06_dropping_columns

March 21, 2022

1 Dropping Columns

Abid Ali

https://github.com/abid-2362

Pandas drop()

```
[ ]: import pandas as pd

     data = pd.read_csv('./data/artwork_sample.csv')
```

```
[ ]: data.head()
```

```
[ ]:      id accession_number         artist artistRole  artistId  \
     0  1035            A00001    Blake, Robert     artist        38
     1  1036            A00002    Blake, Robert     artist        38
     2  1037            A00003    Blake, Robert     artist        38
     3  1038            A00004    Blake, Robert     artist        38
     4  1039            A00005  Blake, William     artist        39

                                                    title              dateText  \
     0  A Figure Bowing before a Seated Old Man with h…        date not known
     1  Two Drawings of Frightened Figures, Probably f…        date not known
     2  The Preaching of Warning. Verso: An Old Man En…               ?c.1785
     3     Six Drawings of Figures with Outstretched Arms        date not known
     4  The Circle of the Lustful: Francesca da Rimini…  1826-7, reprinted 1892

                                              medium  \
     0  Watercolour, ink, chalk and graphite on paper…
     1                             Graphite on paper
     2       Graphite on paper. Verso: graphite on paper
     3                             Graphite on paper
     4                     Line engraving on paper

                                             creditLine    year  acquisitionYear  \
     0         Presented by Mrs John Richmond 1922     NaN             1922
     1         Presented by Mrs John Richmond 1922     NaN             1922
     2         Presented by Mrs John Richmond 1922  1785.0             1922
     3         Presented by Mrs John Richmond 1922     NaN             1922
```

```
4  Purchased with the assistance of a special gra…   1826.0               1919

              dimensions  width  height  depth units  inscription  \
0  support: 394 x 419 mm  394.0   419.0   NaN    mm          NaN
1  support: 311 x 213 mm  311.0   213.0   NaN    mm          NaN
2  support: 343 x 467 mm  343.0   467.0   NaN    mm          NaN
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4    image: 243 x 335 mm  243.0   335.0   NaN    mm          NaN


   thumbnailCopyright                                       thumbnailUrl  \
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2                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
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                                        url
0  http://www.tate.org.uk/art/artworks/blake-a-fi…
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2  http://www.tate.org.uk/art/artworks/blake-the-…
3  http://www.tate.org.uk/art/artworks/blake-six-…
4  http://www.tate.org.uk/art/artworks/blake-the-…
```

```python
# dropping rows – inplace is False by default
data.drop(0, inplace=False)
```

```
     id accession_number          artist artistRole  artistId  \
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8              The Serpent Attacking Buoso Donati  1826-7, reprinted 1892
9              The Pit of Disease: The Falsifiers  1826-7, reprinted 1892
```

```
                                          medium  \
1                             Graphite on paper
2   Graphite on paper. Verso: graphite on paper
3                             Graphite on paper
4                       Line engraving on paper
5                       Line engraving on paper
6                       Line engraving on paper
7                       Line engraving on paper
8                       Line engraving on paper
9                       Line engraving on paper


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2                Presented by Mrs John Richmond 1922  1785.0             1922
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4                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
5                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
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9                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…


                                          url
1  http://www.tate.org.uk/art/artworks/blake-two-…
```

```
2    http://www.tate.org.uk/art/artworks/blake-the-…
3    http://www.tate.org.uk/art/artworks/blake-six-…
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9    http://www.tate.org.uk/art/artworks/blake-the-…
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[ ]: `data`

[ ]:
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                                             medium  \
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1                                 Graphite on paper
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3                                 Graphite on paper
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5                          Line engraving on paper
6                          Line engraving on paper
7                          Line engraving on paper
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7  http://www.tate.org.uk/art/artworks/blake-the-…
8  http://www.tate.org.uk/art/artworks/blake-the-…
9  http://www.tate.org.uk/art/artworks/blake-the-…
```

```
[ ]: # KeyError: "['id'] not found in axis"
     data.drop('id')
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
Input In [7], in <cell line: 1>()
----> 1 data.drop('id')

File C:\Python310\lib\site-packages\pandas\util\_decorators.py:311, in
↪deprecate_nonkeyword_arguments.<locals>.decorate.<locals>.wrapper(*args,
↪**kwargs)
    305 if len(args) > num_allow_args:
    306     warnings.warn(
    307         msg.format(arguments=arguments),
    308         FutureWarning,
    309         stacklevel=stacklevel,
    310     )
--> 311 return func(*args, **kwargs)

File C:\Python310\lib\site-packages\pandas\core\frame.py:4948, in DataFrame.
↪drop(self, labels, axis, index, columns, level, inplace, errors)
   4800 @deprecate_nonkeyword_arguments(version=None, allowed_args=["self",
↪"labels"])
   4801 def drop(
   4802     self,
   (…)
   4809     errors: str = "raise",
   4810 ):
   4811     """
   4812     Drop specified labels from rows or columns.
   4813
   (…)
   4946             weight  1.0     0.8
   4947     """
-> 4948     return super().drop(
   4949         labels=labels,
   4950         axis=axis,
   4951         index=index,
   4952         columns=columns,
   4953         level=level,
   4954         inplace=inplace,
   4955         errors=errors,
   4956     )

File C:\Python310\lib\site-packages\pandas\core\generic.py:4279, in NDFrame.
↪drop(self, labels, axis, index, columns, level, inplace, errors)
   4277 for axis, labels in axes.items():
```

```
   4278     if labels is not None:
-> 4279         obj = obj._drop_axis(labels, axis, level=level, errors=errors)
   4281 if inplace:
   4282     self._update_inplace(obj)

File C:\Python310\lib\site-packages\pandas\core\generic.py:4323, in NDFrame.
  ↪_drop_axis(self, labels, axis, level, errors, consolidate, only_slice)
   4321         new_axis = axis.drop(labels, level=level, errors=errors)
   4322     else:
-> 4323         new_axis = axis.drop(labels, errors=errors)
   4324     indexer = axis.get_indexer(new_axis)
   4326 # Case for non-unique axis
   4327 else:

File C:\Python310\lib\site-packages\pandas\core\indexes\base.py:6644, in Index.
  ↪drop(self, labels, errors)
   6642 if mask.any():
   6643     if errors != "ignore":
-> 6644         raise KeyError(f"{list(labels[mask])} not found in axis")
   6645     indexer = indexer[~mask]
   6646 return self.delete(indexer)

KeyError: "['id'] not found in axis"
```

```
[ ]: data.drop('id', axis=1)
```

```
[ ]:   accession_number           artist artistRole  artistId  \
      0           A00001    Blake, Robert      artist        38
      1           A00002    Blake, Robert      artist        38
      2           A00003    Blake, Robert      artist        38
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      4           A00005  Blake, William      artist        39
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```

