

# **PyRCS**

*An open-source tool for collecting railway codes used in different  
UK rail industry systems*

***Release 0.3.7***

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First release: August 2019  
Last updated: September 2023

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# Chapter 1

## About PyRCS

PyRCS is an open-source Python package designed to simplify the collection and management of diverse codes used in different systems within the UK rail industry. It serves as a practical toolkit for researchers, practitioners, and individuals who frequently interact with the [Railway Codes](#) website and work extensively with railway codes in the UK. Leveraging the capabilities of the Python programming language, PyRCS enables efficient access to and manipulation of railway code data, enhancing productivity and effectiveness in working with these codes.

During *Installation*, PyRCS includes a set of pre-packaged data. When users request data from a specific category listed on the [Railway Codes](#) website, PyRCS automatically loads the corresponding pre-packaged data for that category by default. Additionally, it provides functionality that enables direct access to the latest data from the data source website, ensuring users can stay updated with the most current information. Furthermore, PyRCS users can conveniently update the relevant pre-packaged data, keeping their data resources synchronized with the latest developments.

With PyRCS, users can leverage Python's power to streamline workflows and enhance productivity when working with railway codes in the UK rail industry.

# Chapter 2

## Installation

To install the latest release of pyrcs from PyPI via pip:

```
pip install --upgrade pyrcs
```

To install the most recent version of pyrcs hosted on GitHub:

```
pip install --upgrade git+https://github.com/mikeqfu/pyrcs.git
```

---

### Note:

- If using a virtual environment, make sure it is activated.
  - It is recommended to add `pip install` the option `--upgrade` (or `-U`) to ensure that you are getting the latest stable release of the package.
  - For more general instructions on the installation of Python packages, please refer to the official guide on [Installing Packages](#).
- 

To check whether pyrcs has been correctly installed, try to import the package via an interpreter shell:

```
>>> import pyrcs
>>> pyrcs.__version__ # Check the latest version
```

The latest version is: 0.3.7

# Chapter 3

## Sub-packages and modules

### 3.1 Sub-packages

<code>line_data</code>	A sub-package for collecting codes of <a href="#">line data</a> .
<code>other_assets</code>	A sub-package of modules for collecting codes of <a href="#">other assets</a> .

#### 3.1.1 `line_data`

A sub-package for collecting codes of [line data](#).

(See also [LineData](#).)

<code>ELRMileages([data_dir, update, verbose])</code>	A class for collecting data of <a href="#">Engineer's Line References (ELRs)</a> .
<code>Electrification([data_dir, update, verbose])</code>	A class for collecting <a href="#">section codes for overhead line electrification (OLE) installations</a> .
<code>LocationIdentifiers([data_dir, update, verbose])</code>	A class for collecting data of <a href="#">location identifiers (including other systems' station codes)</a> .
<code>LOR([data_dir, update, verbose])</code>	A class for collecting data of <a href="#">Line of Route (LOR/PRIDE)</a> .
<code>LineNames([data_dir, update, verbose])</code>	A class for collecting data of <a href="#">railway line names</a> .
<code>TrackDiagrams([data_dir, update, verbose])</code>	A class for collecting data of <a href="#">British railway track diagrams</a> .
<code>Bridges([data_dir, verbose])</code>	A class for collecting data of <a href="#">railway bridges</a> .

## ELRMileages

```
class pyrcs.line_data.ELRMileages(data_dir=None, update=False, verbose=True)
```

A class for collecting data of Engineer's Line References (ELRs).

### Parameters

- **data\_dir** (*str or None*) – The name of a folder for the data directory, defaults to None.
- **update** (*bool*) – Whether to do an update check (for the package data), defaults to False.
- **verbose** (*bool or int*) – Whether to print relevant information in console, defaults to True.

### Variables

- **catalogue** (*dict*) – The catalogue of the data.
- **last\_updated\_date** (*str*) – The last updated date.
- **data\_dir** (*str*) – An absolute path to the data directory.
- **current\_data\_dir** (*str*) – An absolute path to the current data directory.
- **measure\_headers** (*list*) – A list of possible headers for different measures.

### Examples:

```
>>> from pyrcs.line_data import ELRMileages # from pyrcs import ELRMileages
>>> em = ELRMileages()
>>> em.NAME
"Engineer's Line References (ELRs)"
>>> em.URL
'http://www.railwaycodes.org.uk/elrs/elr0.shtm'
```

### Attributes

<i>KEY</i>	str: Key of the <i>dict</i> -type data.
<i>KEY_TO_LAST_UPDATED_DATE</i>	str: Key of the data of the last updated date.
<i>NAME</i>	str: Name of the data.
<i>URL</i>	str: URL of the main web page of the data.

**ELRMileages.KEY**

```
ELRMileages.KEY = 'ELRs and mileages'
```

str: Key of the `dict`-type data.

**ELRMileages.KEY\_TO\_LAST\_UPDATED\_DATE**

```
ELRMileages.KEY_TO_LAST_UPDATED_DATE = 'Last updated date'
```

str: Key of the data of the last updated date.

**ELRMileages.NAME**

```
ELRMileages.NAME = "Engineer's Line References (ELRs)"
```

str: Name of the data.

**ELRMileages.URL**

```
ELRMileages.URL = 'http://www.railwaycodes.org.uk/elrs/elr0.shtml'
```

str: URL of the main web page of the data.

**Methods**

<code>collect_elr_by_initial</code> (initial[, update, ...])	Collect Engineer's Line References (ELRs) for a given initial letter from source web page.
<code>collect_mileage_file</code> (elr[, parsed, ...])	Collect mileage file for the given ELR from source web page.
<code>fetch_elr</code> ([update, dump_dir, verbose])	Fetch data of ELRs and their associated mileages.
<code>fetch_mileage_file</code> (elr[, update, dump_dir, ...])	Fetch the mileage file for a given ELR.
<code>get_conn_mileages</code> (start_elr, end_elr[, update])	Get a connection point between two ELR-and-mileage pairs.
<code>search_conn</code> (start_elr, start_em, end_elr, end_em)	Search for connection between two ELR-and-mileage pairs.

## ELRMileages.collect\_elr\_by\_initial

`ELRMileages.collect_elr_by_initial(initial, update=False, verbose=False)`

Collect Engineer's Line References (ELRs) for a given initial letter from source web page.

### Parameters

- `initial (str)` – initial letter of an ELR, e.g. 'a', 'z'
- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `verbose (bool or int)` – whether to print relevant information in console, defaults to True

### Returns

data of ELRs whose names start with the given initial letter and date of when the data was last updated

### Return type

`dict`

### Examples:

```
>>> from pyrcs.line_data import ELRMileages # from pyrcs import ELRMileages
>>> em = ELRMileages()

>>> elrs_a_codes = em.collect_elr_by_initial(initial='a')
>>> type(elrs_a_codes)
dict
>>> list(elrs_a_codes.keys())
['A', 'Last updated date']

>>> elrs_a_codes_dat = elrs_a_codes['A']
>>> type(elrs_a_codes_dat)
pandas.core.frame.DataFrame
>>> elrs_a_codes_dat.head()
   ELR    ...      Notes
0  AAL    ...  Now NAJ3
1  AAM    ...  Formerly AML
2  AAV    ...
3  ABB    ...      Now AHB
4  ABB    ...
[5 rows x 5 columns]

>>> elrs_q_codes = em.collect_elr_by_initial(initial='Q')
>>> elrs_q_codes_dat = elrs_q_codes['Q']
>>> elrs_q_codes_dat.head()
   ELR    ...      Notes
0  QAB    ...  Duplicates ALB?
1  QBL    ...
2  QDS    ...
3  QLT    ...
4  QLT1   ...
[5 rows x 5 columns]
```

## ELRMileages.collect\_mileage\_file

```
ELRMileages.collect_mileage_file(elr, parsed=True, confirmation_required=True,
                                 dump_it=False, verbose=False)
```

Collect mileage file for the given ELR from source web page.

### Parameters

- **elr** (*str*) – ELR, e.g. 'CJD', 'MLA', 'FED'
- **parsed** (*bool*) – whether to parse the scraped mileage data
- **confirmation\_required** (*bool*) – whether to confirm before proceeding, defaults to True
- **dump\_it** (*bool*) – whether to save the collected data as a pickle file, defaults to False
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to False

### Returns

mileage file for the given elr

### Return type

*dict*

### Note:

- In some cases, mileages are unknown hence left blank, e.g. ANI2, Orton Junction with ROB (~3.05)
- Mileages in parentheses are not on that ELR, but are included for reference, e.g. ANL, (8.67) NORTHOLT [London Underground]
- As with the main ELR list, mileages preceded by a tilde (~) are approximate.

### Examples:

```
>>> from pyrcs.line_data import ELRMileages # from pyrcs import ELRMileages
>>> em = ELRMileages()

>>> gam_mileage_file = em.collect_mileage_file(elr='GAM')
To collect mileage file of "GAM"
? [No] |Yes: yes
>>> type(gam_mileage_file)
dict
>>> list(gam_mileage_file.keys())
['ELR', 'Line', 'Sub-Line', 'Mileage', 'Notes']
>>> gam_mileage_file['Mileage']
   Mileage Mileage_Note Miles_Chains ... Link_1 Link_1_ELR Link_1_Mile_Chain
0    8.1518                 8.69 ...     None
1   10.0264                10.12 ...     None
[2 rows x 8 columns]
```

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```

>>> xrc2_mileage_file = em.collect_mileage_file(elr='XRC2')
To collect mileage file of "XRC2"
? [No]|Yes: yes
>>> xrc2_mileage_file['Mileage']
   Mileage Mileage_Note ... Link_1_ELR Link_1_Mile_Chain
0  9.0158      14.629km ...
1  9.0447      14.893km ...
2  9.0557      14.994km ...
[3 rows x 8 columns]

>>> xre_mileage_file = em.collect_mileage_file(elr='XRE')
To collect mileage file of "XRE"
? [No]|Yes: yes
>>> xre_mileage_file['Mileage']
   Mileage Mileage_Note ... Link_2_ELR Link_2_Mile_Chain
0  7.0073      11.333km ...
1  7.0174      11.425km ...
2  9.0158      14.629km ...
3  9.0198      14.666km ...
4  9.0389      14.840km ...
5  9.0439      (14.886)km ...
6  9.0540      (14.978)km ...
[7 rows x 11 columns]

>>> mor_mileage_file = em.collect_mileage_file(elr='MOR')
To collect mileage file of "MOR"
? [No]|Yes: yes
>>> type(mor_mileage_file['Mileage'])
dict
>>> list(mor_mileage_file['Mileage'].keys())
['Original measure', 'Later measure']
>>> mor_mileage_file['Mileage']['Original measure']
   Mileage Mileage_Note Miles_Chains ... Link_1 Link_1_ELR Link_1_Mile_Chain
0  0.0000          0.00 ... SWA (215.18)     SWA        215.18
1  0.0792          0.36 ... None
2  0.1716          0.78 ... None
3  1.1166          1.53 ... None
4  2.0066          2.03 ... None
5  2.0836          2.38 ... None
6
7  3.0462          3.21 ... SDI2 (2.79)     SDI2        2.79
[8 rows x 8 columns]
>>> mor_mileage_file['Mileage']['Later measure']
   Mileage Mileage_Note Miles_Chains ... Link_1 Link_1_ELR Link_1_Mile_Chain
0  0.0000          0.00 ... SWA (215.26)     SWA        215.26
1  0.0176          0.08 ... SWA (215.18)     SWA        215.18
2  0.0968          0.44 ... None
3  1.0132          1.06 ... None
4  1.1342          1.61 ... None
5  2.0242          2.11 ... None
6  2.1012          2.46 ... None
7
8  3.0638          3.29 ... SDI2 (2.79)     SDI2        2.79
[9 rows x 8 columns]

>>> fed_mileage_file = em.collect_mileage_file(elr='FED')

```

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```
To collect mileage file of "FED"
? [No] |Yes: yes
>>> type(fed_mileage_file['Mileage'])
dict
>>> list(fed_mileage_file['Mileage'].keys())
['Current route', 'Original route']
>>> fed_mileage_file['Mileage']['Current route']
  Mileage Mileage_Note ... Link_1_ELR Link_1_Mile_Chain
0 83.1254 ... FEL
1 84.0198 ...
2 84.1430 ...
3 84.1540 ...
4 85.0484 ...
5 85.1122 ...
6 85.1188 ... TFN 2.13
[7 rows x 8 columns]
>>> fed_mileage_file['Mileage']['Original route']
  Mileage Mileage_Note Miles_Chains ... Link_1 Link_1_ELR Link_1_Mile_Chain
0 0.0000 0.00 ... FEL (84.22) FEL 84.22
1 1.0176 1.08 ...
2 1.1540 1.70 ...
3 1.1694 1.77 ...
[4 rows x 8 columns]
```

## ELRMileages.fetch\_elr

`ELRMileages.fetch_elr(update=False, dump_dir=None, verbose=False)`

Fetch data of ELRs and their associated mileages.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of all available ELRs and date of when the data was last updated

### Return type

dict

### Examples:

```
>>> from pyrcs.line_data import ELRMileages # from pyrcs import ELRMileages
>>> em = ELRMileages()
>>> elrs_codes = em.fetch_elr()
>>> type(elrs_codes)
```

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```

dict
>>> list(elrs_codes.keys())
['ELRs and mileages', 'Last updated date']

>>> em.KEY
'ELRs and mileages'

>>> elrs_codes_dat = elrs_codes[em.KEY]
>>> type(elrs_codes_dat)
pandas.core.frame.DataFrame
>>> elrs_codes_dat.head()
   ELR    ...      Notes
0  AAL    ...  Now NAJ3
1  AAM    ...  Formerly AML
2  AAV    ...
3  ABB    ...  Now AHB
4  ABB    ...
[5 rows x 5 columns]

```

## ELRMileages.fetch\_mileage\_file

`ELRMileages.fetch_mileage_file(elr, update=False, dump_dir=None, verbose=False)`

Fetch the mileage file for a given ELR.

### Parameters

- `elr (str) – elr: ELR, e.g. 'CJD', 'MLA', 'FED'`
- `update (bool) – whether to do an update check (for the package data), defaults to False`
- `dump_dir (str or None) – pathname of a directory where the data file is dumped, defaults to None`
- `verbose (bool or int) – whether to print relevant information in console, defaults to False`

### Returns

mileage file (codes), line name and, if any, additional information/notes

### Return type

`dict`

### Examples:

```

>>> from pyrcs.line_data import ELRMileages # from pyrcs import ELRMileages

>>> em = ELRMileages()

>>> # Get the mileage file of 'AAL' (Now 'NAJ3')
>>> aal_mileage_file = em.fetch_mileage_file(elr='AAL')
>>> type(aal_mileage_file)
dict
>>> list(aal_mileage_file.keys())

```

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```

['ELR', 'Line', 'Sub-Line', 'Mileage', 'Notes', 'Formerly']
>>> aal_mileage_file['ELR']
'NAJ3'
>>> aal_mileage_file['Notes']
'Note that Ashendon Junction up line junction is on NAJ2'
>>> aal_mileage_file['Mileage']
   Mileage Mileage_Note ... Link_1_ELR Link_1_Mile_Chain
0    0.0000      ...      NAJ2           33.69
1    0.0594      ...      GUA            164.75
2    1.0396      ...
3    3.0682      ...
4    6.0704      ...
5    8.0572      ...      BSG            0.00
6    8.0990      ...      WEJ
7    9.0594      ...
8   13.0264      ...
9   17.0858      ...
10  17.0968      ...
11  18.0572      ...      DCL            81.10
12  18.0638      ...      DCL            81.12
[13 rows x 8 columns]

>>> # Get the mileage file of 'MLA'
>>> mla_mileage_file = em.fetch_mileage_file(elr='MLA')
>>> type(mla_mileage_file)
dict
>>> list(mla_mileage_file.keys())
['ELR', 'Line', 'Sub-Line', 'Mileage', 'Notes']
>>> mla_mileage_file_mileages = mla_mileage_file['Mileage']
>>> type(mla_mileage_file_mileages)
dict
>>> list(mla_mileage_file_mileages.keys())
['Current measure', 'Original measure']
>>> mla_mileage_file_mileages['Original measure']
   Mileage Mileage_Note ... Link_3_ELR Link_3_Mile_Chain
0    4.1386      ...      NEM4           0.00
1    5.0616      ...
2    5.1122      ...
[3 rows x 14 columns]
>>> mla_mileage_file_mileages['Current measure']
   Mileage Mileage_Note Miles_Chains ...      Link_1 Link_1_ELR Link_1_Mile_Chain
0    0.0000          0.00  ...      MRL2 (4.44)      MRL2           4.44
1    0.0572          0.26  ...          None
2    0.1540          0.70  ...          None
3    0.1606          0.73  ...          None
[4 rows x 8 columns]

>>> # Get the mileage file of 'LCG'
>>> mla_mileage_file = em.fetch_mileage_file(elr='LCG')

```

## ELRMileages.get\_conn\_mileages

`ELRMileages.get_conn_mileages(start_elr, end_elr, update=False, **kwargs)`

Get a connection point between two ELR-and-mileage pairs.

Namely, find the end and start mileages for the start and end ELRs, respectively.

**Note:** This function may not be able to find the connection for every pair of ELRs. See [Example 2](#) below.

### Parameters

- `start_elr (str)` – start ELR
- `end_elr (str)` – end ELR
- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `kwargs` – [optional] parameters of the method  
`ELRMileages.fetch_mileage_file()`

### Returns

connection ELR and mileages between the given `start_elr` and `end_elr`

### Return type

tuple

### Example 1:

```
>>> from pyrcs.line_data import ELRMileages # from pyrcs import ELRMileages
>>> em = ELRMileages()
>>> conn = em.get_conn_mileages(start_elr='NAY', end_elr='LTN2')
>>> (s_dest_mlg, c_elr, c_orig_mlg, c_dest_mlg, e_orig_mlg) = conn
>>> s_dest_mlg
'5.1606'
>>> c_elr
'NOL'
>>> c_orig_mlg
'5.1606'
>>> c_dest_mlg
'0.0638'
>>> e_orig_mlg
'123.1320'
```

### Example 2:

```
>>> from pyrcs.line_data import ELRMileages # from pyrcs import ELRMileages
>>> em = ELRMileages()
```

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```
>>> conn = em.get_conn_mileages(start_elr='MAC3', end_elr='DBP1', dump_dir="tests")
>>> conn
(' ', ' ', ' ', ' ', ' ')
```

## ELRMileages.search\_conn

**static** ELRMileages.**search\_conn**(*start\_elr*, *start\_em*, *end\_elr*, *end\_em*)

Search for connection between two ELR-and-mileage pairs.

### Parameters

- **start\_elr** (*str*) – start ELR
- **start\_em** (*pandas.DataFrame*) – mileage file of the start ELR
- **end\_elr** (*str*) – end ELR
- **end\_em** (*pandas.DataFrame*) – mileage file of the end ELR

### Returns

connection (<end mileage of the start ELR>, <start mileage of the end ELR>)

### Return type

tuple

### Examples:

```
>>> from pyrcs.line_data import ELRMileages # from pyrcs import ELRMileages

>>> em = ELRMileages()

>>> elr_1 = 'AAM'
>>> mileage_file_1 = em.collect_mileage_file(elr_1, confirmation_required=False)
>>> mf_1_mileages = mileage_file_1['Mileage']
>>> mf_1_mileages.head()
   Mileage Mileage_Note ... Link_2_ELR Link_2_Mile_Chain
0  0.0000          ...
1  0.0154          ...
2  0.0396          ...
3  1.1012          ...
4  1.1408          ...
[5 rows x 11 columns]

>>> elr_2 = 'ANZ'
>>> mileage_file_2 = em.collect_mileage_file(elr_2, confirmation_required=False)
>>> mf_2_mileages = mileage_file_2['Mileage']
>>> mf_2_mileages.head()
   Mileage Mileage_Note Miles_Chains ... Link_1 Link_1_ELR Link_1_Mile_Chain
0  84.0924          84.42    ...        BEA        BEA
1  84.1364          84.62    ...  AAM (0.18)      AAM        0.18
[2 rows x 8 columns]

>>> elr_1_dest, elr_2_orig = em.search_conn(elr_1, mf_1_mileages, elr_2, mf_2_mileages)
>>> elr_1_dest
```

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```
'0.0396'
>>> elr_2_orig
'84.1364'
```

## Electrification

`class pyrcs.line_data.Electrification(data_dir=None, update=False, verbose=True)`

A class for collecting section codes for overhead line electrification (OLE) installations.

### Parameters

- `data_dir (str or None)` – name of data directory, defaults to None
- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `verbose (bool or int)` – whether to print relevant information in console, defaults to True

### Variables

- `catalogue (dict)` – catalogue of the data
- `last_updated_date (str)` – last update date
- `data_dir (str)` – path to the data directory
- `current_data_dir (str)` – path to the current data directory

### Examples:

```
>>> from pyrcs.line_data import Electrification # from pyrcs import Electrification
>>> elec = Electrification()
>>> elec.NAME
'Section codes for overhead line electrification (OLE) installations'
>>> elec.URL
'http://www.railwaycodes.org.uk/electrification/mast_prefix0.shtml'
```

## Attributes

<code>KEY</code>	Key of the <code>dict</code> -type data
<code>KEY_TO_ENERGY_TARIFF_ZONES</code>	Key of the <code>dict</code> -type data of the ' <i>UK railway electrification tariff zones</i> '
<code>KEY_TO_INDEPENDENT_LINES</code>	Key of the <code>dict</code> -type data of the ' <i>independent lines</i> '
<code>KEY_TO_LAST_UPDATED_DATE</code>	Key of the data of the last updated date
<code>KEY_TO_NATIONAL_NETWORK</code>	Key of the <code>dict</code> -type data of the ' <i>national network</i> '
<code>KEY_TO_OHNS</code>	Key of the <code>dict</code> -type data of the ' <i>overhead line electrification neutral sections (OHNS)</i> '
<code>NAME</code>	Name of the data
<code>URL</code>	URL of the main web page of the data

### `Electrification.KEY`

`Electrification.KEY = 'Electrification'`

Key of the `dict`-type data

### `Electrification.KEY_TO_ENERGY_TARIFF_ZONES`

`Electrification.KEY_TO_ENERGY_TARIFF_ZONES = 'National network energy tariff zones'`

Key of the `dict`-type data of the '*UK railway electrification tariff zones*'

### `Electrification.KEY_TO_INDEPENDENT_LINES`

`Electrification.KEY_TO_INDEPENDENT_LINES = 'Independent lines'`

Key of the `dict`-type data of the '*independent lines*'

### `Electrification.KEY_TO_LAST_UPDATED_DATE`

`Electrification.KEY_TO_LAST_UPDATED_DATE = 'Last updated date'`

Key of the data of the last updated date

### **Electrification.KEY\_TO\_NATIONAL\_NETWORK**

`Electrification.KEY_TO_NATIONAL_NETWORK = 'National network'`

Key of the dict-type data of the '*national network*'

### **Electrification.KEY\_TO\_OHNS**

`Electrification.KEY_TO_OHNS = 'National network neutral sections'`

Key of the dict-type data of the '*overhead line electrification neutral sections (OHNS)*'

### **Electrification.NAME**

`Electrification.NAME = 'Section codes for overhead line electrification (OLE) installations'`

Name of the data

### **Electrification.URL**

`Electrification.URL =  
'http://www.railwaycodes.org.uk/electrification/mast_prefix0.shtml'`

URL of the main web page of the data

## Methods

<code>collect_etz_codes([confirmation_required, ...])</code>	Collect OLE section codes for national network energy tariff zones from source web page.
<code>collect_indep_lines_codes([...])</code>	Collect OLE section codes for independent lines from source web page.
<code>collect_national_network_codes([...])</code>	Collect OLE section codes for national network from source web page.
<code>collect_ohns_codes([confirmation_required, ...])</code>	Collect codes for overhead line electrification neutral sections (OHNS) from source web page.
<code>fetch_codes([update, dump_dir, verbose])</code>	Fetch OLE section codes listed in the <i>Electrification</i> catalogue.
<code>fetch_etz_codes([update, dump_dir, verbose])</code>	Fetch OLE section codes for national network energy tariff zones.
<code>fetch_indep_lines_codes([update, dump_dir, ...])</code>	Fetch OLE section codes for independent lines.
<code>fetch_national_network_codes([update, ...])</code>	Fetch OLE section codes for national network.
<code>fetch_ohns_codes([update, dump_dir, verbose])</code>	Fetch codes for overhead line electrification neutral sections (OHNS).
<code>get_indep_line_catalogue([update, verbose])</code>	Get a catalogue for independent lines.

### `Electrification.collect_etz_codes`

`Electrification.collect_etz_codes(confirmation_required=True, verbose=False)`

Collect OLE section codes for national network energy tariff zones from source web page.

#### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

#### Returns

OLE section codes for national network energy tariff zones

#### Return type

dict or None

#### Examples:

```
>>> from pyrcs.line_data import Electrification # from pyrcs import Electrification
>>> elec = Electrification()
```

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```

>>> rail_etz_codes = elec.collect_etz_codes()
To collect section codes for OLE installations: national network energy tariff zones
? [No]|Yes: yes
>>> type(rail_etz_codes)
dict
>>> list(rail_etz_codes.keys())
['National network energy tariff zones', 'Last updated date']

>>> elec.KEY_TO_ENERGY_TARIFF_ZONES
'National network energy tariff zones'

>>> rail_etz_codes_dat = rail_etz_codes[elec.KEY_TO_ENERGY_TARIFF_ZONES]
>>> type(rail_etz_codes_dat)
dict
>>> list(rail_etz_codes_dat.keys())
['Railtrack', 'Network Rail']

>>> rail_etz_codes_dat['Railtrack']['Codes']
Code          Energy tariff zone
0   EA          East Anglia
1   EC          East Coast Main Line
2   GE          Great Eastern †
3   LT          LTS †
4   MD          Midland Main Line
5   ME          Merseyside †
6   MS          Merseyside (North West DC traction)
7   NE          North East
8   NL          North London (DC traction)
9   SC          Scotland
10  SO          South
11  SW          South West
12  WA          West Anglia †
13  WC          West Coast/North West

```

## Electrification.collect\_indep\_lines\_codes

`Electrification.collect_indep_lines_codes(confirmation_required=True, verbose=False)`

Collect OLE section codes for `independent lines` from source web page.

### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

OLE section codes for independent lines

### Return type

dict or None

### Examples:

```

>>> from pyrcs.line_data import Electrification # from pyrcs import Electrification

>>> elec = Electrification()

>>> indep_lines_codes = elec.collect_indep_lines_codes()
To collect section codes for OLE installations: independent lines
? [No]|Yes: yes
>>> type(indep_lines_codes)
dict
>>> list(indep_lines_codes.keys())
['Independent lines', 'Last updated date']

>>> elec.KEY_TO_INDEPENDENT_LINES
'Independent lines'

>>> indep_lines_codes_dat = indep_lines_codes[elec.KEY_TO_INDEPENDENT_LINES]
>>> type(indep_lines_codes_dat)
dict
>>> len(indep_lines_codes_dat)
22
>>> list(indep_lines_codes_dat.keys())
['Beamish Tramway',
'Birkenhead Tramway',
'Black Country Living Museum [Tipton]',
'Blackpool Tramway',
'Brighton and Rottingdean Seashore Electric Railway [Magnus Volk's "Daddy Long Legs"]',
'Channel Tunnel',
'Croydon Tramlink',
'East Anglia Transport Museum [Lowestoft]',
'Edinburgh Tramway',
'Heath Park Tramway [Cardiff]',
'Heaton Park Tramway [Manchester]',
'Iarnród Éireann',
'Luas [Dublin]',
'Manchester Metrolink',
'Manx Electric Railway',
'Nottingham Express Transit',
'Seaton Tramway',
'Sheffield Supertram',
'Snaefell Mountain Railway',
'Summerlee, Museum of Scottish Industrial Life Tramway',
'Tyne & Wear Metro',
'West Midlands Metro [West Midlands]']

>>> indep_lines_codes_dat['Beamish Tramway']
{'Codes': None, 'Notes': 'Masts do not appear labelled.'}

```

## `Electrification.collect_national_network_codes`

```
Electrification.collect_national_network_codes(confirmation_required=True,
verbose=False)
```

Collect OLE section codes for national network from source web page.

### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

OLE section codes for National network

### Return type

dict or None

### Examples:

```
>>> from pyrcs.line_data import Electrification # from pyrcs import Electrification

>>> elec = Electrification()

>>> nn_codes = elec.collect_national_network_codes()
To collect section codes for OLE installations: national network
? [No] |Yes: yes
>>> type(nn_codes)
dict
>>> list(nn_codes.keys())
['National network', 'Last updated date']

>>> elec.KEY_TO_NATIONAL_NETWORK
'National network'

>>> nn_codes_dat = nn_codes[elec.KEY_TO_NATIONAL_NETWORK]
>>> type(nn_codes_dat)
dict
>>> list(nn_codes_dat.keys())
['Traditional numbering system [distance and sequence]', 
 'New numbering system [km and decimal]', 
 'Codes not certain [confirmation is welcome]', 
 'Suspicious data', 
 'An odd one to complete the record', 
 'LBSC/Southern Railway overhead system', 
 'Codes not known']

>>> tns_codes = nn_codes_dat['Traditional numbering system [distance and sequence]']
>>> type(tns_codes)
dict
>>> list(tns_codes.keys())
['Codes', 'Notes']
>>> tns_codes_dat = tns_codes['Codes']
>>> tns_codes_dat.head()
Code ... Datum
```

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```

0   A ...           Fenchurch Street
1   A ...           Newbridge Junction
2   A ...           Fenchurch Street
3   A ... Guide Bridge Station Junction
4   AB ...
[5 rows x 4 columns]

```

## Electrification.collect\_ohns\_codes

`Electrification.collect_ohns_codes(confirmation_required=True, verbose=False)`

Collect codes for overhead line electrification neutral sections (OHNS) from source web page.

### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

OHNS codes

### Return type

dict or None

## Examples:

```

>>> from pyrcs.line_data import Electrification # from pyrcs import Electrification
>>> elec = Electrification()

>>> ohl_ns_codes = elec.collect_ohns_codes()
To collect section codes for OLE installations: national network neutral sections
? [No]|Yes: yes
>>> type(ohl_ns_codes)
dict
>>> list(ohl_ns_codes.keys())
['National network neutral sections', 'Last updated date']

>>> elec.KEY_TO_OHNS
'National network neutral sections'

>>> ohl_ns_codes_dat = ohl_ns_codes[elec.KEY_TO_OHNS]
>>> type(ohl_ns_codes_dat)
dict
>>> list(ohl_ns_codes_dat.keys())
['Codes', 'Notes']
>>> ohl_ns_codes_dat['Codes']
      ELR          OHNS Name Mileage Tracks Dates
0  ARG1        Rutherglen 0m 03ch
1  ARG2  Finnieston East 4m 23ch     Down
2  ARG2  Finnieston West 4m 57ch       Up

```

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```
3 AYR1 Shields Junction 0m 68ch Up Ayr
4 AYR1 Shields Junction 0m 69ch Down Ayr
```

## Electrification.fetch\_codes

`Electrification.fetch_codes(update=False, dump_dir=None, verbose=False)`

Fetch OLE section codes listed in the [Electrification](#) catalogue.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

section codes for overhead line electrification (OLE) installations

### Return type

dict

### Examples:

```
>>> from pyrcs.line_data import Electrification # from pyrcs import Electrification
>>> elec = Electrification()

>>> elec_codes = elec.fetch_codes()
>>> type(elec_codes)
dict
>>> list(elec_codes.keys())
['Electrification', 'Last updated date']

>>> elec.KEY
'Electrification'

>>> elec_codes_dat = elec_codes[elec.KEY]
>>> type(elec_codes_dat)
dict
>>> list(elec_codes_dat.keys())
['National network energy tariff zones',
 'Independent lines',
 'National network',
 'National network neutral sections']
```

## Electrification.fetch\_etz\_codes

`Electrification.fetch_etz_codes(update=False, dump_dir=None, verbose=False)`

Fetch OLE section codes for national network energy tariff zones.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

OLE section codes for national network energy tariff zones

### Return type

`dict`

### Examples:

```
>>> from pyrcs.line_data import Electrification # from pyrcs import Electrification
>>> elec = Electrification()

>>> rail_etz_codes = elec.fetch_etz_codes()
>>> type(rail_etz_codes)
dict
>>> list(rail_etz_codes.keys())
['National network energy tariff zones', 'Last updated date']

>>> elec.KEY_TO_ENERGY_TARIFF_ZONES
'National network energy tariff zones'

>>> rail_etz_codes_dat = rail_etz_codes[elec.KEY_TO_ENERGY_TARIFF_ZONES]
>>> type(rail_etz_codes_dat)
dict
>>> list(rail_etz_codes_dat.keys())
['Railtrack', 'Network Rail']

>>> rail_etz_codes_dat['Railtrack']['Codes']
Code          Energy tariff zone
0   EA           East Anglia
1   EC           East Coast Main Line
2   GE           Great Eastern †
3   LT           LTS †
4   MD           Midland Main Line
5   ME           Merseyside †
6   MS           Merseyside (North West DC traction)
7   NE           North East
8   NL           North London (DC traction)
9   SC           Scotland
10  SO           South
11  SW           South West
```

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12	WA	West Anglia †
13	WC	West Coast/North West

## Electrification.fetch\_indep\_lines\_codes

`Electrification.fetch_indep_lines_codes(update=False, dump_dir=None, verbose=False)`

Fetch OLE section codes for `independent` lines.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

OLE section codes for independent lines

### Return type

dict

### Examples:

```
>>> from pyrcs.line_data import Electrification # from pyrcs import Electrification
>>> elec = Electrification()

>>> indep_lines_codes = elec.fetch_indep_lines_codes()
>>> type(indep_lines_codes)
dict
>>> list(indep_lines_codes.keys())
['Independent lines', 'Last updated date']

>>> elec.KEY_TO_INDEPENDENT_LINES
'Independent lines'

>>> indep_lines_codes_dat = indep_lines_codes[elec.KEY_TO_INDEPENDENT_LINES]
>>> type(indep_lines_codes_dat)
dict
>>> len(indep_lines_codes_dat)
22
>>> list(indep_lines_codes_dat.keys())
['Beamish Tramway',
'Birkenhead Tramway',
'Black Country Living Museum [Tipton]',
'Blackpool Tramway',
'"Brighton and Rottingdean Seashore Electric Railway [Magnus Volk's "Daddy Long Legs"] ...',
'Channel Tunnel',
'Croydon Tramlink',
'East Anglia Transport Museum [Lowestoft]',
```

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```
'Edinburgh Tramway',
'Heath Park Tramway [Cardiff]',
'Heaton Park Tramway [Manchester]',
'Iarnród Éireann',
'Luas [Dublin]',
'Manchester Metrolink',
'Manx Electric Railway',
'Nottingham Express Transit',
'Seaton Tramway',
'Sheffield Supertram',
'Snaefell Mountain Railway',
'Summerlee, Museum of Scottish Industrial Life Tramway',
'Tyne & Wear Metro',
'West Midlands Metro [West Midlands]']

>>> indep_lines_codes_dat['Beamish Tramway']
{'Codes': None, 'Notes': 'Masts do not appear labelled.'}
```

## Electrification.fetch\_national\_network\_codes

`Electrification.fetch_national_network_codes(update=False, dump_dir=None, verbose=False)`

Fetch OLE section codes for [national network](#).

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

OLE section codes for National network

### Return type

dict or None

### Examples:

```
>>> from pyrcs.line_data import Electrification # from pyrcs import Electrification

>>> elec = Electrification()

>>> nn_codes = elec.fetch_national_network_codes()
>>> type(nn_codes)
dict
>>> list(nn_codes.keys())
['National network', 'Last updated date']
```

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```
>>> elec.KEY_TO_NATIONAL_NETWORK
'National network'

>>> nn_codes_dat = nn_codes[elec.KEY_TO_NATIONAL_NETWORK]
>>> type(nn_codes_dat)
dict
>>> list(nn_codes_dat.keys())
['Traditional numbering system [distance and sequence]',
 'New numbering system [km and decimal]',
 'Codes not certain [confirmation is welcome]',
 'Suspicious data',
 'An odd one to complete the record',
 'LBSC/Southern Railway overhead system',
 'Codes not known']

>>> tns_codes = nn_codes_dat['Traditional numbering system [distance and sequence]']
>>> type(tns_codes)
dict
>>> list(tns_codes.keys())
['Codes', 'Notes']
>>> tns_codes_dat = tns_codes['Codes']
>>> tns_codes_dat.head()
   Code    ...          Datum
0     A    ...  Fenchurch Street
1     A    ...  Newbridge Junction
2     A    ...  Fenchurch Street
3     A    ...  Guide Bridge Station Junction
4    AB    ...
[5 rows x 4 columns]
```

## Electrification.fetch\_ohns\_codes

`Electrification.fetch_ohns_codes(update=False, dump_dir=None, verbose=False)`

Fetch codes for overhead line electrification neutral sections (OHNS).

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

OHNS codes

### Return type

dict

### Examples:

```
>>> from pyrcs.line_data import Electrification # from pyrcs import Electrification
>>> elec = Electrification()

>>> ohl_ns_codes = elec.fetch_ohns_codes()
>>> type(ohl_ns_codes)
dict
>>> list(ohl_ns_codes.keys())
['National network neutral sections', 'Last updated date']

>>> elec.KEY_TO_OHNS
'National network neutral sections'

>>> ohl_ns_codes_dat = ohl_ns_codes[elec.KEY_TO_OHNS]
>>> type(ohl_ns_codes_dat)
dict
>>> list(ohl_ns_codes_dat.keys())
['Codes', 'Notes']
>>> ohl_ns_codes_dat['Codes'].head()
   ELR          OHNS Name Mileage Tracks Dates
0  ARG1      Rutherglen 0m 03ch
1  ARG2  Finnieston East 4m 23ch    Down
2  ARG2  Finnieston West 4m 57ch     Up
3  AYR1  Shields Junction 0m 68ch    Up Ayr
4  AYR1  Shields Junction 0m 69ch  Down Ayr
```

## Electrification.get\_indep\_line\_catalogue

`Electrification.get_indep_line_catalogue(update=False, verbose=False)`

Get a catalogue for independent lines.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

a list of independent line names

### Return type

`pandas.DataFrame`

### Examples:

```
>>> from pyrcs.line_data import Electrification # from pyrcs import Electrification
>>> from pyhelpers.settings import pd_preferences

>>> pd_preferences(max_columns=1)

>>> elec = Electrification()

>>> indep_line_cat = elec.get_indep_line_catalogue()
```

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```
>>> indep_line_cat.head()
      Feature ...
0       Beamish Tramway ...
1     Birkenhead Tramway ...
2  Black Country Living Museum ...
3     Blackpool Tramway ...
4 Brighton and Rottingdean Seashore Electric Rai... ...
[5 rows x 3 columns]
```

## LocationIdentifiers

`class pyrcs.line_data.LocationIdentifiers(data_dir=None, update=False, verbose=True)`

A class for collecting data of location identifiers (including other systems' station codes).

### Parameters

- `data_dir (str or None)` – name of data directory, defaults to None
- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `verbose (bool or int)` – whether to print relevant information in console, defaults to True

### Variables

- `catalogue (dict)` – catalogue of the data
- `last_updated_date (str)` – last updated date
- `data_dir (str)` – path to the data directory
- `current_data_dir (str)` – path to the current data directory

### Examples:

```
>>> from pyrcs.line_data import LocationIdentifiers
>>> # from pyrcs import LocationIdentifiers

>>> lid = LocationIdentifiers()

>>> lid.NAME
'CRS, NLC, TIPLOC and STANOX codes'

>>> lid.URL
'http://www.railwaycodes.org.uk/crs/crs0.shtm'
```

## Attributes

<code>KEY</code>	Key of the <code>dict</code> -type data
<code>KEY_TO_ADDITIONAL_NOTES</code>	Key of the <code>dict</code> -type data of <i>additional notes</i>
<code>KEY_TO_LAST_UPDATED_DATE</code>	Key of the data of the last updated date
<code>KEY_TO_MSCEN</code>	Key of the <code>dict</code> -type data of the ' <i>multiple station codes explanatory note</i> '
<code>KEY_TO_OTHER_SYSTEMS</code>	Key of the <code>dict</code> -type data of the ' <i>other systems</i> '
<code>NAME</code>	Name of the data
<code>URL</code>	URL of the main web page of the data

### `LocationIdentifiers.KEY`

`LocationIdentifiers.KEY = 'LocationID'`

Key of the `dict`-type data

### `LocationIdentifiers.KEY_TO_ADDITIONAL_NOTES`

`LocationIdentifiers.KEY_TO_ADDITIONAL_NOTES = 'Additional notes'`

Key of the `dict`-type data of *additional notes*

### `LocationIdentifiers.KEY_TO_LAST_UPDATED_DATE`

`LocationIdentifiers.KEY_TO_LAST_UPDATED_DATE = 'Last updated date'`

Key of the data of the last updated date

### `LocationIdentifiers.KEY_TO_MSCEN`

`LocationIdentifiers.KEY_TO_MSCEN = 'Multiple station codes explanatory note'`

Key of the `dict`-type data of the '*multiple station codes explanatory note*'

### `LocationIdentifiers.KEY_TO_OTHER_SYSTEMS`

`LocationIdentifiers.KEY_TO_OTHER_SYSTEMS = 'Other systems'`

Key of the `dict`-type data of the '*other systems*'

## LocationIdentifiers.NAME

`LocationIdentifiers.NAME = 'CRS, NLC, TIPLOC and STANOX codes'`

Name of the data

## LocationIdentifiers.URL

`LocationIdentifiers.URL = 'http://www.railwaycodes.org.uk/crs/crs0.shtml'`

URL of the main web page of the data

## Methods

<code>collect_codes_by_initial(initial[, update, ...])</code>	Collect CRS, NLC, TIPLOC, STANME and STANOX codes for a given initial letter.
<code>collect_explanatory_note([...])</code>	Collect note about CRS code from source web page.
<code>collect_other_systems_codes([...])</code>	Collect data of other systems' station codes from source web page.
<code>fetch_codes([update, dump_dir, verbose])</code>	Fetch CRS, NLC, TIPLOC, STANME and STANOX codes and other systems' station codes.
<code>fetch_explanatory_note([update, dump_dir, ...])</code>	Fetch multiple station codes explanatory note.
<code>fetch_other_systems_codes([update, ...])</code>	Fetch data of other systems' station codes.
<code>make_xref_dict(keys[, initials, main_key, ...])</code>	Make a dict/dataframe for location code data for the given keys.

### LocationIdentifiers.collect\_codes\_by\_initial

`LocationIdentifiers.collect_codes_by_initial(initial, update=False, verbose=False)`

Collect CRS, NLC, TIPLOC, STANME and STANOX codes for a given initial letter.

#### Parameters

- **initial (str)** – initial letter of station/junction name or certain word for specifying URL
- **update (bool)** – whether to do an update check (for the package data), defaults to False
- **verbose (bool or int)** – whether to print relevant information in console, defaults to False

#### Returns

data of locations beginning with the given initial letter and date of when the data was last updated

**Return type**

dict

**Examples:**

```
>>> from pyrcs.line_data import LocationIdentifiers
>>> # from pyrcs import LocationIdentifiers

>>> lid = LocationIdentifiers()

>>> loc_a_codes = lid.collect_codes_by_initial(initial='a')
>>> type(loc_a_codes)
dict
>>> list(loc_a_codes.keys())
['A', 'Additional notes', 'Last updated date']

>>> loc_a_codes_dat = loc_a_codes['A']
>>> type(loc_a_codes_dat)
pandas.core.frame.DataFrame
>>> loc_a_codes_dat.head()
   Location CRS ... STANME_Note STANOX_Note
0      1999 Reorganisations ...
1          A1 ...
2      A463 Traded In ...
3  A483 Road Scheme Supervisors Closed ...
4          Aachen ...
[5 rows x 12 columns]
```

**LocationIdentifiers.collect\_explanatory\_note**

`LocationIdentifiers.collect_explanatory_note(confirmation_required=True,  
verbose=False)`

Collect note about CRS code from source web page.

**Parameters**

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

**Returns**

data of multiple station codes explanatory note

**Return type**

dict or None

**Examples:**

```
>>> from pyrcs.line_data import LocationIdentifiers
>>> # from pyrcs import LocationIdentifiers

>>> lid = LocationIdentifiers()
```

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```
>>> exp_note = lid.collect_explanatory_note()
To collect data of Multiple station codes explanatory note
? [No]|Yes: yes
>>> type(exp_note)
dict
>>> list(exp_note.keys())
['Multiple station codes explanatory note', 'Notes', 'Last updated date']

>>> lid.KEY_TO_MSCEN
'Multiple station codes explanatory note'

>>> exp_note_dat = exp_note[lid.KEY_TO_MSCEN]
>>> type(exp_note_dat)
pandas.core.frame.DataFrame
>>> exp_note_dat.head()
   Location CRS CRS_alt1 CRS_alt2
0   Glasgow Central GLC     GCL
1   Glasgow Queen Street GLQ     GQL
2           Heworth HEW     HEZ
3   Highbury & Islington HHY     HII      XHZ
4 Lichfield Trent Valley LTV     LIF
```

## LocationIdentifiers.collect\_other\_systems\_codes

`LocationIdentifiers.collect_other_systems_codes(confirmation_required=True,  
verbose=False)`

Collect data of other systems' station codes from source web page.

### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

codes of other systems

### Return type

dict or None

### Examples:

```
>>> from pyrcs.line_data import LocationIdentifiers
>>> # from pyrcs import LocationIdentifiers

>>> lid = LocationIdentifiers()

>>> os_codes = lid.collect_other_systems_codes()
To collect data of Other systems
? [No]|Yes: yes
>>> type(os_codes)
```

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```

dict
>>> list(os_codes.keys())
['Other systems', 'Last updated date']

>>> lid.KEY_TO_OTHER_SYSTEMS
'Other systems'

>>> os_codes_dat = os_codes[lid.KEY_TO_OTHER_SYSTEMS]
>>> type(os_codes_dat)
collections.defaultdict
>>> list(os_codes_dat.keys())
['Córas Iompair Éireann (Republic of Ireland)',
 'Crossrail',
 'Croydon Tramlink',
 'Docklands Light Railway',
 'Manchester Metrolink',
 'Translink (Northern Ireland)',
 'Tyne & Wear Metro']

```

## LocationIdentifiers.fetch\_codes

`LocationIdentifiers.fetch_codes(update=False, dump_dir=None, verbose=False)`

Fetch CRS, NLC, TIPLOC, STANME and STANOX codes and other systems' station codes.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of location codes and date of when the data was last updated

### Return type

dict

### Examples:

```

>>> from pyrcs.line_data import LocationIdentifiers
>>> # from pyrcs import LocationIdentifiers

>>> lid = LocationIdentifiers()

>>> loc_codes = lid.fetch_codes()
>>> type(loc_codes)
dict
>>> list(loc_codes.keys())
['LocationID', 'Other systems', 'Additional notes', 'Last updated date']

```

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```
>>> lid.KEY
'LocationID'

>>> loc_codes_dat = loc_codes[lid.KEY]
>>> type(loc_codes_dat)
pandas.core.frame.DataFrame
>>> loc_codes_dat.head()
   Location CRS ... STANME_Note STANOX_Note
0             A1 ...
1        A463 Traded In ...
2  A483 Road Scheme Supervisors Closed ...
3                Aachen ...
4           AA Holidays S524 ...
[5 rows x 12 columns]
```

## LocationIdentifiers.fetch\_explanatory\_note

`LocationIdentifiers.fetch_explanatory_note(update=False, dump_dir=None, verbose=False)`

Fetch multiple station codes explanatory note.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of multiple station codes explanatory note

### Return type

dict

### Examples:

```
>>> from pyrcs.line_data import LocationIdentifiers
>>> # from pyrcs import LocationIdentifiers

>>> lid = LocationIdentifiers()

>>> exp_note = lid.fetch_explanatory_note()
>>> type(exp_note)
dict
>>> list(exp_note.keys())
['Multiple station codes explanatory note', 'Notes', 'Last updated date']

>>> lid.KEY_TO_MSCE
'Multiple station codes explanatory note'
```

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```
>>> exp_note_dat = exp_note[lid.KEY_TO_MSCEN]
>>> type(exp_note_dat)
pandas.core.frame.DataFrame
>>> exp_note_dat.head()
   Location    CRS CRS_alt1 CRS_alt2
0   Glasgow Central    GLC      GCL
1   Glasgow Queen Street    GLQ      GQL
2   Heworth        HEW      HEZ
3   Highbury & Islington    HHY      HII      XHZ
4   Lichfield Trent Valley    LTV      LIF
```

## LocationIdentifiers.fetch\_other\_systems\_codes

`LocationIdentifiers.fetch_other_systems_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of other systems' station codes.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

codes of other systems

### Return type

dict

### Examples:

```
>>> from pyrcs.line_data import LocationIdentifiers
>>> # from pyrcs import LocationIdentifiers

>>> lid = LocationIdentifiers()

>>> os_codes = lid.fetch_other_systems_codes()
>>> type(os_codes)
dict
>>> list(os_codes.keys())
['Other systems', 'Last updated date']

>>> lid.KEY_TO_OTHER_SYSTEMS
'Other systems'

>>> os_codes_dat = os_codes[lid.KEY_TO_OTHER_SYSTEMS]
>>> type(os_codes_dat)
```

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```
collections.defaultdict
>>> list(os_codes_dat.keys())
['Córas Iompair Éireann (Republic of Ireland)',
 'Crossrail',
 'Croydon Tramlink',
 'Docklands Light Railway',
 'Manchester Metrolink',
 'Translink (Northern Ireland)',
 'Tyne & Wear Metro']
```

## LocationIdentifiers.make\_xref\_dict

`LocationIdentifiers.make_xref_dict(keys, initials=None, main_key=None, as_dict=False, drop_duplicates=False, dump_it=False, dump_dir=None, verbose=False)`

Make a dict/dataframe for location code data for the given keys.

### Parameters

- `keys (str or list)` – one or a sublist of ['CRS', 'NLC', 'TIPLOC', 'STANOX', 'STANME']
- `initials (str or list or None)` – one or a sequence of initials for which the codes are used, defaults to None
- `main_key (str or None)` – key of the returned dictionary (when `as_dict=True`), defaults to None
- `as_dict (bool)` – whether to return a dictionary, defaults to False
- `drop_duplicates (bool)` – whether to drop duplicates, defaults to False
- `dump_it (bool)` – whether to save the location codes dictionary, defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

dictionary or a data frame for location code data for the given keys

### Return type

dict or pandas.DataFrame or None

### Examples:

```
>>> from pyrcs.line_data import LocationIdentifiers
>>> # from pyrcs import LocationIdentifiers

>>> lid = LocationIdentifiers()
```

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```

>>> stanox_dictionary = lid.make_xref_dict(keys='STANOX')
>>> type(stanox_dictionary)
pandas.core.frame.DataFrame
>>> stanox_dictionary.head()
          Location
STANOX
00005      Aachen
04309  Abbeyhill Junction
04311  Abbeyhill Signal E811
04308  Abbeyhill Turnback Sidings
88601      Abbey Wood

>>> s_t_dictionary = lid.make_xref_dict(keys=['STANOX', 'TIPLOC'], initials='a')
>>> type(s_t_dictionary)
pandas.core.frame.DataFrame
>>> s_t_dictionary.head()
          Location
STANOX TIPLOC
00005  AACHE      Aachen
04309  ABHLJN  Abbeyhill Junction
04311  ABHL811  Abbeyhill Signal E811
04308  ABHLTB  Abbeyhill Turnback Sidings
88601  ABWD      Abbey Wood

>>> ks = ['STANOX', 'TIPLOC']
>>> ini = 'b'
>>> main_k = 'Data'
>>> s_t_dictionary = lid.make_xref_dict(ks, ini, main_k, as_dict=True)
>>> type(s_t_dictionary)
dict
>>> list(s_t_dictionary.keys())
['Data']
>>> list(s_t_dictionary['Data'].keys())[:5]
[('55115', ''),
 ('23490', 'BABWTHL'),
 ('38306', 'BACHE'),
 ('66021', 'BADESCL'),
 ('81003', 'BADMTN')]

```

## LOR

`class pyrcs.line_data.LOR(data_dir=None, update=False, verbose=True)`

A class for collecting data of Line of Route (LOR/PRIDE).