```
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                                            medium  \
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1                                 Graphite on paper
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4                           Line engraving on paper
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6                           Line engraving on paper
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```

```python
# columns can be dropped with columns param instead of axis as well
data.drop(columns=['id'])
```

```
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3  http://www.tate.org.uk/art/artworks/blake-six-…
4  http://www.tate.org.uk/art/artworks/blake-the-…
5  http://www.tate.org.uk/art/artworks/blake-ciam…
6  http://www.tate.org.uk/art/artworks/blake-the-…
7  http://www.tate.org.uk/art/artworks/blake-the-…
8  http://www.tate.org.uk/art/artworks/blake-the-…
9  http://www.tate.org.uk/art/artworks/blake-the-…
```

```python
data.drop(columns=['id', 'height', 'width', 'depth'])
```

```
  accession_number         artist artistRole  artistId  \
0          A00001  Blake, Robert     artist        38
1          A00002  Blake, Robert     artist        38
2          A00003  Blake, Robert     artist        38
3          A00004  Blake, Robert     artist        38
4          A00005 Blake, William     artist        39
5          A00006 Blake, William     artist        39
6          A00007 Blake, William     artist        39
7          A00008 Blake, William     artist        39
8          A00009 Blake, William     artist        39
9          A00010 Blake, William     artist        39

                                               title               dateText  \
0  A Figure Bowing before a Seated Old Man with h…          date not known
1  Two Drawings of Frightened Figures, Probably f…          date not known
2  The Preaching of Warning. Verso: An Old Man En…                  ?c.1785
3     Six Drawings of Figures with Outstretched Arms          date not known
4  The Circle of the Lustful: Francesca da Rimini…  1826-7, reprinted 1892
5     Ciampolo the Barrator Tormented by the Devils  1826-7, reprinted 1892
6                       The Baffled Devils Fighting  1826-7, reprinted 1892
7  The Six-Footed Serpent Attacking Agnolo Brunel…  1826-7, reprinted 1892
8           The Serpent Attacking Buoso Donati  1826-7, reprinted 1892
9           The Pit of Disease: The Falsifiers  1826-7, reprinted 1892

                                               medium  \
0  Watercolour, ink, chalk and graphite on paper…
1                               Graphite on paper
2        Graphite on paper. Verso: graphite on paper
3                               Graphite on paper
4                          Line engraving on paper
5                          Line engraving on paper
6                          Line engraving on paper
7                          Line engraving on paper
8                          Line engraving on paper
9                          Line engraving on paper
```

```
                                                    creditLine     year  acquisitionYear  \
0              Presented by Mrs John Richmond 1922      NaN             1922
1              Presented by Mrs John Richmond 1922      NaN             1922
2              Presented by Mrs John Richmond 1922   1785.0             1922
3              Presented by Mrs John Richmond 1922      NaN             1922
4  Purchased with the assistance of a special gra…   1826.0            1919
5  Purchased with the assistance of a special gra…   1826.0            1919
6  Purchased with the assistance of a special gra…   1826.0            1919
7  Purchased with the assistance of a special gra…   1826.0            1919
8  Purchased with the assistance of a special gra…   1826.0            1919
9  Purchased with the assistance of a special gra…   1826.0            1919

             dimensions units  inscription  thumbnailCopyright  \
0  support: 394 x 419 mm    mm          NaN                 NaN
1  support: 311 x 213 mm    mm          NaN                 NaN
2  support: 343 x 467 mm    mm          NaN                 NaN
3  support: 318 x 394 mm    mm          NaN                 NaN
4    image: 243 x 335 mm    mm          NaN                 NaN
5    image: 240 x 338 mm    mm          NaN                 NaN
6    image: 242 x 334 mm    mm          NaN                 NaN
7    image: 246 x 340 mm    mm          NaN                 NaN
8    image: 241 x 335 mm    mm          NaN                 NaN
9    image: 243 x 340 mm    mm          NaN                 NaN

                                      thumbnailUrl  \