---

**Note:** ‘LOR’ and ‘PRIDE’ stands for ‘Line Of Route’ and ‘Possession Resource Information Database’, respectively.

---

### Parameters

- `data_dir (str or None)` – name of data directory, defaults to None

- **update** (*bool*) – whether to do an update check (for the package data), defaults to False
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to True

## Variables

- **catalogue** (*dict*) – catalogue of the data
- **last\_updated\_date** (*str*) – last updated date
- **data\_dir** (*str*) – path to the data directory
- **current\_data\_dir** (*str*) – path to the current data directory
- **valid\_prefixes** (*list*) – valid prefixes

## Examples:

```
>>> from pyrcs.line_data import LOR # from pyrcs import LOR
>>> lor = LOR()
>>> lor.NAME
'Possession Resource Information Database (PRIDE)/Line Of Route (LOR) codes'
>>> lor.URL
'http://www.railwaycodes.org.uk/pride/pride0.shtm'
```

## Attributes

<i>KEY</i>	Key of the <i>dict</i> -type data
<i>KEY_ELC</i>	Key of the <i>dict</i> -type data of <i>ELR/LOR converter</i>
<i>KEY_P</i>	Key of the <i>dict</i> -type data of prefixes
<i>KEY_TO_LAST_UPDATED_DATE</i>	Key of the data of the last updated date
<i>NAME</i>	Name of the data
<i>SHORT_NAME</i>	Short name of the data
<i>URL</i>	URL of the main web page of the data

## LOR.KEY

`LOR.KEY = 'LOR'`  
 Key of the *dict*-type data

**LOR.KEY\_ELC**

```
LOR.KEY_ELC = 'ELR/LOR converter'
```

Key of the dict-type data of *ELR/LOR converter*

**LOR.KEY\_P**

```
LOR.KEY_P = 'Key to prefixes'
```

Key of the dict-type data of prefixes

**LOR.KEY\_TO\_LAST\_UPDATED\_DATE**

```
LOR.KEY_TO_LAST_UPDATED_DATE = 'Last updated date'
```

Key of the data of the last updated date

**LOR.NAME**

```
LOR.NAME = 'Possession Resource Information Database (PRIDE)/Line Of Route  
(LOR) codes'
```

Name of the data

**LOR.SHORT\_NAME**

```
LOR.SHORT_NAME = 'Line of Route (LOR/PRIDE) codes'
```

Short name of the data

**LOR.URL**

```
LOR.URL = 'http://www.railwaycodes.org.uk/pride/pride0.shtm'
```

URL of the main web page of the data

## Methods

<code>collect_codes_by_prefix(prefix[, update, ...])</code>	Collect PRIDE/LOR codes by a given prefix.
<code>collect_elr_lor_converter([...])</code>	Collect ELR/LOR converter from source web page.
<code>fetch_codes([update, dump_dir, verbose])</code>	Fetch data of PRIDE/LOR codes.
<code>fetch_elr_lor_converter([update, dump_dir, ...])</code>	Fetch data of ELR/LOR converter.
<code>get_keys_to_prefixes([prefixes_only, ...])</code>	Get the keys to PRIDE/LOR code prefixes.
<code>get_page_urls([update, verbose])</code>	Get URLs to PRIDE/LOR codes with different prefixes.

### LOR.collect\_codes\_by\_prefix

`LOR.collect_codes_by_prefix(prefix, update=False, verbose=False)`

Collect PRIDE/LOR codes by a given prefix.

#### Parameters

- `prefix (str)` – prefix of LOR codes
- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

#### Returns

LOR codes for the given prefix

#### Return type

dict or None

#### Examples:

```
>>> from pyrcs.line_data import LOR # from pyrcs import LOR
>>> lor = LOR()
>>> lor_codes_cy = lor.collect_codes_by_prefix(prefix='CY')
>>> type(lor_codes_cy)
dict
>>> list(lor_codes_cy.keys())
['CY', 'Notes', 'Last updated date']
>>> cy_codes = lor_codes_cy['CY']
>>> type(cy_codes)
pandas.core.frame.DataFrame
>>> cy_codes.head()
   Code    ...          RA Note
0  CY240  ...  Caerwent branch RA4
1  CY1540  ...  Pembroke - Pembroke Dock RA6
```

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```
[2 rows x 5 columns]

>>> lor_codes_nw = lor.collect_codes_by_prefix(prefix='NW')
>>> type(lor_codes_nw)
dict
>>> list(lor_codes_nw.keys())
['NW/NZ', 'Notes', 'Last updated date']
>>> nw_codes = lor_codes_nw['NW/NZ']
>>> nw_codes.head()
   Code ... RA Note
0  NW1001 ...
1  NW1002 ...
2  NW1003 ...
3  NW1004 ...
4  NW1005 ...
[5 rows x 5 columns]

>>> lor_codes_xr = lor.collect_codes_by_prefix(prefix='XR')
>>> type(lor_codes_xr)
dict
>>> list(lor_codes_xr.keys())
['XR', 'Last updated date']
>>> xr_codes = lor_codes_xr['XR']
>>> type(xr_codes)
dict
>>> list(xr_codes.keys())
['Current codes', 'Current codes note', 'Past codes', 'Past codes note']
>>> xr_codes['Past codes'].head()
   Code ... RA Note
0  XR001 ...
1  XR002 ...
[2 rows x 5 columns]
>>> xr_codes['Current codes'].head()
   Code ...           RA Note
0  XR001 ...  Originally reported as RA4
1  XR002 ...  Originally reported as RA4
[2 rows x 5 columns]
```

## LOR.collect\_elr\_lor\_converter

`LOR.collect_elr_lor_converter(confirmation_required=True, verbose=False)`

Collect ELR/LOR converter from source web page.

### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of ELR/LOR converter

**Return type**  
dict or None

**Examples:**

```
>>> from pyrcs.line_data import LOR # from pyrcs import LOR
>>> lor = LOR()

>>> elr_lor_conv = lor.collect_elr_lor_converter()
To collect data of ELR/LOR converter
? [No] |Yes: yes
>>> type(elr_lor_conv)
dict
>>> list(elr_lor_conv.keys())
['ELR/LOR converter', 'Last updated date']

>>> elr_loc_conv_data = elr_lor_conv['ELR/LOR converter']
>>> type(elr_loc_conv_data)
pandas.core.frame.DataFrame
>>> elr_loc_conv_data.head()
   ELR ...          LOR_URL
0  AAV ...  http://www.railwaycodes.org.uk/pride/pridesw.s...
1  ABD ...  http://www.railwaycodes.org.uk/pride/pridegw.s...
2  ABE ...  http://www.railwaycodes.org.uk/pride/prideln.s...
3  ABE1 ...  http://www.railwaycodes.org.uk/pride/prideln.s...
4  ABE2 ...  http://www.railwaycodes.org.uk/pride/prideln.s...
[5 rows x 6 columns]
```

## LOR.fetch\_codes

`LOR.fetch_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of PRIDE/LOR codes.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

LOR codes

### Return type

dict

**Examples:**

```
>>> from pyrcs.line_data import LOR # from pyrcs import LOR
```

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```

>>> lor = LOR()

>>> lor_codes_dat = lor.fetch_codes()
>>> type(lor_codes_dat)
dict
>>> list(lor_codes_dat.keys())
['LOR', 'Last updated date']
>>> l_codes = lor_codes_dat['LOR']
>>> type(l_codes)
dict
>>> list(l_codes.keys())
['CY', 'EA', 'GW', 'LN', 'MD', 'NW/NZ', 'SC', 'SO', 'SW', 'XR']

>>> cy_codes = l_codes['CY']
>>> type(cy_codes)
dict
>>> list(cy_codes.keys())
['CY', 'Notes', 'Last updated date']
>>> cy_codes['CY']
   Code ...           RA Note
0  CY240 ...      Caerwent branch RA4
1  CY1540 ...  Pembroke - Pembroke Dock RA6
[2 rows x 5 columns]

>>> xr_codes = l_codes['XR']
>>> type(xr_codes)
dict
>>> list(xr_codes.keys())
['XR', 'Last updated date']
>>> xr_codes_ = xr_codes['XR']
>>> type(xr_codes_)
dict
>>> list(xr_codes_.keys())
['Current codes', 'Current codes note', 'Past codes', 'Past codes note']
>>> xr_codes_[['Past codes']].head()
   Code ... RA Note
0  XR001 ...
1  XR002 ...
[2 rows x 5 columns]
>>> xr_codes_[['Current codes']].head()
   Code ...           RA Note
0  XR001 ...  Originally reported as RA4
1  XR002 ...  Originally reported as RA4
[2 rows x 5 columns]

```

## LOR.fetch\_elr\_lor\_converter

`LOR.fetch_elr_lor_converter(update=False, dump_dir=None, verbose=False)`

Fetch data of ELR/LOR converter.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False

- **dump\_dir** (*str or None*) – pathname of a directory where the data file is dumped, defaults to None
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to False

**Returns**

data of ELR/LOR converter

**Return type**

dict

**Examples:**

```
>>> from pyrcs.line_data import LOR # from pyrcs import LOR

>>> lor = LOR()

>>> elr_lor_conv = lor.fetch_elr_lor_converter()
>>> type(elr_lor_conv)
dict
>>> list(elr_lor_conv.keys())
['ELR/LOR converter', 'Last updated date']

>>> elr_loc_conv_data = elr_lor_conv['ELR/LOR converter']
>>> type(elr_loc_conv_data)
pandas.core.frame.DataFrame
>>> elr_loc_conv_data.head()
   ELR ...          LOR_URL
0  AAV ...  http://www.railwaycodes.org.uk/pride/pridesw.s...
1  ABD ...  http://www.railwaycodes.org.uk/pride/pridegw.s...
2  ABE ...  http://www.railwaycodes.org.uk/pride/prideln.s...
3  ABE1 ...  http://www.railwaycodes.org.uk/pride/prideln.s...
4  ABE2 ...  http://www.railwaycodes.org.uk/pride/prideln.s...
[5 rows x 6 columns]
```

**LOR.get\_keys\_to\_prefixes****LOR.get\_keys\_to\_prefixes**(*prefixes\_only=True, update=False, verbose=False*)

Get the keys to PRIDE/LOR code prefixes.

**Parameters**

- **prefixes\_only** (*bool*) – whether to get only prefixes, defaults to True
- **update** (*bool*) – whether to do an update check (for the package data), defaults to False
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to True

**Returns**

keys to LOR code prefixes

**Return type**

list or dict or None

**Examples:**

```
>>> from pyrcs.line_data import LOR # from pyrcs import LOR

>>> lor = LOR()

>>> keys_to_pfx = lor.get_keys_to_prefixes()
>>> keys_to_pfx
['CY', 'EA', 'GW', 'LN', 'MD', 'NW', 'NZ', 'SC', 'SO', 'SW', 'XR']

>>> keys_to_pfx = lor.get_keys_to_prefixes(prefixes_only=False)
>>> type(keys_to_pfx)
dict
>>> list(keys_to_pfx.keys())
['Key to prefixes', 'Last updated date']

>>> keys_to_pfx_codes = keys_to_pfx['Key to prefixes']
>>> type(keys_to_pfx_codes)
pandas.core.frame.DataFrame
>>> keys_to_pfx_codes.head()
   Prefixes           Name
0      CY            Wales
1      EA  South Eastern: East Anglia area
2      GW  Great Western (later known as Western)
3      LN    London & North Eastern
4      MD  North West: former Midlands lines
```

**LOR.get\_page\_urls****LOR.get\_page\_urls(*update=False, verbose=False*)**

Get URLs to PRIDE/LOR codes with different prefixes.

**Parameters**

- **update (bool)** – whether to do an update check (for the package data), defaults to False
- **verbose (bool or int)** – whether to print relevant information in console, defaults to True

**Returns**

a list of URLs of web pages hosting LOR codes for each prefix

**Return type**

list or None

**Examples:**

```
>>> from pyrcs.line_data import LOR # from pyrcs import LOR

>>> lor = LOR()

>>> lor_urls = lor.get_page_urls()
>>> type(lor_urls)
list
```

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```
>>> lor_urls[0]
'http://www.railwaycodes.org.uk/pride/pridecy.shtm'
```

## LineNames

`class pyrcs.line_data.LineNames(data_dir=None, update=False, verbose=True)`

A class for collecting data of railway line names.

### Parameters

- `data_dir` (`str or None`) – name of data directory, defaults to `None`
- `update` (`bool`) – whether to do an update check (for the package data), defaults to `False`
- `verbose` (`bool or int`) – whether to print relevant information in console, defaults to `True`

### Variables

- `catalogue` (`dict`) – catalogue of the data
- `last_updated_date` (`str`) – last update date
- `data_dir` (`str`) – path to the data directory
- `current_data_dir` (`str`) – path to the current data directory

### Examples:

```
>>> from pyrcs.line_data import LineNames # from pyrcs import LineNames
>>> ln = LineNames()
>>> ln.NAME
'Railway line names'
>>> ln.URL
'http://www.railwaycodes.org.uk/misc/line_names.shtm'
```

## Attributes

<code>KEY</code>	Key of the <code>dict</code> -type data
<code>KEY_TO_LAST_UPDATED_DATE</code>	Key of the data of the last updated date
<code>NAME</code>	Name of the data
<code>URL</code>	URL of the main web page of the data

## LineNames.KEY

`LineNames.KEY = 'Line names'`

Key of the `dict`-type data

## LineNames.KEY\_TO\_LAST\_UPDATED\_DATE

`LineNames.KEY_TO_LAST_UPDATED_DATE = 'Last updated date'`

Key of the data of the last updated date

## LineNames.NAME

`LineNames.NAME = 'Railway line names'`

Name of the data

## LineNames.URL

`LineNames.URL = 'http://www.railwaycodes.org.uk/line/line_names.shtml'`

URL of the main web page of the data

## Methods

<code>collect_codes([confirmation_required, verbose])</code>	Collect data of <code>railway line names</code> from source web page.
<code>fetch_codes([update, dump_dir, verbose])</code>	Fetch data of <code>railway line names</code> .

### LineNames.collect\_codes

`LineNames.collect_codes(confirmation_required=True, verbose=False)`

Collect data of `railway line names` from source web page.

#### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

#### Returns

`railway line names` and `routes` data and date of when the data was last updated

#### Return type

`dict` or `None`

**Examples:**

```
>>> from pyrcs.line_data import LineNames # from pyrcs import LineNames
>>> ln = LineNames()
>>> line_names_codes = ln.collect_codes()
To collect British railway line names
? [No]|Yes: yes
>>> type(line_names_codes)
dict
>>> list(line_names_codes.keys())
['Line names', 'Last updated date']

>>> ln.KEY
'Line names'

>>> line_names_codes_dat = line_names_codes[ln.KEY]
>>> type(line_names_codes_dat)
pandas.core.frame.DataFrame
>>> line_names_codes_dat.head()
   Line name ... Route_note
0    Abbey Line ...      None
1   Airedale Line ...      None
2    Argyle Line ...      None
3   Arun Valley Line ...      None
4  Atlantic Coast Line ...      None
[5 rows x 3 columns]
```

**LineNames.fetch\_codes**

`LineNames.fetch_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of railway line names.

**Parameters**

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

**Returns**

railway line names and routes data and date of when the data was last updated

**Return type**

dict

**Examples:**

```
>>> from pyrcs.line_data import LineNames # from pyrcs import LineNames
>>> ln = LineNames()

>>> line_names_codes = ln.fetch_codes()
>>> type(line_names_codes)
dict
>>> list(line_names_codes.keys())
['Line names', 'Last updated date']

>>> ln.KEY
'Line names'

>>> line_names_codes_dat = line_names_codes[ln.KEY]
>>> type(line_names_codes_dat)
pandas.core.frame.DataFrame
>>> line_names_codes_dat.head()
   Line name ... Route_note
0    Abbey Line ...      None
1   Airedale Line ...      None
2    Argyle Line ...      None
3   Arun Valley Line ...      None
4  Atlantic Coast Line ...      None
[5 rows x 3 columns]
```

## TrackDiagrams

`class pyrcs.line_data.TrackDiagrams(data_dir=None, update=False, verbose=True)`

A class for collecting data of British railway track diagrams.

### Parameters

- `data_dir (str or None)` – name of data directory, defaults to None
- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `verbose (bool or int)` – whether to print relevant information in console, defaults to True

### Variables

- `catalogue (dict)` – catalogue of the data
- `last_updated_date (str)` – last updated date
- `data_dir (str)` – path to the data directory
- `current_data_dir (str)` – path to the current data directory

### Examples:

```
>>> from pyrcs.line_data import TrackDiagrams # from pyrcs import TrackDiagrams
>>> td = TrackDiagrams()
```

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```
>>> td.NAME
'Railway track diagrams'

>>> td.URL
'http://www.railwaycodes.org.uk/line/diagrams0.shtml'
```

## Attributes

<i>KEY</i>	Key of the <code>dict</code> -type data
<i>KEY_TO_LAST_UPDATED_DATE</i>	Key of the data of the last updated date
<i>NAME</i>	Name of the data
<i>URL</i>	URL of the main web page of the data

### TrackDiagrams.KEY

```
TrackDiagrams.KEY = 'Track diagrams'
```

Key of the `dict`-type data

### TrackDiagrams.KEY\_TO\_LAST\_UPDATED\_DATE

```
TrackDiagrams.KEY_TO_LAST_UPDATED_DATE = 'Last updated date'
```

Key of the data of the last updated date

### TrackDiagrams.NAME

```
TrackDiagrams.NAME = 'Railway track diagrams'
```

Name of the data

### TrackDiagrams.URL

```
TrackDiagrams.URL = 'http://www.railwaycodes.org.uk/line/diagrams0.shtml'
```

URL of the main web page of the data

## Methods

---

<code>collect_catalogue([confirmation_required, ...])</code>	Collect catalogue of sample railway track diagrams from source web page.
<code>fetch_catalogue([update, dump_dir, verbose])</code>	Fetch the catalogue of railway track diagrams.

---

### TrackDiagrams.collect\_catalogue

`TrackDiagrams.collect_catalogue(confirmation_required=True, verbose=False)`

Collect catalogue of sample railway track diagrams from source web page.

#### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

#### Returns

catalogue of railway track diagrams and date of when the catalogue was last updated

#### Return type

dict or None

#### Examples:

```
>>> from pyrcs.line_data import TrackDiagrams # from pyrcs import TrackDiagrams
>>> td = TrackDiagrams()
>>> track_diagrams_catalog = td.collect_catalogue()
To collect the catalogue of track diagrams
? [No] | Yes: yes
>>> type(track_diagrams_catalog)
dict
>>> list(track_diagrams_catalog.keys())
['Track diagrams', 'Last updated date']

>>> td_dat = track_diagrams_catalog['Track diagrams']
>>> type(td_dat)
dict
>>> list(td_dat.keys())
['Main line diagrams', 'Tram systems', 'London Underground', 'Miscellaneous']

>>> main_line_diagrams = td_dat['Main line diagrams']
>>> type(main_line_diagrams)
tuple
>>> type(main_line_diagrams[1])
pandas.core.frame.DataFrame
>>> main_line_diagrams[1].head()
```

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	Description	FileURL
0	South Central area (1985) 10.4Mb file	<a href="http://www.railwaycodes.org.uk/line/track/d...">http://www.railwaycodes.org.uk/line/track/d...</a>
1	South Eastern area (1976) 5.4Mb file	<a href="http://www.railwaycodes.org.uk/line/track/d...">http://www.railwaycodes.org.uk/line/track/d...</a>

## TrackDiagrams.fetch\_catalogue

TrackDiagrams.fetch\_catalogue(*update=False, dump\_dir=None, verbose=False*)

Fetch the catalogue of railway track diagrams.

### Parameters

- **update** (*bool*) – whether to do an update check (for the package data), defaults to False
- **dump\_dir** (*str or None*) – pathname of a directory where the data file is dumped, defaults to None
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to False

### Returns

catalogue of sample railway track diagrams and date of when the catalogue was last updated

### Return type

dict

### Examples:

```
>>> from pyrcs.line_data import TrackDiagrams # from pyrcs import TrackDiagrams
>>> td = TrackDiagrams()

>>> trk_diagr_cat = td.fetch_catalogue()
>>> type(trk_diagr_cat)
dict
>>> list(trk_diagr_cat.keys())
['Track diagrams', 'Last updated date']

>>> td_dat = trk_diagr_cat['Track diagrams']
>>> type(td_dat)
dict
>>> list(td_dat.keys())
['Main line diagrams', 'Tram systems', 'London Underground', 'Miscellaneous']

>>> main_line_diagrams = td_dat['Main line diagrams']
>>> type(main_line_diagrams)
tuple
>>> type(main_line_diagrams[1])
pandas.core.frame.DataFrame
>>> main_line_diagrams[1].head()
Description
0 South Central area (1985) 10.4Mb file http://www.railwaycodes.org.uk/line/track/d...
1 South Eastern area (1976) 5.4Mb file http://www.railwaycodes.org.uk/line/track/d...
```

## Bridges

```
class pyrcs.line_data.Bridges(data_dir=None, verbose=True)
```

A class for collecting data of railway bridges.

### Parameters

- **data\_dir** (*str or None*) – name of data directory, defaults to None
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to True

### Variables

- **catalogue** (*dict*) – catalogue of the data
- **last\_updated\_date** (*str*) – last update date
- **data\_dir** (*str*) – path to the data directory
- **current\_data\_dir** (*str*) – path to the current data directory

### Examples:

```
>>> from pyrcs.line_data import Bridges # from pyrcs import Bridges
>>> bdg = Bridges()
>>> bdg.NAME
'Railway bridges'
>>> bdg.URL
'http://www.railwaycodes.org.uk/bridges/bridges0.shtml'
```

## Attributes

<i>KEY</i>	Key of the <code>dict</code> -type data
<i>KEY_TO_LAST_UPDATED_DATE</i>	Key of the data of the last updated date
<i>NAME</i>	Name of the data
<i>URL</i>	URL of the main web page of the data

### Bridges.KEY

`Bridges.KEY = 'Bridges'`

Key of the `dict`-type data

**Bridges.KEY\_TO\_LAST\_UPDATED\_DATE**

```
Bridges.KEY_TO_LAST_UPDATED_DATE = 'Last updated date'
```

Key of the data of the last updated date

**Bridges.NAME**

```
Bridges.NAME = 'Railway bridges'
```

Name of the data

**Bridges.URL**

```
Bridges.URL = 'http://www.railwaycodes.org.uk/bridges/bridges0.shtm'
```

URL of the main web page of the data

**Methods**

<code>collect_codes([confirmation_required, verbose])</code>	Collect codes of railway bridges from source web page.
<code>fetch_codes([update, dump_dir, verbose])</code>	Fetch codes of railway bridges.

**Bridges.collect\_codes**

```
Bridges.collect_codes(confirmation_required=True, verbose=False)
```

Collect codes of railway bridges from source web page.

**Parameters**

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

**Returns**

data of railway bridges and date of when the data was last updated

**Return type**

dict or None

**Examples:**

```
>>> from pyrcs.line_data import Bridges # from pyrcs import Bridges
>>> bdg = Bridges()
```

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```
>>> bdg_codes = bdg.collect_codes()
To collect data of railway bridges
? [No] |Yes: yes
>>> type(bdg_codes)
dict
>>> list(bdg_codes.keys())
['East Coast Main Line',
 'West Coast Main Line',
 'Scotland',
 'Elizabeth Line',
 'London Overground',
 'Anglia',
 'London Underground',
 'Addendum',
 'Key to text presentation conventions']

>>> bdg_codes['Key to text presentation conventions']
{'Bold': 'Existing bridges',
 'Bold italic': 'Existing locations',
 'Light italic': 'Former/historical locations',
 'Red': 'Stations',
 'Deep red': 'Level crossings',
 'Brown': 'Ventilation shafts',
 'Purple': 'Junctions',
 'Black,grey': 'Bridges and culverts',
 'Green': 'Tunnel portals',
 'Bright blue': 'Viaducts',
 'Deep blue': 'Boundaries'}
```

## Bridges.fetch\_codes

`Bridges.fetch_codes(update=False, dump_dir=None, verbose=False)`

Fetch codes of `railway` bridges.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of railway bridges and date of when the data was last updated

### Return type

dict or None

### Examples:

```
>>> from pyrcs.line_data import Bridges # from pyrcs import Bridges
>>> bdg = Bridges()
>>> bdg_codes = bdg.fetch_codes()
>>> type(bdg_codes)
dict
>>> list(bdg_codes.keys())
['East Coast Main Line',
 'West Coast Main Line',
 'Scotland',
 'Elizabeth Line',
 'London Overground',
 'Anglia',
 'London Underground',
 'Addendum',
 'Key to text presentation conventions']

>>> bdg_codes['Key to text presentation conventions']
{'Bold': 'Existing bridges',
 'Bold italic': 'Existing locations',
 'Light italic': 'Former/historical locations',
 'Red': 'Stations',
 'Deep red': 'Level crossings',
 'Brown': 'Ventilation shafts',
 'Purple': 'Junctions',
 'Black,grey': 'Bridges and culverts',
 'Green': 'Tunnel portals',
 'Bright blue': 'Viaducts',
 'Deep blue': 'Boundaries'}
```

### 3.1.2 other\_assets

A sub-package of modules for collecting codes of other assets.

(See also [OtherAssets](#).)

<code>SignalBoxes([data_dir, update, verbose])</code>	A class for collecting data of signal box prefix codes.
<code>Tunnels([data_dir, update, verbose])</code>	A class for collecting data of railway tunnel lengths.
<code>Viaducts([data_dir, update, verbose])</code>	A class for collecting codes of railway viaducts.
<code>Stations([data_dir, update, verbose])</code>	A class for collecting railway station data.
<code>Depots([data_dir, update, verbose])</code>	A class for collecting data of depot codes.
<code>Features([data_dir, update, verbose])</code>	A class for collecting codes of several infrastructure features.

## SignalBoxes

```
class pyrcs.other_assets.SignalBoxes(data_dir=None, update=False, verbose=True)
```

A class for collecting data of signal box prefix codes.

### Parameters

- **data\_dir** (*str or None*) – name of data directory, defaults to None
- **update** (*bool*) – whether to do an update check (for the package data), defaults to False
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to True

### Variables

- **catalogue** (*dict*) – catalogue of the data
- **last\_updated\_date** (*str*) – last updated date
- **data\_dir** (*str*) – path to the data directory
- **current\_data\_dir** (*str*) – path to the current data directory

### Examples:

```
>>> from pyrcs.other_assets import SignalBoxes # from pyrcs import SignalBoxes

>>> sb = SignalBoxes()

>>> sb.NAME
'Signal box prefix codes'

>>> sb.URL
'http://www.railwaycodes.org.uk/signal/signal_boxes0.shtml'
```

### Attributes

<i>KEY</i>	Key of the <i>dict</i> -type data
<i>KEY_TO_BELL_CODES</i>	Key of the dict-type data of ' <i>bell codes</i> '
<i>KEY_TO_IRELAND</i>	Key of the dict-type data of ' <i>Ireland</i> '
<i>KEY_TO_LAST_UPDATED_DATE</i>	Key of the data of the last updated date
<i>KEY_TO_NON_NATIONAL_RAIL</i>	Key of the dict-type data of ' <i>non-national rail</i> '
<i>KEY_TO_WRMASD</i>	Key of the dict-type data of ' <i>WR (Western region) MAS (multiple aspect signalling) dates</i> '
<i>NAME</i>	Name of the data
<i>URL</i>	URL of the main web page of the data

## SignalBoxes.KEY

SignalBoxes.KEY = 'Signal boxes'

Key of the `dict`-type data

## SignalBoxes.KEY\_TO\_BELL\_CODES

SignalBoxes.KEY\_TO\_BELL\_CODES = 'Bell codes'

Key of the dict-type data of '*bell codes*'

## SignalBoxes.KEY\_TO\_IRELAND

SignalBoxes.KEY\_TO\_IRELAND = 'Ireland'

Key of the dict-type data of '*Ireland*'

## SignalBoxes.KEY\_TO\_LAST\_UPDATED\_DATE

SignalBoxes.KEY\_TO\_LAST\_UPDATED\_DATE = 'Last updated date'

Key of the data of the last updated date

## SignalBoxes.KEY\_TO\_NON\_NATIONAL\_RAIL

SignalBoxes.KEY\_TO\_NON\_NATIONAL\_RAIL = 'Non-National Rail'

Key of the dict-type data of '*non-national rail*'

## SignalBoxes.KEY\_TO\_WRMASD

SignalBoxes.KEY\_TO\_WRMASD = 'WR MAS dates'

Key of the dict-type data of '*WR (Western region) MAS (multiple aspect signalling) dates*'

## SignalBoxes.NAME

SignalBoxes.NAME = 'Signal box prefix codes'

Name of the data

## SignalBoxes.URL

`SignalBoxes.URL = 'http://www.railwaycodes.org.uk/signal/signal_boxes0.shtm'`

URL of the main web page of the data

## Methods

<code>collect_bell_codes([confirmation_required, ...])</code>	Collect data of bell codes from source web page.
<code>collect_ireland_codes([...])</code>	Collect data of Irish signal cabin prefix codes from source web page.
<code>collect_non_national_rail_codes([...])</code>	Collect signal box prefix codes of non-national rail from source web page.
<code>collect_prefix_codes(initial[, update, verbose])</code>	Collect signal box prefix codes beginning with a given initial letter from source web page.
<code>collect_wr_mas_dates([...])</code>	Collect data of WR (western region) MAS (multiple aspect signalling) dates from source web page.
<code>fetch_bell_codes([update, dump_dir, verbose])</code>	Fetch data of bell codes.
<code>fetch_ireland_codes([update, dump_dir, verbose])</code>	Fetch data of Irish signal cabin prefix codes.
<code>fetch_non_national_rail_codes([update, ...])</code>	Fetch signal box prefix codes of non-national rail.
<code>fetch_prefix_codes([update, dump_dir, verbose])</code>	Fetch data of signal box prefix codes.
<code>fetch_wr_mas_dates([update, dump_dir, verbose])</code>	Fetch data of WR (western region) MAS (multiple aspect signalling) dates.

## SignalBoxes.collect\_bell\_codes

`SignalBoxes.collect_bell_codes(confirmation_required=True, verbose=False)`

Collect data of bell codes from source web page.

### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

bell codes for the signal box prefix codes

**Return type**  
dict or None

**Examples:**

```
>>> from pyrcs.other_assets import SignalBoxes # from pyrcs import SignalBoxes

>>> sb = SignalBoxes()

>>> sb_bell_codes = sb.collect_bell_codes()
To collect data of Bell codes
? [No] |Yes: yes
>>> type(sb_bell_codes)
dict
>>> list(sb_bell_codes.keys())
['Bell codes', 'Last updated date']

>>> sb.KEY_TO_BELL_CODES
'Bell codes'

>>> sb_bell_codes_dat = sb_bell_codes[sb.KEY_TO_BELL_CODES]
>>> type(sb_bell_codes_dat)
collections.OrderedDict
>>> list(sb_bell_codes_dat.keys())
['Network Rail codes',
 'Southern Railway codes',
 'Lancashire & Yorkshire Railway codes']

>>> sb_nr_bell_codes = sb_bell_codes_dat['Network Rail codes']
>>> type(sb_nr_bell_codes)
dict
>>> list(sb_nr_bell_codes.keys())
['Codes', 'Notes']
>>> sb_nr_bell_codes_dat = sb_nr_bell_codes['Codes']
>>> type(sb_nr_bell_codes_dat)
pandas.core.frame.DataFrame
>>> sb_nr_bell_codes_dat.head()
   Code          Meaning
0    1      Call attention
1  1-1  Answer telephone [withdrawn 2007]
2  1-1-6  Police assistance urgently required
3   1-2  Signaller required on telephone [added 2007]
4   1-2-1        Train approaching
```

## SignalBoxes.collect\_ireland\_codes

SignalBoxes.collect\_ireland\_codes(*confirmation\_required=True, verbose=False*)

Collect data of Irish signal cabin prefix codes from source web page.

### Parameters

- **confirmation\_required (bool)** – whether to confirm before proceeding, defaults to True
- **verbose (bool or int)** – whether to print relevant information in console, defaults to False

**Returns**

signal box prefix codes of Ireland

**Return type**

dict or None

**Examples:**

```
>>> from pyrcs.other_assets import SignalBoxes # from pyrcs import SignalBoxes

>>> sb = SignalBoxes()

>>> ireland_sb_codes = sb.collect_ireland_codes()
To collect data of signal box prefix codes of Ireland
? [No]|Yes: yes
>>> type(ireland_sb_codes)
dict
>>> list(ireland_sb_codes.keys())
['Ireland', 'Notes', 'Last updated date']

>>> sb.KEY_TO_IRELAND
'Ireland'

>>> ireland_sb_codes_dat = ireland_sb_codes[sb.KEY_TO_IRELAND]
>>> type(ireland_sb_codes_dat)
pandas.core.frame.DataFrame
>>> ireland_sb_codes_dat.head()
   Code Signal Cabin           Note
0    AD     Adelaide
1    AN      Antrim
2    AE     Athlone
3   AE R          Distant signals
4    XG          Level crossing signals
```

**SignalBoxes.collect\_non\_national\_rail\_codes**

`SignalBoxes.collect_non_national_rail_codes(confirmation_required=True, verbose=False)`

Collect signal box prefix codes of `non-national rail` from source web page.

**Parameters**

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

**Returns**

signal box prefix codes of non-national rail

**Return type**

dict or None

**Examples:**

```

>>> from pyrcs.other_assets import SignalBoxes # from pyrcs import SignalBoxes

>>> sb = SignalBoxes()

>>> nnr_codes = sb.collect_non_national_rail_codes()
To collect data of non-national rail signal box prefix codes
? [No]|Yes: yes
>>> type(nnr_codes)
dict
>>> list(nnr_codes.keys())
['Non-National Rail', 'Last updated date']

>>> sb.KEY_TO_NON_NATIONAL_RAIL
'Non-National Rail'

>>> nnr_codes_dat = nnr_codes[sb.KEY_TO_NON_NATIONAL_RAIL]
>>> type(nnr_codes_dat)
dict
>>> list(nnr_codes_dat.keys())
['Croydon Tramlink signals',
 'Docklands Light Railway signals',
 'Edinburgh Tramway signals',
 'Glasgow Subway signals',
 'London Underground signals',
 'Luas signals',
 'Manchester Metrolink signals',
 'Midland Metro signals',
 'Nottingham Tram signals',
 'Sheffield Supertram signals',
 'Tyne & Wear Metro signals',
 "Heritage, minor and miniature railways and other 'special' signals"]

>>> lu_signals_codes = nnr_codes_dat['London Underground signals']
>>> type(lu_signals_codes)
dict
>>> list(lu_signals_codes.keys())
['Codes', 'Notes']
>>> type(lu_signals_codes['Codes'])
pandas.core.frame.DataFrame
>>> lu_signals_codes['Codes'].head()
   Code ... Became or taken over by (where known)
0   BMX ...
1     A ...
2     S ...
3     X ...
4     R ...
[5 rows x 5 columns]

```

## SignalBoxes.collect\_prefix\_codes

`SignalBoxes.collect_prefix_codes(initial, update=False, verbose=False)`

Collect signal box prefix codes beginning with a given initial letter from source web page.

### Parameters

- **initial** (*str*) – initial letter of signal box name (for specifying a target URL)
- **update** (*bool*) – whether to do an update check (for the package data), defaults to False
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to False

### Returns

data of signal box prefix codes beginning with the given initial letter and date of when the data was last updated

### Return type

`dict`

### Examples:

```
>>> from pyrcs.other_assets import SignalBoxes # from pyrcs import SignalBoxes

>>> sb = SignalBoxes()

>>> sb_a_codes = sb.collect_prefix_codes(initial='a')
>>> type(sb_a_codes)
dict
>>> list(sb_a_codes.keys())
['A', 'Last updated date']

>>> sb_a_codes_dat = sb_a_codes['A']
>>> type(sb_a_codes_dat)
pandas.core.frame.DataFrame
>>> sb_a_codes_dat.head()
   Code           Signal Box ...      Closed      Control to
0   AF    Abbey Foregate Junction ...
1   AJ        Abbey Junction ...
2     R        Abbey Junction ...
3   AW        Abbey Wood ...
4   AE    Abbey Works East ...
[5 rows x 8 columns]
```

## SignalBoxes.collect\_wr\_mas\_dates

SignalBoxes.**collect\_wr\_mas\_dates**(*confirmation\_required=True*, *verbose=False*)

Collect data of WR (western region) MAS (multiple aspect signalling) dates from source web page.

### Parameters

- **confirmation\_required** (*bool*) – whether to confirm before proceeding, defaults to True
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to False

### Returns

data of WR (western region) MAS (multiple aspect signalling) dates

### Return type

dict or None

### Examples:

```
>>> from pyrcs.other_assets import SignalBoxes # from pyrcs import SignalBoxes

>>> sb = SignalBoxes()

>>> sb_wr_mas_dates = sb.collect_wr_mas_dates()
To collect data of WR MAS dates
? [No] |Yes: yes
>>> type(sb_wr_mas_dates)
dict
>>> list(sb_wr_mas_dates.keys())
['WR MAS dates', 'Last updated date']

>>> sb.KEY_TO_WRMASD
'WR MAS dates'

>>> sb_wr_mas_dates_dat = sb_wr_mas_dates[sb.KEY_TO_WRMASD]
>>> type(sb_wr_mas_dates_dat)
collections.defaultdict
>>> list(sb_wr_mas_dates_dat.keys())
['Paddington-Hayes',
 'Birmingham',
 'Plymouth',
 'Reading-Hayes',
 'Newport Multiple Aspect Signalling',
 'Old Oak Common (original scheme)',
 'Port Talbot Multiple Aspect Signalling',
 'Reading Multiple Aspect Signalling',
 'Original Barry amalgamation',
 'Cornwall',
 'Cardiff Multiple Aspect Signalling',
 'Central Wales',
 'Gloucester Multiple Aspect Signalling',
 'Swindon Multiple Aspect Signalling',
 'Bristol Division (miscellaneous schemes)',
 'Old Oak Common (new panel)',
```

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```
'Western Valleys',
'London Division (miscellaneous schemes)',
'Cardiff Valleys',
'Newport Extension',
'Barry centralisation',
'Slough/Reading (developments)',
'Bristol Multiple Aspect Signalling',
'Port Talbot Multiple Aspect Signalling (extensions and developments)',
'Miscellaneous',
'Old Oak Common (rationalisation)',
'Centralisation schemes',
'Bristol (developments)',
'Devon',
'Didcot/Swindon/Bristol reversible working',
'Reading West extension',
'Carmarthen-Whitland']]

>>> sb_wr_mas_dates_dat['Paddington-Hayes']
   Stage          Date           Area
0    1A  12 April 1953  Hayes-Hanwell
1    1B  20 March 1955  Hanwell-Acton Middle
2    1C  1 February 1959  Acton West-Friars Junction
```

## SignalBoxes.fetch\_bell\_codes

`SignalBoxes.fetch_bell_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of bell codes.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – name of package data folder, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of bell codes

### Return type

dict

### Examples:

```
>>> from pyrcs.other_assets import SignalBoxes # from pyrcs import SignalBoxes
>>> sb = SignalBoxes()
>>> sb_bell_codes = sb.fetch_bell_codes()
>>> type(sb_bell_codes)
dict
>>> list(sb_bell_codes.keys())
```

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```

['Bell codes', 'Last updated date']

>>> sb.KEY_TO_BELL_CODES
'Bell codes'

>>> sb_bell_codes_dat = sb_bell_codes[sb.KEY_TO_BELL_CODES]
>>> type(sb_bell_codes_dat)
collections.OrderedDict
>>> list(sb_bell_codes_dat.keys())
['Network Rail codes',
 'Southern Railway codes',
 'Lancashire & Yorkshire Railway codes']

>>> sb_nr_bell_codes = sb_bell_codes_dat['Network Rail codes']
>>> type(sb_nr_bell_codes)
dict
>>> list(sb_nr_bell_codes.keys())
['Codes', 'Notes']
>>> sb_nr_bell_codes_dat = sb_nr_bell_codes['Codes']
>>> type(sb_nr_bell_codes_dat)
pandas.core.frame.DataFrame
>>> sb_nr_bell_codes_dat.head()
   Code           Meaning
0    1      Call attention
1  1-1  Answer telephone [withdrawn 2007]
2  1-1-6  Police assistance urgently required
3   1-2  Signaller required on telephone [added 2007]
4   1-2-1        Train approaching

```

## SignalBoxes.fetch\_ireland\_codes

`SignalBoxes.fetch_ireland_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of Irish signal cabin prefix codes.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – name of package data folder, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

signal box prefix codes of Ireland

### Return type

dict

### Examples:

```
>>> from pyrcs.other_assets import SignalBoxes # from pyrcs import SignalBoxes
```

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```
>>> sb = SignalBoxes()

>>> ireland_sb_codes = sb.fetch_ireland_codes()
>>> type(ireland_sb_codes)
dict
>>> list(ireland_sb_codes.keys())
['Ireland', 'Notes', 'Last updated date']

>>> sb.KEY_TO_IRELAND
'Ireland'

>>> ireland_sb_codes_dat = ireland_sb_codes[sb.KEY_TO_IRELAND]
>>> type(ireland_sb_codes_dat)
pandas.core.frame.DataFrame
>>> ireland_sb_codes_dat.head()
   Code Signal Cabin           Note
0    AD     Adelaide
1    AN      Antrim
2    AE     Athlone
3   AE R          Distant signals
4    XG          Level crossing signals
```

## SignalBoxes.fetch\_non\_national\_rail\_codes

`SignalBoxes.fetch_non_national_rail_codes(update=False, dump_dir=None, verbose=False)`  
Fetch signal box prefix codes of non-national rail.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – name of package data folder, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

signal box prefix codes of non-national rail

### Return type

dict

### Examples:

```
>>> from pyrcs.other_assets import SignalBoxes # from pyrcs import SignalBoxes

>>> sb = SignalBoxes()

>>> nnr_codes = sb.fetch_non_national_rail_codes()
>>> type(nnr_codes)
dict
>>> list(nnr_codes.keys())
['Non-National Rail', 'Last updated date']
```

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```

>>> sb.KEY_TO_NON_NATIONAL_RAIL
'Non-National Rail'

>>> nnr_codes_dat = nnr_codes[sb.KEY_TO_NON_NATIONAL_RAIL]
>>> type(nnr_codes_dat)
dict
>>> list(nnr_codes_dat.keys())
['Croydon Tramlink signals',
 'Docklands Light Railway signals',
 'Edinburgh Tramway signals',
 'Glasgow Subway signals',
 'London Underground signals',
 'Luas signals',
 'Manchester Metrolink signals',
 'Midland Metro signals',
 'Nottingham Tram signals',
 'Sheffield Supertram signals',
 'Tyne & Wear Metro signals',
 "Heritage, minor and miniature railways and other 'special' signals"]

>>> lu_signals_codes = nnr_codes_dat['London Underground signals']
>>> type(lu_signals_codes)
dict
>>> list(lu_signals_codes.keys())
['Codes', 'Notes']
>>> type(lu_signals_codes['Codes'])
pandas.core.frame.DataFrame
>>> lu_signals_codes['Codes'].head()
   Code ... Became or taken over by (where known)
0  BMX ...
1    A ...
2    S ...
3    X ...
4    R ...
[5 rows x 5 columns]

```

## SignalBoxes.fetch\_prefix\_codes

`SignalBoxes.fetch_prefix_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of signal box prefix codes.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – name of package data folder, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of location codes and date of when the data was last updated

**Return type**

dict

**Examples:**

```
>>> from pyrcs.other_assets import SignalBoxes # from pyrcs import SignalBoxes

>>> sb = SignalBoxes()

>>> sb_prefix_codes = sb.fetch_prefix_codes()
>>> type(sb_prefix_codes)
dict
>>> list(sb_prefix_codes.keys())
['Signal boxes', 'Last updated date']

>>> sb.KEY
'Signal boxes'

>>> sb_prefix_codes_dat = sb_prefix_codes[sb.KEY]
>>> type(sb_prefix_codes_dat)
pandas.core.frame.DataFrame
>>> sb_prefix_codes_dat.head()
   Code           Signal Box ...     Closed      Control to
0   AF    Abbey Foregate Junction ...        Closed
1   AJ          Abbey Junction ... 16 February 1992  Nuneaton (NN)
2   R          Abbey Junction ... 16 February 1992  Nuneaton (NN)
3   AW          Abbey Wood ...       13 July 1975    Dartford (D)
4   AE    Abbey Works East ...  1 November 1987 Port Talbot (PT)
[5 rows x 8 columns]
```

**SignalBoxes.fetch\_wr\_mas\_dates**SignalBoxes.fetch\_wr\_mas\_dates(*update=False, dump\_dir=None, verbose=False*)

Fetch data of WR (western region) MAS (multiple aspect signalling) dates.

**Parameters**

- **update (bool)** – whether to do an update check (for the package data), defaults to False
- **dump\_dir (str or None)** – name of package data folder, defaults to None
- **verbose (bool or int)** – whether to print relevant information in console, defaults to False

**Returns**

data of WR (western region) MAS (multiple aspect signalling) dates

**Return type**

dict

**Examples:**

```
>>> from pyrcs.other_assets import SignalBoxes # from pyrcs import SignalBoxes
```

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```

>>> sb = SignalBoxes()

>>> sb_wr_mas_dates = sb.fetch_wr_mas_dates()
>>> type(sb_wr_mas_dates)
dict
>>> list(sb_wr_mas_dates.keys())
['WR MAS dates', 'Last updated date']

>>> sb.KEY_TO_WRMASD
'WR MAS dates'

>>> sb_wr_mas_dates_dat = sb_wr_mas_dates[sb.KEY_TO_WRMASD]
>>> type(sb_wr_mas_dates_dat)
collections.defaultdict
>>> list(sb_wr_mas_dates_dat.keys())
['Paddington-Hayes',
 'Birmingham',
 'Plymouth',
 'Reading-Hayes',
 'Newport Multiple Aspect Signalling',
 'Old Oak Common (original scheme)',
 'Port Talbot Multiple Aspect Signalling',
 'Reading Multiple Aspect Signalling',
 'Original Barry amalgamation',
 'Cornwall',
 'Cardiff Multiple Aspect Signalling',
 'Central Wales',
 'Gloucester Multiple Aspect Signalling',
 'Swindon Multiple Aspect Signalling',
 'Bristol Division (miscellaneous schemes)',
 'Old Oak Common (new panel)',
 'Western Valleys',
 'London Division (miscellaneous schemes)',
 'Cardiff Valleys',
 'Newport Extension',
 'Barry centralisation',
 'Slough/Reading (developments)',
 'Bristol Multiple Aspect Signalling',
 'Port Talbot Multiple Aspect Signalling (extensions and developments)',
 'Miscellaneous',
 'Old Oak Common (rationalisation)',
 'Centralisation schemes',
 'Bristol (developments)',
 'Devon',
 'Didcot/Swindon/Bristol reversible working',
 'Reading West extension',
 'Carmarthen-Whitland']

>>> sb_wr_mas_dates_dat['Paddington-Hayes']
   Stage          Date           Area
0     1A    12 April 1953    Hayes-Hanwell
1     1B    20 March 1955  Hanwell-Acton Middle
2     1C   1 February 1959  Acton West-Friars Junction

```

## Tunnels

```
class pyrcs.other_assets.Tunnels(data_dir=None, update=False, verbose=True)
```

A class for collecting data of railway tunnel lengths.

### Parameters

- **data\_dir** (*str or None*) – name of data directory, defaults to None
- **update** (*bool*) – whether to do an update check (for the package data), defaults to False
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to True

### Variables

- **catalogue** (*dict*) – catalogue of the data
- **last\_updated\_date** (*str*) – last updated date
- **data\_dir** (*str*) – path to the data directory
- **current\_data\_dir** (*str*) – path to the current data directory

### Examples:

```
>>> from pyrcs.other_assets import Tunnels # from pyrcs import Tunnels

>>> tunl = Tunnels()

>>> tunl.NAME
'Railway tunnel lengths'

>>> tunl.URL
'http://www.railwaycodes.org.uk/tunnels/tunnels0.shtml'
```

## Attributes

<i>KEY</i>	Key of the <i>dict</i> -type data
<i>KEY_TO_LAST_UPDATED_DATE</i>	Key of the data of the last updated date
<i>NAME</i>	Name of the data
<i>URL</i>	URL of the main web page of the data

## Tunnels.KEY

Tunnels.KEY = 'Tunnels'

Key of the `dict`-type data

## Tunnels.KEY\_TO\_LAST\_UPDATED\_DATE

Tunnels.KEY\_TO\_LAST\_UPDATED\_DATE = 'Last updated date'

Key of the data of the last updated date

## Tunnels.NAME

Tunnels.NAME = 'Railway tunnel lengths'

Name of the data

## Tunnels.URL

Tunnels.URL = 'http://www.railwaycodes.org.uk/tunnels/tunnels0.shtm'

URL of the main web page of the data

## Methods

---

<code>collect_codes_by_page(page_no[, update, verbose])</code>	Collect data of railway tunnel lengths for a page number from source web page.
<code>fetch_codes([update, dump_dir, verbose])</code>	Fetch data of railway tunnel lengths.

---

### Tunnels.collect\_codes\_by\_page

Tunnels.collect\_codes\_by\_page(*page\_no*, *update=False*, *verbose=False*)

Collect data of railway tunnel lengths for a page number from source web page.

#### Parameters

- **page\_no** (*int or str*) – page number; valid values include 1, 2, 3 and 4
- **update** (*bool*) – whether to do an update check (for the package data), defaults to False
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to False

#### Returns

data of tunnel lengths on page *page\_no* and date of when the data was last updated

**Return type**

dict

**Examples:**

```
>>> from pyrcs.other_assets import Tunnels # from pyrcs import Tunnels

>>> tunl = Tunnels()

>>> page_1 = tunl.collect_codes_by_page(page_no=1)
>>> type(page_1)
dict
>>> list(page_1.keys())
['Page 1 (A-F)', 'Last updated date']
>>> page_1_codes = page_1['Page 1 (A-F)']
>>> type(page_1_codes)
pandas.core.frame.DataFrame
>>> page_1_codes.head()
      Name Other names, remarks ... Length (metres) Length (note)
0  Abbotscliffe           ...        1775.7648
1    Abercanaid       see Merthyr ...          NaN  Unavailable
2   Aberchalder       see Loch Oich ...          NaN  Unavailable
3  Aberdovey No 1  also called Frongoch ...        182.8800
4  Aberdovey No 2  also called Morfor ...        200.2536
[5 rows x 10 columns]

>>> page_4 = tunl.collect_codes_by_page(page_no=4)
>>> type(page_4)
dict
>>> list(page_4.keys())
['Page 4 (others)', 'Last updated date']
>>> page_4_codes = page_4['Page 4 (others)']
>>> type(page_4_codes)
dict
>>> list(page_4_codes.keys())
['Tunnels on industrial and other minor lines',
 'Large bridges that are not officially tunnels but could appear to be so']

>>> key1 = 'Tunnels on industrial and other minor lines'
>>> page_4_dat = page_4_codes[key1]
>>> type(page_4_dat)
pandas.core.frame.DataFrame
>>> page_4_dat.head()
      Name Other names, remarks ... Length (metres) Length (note)
0     Ashes Quarry           ...        56.6928
1    Ashey Down Quarry       ...        33.8328
2  Baileycroft Quarry No 1 ...        28.3464
3  Baileycroft Quarry No 2 ...        21.0312
4     Basfords Hill           ...        46.6344
[5 rows x 6 columns]

>>> key2 = 'Large bridges that are not officially tunnels but could appear to be so'
>>> page_4_dat_ = page_4_codes[key2]
>>> type(page_4_dat_)
pandas.core.frame.DataFrame
>>> page_4_dat_.head()
      Name Other names, remarks ... Length (metres) Length (note)
0 A470/A472 (north)           ...        35.6616
```

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1	A470/A472 (south)		...	28.3464
2	A720		...	145.3896
3	A9	Aberdeen line	...	141.7320
4	A9	Perth line	...	146.3040
[5 rows x 8 columns]				

## Tunnels.fetch\_codes

Tunnels.fetch\_codes(*update=False, dump\_dir=None, verbose=False*)

Fetch data of railway tunnel lengths.

### Parameters

- **update (bool)** – whether to do an update check (for the package data), defaults to False
- **dump\_dir (str or None)** – name of a folder where the pickle file is to be saved, defaults to None
- **verbose (bool or int)** – whether to print relevant information in console, defaults to False

### Returns

data of railway tunnel lengths (including the name, length, owner and relative location) and date of when the data was last updated

### Return type

dict

### Examples:

```
>>> from pyrcs.other_assets import Tunnels # from pyrcs import Tunnels
>>> tunl = Tunnels()

>>> tunl_len_codes = tunl.fetch_codes()
>>> type(tunl_len_codes)
dict
>>> list(tunl_len_codes.keys())
['Tunnels', 'Last updated date']

>>> tunl.KEY
'Tunnels'

>>> tunl_len_codes_dat = tunl_len_codes[tunl.KEY]
>>> type(tunl_len_codes_dat)
dict
>>> list(tunl_len_codes_dat.keys())
['Page 1 (A-F)', 'Page 2 (G-P)', 'Page 3 (Q-Z)', 'Page 4 (others)']

>>> page_1_codes = tunl_len_codes_dat['Page 1 (A-F)']
>>> type(page_1_codes)
pandas.core.frame.DataFrame
>>> page_1_codes.head()
```

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	Name	Other names, remarks	...	Length (metres)	Length (note)
0	Abbotscliffe		...	1775.7648	
1	Abercanaid	see Merthyr	...	NaN	Unavailable
2	Aberchalder	see Loch Oich	...	NaN	Unavailable
3	Aberdovey No 1	also called Frongoch	...	182.8800	
4	Aberdovey No 2	also called Morfor	...	200.2536	
[5 rows x 10 columns]					

  

```
>>> page_4_codes = tunl_len_codes_dat['Page 4 (others)']
>>> type(page_4_codes)
dict
>>> list(page_4_codes.keys())
['Tunnels on industrial and other minor lines',
 'Large bridges that are not officially tunnels but could appear to be so']

>>> key1 = 'Tunnels on industrial and other minor lines'
>>> page_4_dat = page_4_codes[key1]
>>> type(page_4_dat)
pandas.core.frame.DataFrame
>>> page_4_dat.head()
      Name Other names, remarks  ... Length (metres) Length (note)
0      Ashes Quarry          ...        56.6928
1      Ashey Down Quarry     ...        33.8328
2  Baileycroft Quarry No 1     ...        28.3464
3  Baileycroft Quarry No 2     ...        21.0312
4      Basfords Hill         ...        46.6344
[5 rows x 6 columns]

>>> key2 = 'Large bridges that are not officially tunnels but could appear to be so'
>>> page_4_dat_ = page_4_codes[key2]
>>> type(page_4_dat_)
pandas.core.frame.DataFrame
>>> page_4_dat_.head()
      Name Other names, remarks  ... Length (metres) Length (note)
0  A470/A472 (north)          ...        35.6616
1  A470/A472 (south)         ...        28.3464
2          A720                ...        145.3896
3          A9      Aberdeen line  ...        141.7320
4          A9      Perth line   ...        146.3040
[5 rows x 8 columns]
```

## Viaducts

```
class pyrcs.other_assets.Viaducts(data_dir=None, update=False, verbose=True)
```

A class for collecting codes of railway viaducts.