0  http://www.tate.org.uk/art/images/work/A/A00/A…
1  http://www.tate.org.uk/art/images/work/A/A00/A…
2  http://www.tate.org.uk/art/images/work/A/A00/A…
3  http://www.tate.org.uk/art/images/work/A/A00/A…
4  http://www.tate.org.uk/art/images/work/A/A00/A…
5  http://www.tate.org.uk/art/images/work/A/A00/A…
6  http://www.tate.org.uk/art/images/work/A/A00/A…
7  http://www.tate.org.uk/art/images/work/A/A00/A…
8  http://www.tate.org.uk/art/images/work/A/A00/A…
9  http://www.tate.org.uk/art/images/work/A/A00/A…

                                               url
0  http://www.tate.org.uk/art/artworks/blake-a-fi…
1  http://www.tate.org.uk/art/artworks/blake-two-…
2  http://www.tate.org.uk/art/artworks/blake-the-…
3  http://www.tate.org.uk/art/artworks/blake-six-…
4  http://www.tate.org.uk/art/artworks/blake-the-…
5  http://www.tate.org.uk/art/artworks/blake-ciam…
6  http://www.tate.org.uk/art/artworks/blake-the-…
7  http://www.tate.org.uk/art/artworks/blake-the-…
8  http://www.tate.org.uk/art/artworks/blake-the-…
9  http://www.tate.org.uk/art/artworks/blake-the-…
```

```python
# removing rows with labels parameter
data.drop(labels=[0, 1, 2])
```

```
        id accession_number         artist artistRole  artistId  \
3     1038          A00004   Blake, Robert     artist        38
4     1039          A00005  Blake, William     artist        39
5     1040          A00006  Blake, William     artist        39
6     1041          A00007  Blake, William     artist        39
7     1042          A00008  Blake, William     artist        39
8     1043          A00009  Blake, William     artist        39
9     1044          A00010  Blake, William     artist        39

                                                title              dateText  \
3          Six Drawings of Figures with Outstretched Arms        date not known
4  The Circle of the Lustful: Francesca da Rimini…  1826-7, reprinted 1892
5       Ciampolo the Barrator Tormented by the Devils  1826-7, reprinted 1892
6                       The Baffled Devils Fighting  1826-7, reprinted 1892
7  The Six-Footed Serpent Attacking Agnolo Brunel…  1826-7, reprinted 1892
8               The Serpent Attacking Buoso Donati  1826-7, reprinted 1892
9               The Pit of Disease: The Falsifiers  1826-7, reprinted 1892

                    medium                                    creditLine  \
3          Graphite on paper              Presented by Mrs John Richmond 1922
4  Line engraving on paper  Purchased with the assistance of a special gra…
5  Line engraving on paper  Purchased with the assistance of a special gra…
6  Line engraving on paper  Purchased with the assistance of a special gra…
7  Line engraving on paper  Purchased with the assistance of a special gra…
8  Line engraving on paper  Purchased with the assistance of a special gra…
9  Line engraving on paper  Purchased with the assistance of a special gra…

     year  acquisitionYear            dimensions  width  height  depth units  \
3     NaN             1922  support: 318 x 394 mm  318.0   394.0    NaN    mm
4  1826.0             1919    image: 243 x 335 mm  243.0   335.0    NaN    mm
5  1826.0             1919    image: 240 x 338 mm  240.0   338.0    NaN    mm
6  1826.0             1919    image: 242 x 334 mm  242.0   334.0    NaN    mm
7  1826.0             1919    image: 246 x 340 mm  246.0   340.0    NaN    mm
8  1826.0             1919    image: 241 x 335 mm  241.0   335.0    NaN    mm
9  1826.0             1919    image: 243 x 340 mm  243.0   340.0    NaN    mm

   inscription  thumbnailCopyright  \
3          NaN                 NaN
4          NaN                 NaN
5          NaN                 NaN
6          NaN                 NaN
7          NaN                 NaN
8          NaN                 NaN
9          NaN                 NaN
```

```
                                              thumbnailUrl  \
3  http://www.tate.org.uk/art/images/work/A/A00/A…
4  http://www.tate.org.uk/art/images/work/A/A00/A…
5  http://www.tate.org.uk/art/images/work/A/A00/A…
6  http://www.tate.org.uk/art/images/work/A/A00/A…
7  http://www.tate.org.uk/art/images/work/A/A00/A…
8  http://www.tate.org.uk/art/images/work/A/A00/A…
9  http://www.tate.org.uk/art/images/work/A/A00/A…


                                              url
3  http://www.tate.org.uk/art/artworks/blake-six-…
4  http://www.tate.org.uk/art/artworks/blake-the-…
5  http://www.tate.org.uk/art/artworks/blake-ciam…
6  http://www.tate.org.uk/art/artworks/blake-the-…
7  http://www.tate.org.uk/art/artworks/blake-the-…
8  http://www.tate.org.uk/art/artworks/blake-the-…
9  http://www.tate.org.uk/art/artworks/blake-the-…
```