### Parameters

- **data\_dir** (*str or None*) – name of data directory, defaults to None
- **update** (*bool*) – whether to do an update check (for the package data), defaults to False
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to True

## Variables

- `catalogue` (`dict`) – catalogue of the data
- `last_updated_date` (`str`) – last updated date
- `data_dir` (`str`) – path to the data directory
- `current_data_dir` (`str`) – path to the current data directory

### Examples:

```
>>> from pyrcs.other_assets import Viaducts # from pyrcs import Viaducts

>>> vdct = Viaducts()

>>> vdct.NAME
'Railway viaducts'

>>> vdct.URL
'http://www.railwaycodes.org.uk/viaducts/viaducts0.shtm'
```

## Attributes

<code>KEY</code>	Key of the <code>dict</code> -type data
<code>KEY_TO_LAST_UPDATED_DATE</code>	Key of the data of the last updated date
<code>NAME</code>	Name of the data
<code>URL</code>	URL of the main web page of the data

### `Viaducts.KEY`

`Viaducts.KEY = 'Viaducts'`

Key of the `dict`-type data

### `Viaducts.KEY_TO_LAST_UPDATED_DATE`

`Viaducts.KEY_TO_LAST_UPDATED_DATE = 'Last updated date'`

Key of the data of the last updated date

### `Viaducts.NAME`

`Viaducts.NAME = 'Railway viaducts'`

Name of the data

## Viaducts.URL

`Viaducts.URL = 'http://www.railwaycodes.org.uk/viaducts/viaducts0.shtm'`

URL of the main web page of the data

## Methods

<code>collect_codes_by_page(page_no[, update, verbose])</code>	Collect data of railway viaducts for a given page number from source web page.
<code>fetch_codes([update, dump_dir, verbose])</code>	Fetch data of railway viaducts.

### Viaducts.collect\_codes\_by\_page

`Viaducts.collect_codes_by_page(page_no, update=False, verbose=False)`

Collect data of railway viaducts for a given page number from source web page.

#### Parameters

- `page_no` (`int or str`) – page number; valid values include 1, 2, 3, 4, 5, and 6
- `update` (`bool`) – whether to do an update check (for the package data), defaults to False
- `verbose` (`bool or int`) – whether to print relevant information in console, defaults to False

#### Returns

data of railway viaducts on page `page_no` and date of when the data was last updated

#### Return type

`dict`

#### Examples:

```
>>> from pyrcs.other_assets import Viaducts # from pyrcs import Viaducts
>>> vdct = Viaducts()

>>> page_1_codes = vdct.collect_codes_by_page(page_no=1)
>>> type(page_1_codes)
dict
>>> list(page_1_codes.keys())
['Page 1 (A-C)', 'Last updated date']

>>> page_1_dat = page_1_codes['Page 1 (A-C)']
>>> type(page_1_dat)
pandas.core.frame.DataFrame
>>> page_1_dat.head()
   Name ... Spans
```

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```

0      7 Arches ...    7
1      36 Arch   ...   36
2      42 Arch   ... ...
3          A698   ...    5
4 Abattoir Road ...    8
[5 rows x 7 columns]

```

## Viaducts.fetch\_codes

`Viaducts.fetch_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of railway viaducts.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – name of a folder where the pickle file is to be saved, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of railway viaducts and date of when the data was last updated

### Return type

dict

### Examples:

```

>>> from pyrcs.other_assets import Viaducts # from pyrcs import Viaducts

>>> vdct = Viaducts()

>>> vdct_codes = vdct.fetch_codes()
>>> type(vdct_codes)
dict
>>> list(vdct_codes.keys())
['Viaducts', 'Last updated date']

>>> vdct.KEY
'Viaducts'

>>> vdct_codes_dat = vdct_codes[vdct.KEY]
>>> type(vdct_codes_dat)
dict
>>> list(vdct_codes_dat.keys())
['Page 1 (A-C)', 'Page 2 (D-G)', 'Page 3 (H-K)', 'Page 4 (L-P)', 'Page 5 (Q-S)', 'Page 6 (T-Z)']

```

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```
>>> page_6_codes = vdct_codes_dat['Page 6 (T-Z)']
>>> type(page_6_codes)
pandas.core.frame.DataFrame
>>> page_6_codes.head()
   Name          Notes ... End mileage Spans
0 Tadcaster crosses River Wharfe; grade II listed ...           11
1      Taff             see Red Bridge ...
2      Taff ...
3  Taff River        also called Afon Taff ...    170m 42ch
4  Taffs Well        see River Taff ...
[5 rows x 7 columns]
```

## Stations

`class pyrcs.other_assets.Stations(data_dir=None, update=False, verbose=True)`

A class for collecting railway station data.

### Parameters

- `data_dir (str or None)` – name of data directory, defaults to None
- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `verbose (bool or int)` – whether to print relevant information in console, defaults to True

### Variables

- `catalogue (dict)` – catalogue of the data
- `last_updated_date (str)` – last updated date
- `data_dir (str)` – path to the data directory
- `current_data_dir (str)` – path to the current data directory

### Examples:

```
>>> from pyrcs.other_assets import Stations

>>> stn = Stations()

>>> stn.NAME
'Railway station data'

>>> stn.URL
'http://www.railwaycodes.org.uk/stations/station0.shtml'
```

## Attributes

---

<code>KEY</code>	str: Key of the <code>dict</code> -type data.
<code>KEY_TO_LAST_UPDATED_DATE</code>	str: Key of the data of the last updated date.
<code>KEY_TO_STN</code>	str: Key of the <code>dict</code> -type data of ' <i>Mileages, operators and grid coordinates</i> '.
<code>NAME</code>	str: Name of the data.
<code>URL</code>	str: URL of the main web page of the data.

---

### **Stations.KEY**

```
Stations.KEY = 'Stations'
```

str: Key of the `dict`-type data.

### **Stations.KEY\_TO\_LAST\_UPDATED\_DATE**

```
Stations.KEY_TO_LAST_UPDATED_DATE = 'Last updated date'
```

str: Key of the data of the last updated date.

### **Stations.KEY\_TO\_STN**

```
Stations.KEY_TO_STN = 'Mileages, operators and grid coordinates'
```

str: Key of the `dict`-type data of '*Mileages, operators and grid coordinates*'.

### **Stations.NAME**

```
Stations.NAME = 'Railway station data'
```

str: Name of the data.

### **Stations.URL**

```
Stations.URL = 'http://www.railwaycodes.org.uk/stations/station0.shtml'
```

str: URL of the main web page of the data.

## Methods

<code>collect_locations_by_initial(initial[, ...])</code>	Collect <b>data of railway station locations</b> (mileages, operators and grid coordinates) for a given initial letter.
<code>fetch_locations([update, dump_dir, verbose])</code>	Fetch <b>data of railway station locations</b> (mileages, operators and grid coordinates).
<code>get_catalogue([update, verbose])</code>	Get catalogue of railway station data.

### `Stations.collect_locations_by_initial`

`Stations.collect_locations_by_initial(initial, update=False, verbose=False)`

Collect **data of railway station locations** (mileages, operators and grid coordinates) for a given initial letter.

#### Parameters

- **initial** (*str*) – initial letter of locations of the railway station data
- **update** (*bool*) – whether to do an update check (for the package data), defaults to False
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to False

#### Returns

data of railway station locations beginning with the given initial letter and date of when the data was last updated

#### Return type

*dict*

#### Examples:

```
>>> from pyrcs.other_assets import Stations # from pyrcs import Stations
>>> stn = Stations()

>>> stn_loc_a_codes = stn.collect_locations_by_initial(initial='a')
>>> type(stn_loc_a_codes)
dict
>>> list(stn_loc_a_codes.keys())
['A', 'Last updated date']

>>> stn_loc_a_codes_dat = stn_loc_a_codes['A']
>>> type(stn_loc_a_codes_dat)
pandas.core.frame.DataFrame
>>> stn_loc_a_codes_dat.head()
   Station ...           Former Operator
0  Abbey Wood ...  London & South Eastern Railway from 1 April 20...
1  Abbey Wood ...  London & South Eastern Railway from 1 April 20...
2      Aber ...  Keolis Amey Operations/Gweithrediadau Keolis A...
```

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```

3  Abercynon ... Keolis Amey Operations/Gweithrediadau Keolis A...
4  Abercynon ... Keolis Amey Operations/Gweithrediadau Keolis A...
[5 rows x 14 columns]
>>> stn_loc_a_codes_dat.columns.to_list()
['Station',
 'Station Note',
 'ELR',
 'Mileage',
 'Status',
 'Degrees Longitude',
 'Degrees Latitude',
 'Grid Reference',
 'CRS',
 'CRS Note',
 'Owner',
 'Former Owner',
 'Operator',
 'Former Operator']
>>> stn_loc_a_codes_dat[['Station', 'ELR', 'Mileage']].head()
   Station ELR Mileage
0  Abbey Wood  NKL  11m 43ch
1  Abbey Wood  XRS  24.458km
2      Aber  CAR   8m 69ch
3  Abercynon  CAM  16m 28ch
4  Abercynon  ABD  16m 28ch

```

## `Stations.fetch_locations`

`Stations.fetch_locations(update=False, dump_dir=None, verbose=False)`

Fetch data of railway station locations (mileages, operators and grid coordinates).

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – name of a folder where the pickle file is to be saved, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of railway station locations and date of when the data was last updated

### Return type

dict

### Examples:

```

>>> from pyrcs.other_assets import Stations # from pyrcs import Stations
>>> stn = Stations()

```

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```

>>> stn_loc_codes = stn.fetch_locations()
>>> type(stn_loc_codes)
dict
>>> list(stn_loc_codes.keys())
['Mileages, operators and grid coordinates', 'Last updated date']

>>> stn.KEY_TO_STN
'Mileages, operators and grid coordinates'

>>> stn_loc_codes_dat = stn_loc_codes[stn.KEY_TO_STN]
>>> type(stn_loc_codes_dat)
pandas.core.frame.DataFrame
>>> stn_loc_codes_dat.head()
   Station ...           Former Operator
0  Abbey Wood ...  London & South Eastern Railway from 1 April 20...
1  Abbey Wood ...  London & South Eastern Railway from 1 April 20...
2      Aber ...  Keolis Amey Operations/Gweithrediadau Keolis A...
3  Abercynon ...  Keolis Amey Operations/Gweithrediadau Keolis A...
4  Abercynon ...  Keolis Amey Operations/Gweithrediadau Keolis A...
[5 rows x 14 columns]
>>> stn_loc_codes_dat.columns.to_list()
['Station',
 'Station Note',
 'ELR',
 'Mileage',
 'Status',
 'Degrees Longitude',
 'Degrees Latitude',
 'Grid Reference',
 'CRS',
 'CRS Note',
 'Owner',
 'Former Owner',
 'Operator',
 'Former Operator']
>>> stn_loc_codes_dat[['Station', 'ELR', 'Mileage']].head()
   Station ELR    Mileage
0  Abbey Wood  NKL  11m 43ch
1  Abbey Wood  XRS  24.458km
2      Aber  CAR   8m 69ch
3  Abercynon  CAM  16m 28ch
4  Abercynon  ABD  16m 28ch

```

## Stations.get\_catalogue

`Stations.get_catalogue(update=False, verbose=False)`

Get catalogue of railway station data.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

**Returns**

catalogue of railway station data

**Return type**

dict

**Examples:**

```
>>> from pyrcs.other_assets import Stations # from pyrcs import Stations

>>> stn = Stations()

>>> stn_data_cat = stn.get_catalogue()
>>> type(stn_data_cat)
dict
>>> list(stn_data_cat.keys())
['Mileages, operators and grid coordinates',
 'Bilingual names',
 'Sponsored signs',
 'Not served by SFO',
 'International',
 'Trivia',
 'Access rights',
 'Barrier error codes',
 'London Underground',
 'Railnet']
```

**Depots**

`class pyrcs.other_assets.Depots(data_dir=None, update=False, verbose=True)`

A class for collecting data of `depot` codes.

**Parameters**

- `data_dir (str or None)` – name of data directory, defaults to None
- `update (bool)` – whether to do an update check (for the catalogue data), defaults to False
- `verbose (bool or int)` – whether to print relevant information in console, defaults to True

**Variables**

- `catalogue (dict)` – catalogue of the data
- `last_updated_date (str)` – last updated date
- `data_dir (str)` – path to the data directory
- `current_data_dir (str)` – path to the current data directory

**Examples:**

```
>>> from pyrcs.other_assets import Depots # from pyrcs import Depots

>>> depots = Depots()
```

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```
>>> depots.NAME
'Depot codes'

>>> depots.URL
'http://www.railwaycodes.org.uk/depots/depots0.shtml'
```

## Attributes

<code>KEY</code>	Key of the <code>dict</code> -type data
<code>KEY_TO_1950_SYSTEM</code>	Key of the dict-type data of 1950 system (pre-TOPS) codes
<code>KEY_TO_GWR</code>	Key of the dict-type data of GWR codes
<code>KEY_TO_LAST_UPDATED_DATE</code>	Key of the data of the last updated date
<code>KEY_TO_PRE_TOPS</code>	Key of the dict-type data of four digit pre-TOPS codes
<code>KEY_TO_TOPS</code>	Key of the dict-type data of two character TOPS codes
<code>NAME</code>	Name of the data
<code>URL</code>	URL of the main web page of the data

### Depots.KEY

`Depots.KEY = 'Depots'`  
Key of the `dict`-type data

### Depots.KEY\_TO\_1950\_SYSTEM

`Depots.KEY_TO_1950_SYSTEM = '1950 system (pre-TOPS) codes'`  
Key of the dict-type data of 1950 system (pre-TOPS) codes

### Depots.KEY\_TO\_GWR

`Depots.KEY_TO_GWR = 'GWR codes'`  
Key of the dict-type data of GWR codes

**Depots.KEY\_TO\_LAST\_UPDATED\_DATE**

Depots.KEY\_TO\_LAST\_UPDATED\_DATE = 'Last updated date'

Key of the data of the last updated date

**Depots.KEY\_TO\_PRE\_TOPS**

Depots.KEY\_TO\_PRE\_TOPS = 'Four digit pre-TOPS codes'

Key of the dict-type data of four digit pre-TOPS codes

**Depots.KEY\_TO\_TOPS**

Depots.KEY\_TO\_TOPS = 'Two character TOPS codes'

Key of the dict-type data of two character TOPS codes

**Depots.NAME**

Depots.NAME = 'Depot codes'

Name of the data

**Depots.URL**

Depots.URL = 'http://www.railwaycodes.org.uk/depots/depots0.shtm'

URL of the main web page of the data

## Methods

<code>collect_1950_system_codes([...])</code>	Collect <b>1950</b> system (pre-TOPS) codes from source web page.
<code>collect_gwr_codes([confirmation_required, ...])</code>	Collect Great Western Railway (GWR) depot codes from source web page.
<code>collect_pre_tops_codes([...])</code>	Collect four-digit pre-TOPS codes from source web page.
<code>collect_tops_codes([confirmation_required, ...])</code>	Collect two-character TOPS codes from source web page.
<code>fetch_1950_system_codes([update, dump_dir, ...])</code>	Fetch data of <b>1950</b> system (pre-TOPS) codes.
<code>fetch_codes([update, dump_dir, verbose])</code>	Fetch data of depot codes.
<code>fetch_gwr_codes([update, dump_dir, verbose])</code>	Fetch data of Great Western Railway (GWR) depot codes.
<code>fetch_pre_tops_codes([update, dump_dir, verbose])</code>	Fetch data of four-digit pre-TOPS codes.
<code>fetch_tops_codes([update, dump_dir, verbose])</code>	Fetch data of two-character TOPS codes.

### Depots.collect\_1950\_system\_codes

`Depots.collect_1950_system_codes(confirmation_required=True, verbose=False)`

Collect **1950** system (pre-TOPS) codes from source web page.

#### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

#### Returns

data of **1950** system (pre-TOPS) codes and date of when the data was last updated

#### Return type

dict or None

#### Examples:

```
>>> from pyrcs.other_assets import Depots # from pyrcs import Depots
>>> depots = Depots()
>>> s1950_codes = depots.collect_1950_system_codes()
To collect data of 1950 system (pre-TOPS) codes
? [No] |Yes: yes
>>> type(s1950_codes)
```

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```

dict
>>> list(s1950_codes.keys())
['1950 system (pre-TOPS) codes', 'Last updated date']

>>> depots.KEY_TO_1950_SYSTEM
'1950 system (pre-TOPS) codes'

>>> s1950_codes_dat = s1950_codes[depots.KEY_TO_1950_SYSTEM]

>>> type(s1950_codes_dat)
pandas.core.frame.DataFrame
>>> s1950_codes_dat.head()
   Code      Depot name          Notes
0  1A        Willesden  From 1950. Became WN from 6 May 1973
1  1B        Camden       From 1950. To 3 January 1966
2  1C        Watford    From 1950. Became WJ from 6 May 1973
3  1D  Devons Road, Bow  Previously 13B to 9 June 1950. Became 1J from...
4  1D        Marylebone  Previously 14F to 31 August 1963. Became ME f...

```

## Depots.collect\_gwr\_codes

`Depots.collect_gwr_codes(confirmation_required=True, verbose=False)`

Collect Great Western Railway (GWR) depot codes from source web page.

### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of GWR depot codes and date of when the data was last updated

### Return type

dict or None

### Examples:

```

>>> from pyrcs.other_assets import Depots # from pyrcs import Depots

>>> depots = Depots()

>>> gwr_codes = depots.collect_gwr_codes()
To collect data of GWR codes
? [No] |Yes: yes
>>> type(gwr_codes)
dict
>>> list(gwr_codes.keys())
['GWR codes', 'Last updated date']

>>> depots.KEY_TO_GWR
'GWR codes'

```

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```
>>> gwr_codes_dat = gwr_codes[depots.KEY_TO_GWR]
>>> type(gwr_codes_dat)
dict
>>> list(gwr_codes_dat.keys())
['Alphabetical codes', 'Numerical codes']

>>> gwr_alpha_codes = gwr_codes_dat['Alphabetical codes']
>>> type(gwr_alpha_codes)
pandas.core.frame.DataFrame
>>> gwr_alpha_codes.head()
   Code    Depot name
0  ABEEG    Aberbeeg
1    ABG    Aberbeeg
2    AYN    Abercynon
3   ABDR    Aberdare
4    ABH  Aberystwyth
```

## Depots.collect\_pre\_tops\_codes

Depots.collect\_pre\_tops\_codes(*confirmation\_required=True, verbose=False*)

Collect four-digit pre-TOPS codes from source web page.

### Parameters

- **confirmation\_required** (*bool*) – whether to confirm before proceeding, defaults to True
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to False

### Returns

data of four-digit pre-TOPS codes and date of when the data was last updated

### Return type

dict or None

### Examples:

```
>>> from pyrcs.other_assets import Depots # from pyrcs import Depots

>>> depots = Depots()

>>> fdpt_codes = depots.collect_pre_tops_codes()
To collect data of four digit pre-TOPS codes
? [No]|Yes: yes
>>> type(fdpt_codes)
dict
>>> list(fdpt_codes.keys())
['Four digit pre-TOPS codes', 'Last updated date']

>>> depots.KEY_TO_PRE_TOPS
'Four digit pre-TOPS codes'
```

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```
>>> fdpt_codes_dat = fdpt_codes[depots.KEY_TO_PRE_TOPS]
>>> type(fdpt_codes_dat)
pandas.core.frame.DataFrame
>>> fdpt_codes_dat.head()
   Code          Depot name      Region Main Works site
0  2000        Accrington  London Midland      False
1  2001      Derby Litchurch Lane  London Midland     True
2  2003       Blackburn  London Midland      False
3  2004  Bolton Trinity Street  London Midland      False
4  2006       Burnley  London Midland      False
```

## Depots.collect\_tops\_codes

`Depots.collect_tops_codes(confirmation_required=True, verbose=False)`

Collect two-character TOPS codes from source web page.

### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of two-character TOPS codes and date of when the data was last updated

### Return type

dict or None

### Examples:

```
>>> from pyrcs.other_assets import Depots # from pyrcs import Depots

>>> depots = Depots()

>>> tct_codes = depots.collect_tops_codes()
To collect data of two character TOPS codes
? [No] |Yes: yes
>>> type(tct_codes)
dict
>>> list(tct_codes.keys())
['Two character TOPS codes', 'Last updated date']

>>> depots.KEY_TO_TOPS
'Two character TOPS codes'

>>> tct_codes_dat = tct_codes[depots.KEY_TO_TOPS]
>>> type(tct_codes_dat)
pandas.core.frame.DataFrame
>>> tct_codes_dat.head()
   Code    ...          Notes
0   AB    ...  Closed 1987
1   AB    ...
```

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```

2 AC ... Became WH from 1994
3 AC ...
4 AD ...
[5 rows x 5 columns]

```

## Depots.fetch\_1950\_system\_codes

`Depots.fetch_1950_system_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of 1950 system (pre-TOPS) codes.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of 1950 system (pre-TOPS) codes and date of when the data was last updated

### Return type

dict

### Examples:

```

>>> from pyrcs.other_assets import Depots # from pyrcs import Depots

>>> depots = Depots()

>>> s1950_codes = depots.fetch_1950_system_codes()
>>> type(s1950_codes)
dict
>>> list(s1950_codes.keys())
['1950 system (pre-TOPS) codes', 'Last updated date']

>>> depots.KEY_TO_1950_SYSTEM
'1950 system (pre-TOPS) codes'

>>> s1950_codes_dat = s1950_codes[depots.KEY_TO_1950_SYSTEM]
>>> type(s1950_codes_dat)
pandas.core.frame.DataFrame
>>> s1950_codes_dat.head()
   Code      Depot name          Notes
0  1A        Willesden  From 1950. Became WN from 6 May 1973
1  1B        Camden           From 1950. To 3 January 1966
2  1C        Watford  From 1950. Became WJ from 6 May 1973
3  1D  Devons Road, Bow  Previously 13B to 9 June 1950. Became 1J from...
4  1D    Marylebone  Previously 14F to 31 August 1963. Became ME f...

```

## Depots.fetch\_codes

`Depots.fetch_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of depot codes.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of depot codes and date of when the data was last updated

### Return type

dict

### Examples:

```
>>> from pyrcs.other_assets import Depots # from pyrcs import Depots

>>> depots = Depots()

>>> depots_codes = depots.fetch_codes()

>>> type(depots_codes)
dict
>>> list(depots_codes.keys())
['Depots', 'Last updated date']

>>> depots.KEY
'Depots'

>>> depots_codes_dat = depots_codes[depots.KEY]
>>> type(depots_codes_dat)
dict
>>> list(depots_codes_dat.keys())
['1950 system (pre-TOPS) codes',
 'Four digit pre-TOPS codes',
 'GWR codes',
 'Two character TOPS codes']

>>> depots.KEY_TO_PRE_TOPS
'Four digit pre-TOPS codes'
>>> depots_codes_dat[depots.KEY_TO_PRE_TOPS].head()
   Code          Depot name      Region Main Works site
0  2000        Accrington    London Midland      False
1  2001     Derby Litchurch Lane    London Midland      True
2  2003       Blackburn    London Midland      False
3  2004  Bolton Trinity Street    London Midland      False
4  2006       Burnley    London Midland      False
```

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```
>>> depots.KEY_TO_TOPS
'Two character TOPS codes'
>>> depots_codes_dat[depots.KEY_TO_TOPS].head()
   Code    ...          Notes
0  AB    ...      Closed 1987
1  AB    ...
2  AC    ...  Became WH from 1994
3  AC    ...
4  AD    ...
[5 rows x 5 columns]
```

## Depots.fetch\_gwr\_codes

`Depots.fetch_gwr_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of Great Western Railway (GWR) depot codes.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of GWR depot codes and date of when the data was last updated

### Return type

dict

## Examples:

```
>>> from pyrcs.other_assets import Depots # from pyrcs import Depots

>>> depots = Depots()

>>> gwr_codes = depots.fetch_gwr_codes()
>>> type(gwr_codes)
dict
>>> list(gwr_codes.keys())
['GWR codes', 'Last updated date']

>>> depots.KEY_TO_GWR
'GWR codes'

>>> gwr_codes_dat = gwr_codes[depots.KEY_TO_GWR]
>>> type(gwr_codes_dat)
dict
>>> list(gwr_codes_dat.keys())
['Alphabetical codes', 'Numerical codes']
```

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```
>>> gwr_alpha_codes = gwr_codes_dat['Alphabetical codes']
>>> type(gwr_alpha_codes)
pandas.core.frame.DataFrame
>>> gwr_alpha_codes.head()
   Code    Depot name
0  ABEEG    Aberbeeg
1    ABG    Aberbeeg
2    AYN  Abercynon
3  ABDR    Aberdare
4    ABH  Aberystwyth
```

## Depots.fetch\_pre\_tops\_codes

`Depots.fetch_pre_tops_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of four-digit pre-TOPS codes.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – pathname of a directory where the data file is dumped, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of four-digit pre-TOPS codes and date of when the data was last updated

### Return type

dict

### Examples:

```
>>> from pyrcs.other_assets import Depots # from pyrcs import Depots
>>> depots = Depots()

>>> fdpt_codes = depots.fetch_pre_tops_codes()
>>> type(fdpt_codes)
dict
>>> list(fdpt_codes.keys())
['Four digit pre-TOPS codes', 'Last updated date']

>>> depots.KEY_TO_PRE_TOPS
'Four digit pre-TOPS codes'

>>> fdpt_codes_dat = fdpt_codes[depots.KEY_TO_PRE_TOPS]
>>> type(fdpt_codes_dat)
pandas.core.frame.DataFrame
>>> fdpt_codes_dat.head()
   Code    Depot name      Region Main Works site
0  2000  Accrington  London Midland        False
```

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1	2001	Derby	Litchurch Lane	London Midland	True
2	2003		Blackburn	London Midland	False
3	2004	Bolton	Trinity Street	London Midland	False
4	2006		Burnley	London Midland	False

## Depots.fetch\_tops\_codes

Depots.fetch\_tops\_codes(*update=False*, *dump\_dir=None*, *verbose=False*)

Fetch data of two-character TOPS codes.

### Parameters

- **update (bool)** – whether to do an update check (for the package data), defaults to False
- **dump\_dir (str or None)** – pathname of a directory where the data file is dumped, defaults to None
- **verbose (bool or int)** – whether to print relevant information in console, defaults to False

### Returns

data of two-character TOPS codes and date of when the data was last updated

### Return type

dict

### Examples:

```
>>> from pyrcs.other_assets import Depots # from pyrcs import Depots

>>> depots = Depots()

>>> tct_codes = depots.fetch_tops_codes()
>>> type(tct_codes)
dict
>>> list(tct_codes.keys())
['Two character TOPS codes', 'Last updated date']

>>> depots.KEY_TO_TOPS
'Two character TOPS codes'

>>> tct_codes_dat = tct_codes[depots.KEY_TO_TOPS]
>>> type(tct_codes_dat)
pandas.core.frame.DataFrame
>>> tct_codes_dat.head()
   Code ...          Notes
0   AB ...      Closed 1987
1   AB ...
2   AC ...  Became WH from 1994
3   AC ...
4   AD ...
[5 rows x 5 columns]
```

## Features

```
class pyrcs.other_assets.Features(data_dir=None, update=False, verbose=True)
```

A class for collecting codes of several infrastructure features.

### Parameters

- **data\_dir** (*str or None*) – name of data directory, defaults to None
- **update** (*bool*) – whether to do an update check (for the package data), defaults to False
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to True

### Variables

- **catalogue** (*dict*) – catalogue of the data
- **last\_updated\_date** (*str*) – last updated date
- **data\_dir** (*str*) – path to the data directory
- **current\_data\_dir** (*str*) – path to the current data directory

### Examples:

```
>>> from pyrcs.other_assets import Features # from pyrcs import Features

>>> feats = Features()

>>> feats.NAME
'Infrastructure features'
```

## Attributes

<code>KEY</code>	Key of the <code>dict</code> -type data
<code>KEY_TO_BUZZER</code>	Key of the <code>dict</code> -type data of ' <i>buzzer codes</i> '
<code>KEY_TO_HABD_WILD</code>	Key of the <code>dict</code> -type data of ' <i>HABD</i> ' and ' <i>WILD</i> '
<code>KEY_TO_LAST_UPDATED_DATE</code>	Key of the data of the last updated date
<code>KEY_TO_TELEGRAPH</code>	Key of the <code>dict</code> -type data of ' <i>telegraph codes</i> '
<code>KEY_TO_TROUGH</code>	Key of the <code>dict</code> -type data of ' <i>water troughs</i> '
<code>NAME</code>	Name of the data

**Features.KEY**

Features.KEY = 'Features'

Key of the `dict`-type data

**Features.KEY\_TO\_BUZZER**

Features.KEY\_TO\_BUZZER = 'Buzzer codes'

Key of the dict-type data of '*buzzer codes*'

**Features.KEY\_TO\_HABD\_WILD**

Features.KEY\_TO\_HABD\_WILD = 'HABD and WILD'

Key of the dict-type data of '*HABD*' and '*WILD*'

**Features.KEY\_TO\_LAST\_UPDATED\_DATE**

Features.KEY\_TO\_LAST\_UPDATED\_DATE = 'Last updated date'

Key of the data of the last updated date

**Features.KEY\_TO\_TELEGRAPH**

Features.KEY\_TO\_TELEGRAPH = 'Telegraphic codes'

Key of the dict-type data of '*telegraph codes*'

**Features.KEY\_TO\_TROUGH**

Features.KEY\_TO\_TROUGH = 'Water troughs'

Key of the dict-type data of '*water troughs*'

**Features.NAME**

Features.NAME = 'Infrastructure features'

Name of the data

## Methods

<code>collect_buzzer_codes([...])</code>	Collect data of <b>buzzer codes</b> from source web page.
<code>collect_habds_and_wilds([...])</code>	Collect codes of <b>HABDs</b> and <b>WILDs</b> from source web page.
<code>collect_telegraph_codes([...])</code>	Collect data of <b>telegraph code words</b> from source web page.
<code>collect_water_troughs([...])</code>	Collect codes of <b>water troughs locations</b> from source web page.
<code>fetch_buzzer_codes([update, dump_dir, verbose])</code>	Fetch data of <b>buzzer codes</b> .
<code>fetch_codes([update, dump_dir, verbose])</code>	Fetch codes of infrastructure features.
<code>fetch_habds_and_wilds([update, dump_dir, ...])</code>	Fetch codes of <b>HABDs</b> and <b>WILDs</b> .
<code>fetch_telegraph_codes([update, dump_dir, ...])</code>	Fetch data of <b>telegraph code words</b> .
<code>fetch_water_troughs([update, dump_dir, verbose])</code>	Fetch codes of <b>water troughs locations</b> .

### Features.collect\_buzzer\_codes

`Features.collect_buzzer_codes(confirmation_required=True, verbose=False)`

Collect data of **buzzer codes** from source web page.

#### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

#### Returns

data of buzzer codes, and date of when the data was last updated

#### Return type

dict or None

#### Examples:

```
>>> from pyrcs.other_assets import Features # from pyrcs import Features
>>> feats = Features()
>>> buz_codes = feats.collect_buzzer_codes()
To collect data of Buzzer codes
? [No] |Yes: yes
>>> type(buz_codes)
dict
```

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```
>>> list(buz_codes.keys())
['Buzzer codes', 'Last updated date']

>>> feats.KEY_TO_BUZZER
'Buzzer codes'

>>> buz_codes_dat = buz_codes[feats.KEY_TO_BUZZER]
>>> type(buz_codes_dat)
pandas.core.frame.DataFrame
>>> buz_codes_dat.head()
   Code [number of buzzes or groups separated by pauses]      Meaning
0                      1          Stop
1                     1-2    Close doors
2                      2  Ready to start
3                     2-2  Do not open doors
4                      3        Set back
```

## Features.collect\_habds\_and\_wilds

`Features.collect_habds_and_wilds(confirmation_required=True, verbose=False)`

Collect codes of HABDs and WILDs from source web page.

### Note:

- HABDs: Hot axle box detectors
- WILDs: Wheel impact load detectors

### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of HABDs and WILDs, and date of when the data was last updated

### Return type

dict or None

### Examples:

```
>>> from pyrcs.other_assets import Features # from pyrcs import Features

>>> feats = Features()

>>> hw_codes = feats.collect_habds_and_wilds()
To collect data of HABD and WILD
? [No]|Yes: yes
```

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```

>>> type(hw_codes)
dict
>>> list(hw_codes.keys())
['HABD and WILD', 'Last updated date']

>>> feats.KEY_TO_HABD_WILD
'HABD and WILD'

>>> hw_codes_dat = hw_codes[feats.KEY_TO_HABD_WILD]
>>> type(hw_codes_dat)
dict
>>> list(hw_codes_dat.keys())
['HABD', 'WILD']

>>> habd_dat = hw_codes_dat['HABD']
>>> type(habd_dat)
pandas.core.frame.DataFrame
>>> habd_dat.head()
   ELR    ...                      Notes
0  BAG2  ...
1  BAG2  ...  installed 29 September 1997, later moved to 74...
2  BAG2  ...                                previously at 74m 51ch
3  BAG2  ...                                removed 29 September 1997
4  BAG2  ...  present in 1969, later moved to 89m 00ch
[5 rows x 5 columns]
>>> wild_dat = hw_codes_dat['WILD']
>>> type(wild_dat)
pandas.core.frame.DataFrame
>>> wild_dat.head()
   ELR    ...                      Notes
0  AYR3  ...
1  BAG2  ...
2  BML1  ...
3  BML1  ...
4  CGJ3  ...  moved to 183m 68ch from 8 September 2018 / mov...
[5 rows x 5 columns]

```

## Features.collect\_telegraph\_codes

`Features.collect_telegraph_codes(confirmation_required=True, verbose=False)`

Collect data of `telegraph code words` from source web page.

### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of telegraph code words, and date of when the data was last updated

### Return type

dict or None

**Examples:**

```
>>> from pyrcs.other_assets import Features # from pyrcs import Features

>>> feats = Features()

>>> tel_codes = feats.collect_telegraph_codes()
To collect data of Telegraphic codes
? [No]|Yes: yes
>>> type(tel_codes)
dict
>>> list(tel_codes.keys())
['Telegraphic codes', 'Last updated date']

>>> feats.KEY_TO_TELEGRAPH
'Telegraphic codes'

>>> tel_codes_dat = tel_codes[feats.KEY_TO_TELEGRAPH]
>>> type(tel_codes_dat)
dict
>>> list(tel_codes_dat.keys())
['Official codes', 'Unofficial codes']

>>> tel_official_codes = tel_codes_dat['Official codes']
>>> type(tel_official_codes)
pandas.core.frame.DataFrame
>>> tel_official_codes.head()
   Code ... In use
0 ABACK ... cross industry term used in 1939
1 ABASE ... GWR, 1939
2 ABREAST ... GWR, 1939 / Railway Executive, 1950
3 ABREAST ... British Transport Commission, 1958
4 ABSENT ... GWR, 1939
[5 rows x 3 columns]
>>> tel_unofficial_codes = tel_codes_dat['Unofficial codes']
>>> type(tel_unofficial_codes)
pandas.core.frame.DataFrame
>>> tel_unofficial_codes.head()
   Code Unofficial description
0 CRANKEX [See KRANKEX]
1 DRUNKEX Saturday night special train (usually a DMU) t...
2 GYFO Strongly urge all speed ('Get your finger out')
3 KRANKEX Special train with interesting routing or trac...
4 MYSTEX Special excursion going somewhere no one reall...
```

**Features.collect\_water\_troughs**

`Features.collect_water_troughs(confirmation_required=True, verbose=False)`

Collect codes of water troughs locations from source web page.

**Parameters**

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console,

defaults to False

### Returns

data of water trough locations, and date of when the data was last updated

### Return type

dict or None

### Examples:

```
>>> from pyrcs.other_assets import Features # from pyrcs import Features

>>> feats = Features()

>>> wt_codes = feats.collect_water_troughs()
To collect data of Water troughs
? [No]|Yes: yes
>>> type(wt_codes)
dict
>>> list(wt_codes.keys())
['Water troughs', 'Last updated date']

>>> feats.KEY_TO_TROUGH
'Water troughs'

>>> wt_codes_dat = wt_codes[feats.KEY_TO_TROUGH]
>>> type(wt_codes_dat)
pandas.core.frame.DataFrame
>>> wt_codes_dat.head()
   ELR ... Length (Yard)
0  BEI ...      NaN
1  BHL ...  620.000000
2  CGJ2 ...    0.666667
3  CGJ6 ...  561.000000
4  CGJ6 ...  560.000000
[5 rows x 6 columns]
```

## Features.fetch\_buzzer\_codes

`Features.fetch_buzzer_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of `buzzer codes`.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – name of a folder where the pickle file is to be saved, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of buzzer codes, and date of when the data was last updated

**Return type**

dict

**Examples:**

```
>>> from pyrcs.other_assets import Features # from pyrcs import Features

>>> feats = Features()

>>> buz_codes = feats.fetch_buzzer_codes()
>>> type(buz_codes)
dict
>>> list(buz_codes.keys())
['Buzzer codes', 'Last updated date']

>>> feats.KEY_TO_BUZZER
'Buzzer codes'

>>> buz_codes_dat = buz_codes[feats.KEY_TO_BUZZER]
>>> type(buz_codes_dat)
pandas.core.frame.DataFrame
>>> buz_codes_dat.head()
   Code [number of buzzes or groups separated by pauses]      Meaning
0                      1          Stop
1                     1-2    Close doors
2                      2  Ready to start
3                     2-2  Do not open doors
4                      3        Set back
```

**Features.fetch\_codes**`Features.fetch_codes(update=False, dump_dir=None, verbose=False)`

Fetch codes of infrastructure features.

Including:

- HABD and WILD
- Water troughs
- Telegraph codes
- Driver/guard buzzer codes

**Parameters**

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – name of a folder where the pickle file is to be saved, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

**Returns**

data of features codes and date of when the data was last updated

**Return type**

dict

**Examples:**

```
>>> from pyrcs.other_assets import Features # from pyrcs import Features

>>> feats = Features()

>>> feats_codes = feats.fetch_codes()
>>> type(feats_codes)
dict
>>> list(feats_codes.keys())
['Features', 'Last updated date']

>>> feats.KEY
'Features'

>>> feats_codes_dat = feats_codes[feats.KEY]
>>> type(feats_codes_dat)
dict
>>> list(feats_codes_dat.keys())
['Buzzer codes', 'HABD and WILD', 'Telegraphic codes', 'Water troughs']

>>> water_troughs_locations = feats_codes_dat[feats.KEY_TO_TROUGH]
>>> type(water_troughs_locations)
pandas.core.frame.DataFrame
>>> water_troughs_locations.head()
   ELR ... Length (Yard)
0  BEI ...      NaN
1  BHL ...  620.000000
2  CGJ2 ...    0.666667
3  CGJ6 ...  561.000000
4  CGJ6 ...  560.000000
[5 rows x 6 columns]

>>> hw_codes_dat = feats_codes_dat[feats.KEY_TO_HABD_WILD]
>>> type(hw_codes_dat)
dict
>>> list(hw_codes_dat.keys())
['HABD', 'WILD']
>>> habd_dat = hw_codes_dat['HABD']
>>> type(habd_dat)
pandas.core.frame.DataFrame
>>> habd_dat.head()
   ELR ... Notes
0  BAG2 ...
1  BAG2 ... installed 29 September 1997, later moved to 74...
2  BAG2 ... previously at 74m 51ch
3  BAG2 ... removed 29 September 1997
4  BAG2 ... present in 1969, later moved to 89m 00ch
[5 rows x 5 columns]
>>> wild_dat = hw_codes_dat['WILD']
>>> type(wild_dat)
```

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```
pandas.core.frame.DataFrame
>>> wild_dat.head()
   ELR    ...
0 AYR3    ...
1 BAG2    ...
2 BML1    ...
3 BML1    ...
4 CGJ3    ... moved to 183m 68ch from 8 September 2018 / mov...
[5 rows x 5 columns]
```

Notes

## Features.fetch\_habds\_and\_wilds

`Features.fetch_habds_and_wilds(update=False, dump_dir=None, verbose=False)`

Fetch codes of HABDs and WILDs.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – name of a folder where the pickle file is to be saved, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of hot axle box detectors (HABDs) and wheel impact load detectors (WILDs), and date of when the data was last updated

### Return type

dict

### Examples:

```
>>> from pyrcs.other_assets import Features # from pyrcs import Features

>>> feats = Features()

>>> hw_codes = feats.fetch_habds_and_wilds()

>>> type(hw_codes)
dict
>>> list(hw_codes.keys())
['HABD and WILD', 'Last updated date']

>>> feats.KEY_TO_HABD_WILD
'HABD and WILD'

>>> hw_codes_dat = hw_codes[feats.KEY_TO_HABD_WILD]
>>> type(hw_codes_dat)
dict
>>> list(hw_codes_dat.keys())
['HABD', 'WILD']
```

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```
>>> habd_dat = hw_codes_dat['HABD']
>>> type(habd_dat)
pandas.core.frame.DataFrame
>>> habd_dat.head()
   ELR ...
0 BAG2 ...
1 BAG2 ... installed 29 September 1997, later moved to 74...
2 BAG2 ... previously at 74m 51ch
3 BAG2 ... removed 29 September 1997
4 BAG2 ... present in 1969, later moved to 89m 00ch
[5 rows x 5 columns]
>>> wild_dat = hw_codes_dat['WILD']
>>> type(wild_dat)
pandas.core.frame.DataFrame
>>> wild_dat.head()
   ELR ...
0 AYR3 ...
1 BAG2 ...
2 BML1 ...
3 BML1 ...
4 CGJ3 ... moved to 183m 68ch from 8 September 2018 / mov...
[5 rows x 5 columns]
```

## Features.fetch\_telegraph\_codes

`Features.fetch_telegraph_codes(update=False, dump_dir=None, verbose=False)`

Fetch data of telegraph code words.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – name of a folder where the pickle file is to be saved, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of telegraph code words, and date of when the data was last updated

### Return type

dict

### Examples:

```
>>> from pyrcs.other_assets import Features # from pyrcs import Features
>>> feats = Features()
>>> tel_codes = feats.fetch_telegraph_codes()
>>> type(tel_codes)
```

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```

dict
>>> list(tel_codes.keys())
['Telegraphic codes', 'Last updated date']

>>> feats.KEY_TO_TELEGRAPH
'Telegraphic codes'

>>> tel_codes_dat = tel_codes[feats.KEY_TO_TELEGRAPH]
>>> type(tel_codes_dat)
dict
>>> list(tel_codes_dat.keys())
['Official codes', 'Unofficial codes']
>>> tel_official_codes = tel_codes_dat['Official codes']
>>> type(tel_official_codes)
pandas.core.frame.DataFrame
>>> tel_official_codes.head()
   Code ... In use
0 ABACK ... cross industry term used in 1939
1 ABASE ... GWR, 1939
2 ABREAST ... GWR, 1939 / Railway Executive, 1950
3 ABREAST ... British Transport Commission, 1958
4 ABSENT ... GWR, 1939
[5 rows x 3 columns]
>>> tel_unofficial_codes = tel_codes_dat['Unofficial codes']
>>> type(tel_unofficial_codes)
pandas.core.frame.DataFrame
>>> tel_unofficial_codes.head()
   Code Unofficial description
0 CRANKEX [See KANKEX]
1 DRUNKEX Saturday night special train (usually a DMU) t...
2 GYFO Strongly urge all speed ('Get your finger out')
3 KANKEX Special train with interesting routing or trac...
4 MYSTEX Special excursion going somewhere no one reall...

```

## Features.fetch\_water\_troughs

`Features.fetch_water_troughs(update=False, dump_dir=None, verbose=False)`

Fetch codes of water troughs locations.

### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str or None)` – name of a folder where the pickle file is to be saved, defaults to None
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False

### Returns

data of water trough locations, and date of when the data was last updated

### Return type

dict

**Examples:**

```
>>> from pyrcs.other_assets import Features # from pyrcs import Features

>>> feats = Features()

>>> wt_codes = feats.fetch_water_troughs()
>>> type(wt_codes)
dict
>>> list(wt_codes.keys())
['Water troughs', 'Last updated date']

>>> feats.KEY_TO_TROUGH
'Water troughs'

>>> wt_codes_dat = wt_codes[feats.KEY_TO_TROUGH]
>>> type(wt_codes_dat)
pandas.core.frame.DataFrame
>>> wt_codes_dat.head()
   ELR ... Length (Yard)
0  BEI ...      NaN
1  BHL ...    620.000000
2  CGJ2 ...     0.666667
3  CGJ6 ...    561.000000
4  CGJ6 ...    560.000000
[5 rows x 6 columns]
```

## 3.2 Modules

---

<i>parser</i>	Parse web-page contents.
<i>converter</i>	Change data into a desired form.
<i>collector</i>	Collect data of railway codes.
<i>utils</i>	Provide a number of helper functions.

---

### 3.2.1 parser

Parse web-page contents.

#### Preprocess contents

---

<i>parse_tr</i> (trs, ths[, sep, as_dataframe])	Parse a list of parsed HTML <tr> elements.
<i>parse_table</i> (source[, parser, as_dataframe])	Parse HTML <tr> elements for creating a data frame.
<i>parse_date</i> (str_date[, as_date_type])	Parse a date.

---

## parse\_tr

`pyrcs.parser.parse_tr(trs, ths, sep=' / ', as_dataframe=False)`

Parse a list of parsed HTML <tr> elements.

See also [PT-1].

### Parameters

- **trs** (`bs4.ResultSet` | `list`) – contents under <tr> tags of a web page.
- **ths** (`list` | `bs4.element.Tag`) – list of column names (usually under a <th> tag) of a requested table.
- **sep** (`str` | `None`) – separator that replaces the one in the raw data.
- **as\_dataframe** (`bool`) – whether to return the parsed data in tabular form

### Returns

a list of lists that each comprises a row of the requested table

### Return type

`pandas.DataFrame` | `List[list]`

### Example:

```
>>> from pyrcs.parser import parse_tr
>>> import requests
>>> import bs4

>>> example_url = 'http://www.railwaycodes.org.uk/elrs/elra.shtml'
>>> source = requests.get(example_url)
>>> parsed_text = bs4.BeautifulSoup(markup=source.content, features='html.parser')
>>> ths_dat = [th.text for th in parsed_text.find_all('th')]
>>> trs_dat = parsed_text.find_all(name='tr')

>>> tables_list = parse_tr(trs=trs_dat, ths=ths_dat) # returns a list of lists

>>> type(tables_list)
list
>>> len(tables_list) // 100
1
>>> tables_list[0]
['AAL',
 'Ashendon and Aynho Line',
 '0.00 - 18.29',
 'Ashendon Junction',
 'Now NAJ3']
```

## parse\_table

`pyrcs.parser.parse_table(source, parser='html.parser', as_dataframe=False)`

Parse HTML <tr> elements for creating a data frame.

### Parameters

- **source** (`requests.Response`) – response object to connecting a URL to request a table
- **parser** (`str`) – 'html.parser' (default), 'html5lib' or 'lxml'
- **as\_dataframe** (`bool`) – whether to return the parsed data in tabular form

### Returns

a list of lists each comprising a row of the requested table (see also `pyrcs.utils.parse_tr()`) and a list of column names of the requested table

### Return type

`tuple[list, list] | pandas.DataFrame | list`

### Examples:

```
>>> from pyrcs.parser import parse_table
>>> import requests

>>> source_dat = requests.get(url='http://www.railwaycodes.org.uk/elrs/elra.shtml')

>>> columns_dat, records_dat = parse_table(source_dat)

>>> columns_dat
['ELR', 'Line name', 'Mileages', 'Datum', 'Notes']

>>> type(records_dat)
list

>>> len(records_dat) // 100
1

>>> records_dat[0]
['AAL',
 'Ashendon and Aynho Line',
 '0.00 - 18.29',
 'Ashendon Junction',
 'Now NAJ3']
```

## parse\_date

`pyrcs.parser.parse_date(str_date, as_date_type=False)`

Parse a date.

### Parameters

- **str\_date** (`str`) – string-type date
- **as\_date\_type** (`bool`) – whether to return the date as `datetime.date`, defaults to False

**Returns**

parsed date as a string or `datetime.date`

**Return type**

`str` | `datetime.date`

**Examples:**

```
>>> from pyrcs.parser import parse_date

>>> str_date_dat = '2020-01-01'

>>> parsed_date_dat = parse_date(str_date_dat)
>>> parsed_date_dat
'2020-01-01'

>>> parsed_date_dat = parse_date(str_date_dat, as_date_type=True)
>>> parsed_date_dat
datetime.date(2020, 1, 1)
```

**Extract information**

<code>get_site_map([update, ...])</code>	Fetch the <a href="#">site map</a> from the package data.
<code>get_last_updated_date(url[, parsed, ...])</code>	Get last update date.
<code>get_financial_year(date)</code>	Convert calendar year of a given date to Network Rail financial year.
<code>get_catalogue(url[, update, ...])</code>	Get the catalogue for a class.
<code>get_category_menu(url[, update, ...])</code>	Get a menu of the available classes.
<code>get_page_catalogue(url[, head_tag_name, ...])</code>	Get the catalogue of the main page of a data cluster.
<code>get_heading_text(heading_tag[, elem_tag_name])</code>	Get the text of a given heading tag.
<code>get_page_catalogue(url[, head_tag_name, ...])</code>	Get the catalogue of the main page of a data cluster.
<code>get_hypertext(hypertext_tag[, ...])</code>	Get text that is with a hyperlink.
<code>get_introduction(url[, delimiter, verbose])</code>	Get contents of the Introduction page.

**get\_site\_map**

`pyrcs.parser.get_site_map(update=False, confirmation_required=True, verbose=False)`

Fetch the [site map](#) from the package data.

**Parameters**

- `update` (`bool`) – whether to do an update check (for the package data), defaults to `False`
- `confirmation_required` (`bool`) – whether to confirm before proceeding, defaults to `True`

- **verbose** (bool / int) – whether to print relevant information in console, defaults to False

**Returns**

dictionary of site map data

**Return type**

`collections.OrderedDict | None`

**Examples:**

```
>>> from pyrcs.parser import get_site_map

>>> site_map_dat = get_site_map()

>>> type(site_map_dat)
collections.OrderedDict
>>> list(site_map_dat.keys())
['Home',
 'Line data',
 'Other assets',
 '"Legal/financial" lists',
 'Miscellaneous']
>>> site_map_dat['Home']
{'index.shtml': 'http://www.railwaycodes.org.uk/index.shtml'}
```

**get\_last\_updated\_date**

`pyrcs.parser.get_last_updated_date(url, parsed=True, as_date_type=False, verbose=False)`

Get last update date.

**Parameters**

- **url** (str) – URL link of a requested web page
- **parsed** (bool) – whether to reformat the date, defaults to True
- **as\_date\_type** (bool) – whether to return the date as `datetime.date`, defaults to False
- **verbose** (bool / int) – whether to print relevant information in console, defaults to False

**Returns**

date of when the specified web page was last updated

**Return type**

`str | datetime.date | None`

**Examples:**

```
>>> from pyrcs.parser import get_last_updated_date

>>> url_a = 'http://www.railwaycodes.org.uk/crs/CRSa.shtml'
>>> last_upd_date = get_last_updated_date(url_a, parsed=True, as_date_type=False)
```

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```
>>> type(last_upd_date)
str

>>> last_upd_date = get_last_updated_date(url_a, parsed=True, as_date_type=True)
>>> type(last_upd_date)
datetime.date

>>> ldm_url = 'http://www.railwaycodes.org.uk/linedatamenu.shtml'
>>> last_upd_date = get_last_updated_date(url=ldm_url)
>>> print(last_upd_date)
None
```

## get\_financial\_year

`pyrcs.parser.get_financial_year(date)`

Convert calendar year of a given date to Network Rail financial year.

### Parameters

`date (datetime.datetime) – date`

### Returns

Network Rail financial year of the given date

### Return type

`int`

### Example:

```
>>> from pyrcs.parser import get_financial_year
>>> import datetime

>>> financial_year = get_financial_year(date=datetime.datetime(2021, 3, 31))
>>> financial_year
2020
```

## get\_catalogue

`pyrcs.parser.get_catalogue(url, update=False, confirmation_required=True, json_it=True, verbose=False)`

Get the catalogue for a class.

### Parameters

- `url (str) – URL of the main page of a data cluster`
- `update (bool) – whether to do an update check (for the package data), defaults to False`
- `confirmation_required (bool) – whether to confirm before proceeding, defaults to True`

- **json\_it** (*bool*) – whether to save the catalogue as a JSON file, defaults to True
- **verbose** (*bool* / *int*) – whether to print relevant information in console, defaults to False

**Returns**

catalogue in the form {'<title>': '<URL>'}  
**Return type**  
dict | None

**Examples:**

```
>>> from pyrcs.parser import get_catalogue

>>> elr_cat = get_catalogue(url='http://www.railwaycodes.org.uk/elrs/elr0.shtm')
>>> type(elr_cat)
dict
>>> list(elr_cat.keys())[:5]
['Introduction', 'A', 'B', 'C', 'D']
>>> list(elr_cat.keys())[-5:]
['Lines without codes',
'ELR/LOR converter',
'LUL system',
'DLR system',
'Canals']

>>> line_data_cat = get_catalogue(url='http://www.railwaycodes.org.uk/linedatamenu.shtm')
>>> type(line_data_cat)
dict
>>> list(line_data_cat.keys())
['ELRs and mileages',
'Electrification masts and related features',
'CRS, NLC, TIPLOC and STANOX Codes',
'Line of Route (LOR/PRIDE) codes',
'Line names',
'Track diagrams']
```

**get\_category\_menu**

pyrcs.parser.get\_category\_menu(*url*, *update=False*, *confirmation\_required=True*, *json\_it=True*, *verbose=False*)

Get a menu of the available classes.

**Parameters**

- **url** (*str*) – URL of the menu page
- **update** (*bool*) – whether to do an update check (for the package data), defaults to False
- **confirmation\_required** (*bool*) – whether to confirm before proceeding, defaults to True

- **json\_it** (*bool*) – whether to save the catalogue as a .json file, defaults to True
- **verbose** (*bool* / *int*) – whether to print relevant information in console, defaults to False

**Returns**

a category menu

**Return type**

`dict` | `None`

**Example:**

```
>>> from pyrcs.parser import get_category_menu

>>> menu = get_category_menu('http://www.railwaycodes.org.uk/linedatamenu.shtml')

>>> type(menu)
dict
>>> list(menu.keys())
['Line data']
```

**get\_page\_catalogue**

`pyrcs.parser.get_page_catalogue(url, head_tag_name='nav', head_tag_txt='Jump to:', feature_tag_name='h3', verbose=False)`

Get the catalogue of the main page of a data cluster.

**Parameters**

- **url** (*str*) – URL of the main page of a data cluster
- **head\_tag\_name** (*str*) – tag name of the feature list at the top of the page, defaults to 'nav'
- **head\_tag\_txt** (*str*) – text that is contained in the head\_tag, defaults to 'Jump to: '
- **feature\_tag\_name** (*str*) – tag name of the headings of each feature, defaults to 'h3'
- **verbose** (*bool* / *int*) – whether to print relevant information in console, defaults to False

**Returns**

catalogue of the main page of a data cluster

**Return type**

`pandas.DataFrame`

**Example:**

```
>>> from pyrcs.parser import get_page_catalogue
>>> from pyhelpers.settings import pd_preferences

>>> pd_preferences(max_columns=1)

>>> elec_url = 'http://www.railwaycodes.org.uk/electrification/mast_prefix2.shtml'

>>> elec_catalogue = get_page_catalogue(elec_url)
>>> elec_catalogue
   Feature ...
0      Beamish Tramway ...
1      Birkenhead Tramway ...
2      Black Country Living Museum ...
3      Blackpool Tramway ...
4  Brighton and Rottingdean Seashore Electric Rai...
... ...
17      Seaton Tramway ...
18      Sheffield Supertram ...
19      Snaefell Mountain Railway ...
20  Summerlee, Museum of Scottish Industrial Life ...
21      Tyne & Wear Metro ...

[22 rows x 3 columns]

>>> elec_catalogue.columns.to_list()
['Feature', 'URL', 'Heading']
```

## get\_heading\_text

`pyrcs.parser.get_heading_text(heading_tag, elem_tag_name='em')`

Get the text of a given heading tag.

### Parameters

- `heading_tag (bs4.element.Tag)` – tag of a heading
- `elem_tag_name (str)` – tag name of an element in the heading\_tag, defaults to 'em'

### Returns

cleansed text of the given heading\_tag

### Return type

str

### Examples:

```
>>> from pyrcs.parser import get_heading_text
>>> from pyrcs.line_data import Electrification

>>> elec = Electrification()

>>> url = elec.catalogue[elec.KEY_TO_INDEPENDENT_LINES]
>>> source = requests.get(url=url, headers=fake_requests_headers())
>>> soup = bs4.BeautifulSoup(markup=source.content, features='html.parser')
```

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```
>>> h3 = soup.find('h3')

>>> h3_text = get_heading_text(heading_tag=h3, elem_tag_name='em')
>>> h3_text
'Beamish Tramway'
```

## get\_hypertext

`pyrcs.parser.get_hypertext(hypertext_tag, hyperlink_tag_name='a', md_style=True)`

Get text that is with a hyperlink.

### Parameters

- `hypertext_tag (bs4.element.Tag / bs4.element.PageElement)` – tag of hypertext (i.e. text that is with a hyperlink)
- `hyperlink_tag_name (str)` –
- `md_style (bool)` – whether to return the obtained hypertext in markdown style, defaults to True

### Returns

hypertext

### Return type

str

### Examples:

```
>>> from pyrcs.parser import get_hypertext
>>> from pyrcs.line_data import Electrification
>>> import bs4
>>> import requests

>>> elec = Electrification()

>>> url = elec.catalogue[elec.KEY_TO_INDEPENDENT_LINES]
>>> source = requests.get(url)
>>> soup = bs4.BeautifulSoup(source.content, 'html.parser')

>>> h3 = soup.find('h3')

>>> p = h3.find_all_next('p')[8]
>>> p
<p>Croydon Tramlink mast references can be found on the <a href="http://www.croydon-traml...</a>

>>> hyper_txt = get_hypertext(hypertext_tag=p, md_style=True)
>>> hyper_txt
'Croydon Tramlink mast references can be found on the [Croydon Tramlink Unofficial Site](...
```

## get\_introduction

`pyrcs.parser.get_introduction(url, delimiter='\n', verbose=True)`

Get contents of the Introduction page.

### Parameters

- `url (str)` – URL of a web page (usually the main page of a data cluster)
- `delimiter (str)` – delimiter used for separating paragraphs, defaults to '\n'
- `verbose (bool / int)` – whether to print relevant information in console, defaults to True

### Returns

introductory texts on the given web page

### Return type

str

### Examples:

```
>>> from pyrcs.parser import get_introduction

>>> bridges_url = 'http://www.railwaycodes.org.uk/bridges/bridges0.shtml'

>>> intro_text = get_introduction(url=bridges_url)
>>> intro_text
"There are thousands of bridges over and under the railway system. These pages attempt to..."
```

## 3.2.2 converter

Change data into a desired form.

### Convert mileage data

<code>fix_mileage(mileage)</code>	Fix mileage data (associated with an ELR).
<code>yard_to_mileage(yard[, as_str])</code>	Convert yards to Network Rail mileages.
<code>mileage_to_yard(mileage)</code>	Convert Network Rail mileages to yards.
<code>mile_chain_to_mileage(mile_chain)</code>	Convert mileage data in the form ' <code>&lt;miles&gt;.&lt;chains&gt;</code> ' to Network Rail mileage.
<code>mileage_to_mile_chain(mileage)</code>	Convert Network Rail mileage to the form ' <code>&lt;miles&gt;.&lt;chains&gt;</code> '.
<code>mile_yard_to_mileage(mile, yard[, as_numeric])</code>	Convert mile and yard to Network Rail mileage.
<code>mileage_str_to_num(mileage)</code>	Convert string-type Network Rail mileage to numerical-type one.
<code>mileage_num_to_str(mileage)</code>	Convert numerical-type Network Rail mileage to string-type one.
<code>shift_mileage_by_yard(mileage, shift_yards)</code>	Shift Network Rail mileage by given yards.

## fix\_mileage

`pyrcs.converter.fix_mileage(mileage)`

Fix mileage data (associated with an ELR).

**Parameters**

- `mileage (str or float or None)` – Network Rail mileage

**Returns**

- fixed mileage data in the conventional format used by Network Rail

**Return type**

- str

**Examples:**

```
>>> from pyrcs.converter import fix_mileage

>>> fixed_mileage = fix_mileage(mileage=29.011)
>>> fixed_mileage
'29.0110'

>>> fixed_mileage = fix_mileage(mileage='.1100')
>>> fixed_mileage
'0.1100'

>>> fixed_mileage = fix_mileage(mileage=29)
>>> fixed_mileage
'29.0000'
```

## yard\_to\_mileage

`pyrcs.converter.yard_to_mileage(yard, as_str=True)`

Convert yards to Network Rail mileages.

**Parameters**

- `yard (int or float or None)` – yard data
- `as_str (bool)` – whether to return as a string value, defaults to True

**Returns**

- Network Rail mileage in the form '<miles>.<yards>' or <miles>.<yards>

**Return type**

- str or float

**Examples:**

```
>>> from pyrcs.converter import yard_to_mileage

>>> mileage_dat = yard_to_mileage(yard=396)
>>> mileage_dat
'0.0396'
```

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```
>>> mileage_dat = yard_to_mileage(yard=396, as_str=False)
>>> mileage_dat
0.0396

>>> mileage_dat = yard_to_mileage(yard=None)
>>> mileage_dat
''

>>> mileage_dat = yard_to_mileage(yard=1760)
>>> mileage_dat
'1.0000'

>>> mileage_dat = yard_to_mileage(yard=12330)
>>> mileage_dat
'7.0010'
```

## mileage\_to\_yard

`pyrcs.converter.mileage_to_yard(mileage)`

Convert Network Rail mileages to yards.

### Parameters

`mileage (float or int or str)` – Network Rail mileage

### Returns

yards

### Return type

int

### Examples:

```
>>> from pyrcs.converter import mileage_to_yard

>>> yards_dat = mileage_to_yard(mileage='0.0396')
>>> yards_dat
396

>>> yards_dat = mileage_to_yard(mileage=0.0396)
>>> yards_dat
396

>>> yards_dat = mileage_to_yard(mileage=1.0396)
>>> yards_dat
2156
```

## `mile_chain_to_mileage`

`pyrcs.converter.mile_chain_to_mileage(mile_chain)`

Convert mileage data in the form '<miles>.<chains>' to Network Rail mileage.

### Parameters

`mile_chain` (`str` or `numpy.nan` or `None`) – mileage data presented in the form '<miles>.<chains>'

### Returns

Network Rail mileage in the form '<miles>.<yards>'

### Return type

`str`

### Examples:

```
>>> from pyrcs.converter import mile_chain_to_mileage

>>> # AAM 0.18 Tewkesbury Junction with ANZ (84.62)
>>> mileage_data = mile_chain_to_mileage(mile_chain='0.18')
>>> mileage_data
'0.0396'

>>> # None, nan or ''
>>> mileage_data = mile_chain_to_mileage(mile_chain=None)
>>> mileage_data
''
```

## `mileage_to_mile_chain`

`pyrcs.converter.mileage_to_mile_chain(mileage)`

Convert Network Rail mileage to the form '<miles>.<chains>'.

### Parameters

`mileage` (`str` or `numpy.nan` or `None`) – Network Rail mileage data presented in the form '<miles>.<yards>'

### Returns

data presented in the form '<miles>.<chains>'

### Return type

`str`

### Examples:

```
>>> from pyrcs.converter import mileage_to_mile_chain

>>> mile_chain_data = mileage_to_mile_chain(mileage='0.0396')
>>> mile_chain_data
'0.18'

>>> mile_chain_data = mileage_to_mile_chain(mileage=1.0396)
```

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```
>>> mile_chain_data
'1.18'

>>> # None, nan or ''
>>> miles_chains_dat = mileage_to_mile_chain(mileage=None)
>>> miles_chains_dat
''
```

## [mile\\_yard\\_to\\_mileage](#)

`pyrcs.converter.mile_yard_to_mileage(mile, yard, as_numeric=True)`

Convert mile and yard to Network Rail mileage.

### Parameters

- `mile` (`float` or `int`) – mile
- `yard` (`float` or `int`) – yard
- `as_numeric` (`bool`) – whether to return a numeric value, defaults to True

### Returns

Network Rail mileage

### Return type

`str` or `float`

### Examples:

```
>>> from pyrcs.converter import mile_yard_to_mileage

>>> m, y = 10, 1500

>>> mileage_data = mile_yard_to_mileage(mile=m, yard=y)
>>> mileage_data
10.15

>>> mileage_data = mile_yard_to_mileage(mile=m, yard=y, as_numeric=False)
>>> mileage_data
'10.1500'

>>> m, y = 10, 500

>>> mileage_data = mile_yard_to_mileage(mile=m, yard=y, as_numeric=False)
>>> mileage_data
'10.0500'
```

## `mileage_str_to_num`

`pyrcs.converter.mileage_str_to_num(mileage)`

Convert string-type Network Rail mileage to numerical-type one.

### Parameters

`mileage (str)` – string-type Network Rail mileage in the form '<miles>.<yards>'

### Returns

numerical-type Network Rail mileage

### Return type

float

**Examples:**

```
>>> from pyrcs.converter import mileage_str_to_num

>>> mileage_num = mileage_str_to_num(mileage='0.0396')
>>> mileage_num
0.0396

>>> mileage_num = mileage_str_to_num(mileage=' ')
>>> mileage_num
nan
```

## `mileage_num_to_str`

`pyrcs.converter.mileage_num_to_str(mileage)`

Convert numerical-type Network Rail mileage to string-type one.

### Parameters

`mileage (float or None)` – numerical-type Network Rail mileage

### Returns

string-type Network Rail mileage in the form '<miles>.<yards>'

### Return type

str

**Examples:**

```
>>> from pyrcs.converter import mileage_num_to_str

>>> mileage_str = mileage_num_to_str(mileage=0.0396)
>>> mileage_str
'0.0396'

>>> mileage_str = mileage_num_to_str(mileage=None)
>>> mileage_str
''
```

## shift\_mileage\_by\_yard

`pyrcs.converter.shift_mileage_by_yard(mileage, shift_yards, as_numeric=True)`

Shift Network Rail mileage by given yards.

### Parameters

- `mileage` (`float or int or str`) – mileage (associated with an ELR) used by Network Rail
- `shift_yards` (`int or float`) – yards by which the given mileage is shifted
- `as_numeric` (`bool`) – whether to return a numeric type result, defaults to `True`

### Returns

shifted mileage

### Return type

`float or str`

### Examples:

```
>>> from pyrcs.converter import shift_mileage_by_yard

>>> n_mileage = shift_mileage_by_yard(mileage='0.0396', shift_yards=220)
>>> n_mileage
0.0616

>>> n_mileage = shift_mileage_by_yard(mileage='0.0396', shift_yards=221)
>>> n_mileage
0.0617

>>> n_mileage = shift_mileage_by_yard(mileage=10, shift_yards=220)
>>> n_mileage
10.022
```

## Convert other data

---

`fix_stanox(stanox)`

Fix the format of a given STANOX (station number) code.

---

`kilometer_to_yard(km)`

Make kilometer-to-yard conversion.

## fix\_stanox

```
pyrcs.converter.fix_stanox(stanox)
```

Fix the format of a given STANOX (station number) code.

**Parameters**

`stanox` (*str or int or None*) – STANOX code

**Returns**

standard STANOX code

**Return type**

`str`

**Examples:**

```
>>> from pyrcs.converter import fix_stanox

>>> fixed_stanox = fix_stanox(stanox=65630)
>>> fixed_stanox
'65630'

>>> fixed_stanox = fix_stanox(stanox='2071')
>>> fixed_stanox
'02071'

>>> fixed_stanox = fix_stanox(stanox=2071)
>>> fixed_stanox
'02071'
```

## kilometer\_to\_yard

```
pyrcs.converter.kilometer_to_yard(km)
```

Make kilometer-to-yard conversion.

**Parameters**

`km` (*int or float or None*) – kilometer

**Returns**

yard

**Return type**

`float`

**Example:**

```
>>> from pyrcs.converter import kilometer_to_yard

>>> kilometer_to_yard(1)
1093.6132983377079
```

### 3.2.3 collector

Collect data of railway codes.

The current release only includes [line data](#) and [other assets](#).

---

<code>LineData([update, verbose])</code>	A class representation of all modules of the subpackage <code>line_data</code> for collecting <a href="#">line data</a> .
<code>OtherAssets([update, verbose])</code>	A class representation of all modules of the subpackage <code>other_assets</code> for collecting <a href="#">other assets</a> .

---

#### LineData

`class pyrcs.collector.LineData(update=False, verbose=True)`

A class representation of all modules of the subpackage `line_data` for collecting [line data](#).

##### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `verbose (bool or int)` – whether to print relevant information in console, defaults to True

##### Variables

- `connected (bool)` – whether the Internet / the website can be connected
- `catalogue (dict)` – catalogue of the data
- `ELRMileages (object)` – instance of the class `ELRMileages`
- `Electrification (object)` – instance of the class `Electrification`
- `LocationIdentifiers (object)` – instance of the class `LocationIdentifiers`
- `LOR (object)` – instance of the class `LOR`
- `LineNames (object)` – instance of the class `LineNames`
- `TrackDiagrams (object)` – instance of the class `TrackDiagrams`
- `Bridges (object)` – instance of the class `Bridges`

##### Examples:

```
>>> from pyrcs import LineData
>>> ld = LineData()
>>> # To get data of location codes
>>> location_codes = ld.LocationIdentifiers.fetch_codes()
>>> type(location_codes)
```

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```

dict
>>> list(location_codes.keys())
['LocationID', 'Other systems', 'Additional notes', 'Last updated date']

>>> location_codes_dat = location_codes[ld.LocationIdentifiers.KEY]
>>> type(location_codes_dat)
pandas.core.frame.DataFrame
>>> location_codes_dat.head()
   Location CRS ... STANME_Note STANOX_Note
0          Aachen ...
1    Abbeyhill Junction ...
2    Abbeyhill Signal E811 ...
3    Abbeyhill Turnback Sidings ...
4  Abbey Level Crossing (Staffordshire) ...

[5 rows x 12 columns]

>>> # To get data of line names
>>> line_names_codes = ld.LineNames.fetch_codes()
>>> type(line_names_codes)
dict
>>> list(line_names_codes.keys())
['Line names', 'Last updated date']

>>> line_names_codes_dat = line_names_codes[ld.LineNames.KEY]
>>> type(line_names_codes_dat)
pandas.core.frame.DataFrame
>>> line_names_codes_dat.head()
   Line name ... Route_note
0      Abbey Line ...     None
1    Airedale Line ...     None
2      Argyle Line ...     None
3    Arun Valley Line ...     None
4  Atlantic Coast Line ...     None

[5 rows x 3 columns]

```

## Attributes

<i>NAME</i>	Name of data
<i>URL</i>	URL of the main web page of the data

### LineData.NAME

LineData.NAME = 'Line data'

Name of data

## LineData.URL

`LineData.URL = 'http://www.railwaycodes.org.uk/linedatamenu.shtm'`

URL of the main web page of the data

## Methods

---

`update([confirmation_required, verbose, ...])` Update pre-packed of the `line` data.

---

### LineData.update

`LineData.update(confirmation_required=True, verbose=False, interval=5, init_update=False)`

Update pre-packed of the `line` data.

#### Parameters

- `confirmation_required (bool)` – whether to confirm before proceeding, defaults to True
- `verbose (bool or int)` – whether to print relevant information in console, defaults to False
- `interval (int or float)` – time gap (in seconds) between the updating of different classes, defaults to 5
- `init_update (bool)` – whether to update the data for instantiation of each subclass, defaults to False

#### Example:

```
>>> from pyrcs.collector import LineData
>>> ld = LineData()
>>> ld.update(verbose=True)
```

## OtherAssets

`class pyrcs.collector.OtherAssets(update=False, verbose=True)`

A class representation of all modules of the subpackage `other_assets` for collecting other assets.

#### Parameters

- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `verbose (bool or int)` – whether to print relevant information in console, defaults to True

## Variables

- **connected** (*bool*) – whether the Internet / the website can be connected
- **catalogue** (*dict*) – catalogue of the data
- **SignalBoxes** (*object*) – instance of the class SignalBoxes
- **Tunnels** (*object*) – instance of the class Tunnels
- **Viaducts** (*object*) – instance of the class Viaducts
- **Stations** (*object*) – instance of the class Stations
- **Depots** (*object*) – instance of the class Depots
- **Features** (*object*) – instance of the class Features

## Examples:

```
>>> from pyrcs import OtherAssets

>>> oa = OtherAssets()

>>> # To get data of railway stations
>>> rail_stn_locations = oa.Stations.fetch_locations()

>>> type(rail_stn_locations)
dict
>>> list(rail_stn_locations.keys())
['Mileages', 'operators and grid coordinates', 'Last updated date']

>>> rail_stn_locations_dat = rail_stn_locations[oa.Stations.KEY_TO_STN]
>>> type(rail_stn_locations_dat)
pandas.core.frame.DataFrame
>>> rail_stn_locations_dat.head()
   Station ...           Former Operator
0    Abbey Wood ...  London & South Eastern Railway from 1 April 20...
1    Abbey Wood ... ...
2        Aber ...  Keolis Amey Operations/Gweithrediadau Keolis A...
3    Abercynon ...  Keolis Amey Operations/Gweithrediadau Keolis A...
4  Abercynon North ... [Cardiff Railway Company from 13 October 1996 ...

[5 rows x 13 columns]

>>> # To get data of signal boxes
>>> signal_boxes_codes = oa.SignalBoxes.fetch_prefix_codes()

>>> type(signal_boxes_codes)
dict
>>> list(signal_boxes_codes.keys())
['Signal boxes', 'Last updated date']

>>> signal_boxes_codes_dat = signal_boxes_codes[oa.SignalBoxes.KEY]
>>> type(signal_boxes_codes_dat)
pandas.core.frame.DataFrame
>>> signal_boxes_codes_dat.head()
   Code           Signal Box ...      Closed      Control to
0   AF    Abbey Foregate Junction ...
1   AJ          Abbey Junction ...  16 February 1992      Nuneaton (NN)
```

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2	R	Abbey Junction	...	16 February 1992	Nuneaton (NN)
3	AW	Abbey Wood	...	13 July 1975	Dartford (D)
4	AE	Abbey Works East	...	1 November 1987	Port Talbot (PT)

[5 rows x 8 columns]

## Attributes

<i>NAME</i>	Name of data
<i>URL</i>	URL of the main web page of the data

### OtherAssets.NAME

```
OtherAssets.NAME = 'Other assets'
```

Name of data

### OtherAssets.URL

```
OtherAssets.URL = 'http://www.railwaycodes.org.uk/otherassetsmenu.shtml'
```

URL of the main web page of the data

## Methods

---

*update*([confirmation\_required, verbose, ...])    Update pre-packed data of the other assets.

---

### OtherAssets.update

```
OtherAssets.update(confirmation_required=True, verbose=False, interval=5, init_update=False)
```

Update pre-packed data of the other assets.

#### Parameters

- **confirmation\_required** (*bool*) – whether to confirm before proceeding, defaults to True
- **verbose** (*bool or int*) – whether to print relevant information in console, defaults to False
- **interval** (*int*) – time gap (in seconds) between the updating of different classes, defaults to 5
- **init\_update** (*bool*) – whether to update the data for instantiation of each subclass, defaults to False

**Example:**

```
>>> from pyrcs.collector import OtherAssets
>>> oa = OtherAssets()
>>> oa.update(verbose=True)
```

**3.2.4 utils**

Provide a number of helper functions.

**Validate inputs**

<code>is_home_connectable()</code>	Check whether the Railway Codes website is connectable.
<code>is_str_float(x)</code>	Check if a string-type variable can express a float-type value.
<code>validate_initial(x[, as_is])</code>	Get a valid initial letter as an input.
<code>validate_page_name(cls, page_no, valid_page_no)</code>	Get a valid page name.
<code>collect_in_fetch_verbose(data_dir, verbose)</code>	Create a new parameter that indicates whether to print relevant information in console (used only if it is necessary to re-collect data when trying to fetch the data).
<code>fetch_all_verbose(data_dir, verbose)</code>	Create a new parameter that indicates whether to print relevant information in console (used only when trying to fetch all data of a cluster).

**is\_home\_connectable**

`pyrcs.utils.is_home_connectable()`

Check whether the Railway Codes website is connectable.

**Returns**

whether the Railway Codes website is connectable

**Return type**

`bool`

**Example:**

```
>>> from pyrcs.utils import is_home_connectable
>>> is_home_connectable()
True
```

## is\_str\_float

`pyrcs.utils.is_str_float(x)`

Check if a string-type variable can express a float-type value.

### Parameters

`x (str)` – a string-type variable

### Returns

whether `str_val` can express a float value

### Return type

`bool`

Examples:

```
>>> from pyrcs.utils import is_str_float

>>> is_str_float('')
False

>>> is_str_float('a')
False

>>> is_str_float('1')
True

>>> is_str_float('1.1')
True
```

## validate\_initial

`pyrcs.utils.validate_initial(x, as_is=False)`

Get a valid initial letter as an input.

### Parameters

- `x (str)` – any string variable (which is supposed to be an initial letter)
- `as_is (bool)` – whether to return the validated letter as is the input

### Returns

validated initial letter

### Return type

`str`

Examples:

```
>>> from pyrcs.utils import validate_initial

>>> validate_initial('x')
'X'
```

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```
>>> validate_initial('x', as_is=True)
'x'

>>> validate_initial('xyz')
AssertionError: `x` must be a single letter.
```

## validate\_page\_name

`pyrcs.utils.validate_page_name(cls, page_no, valid_page_no)`

Get a valid page name.

### Parameters

- `cls (any)` – instance of a class
- `page_no (int / str)` – page number
- `valid_page_no (set / list / tuple)` – all valid page numbers

### Returns

validated page name of the given `cls`

### Return type

`str`

### See also:

- Examples for the methods `Tunnels.collect_codes_by_page()` and `Tunnels.collect_codes_by_page()`.

## collect\_in\_fetch\_verbose

`pyrcs.utils.collect_in_fetch_verbose(data_dir, verbose)`

Create a new parameter that indicates whether to print relevant information in console (used only if it is necessary to re-collect data when trying to fetch the data).

### Parameters

- `data_dir (str / None)` – name of a folder where the pickle file is to be saved
- `verbose (bool / int)` – whether to print relevant information in console

### Returns

whether to print relevant information in console when collecting data

### Return type

`bool | int`

### Example:

```
>>> from pyrcs.utils import collect_in_fetch_verbose
>>> collect_in_fetch_verbose(data_dir="data", verbose=True)
False
```

## fetch\_all\_verbose

`pyrcs.utils.fetch_all_verbose(data_dir, verbose)`

Create a new parameter that indicates whether to print relevant information in console (used only when trying to fetch all data of a cluster).

### Parameters

- `data_dir` (`str` / `None`) – name of a folder where the pickle file is to be saved
- `verbose` (`bool` / `int`) – whether to print relevant information in console

### Returns

whether to print relevant information in console when collecting data

### Return type

`bool` | `int`

### Example:

```
>>> from pyrcs.utils import fetch_all_verbose
>>> fetch_all_verbose(data_dir="data", verbose=True)
False
```

## Print messages

<code>confirm_msg(data_name)</code>	Create a confirmation message (for data collection).
<code>print_collect_msg(data_name, verbose, ...[ end])</code>	Print a message about the status of collecting data.
<code>print_conn_err([verbose])</code>	Print a message about unsuccessful attempts to establish a connection to the Internet.
<code>format_err_msg(e)</code>	Format an error message.
<code>print_inst_conn_err([update, verbose, e])</code>	Print a message about unsuccessful attempts to establish a connection to the Internet (for an instance of a class).
<code>print_void_msg(data_name, verbose)</code>	Print a message about the status of collecting data (only when the data collection process fails).

## confirm\_msg

```
pyrcs.utils.confirm_msg(data_name)
```

Create a confirmation message (for data collection).

### Parameters

- **data\_name** (*str*) – name of data, e.g. “Railway Codes”

### Returns

- a confirmation message

### Return type

- str

### Example:

```
>>> from pyrcs.utils import confirm_msg  
  
>>> msg = confirm_msg(data_name="Railway Codes")  
>>> print(msg)  
To collect data of Railway Codes  
?
```

## print\_collect\_msg

```
pyrcs.utils.print_collect_msg(data_name, verbose, confirmation_required, end=' ... ')
```

Print a message about the status of collecting data.

### Parameters

- **data\_name** (*str*) – name of the data being collected
- **verbose** (*bool* / *int*) – whether to print relevant information in console
- **confirmation\_required** (*bool*) – whether to confirm before proceeding
- **end** (*str*) – string appended after the last value, defaults to “ . . . ”.

### Example:

```
>>> from pyrcs.utils import print_collect_msg  
  
>>> print_collect_msg("Railway Codes", verbose=2, confirmation_required=False)  
Collecting the data of "Railway Codes" ...
```

## print\_conn\_err

`pyrcs.utils.print_conn_err(verbose=False)`

Print a message about unsuccessful attempts to establish a connection to the Internet.

### Parameters

`verbose (bool / int)` – whether to print relevant information in console, defaults to False

### Example:

```
>>> from pyrcs.utils import print_conn_err
>>> # If Internet connection is ready, nothing would be printed
>>> print_conn_err(verbose=True)
```

## format\_err\_msg

`pyrcs.utils.format_err_msg(e)`

Format an error message.

### Parameters

`e (Exception / None)` – Subclass of Exception.

### Returns

An error message.

### Return type

str

## print\_inst\_conn\_err

`pyrcs.utils.print_inst_conn_err(update=False, verbose=False, e=None)`

Print a message about unsuccessful attempts to establish a connection to the Internet (for an instance of a class).

### Parameters

- `update (bool)` – mostly complies with update in a parent function that uses this function, defaults to False
- `verbose (bool / int)` – whether to print relevant information in console, defaults to False
- `e (Exception / None)` – error message

### Example:

```
>>> from pyrcs.utils import print_inst_conn_err
```

```
>>> print_inst_conn_err(verbose=True)
```

The Internet connection is not available.

## print\_void\_msg

`pyrcs.utils.print_void_msg(data_name, verbose)`

Print a message about the status of collecting data (only when the data collection process fails).

### Parameters

- `data_name` (`str`) – name of the data being collected
- `verbose` (`bool` / `int`) – whether to print relevant information in console

### Example:

```
>>> from pyrcs.utils import print_void_msg
>>> print_void_msg(data_name="Railway Codes", verbose=True)
No data of "Railway Codes" has been freshly collected.
```

## Save and retrieve pre-packed data

<code>init_data_dir</code> (cls_instance, data_dir, category)	Specify an initial data directory for (an instance of) a class for a data cluster.
<code>make_file.pathname</code> (cls, data_name[, ext, ...])	Make a pathname for saving data as a file of a certain format.
<code>fetch_location_names_errata</code> ([k, regex, ...])	Create a dictionary for rectifying location names.
<code>save_data_to_file</code> (cls, data, data_name, ext)	Save the collected data as a file, depending on the given parameters.
<code>fetch_data_from_file</code> (cls, method, data_name, ...)	Fetch/load desired data from a backup file, depending on the given parameters.

## init\_data\_dir

`pyrcs.utils.init_data_dir(cls_instance, data_dir, category, cluster=None, **kwargs)`

Specify an initial data directory for (an instance of) a class for a data cluster.

### Parameters

- `cls_instance` (`object`) – An instance of a class for a certain data cluster.
- `data_dir` (`str` / `None`) – The name of a folder where the pickle file is to be saved.
- `category` (`str`) – The name of a data category, e.g. "line-data".
- `cluster` (`str` / `None`) – A replacement for `cls.KEY`.
- `kwargs` – [optional] parameters of the function `cd_data()`.

### Returns

Pathnames of a default data directory and a current data directory.

**Return type**

tuple[str, os.PathLike[str]]

**Example:**

```
>>> from pyrcs.utils import init_data_dir
>>> from pyrcs.line_data import Bridges
>>> import os

>>> bridges = Bridges()

>>> dat_dir, current_dat_dir = init_data_dir(bridges, data_dir="data", category="line-data")
>>> os.path.relpath(dat_dir)
'data'
>>> os.path.relpath(current_dat_dir)
'data'
```

**make\_file\_pathname**pyrcs.utils.make\_file\_pathname(*cls*, *data\_name*, *ext*='.pkl', *data\_dir*=None)

Make a pathname for saving data as a file of a certain format.

**Parameters**

- ***cls* (object)** – (An instance of) a class for a certain data cluster.
- ***data\_name* (str)** – The key to the dict-type data of a certain code cluster.
- ***ext* (str)** – A file extension, defaults to ".pkl".
- ***data\_dir* (str / None)** – The name of a folder where the data is saved, defaults to None.

**Returns**

A pathname for saving the data.

**Return type**

str

**Example:**

```
>>> from pyrcs.utils import make_file_pathname
>>> from pyrcs.line_data import Bridges
>>> import os

>>> bridges = Bridges()

>>> example_pathname = make_file_pathname(bridges, data_name="example-data", ext=".pkl")
>>> os.path.relpath(example_pathname)
'pyrcs\data\line-data\bridges\example-data.pkl'
```

## fetch\_location\_names\_errata

```
pyrcs.utils.fetch_location_names_errata(k=None, regex=False, as_dataframe=False,
                                         column_name=None)
```

Create a dictionary for rectifying location names.

### Parameters

- **k** (*str* / *int* / *float* / *bool* / *None*) – key of the created dictionary, defaults to *None*
- **regex** (*bool*) – whether to create a dictionary for replacement based on regular expressions, defaults to *False*
- **as\_dataframe** (*bool*) – whether to return the created dictionary as a *pandas.DataFrame*, defaults to *False*
- **column\_name** (*str* / *list* / *None*) – (if *as\_dataframe=True*) column name of the errata data as a dataframe

### Returns

dictionary for rectifying location names

### Return type

*dict* | *pandas.DataFrame*

### Examples:

```
>>> from pyrcs.utils import fetch_location_names_errata

>>> repl_dict = fetch_location_names_errata()

>>> type(repl_dict)
dict
>>> list(repl_dict.keys())[:5]
['"Tyndrum Upper" (Upper Tyndrum)',
 'AISH EMERGENCY CROSSOVER',
 'ATLBRJN',
 'Aberdeen Craiginches',
 'Aberdeen Craiginches T.C.]'

>>> repl_dict = fetch_location_names_errata(regex=True, as_dataframe=True)

>>> type(repl_dict)
pandas.core.frame.DataFrame
>>> repl_dict.head()
      new_value
re.compile(' \\\(DC lines\\)')    [DC lines]
re.compile(' And | \\+ ')          &
re.compile('-By-')                -by-
re.compile('-In-')                -in-
re.compile('-En-Le-')            -en-le-
```

## `save_data_to_file`

`pyrcs.utils.save_data_to_file(cls, data, data_name, ext, dump_dir=None, verbose=False, **kwargs)`

Save the collected data as a file, depending on the given parameters.

### Parameters

- `cls (object)` – (an instance of) a class for a certain data cluster
- `data (pandas.DataFrame / list / dict)` – data collected for a certain cluster
- `data_name (str)` – key to the dict-type data of a certain cluster
- `ext (bool / str)` – whether to save the data as a file, or file extension
- `dump_dir (str / None)` – pathname of a directory where the data file is to be dumped, defaults to None
- `verbose (bool / int)` – whether to print relevant information in console, defaults to False
- `kwargs` – [optional] parameters of the function `pyhelpers.store.save_data()`

## `fetch_data_from_file`

`pyrcs.utils.fetch_data_from_file(cls, method, data_name, ext, update, dump_dir, verbose, data_dir=None, save_data_kwargs=None, **kwargs)`

Fetch/load desired data from a backup file, depending on the given parameters.

### Parameters

- `cls (object)` – (an instance of) a class for a certain data cluster
- `method (str)` – name of a method of the `cls`, which is used for collecting the data
- `data_name (str)` – key to the dict-type data of a certain cluster
- `ext (bool / str)` – whether to save the data as a file, or file extension
- `update (bool)` – whether to do an update check (for the package data), defaults to False
- `dump_dir (str / os.PathLike [str] / None)` – pathname of a directory where the data file is to be dumped, defaults to None
- `verbose (bool / int)` – whether to print relevant information in console
- `data_dir (str / os.PathLike [str] / None)` – pathname of a directory where the data is fetched, defaults to None
- `save_data_kwargs (dict / None)` – equivalent of `kwargs` used by the function `pyrcs.utils.save_data_to_file()`, defaults to None
- `kwargs (Any)` – [optional] parameters of the `cls.``method``` being called

**Returns**

data fetched for the desired cluster

**Return type**

dict | None

# **Chapter 4**

## **License**

PyRCS is licensed under [GNU General Public License v3](#) or later (GPLv3+).

# **Chapter 5**

## **Use of data**

For the use of the data pre-packed with, and collected by, PyRCS, please refer to this link: <http://www.railwaycodes.org.uk/misc/contributing.shtm>

# Chapter 6

## Acknowledgement

PyRCS uses data available from the [Railway Codes](#) website. The time and effort that the website's editor and [all contributors](#) put in making the site and data available are fully credited.

## Chapter 7

# Contributors

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# Chapter 8

## Quick start

To showcase the functionality of PyRCS, this concise tutorial offers a quick guide with examples on how to work with three frequently-used code categories in the UK railway system:

- Location identifiers (CRS, NLC, TIPLOC and STANOX codes);
- Engineer's Line References (ELRs) and their associated mileage files;
- Railway station data (mileages, operators and grid coordinates).

The tutorial aims to demonstrate how PyRCS operates by providing practical illustrations and guidance.

### 8.1 Location identifiers

The location identifiers, including CRS, NLC, TIPLOC and STANOX codes, are categorised as [line data](#) on the [Railway Codes](#) website. To get these codes via PyRCS, we can use the class [\*LocationIdentifiers\*](#), which is contained in the sub-package [\*line\\_data\*](#). Let's firstly import the class and create an instance:

```
>>> from pyrcs.line_data import LocationIdentifiers # from pyrcs import LocationIdentifiers  
>>> lid = LocationIdentifiers()  
  
>>> lid.NAME  
'CRS, NLC, TIPLOC and STANOX codes'  
>>> lid.URL  
'http://www.railwaycodes.org.uk/crs/crs0.shtml'
```

---

**Note:** An alternative way of creating the instance is through the class [\*LineData\*](#) (see below).

---

```
>>> from pyrcs.collector import LineData # from pyrcs import LineData  
>>> ld = LineData()  
>>> lid_ = ld.LocationIdentifiers
```

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```
>>> lid.NAME == lid_.NAME
True
```

**Note:**

- The instance `lid` refers to all classes under the category of [line data](#).
- Here `lid_` is equivalent to `lid`.

### 8.1.1 Location identifiers given a specific initial letter

Now we can get the codes (in a `pandas.DataFrame` type) for all locations beginning with a given letter, by using the method `LocationIdentifiers.collect_codes_by_initial()`. For example, to get the codes for locations whose names begin with 'A' (or 'a'):

```
>>> loc_a_codes = lid.collect_codes_by_initial(initial='a') # The input is case-insensitive
>>> type(loc_a_codes)
dict
>>> list(loc_a_codes.keys())
['A', 'Additional notes', 'Last updated date']
```

As demonstrated above, `loc_a_codes` is a [dictionary](#) (in `dict` type), which has the following *keys*:

- 'A'
- 'Additional notes'
- 'Last updated date'

The corresponding *values* are:

- `loc_a_codes['A']` - CRS, NLC, TIPLOC and STANOX codes for the locations whose names begin with 'A' (referring to the table presented on the web page [Locations beginning A](#));
- `loc_a_codes['Additional notes']` - Additional information on the web page (if available);
- `loc_a_codes['Last updated date']` - The date when the web page [Locations beginning A](#) was last updated.

A snapshot of the data contained in `loc_a_codes` is demonstrated below:

```
>>> loc_a_codes_dat = loc_a_codes['A']
>>> type(loc_a_codes_dat)
pandas.core.frame.DataFrame
>>> loc_a_codes_dat.head()
   Location CRS ... STANME_Note STANOX_Note
0      1999 Reorganisations ...
1            A1 ...
2        A463 Traded In ...
3  A483 Road Scheme Supervisors Closed ...
4                Aachen ...
[5 rows x 12 columns]
```

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```
>>> print("Last updated date: {}".format(loc_a_codes['Last updated date']))
```

### 8.1.2 All available location identifiers

In addition to the 'A' group of locations, we can use the method `LocationIdentifiers.fetch_codes()` to get the codes of all locations (with the initial letters ranging from 'A' to 'Z') available in this category:

```
>>> loc_codes = lid.fetch_codes()
>>> type(loc_codes)
dict
>>> list(loc_codes.keys())
['LocationID', 'Other systems', 'Additional notes', 'Last updated date']
```

`loc_codes` is also in a dictionary, of which the *keys* are as follows:

- 'LocationID'
- 'Other systems'
- 'Additional notes'
- 'Latest update date'

The corresponding *values* are:

- `loc_codes['LocationID']` - CRS, NLC, TIPLOC and STANOX codes for all locations available on the relevant web pages ranging from 'A' to 'Z';
- `loc_codes['Other systems']` - Relevant codes of the `Other systems`;
- `loc_codes['Additional notes']` - Additional notes and information (if available);
- `loc_codes['Latest update date']` - The latest 'Last updated date' among all initial-specific codes.

A snapshot of the data contained in `loc_codes` is demonstrated below:

```
>>> lid.KEY
'LocationID'

>>> loc_codes_dat = loc_codes[lid.KEY] # loc_codes['LocationID']
>>> type(loc_codes_dat)
pandas.core.frame.DataFrame
>>> loc_codes_dat.head()
   Location CRS  ... STANME_Note STANOX_Note
0    1999 Reorganisations  ...
1          A1  ...
2    A463 Traded In  ...
3  A483 Road Scheme Supervisors Closed  ...
4          Aachen  ...
[5 rows x 12 columns]

>>> # Relevant codes of the 'Other systems'
```

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```
>>> lid.KEY_TO_OTHER_SYSTEMS
'Other systems'
>>> os_codes_dat = loc_codes[lid.KEY_TO_OTHER_SYSTEMS]
>>> type(os_codes_dat)
collections.defaultdict
>>> list(os_codes_dat.keys())
['Córas Iompair Éireann (Republic of Ireland)',
 'Crossrail',
 'Croydon Tramlink',
 'Docklands Light Railway',
 'Manchester Metrolink',
 'Translink (Northern Ireland)',
 'Tyne & Wear Metro']

>>> # Take 'Crossrail' as an example
>>> crossrail_codes_dat = os_codes_dat['Crossrail']
>>> type(crossrail_codes_dat)
pandas.core.frame.DataFrame
>>> crossrail_codes_dat.head()
   Location ... New operating code
0    Abbey Wood ... ABW
1 Abbey Wood Bolthole Berth/Crossrail Sidings ...
2          Abbey Wood Sidings ...
3           Bond Street ...
4            Canary Wharf ... BDS
                           ...
[5 rows x 5 columns]
```

## 8.2 ELRs and mileages

Engineer's Line References (ELRs) are also frequently seen among various data in Britain's railway system. To get the codes of ELRs (and their associated mileage files), we can use the class `ELRMileages`:

```
>>> from pyrcs.line_data import ELRMileages # from pyrcs import ELRMileages

>>> em = ELRMileages()

>>> em.NAME
"Engineer's Line References (ELRs)"
>>> em.URL
'http://www.railwaycodes.org.uk/elrs/elr0.shtml'
```

### 8.2.1 Engineer's Line References (ELRs)

Similar to the location identifiers, the codes of ELRs on the [Railway Codes](#) website are also alphabetically arranged given their initial letters. We can use the method `ELRMileages.collect_elr_by_initial()` to get the data of ELRs which begin with a specific initial letter. Let's take 'A' as an example:

```
>>> elrs_a_codes = em.collect_elr_by_initial(initial='A') # Data of ELRs beginning with 'A'
>>> type(elrs_a_codes)
dict
>>> list(elrs_a_codes.keys())
['A', 'Last updated date']
```

`elrs_a_codes` is a [dictionary](#) and has the following *keys*:

- 'A'
- 'Last updated date'

The corresponding *values* are:

- `elrs_a_codes['A']` - Data of ELRs that begin with 'A' (referring to the table presented on the web page [ELRs beginning with A](#));
- `elrs_a_codes['Last updated date']` - The date when the web page [ELRs beginning with A](#) was last updated.

A snapshot of the data contained in `elrs_a_codes` is demonstrated below:

```
>>> elrs_a_codes_dat = elrs_a_codes['A']
>>> type(elrs_a_codes_dat)
pandas.core.frame.DataFrame
>>> elrs_a_codes_dat.head()
   ELR    ...      Notes
0  AAL    ...    Now NAJ3
1  AAM    ...  Formerly AML
2  AAV    ...
3  ABB    ...    Now AHB
4  ABB    ...
[5 rows x 5 columns]

>>> print("Last updated date: {}".format(elrs_a_codes['Last updated date']))
```

To get the data of all ELRs (with the initial letters ranging from 'A' to 'Z') available in this category, we can use the method [`ELRMileages.fetch\_elr\(\)`](#):

```
>>> elrs_codes = em.fetch_elr()
>>> type(elrs_codes)
dict
>>> list(elrs_codes.keys())
['ELRs and mileages', 'Last updated date']
```

In like manner, `elrs_codes` is also a [dictionary](#), of which the *keys* are:

- 'ELRs and mileages'
- 'Latest update date'

The corresponding *values* are:

- `elrs_codes['ELRs and mileages']` - Codes of all available ELRs (with the initial letters ranging from 'A' to 'Z');
- `elrs_codes['Latest update date']` - The latest 'Last updated date' among all the initial-specific codes.

A snapshot of the data contained in `elrs_codes` is demonstrated below:

```
>>> elrs_codes_dat = elrs_codes[em.KEY]
>>> type(elrs_codes_dat)
pandas.core.frame.DataFrame
>>> elrs_codes_dat.head()
   ELR    ...      Notes
0  AAL    ...  Now NAJ3
1  AAM    ...  Formerly AML
2  AAV    ...
3  ABB    ...  Now AHB
4  ABB    ...
[5 rows x 5 columns]
```

### 8.2.2 Mileage file of a given ELR

Further to the codes of ELRs, each ELR is associated with a mileage file, which specifies the major mileages for the ELR. To get the mileage data, we can use the method `ELRMileages.fetch_mileage_file()`.

For example, let's try to get the mileage file for 'AAM':

```
>>> amm_mileage_file = em.fetch_mileage_file(elr='AAM')
>>> type(amm_mileage_file)
dict
>>> list(amm_mileage_file.keys())
['ELR', 'Line', 'Sub-Line', 'Mileage', 'Notes']
```

As demonstrated above, `amm_mileage_file` is a `dictionary` and has the following *keys*:

- 'ELR'
- 'Line'
- 'Sub-Line'
- 'Mileage'
- 'Notes'

The corresponding *values* are:

- `amm_mileage_file['ELR']` - The given ELR, which, in this example, is 'AAM';
- `amm_mileage_file['Line']` - Name of the line associated with the given ELR;
- `amm_mileage_file['Sub-Line']` - Name of the sub line (if any) associated with the given ELR;
- `amm_mileage_file['Mileage']` - Major mileages for the given ELR;
- `amm_mileage_file['Notes']` - Additional information/notes (if any).

A snapshot of the data contained in `amm_mileage_file` is demonstrated below:

```
>>> amm_mileage_file['Line']
'Ashchurch and Malvern Line'

>>> amm_mileage_file['Mileage'].head()
   Mileage Mileage_Note ... Link_2_ELR Link_2_Mile_Chain
0  0.0000      ...
1  0.0154      ...
2  0.0396      ...
3  1.1012      ...
4  1.1408      ...
[5 rows x 11 columns]
```

## 8.3 Railway station data

The railway station data (including the station name, ELR, mileage, status, owner, operator, degrees of longitude and latitude, and grid reference) is categorised as one of the [other assets](#) on the [Railway Codes](#) website. To deal with data in this category, PyRCS offers a sub-package [other\\_assets](#), from which we can use the contained class [Stations](#) to get the [railway station data](#):

Now let's import the class and create an instance of it:

```
>>> from pyrcs.other_assets import Stations # from pyrcs import Stations

>>> stn = Stations()

>>> stn.NAME
'Railway station data'
>>> stn.URL
'http://www.railwaycodes.org.uk/stations/station0.shtml'
```

---

### Note:

- Alternatively, the instance `stn` can also be defined through the class [OtherAssets](#), which contains all classes under the category of [other assets](#) (see below).

```
>>> from pyrcs.collector import OtherAssets # from pyrcs import OtherAssets

>>> oa = OtherAssets()
>>> stn_ = oa.Stations

>>> stn_.NAME == stn_.NAME
True
```

---

### Note:

- The instances `stn_` and `stn` are of the same class [Stations](#).

### 8.3.1 Railway station locations given a specific initial letter

To get the location data of railway stations whose names start with a given letter, say 'A', we can use the method `Stations.collect_locations_by_initial()`:

```
>>> stn_loc_a_codes = stn.collect_locations_by_initial(initial='a')
>>> type(stn_loc_a_codes)
dict
>>> list(stn_loc_a_codes.keys())
['A', 'Last updated date']
```

As demonstrated above, the dictionary `stn_loc_a_codes` include the following *keys*:

- 'A'
- 'Last updated date'

The corresponding *values* are:

- `stn_loc_a_codes['A']` - Mileages, operators and grid coordinates of railway stations whose names begin with 'A' (referring to the table presented on the web page of [Stations beginning with A](#));
- `stn_loc_a_codes['Last updated date']` - The date when the web page [Stations beginning with A](#) was last updated.

A snapshot of the data contained in `stn_loc_a` is demonstrated below:

```
>>> stn_loc_a_codes_dat = stn_loc_a_codes['A']
>>> type(stn_loc_a_codes_dat)
pandas.core.frame.DataFrame
>>> stn_loc_a_codes_dat.head()
   Station    ...           Former Operator
0  Abbey Wood  ...  London & South Eastern Railway from 1 April 20...
1  Abbey Wood  ...  London & South Eastern Railway from 1 April 20...
2      Aber    ...  Keolis Amey Operations/Gweithrediadau Keolis A...
3  Abercynon  ...  Keolis Amey Operations/Gweithrediadau Keolis A...
4  Abercynon  ...  Keolis Amey Operations/Gweithrediadau Keolis A...
[5 rows x 14 columns]

>>> stn_loc_a_codes_dat.columns.to_list()
['Station',
 'Station Note',
 'ELR',
 'Mileage',
 'Status',
 'Degrees Longitude',
 'Degrees Latitude',
 'Grid Reference',
 'CRS',
 'CRS Note',
 'Owner',
 'Former Owner',
 'Operator',
 'Former Operator']
>>> stn_loc_a_codes_dat[['Station', 'ELR', 'Mileage']].head()
   Station  ELR  Mileage
```

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```

0  Abbey Wood  NKL  11m 43ch
1  Abbey Wood  XRS  24.458km
2      Aber   CAR   8m 69ch
3  Abercynon  CAM  16m 28ch
4  Abercynon  ABD  16m 28ch

>>> print("Last updated date: {}".format(stn_loc_a_codes['Last updated date']))

```

### 8.3.2 All available railway station locations

To get the location data of all railway stations (with the initial letters ranging from 'A' to 'Z') available in this category, we can use the method `Stations.fetch_locations()`:

```

>>> stn_loc_codes = stn.fetch_locations()
>>> type(stn_loc_codes)
dict
>>> list(stn_loc_codes.keys())
['Mileages, operators and grid coordinates', 'Last updated date']

```

The dictionary `stn_loc_codes` include the following *keys*:

- 'Mileages, operators and grid coordinates'
- 'Latest update date'

The corresponding *values* are:

- `stn_loc_codes['Mileages, operators and grid coordinates']` - Location data of all railway stations available on the relevant web pages ranging from 'A' to 'Z';
- `stn_loc_codes['Latest update date']` - The latest 'Last updated date' among all initial-specific codes.

A snapshot of the data contained in `stn_loc_codes` is demonstrated below:

```

>>> stn.KEY_TO_STN
'Mileages, operators and grid coordinates'

>>> stn_loc_codes_dat = stn_loc_codes[stn.KEY_TO_STN]
>>> type(stn_loc_codes_dat)
pandas.core.frame.DataFrame
>>> stn_loc_codes_dat.head()
   Station ...           Former Operator
0  Abbey Wood ...  London & South Eastern Railway from 1 April 20...
1  Abbey Wood ...  London & South Eastern Railway from 1 April 20...
2      Aber   ...  Keolis Amey Operations/Gweithrediadau Keolis A...
3  Abercynon   ...  Keolis Amey Operations/Gweithrediadau Keolis A...
4  Abercynon   ...  Keolis Amey Operations/Gweithrediadau Keolis A...
[5 rows x 14 columns]

>>> stn_loc_codes_dat.columns.to_list()
['Station',
 'Station Note',
 'ELR',

```

(continues on next page)

(continued from previous page)

```
'Mileage',
>Status',
'Degrees Longitude',
'Degrees Latitude',
'Grid Reference',
'CRS',
'CRS Note',
'Owner',
'Former Owner',
'Operator',
'Former Operator']
>>> stn_loc_codes_dat[['Station', 'ELR', 'Mileage']].head()
   Station    ELR    Mileage
0  Abbey Wood    NKL  11m 43ch
1  Abbey Wood    XRS 24.458km
2      Aber     CAR   8m 69ch
3  Abercynon    CAM  16m 28ch
4  Abercynon    ABD  16m 28ch
>>> print("Last updated date: {}".format(stn_loc_codes['Last updated date']))
```

This is the end of the [Quick start](#).

Any issues regarding the use of the package are all welcome and should be logged/reported onto the [Issue Tracker](#).

For more details and examples, check [Sub-packages and modules](#).

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