[ ]: `help(data.drop)`

```
Help on method drop in module pandas.core.frame:

drop(labels=None, axis: 'Axis' = 0, index=None, columns=None, level: 'Level |
None' = None, inplace: 'bool' = False, errors: 'str' = 'raise') method of
pandas.core.frame.DataFrame instance
    Drop specified labels from rows or columns.

    Remove rows or columns by specifying label names and corresponding
    axis, or by specifying directly index or column names. When using a
    multi-index, labels on different levels can be removed by specifying
    the level. See the `user guide <advanced.shown_levels>`
    for more information about the now unused levels.

    Parameters
    ----------
    labels : single label or list-like
        Index or column labels to drop. A tuple will be used as a single
        label and not treated as a list-like.
    axis : {0 or 'index', 1 or 'columns'}, default 0
        Whether to drop labels from the index (0 or 'index') or
        columns (1 or 'columns').
    index : single label or list-like
        Alternative to specifying axis (``labels, axis=0``
        is equivalent to ``index=labels``).
    columns : single label or list-like
        Alternative to specifying axis (``labels, axis=1``
        is equivalent to ``columns=labels``).
```

```
level : int or level name, optional
    For MultiIndex, level from which the labels will be removed.
inplace : bool, default False
    If False, return a copy. Otherwise, do operation
    inplace and return None.
errors : {'ignore', 'raise'}, default 'raise'
    If 'ignore', suppress error and only existing labels are
    dropped.

Returns
-------
DataFrame or None
    DataFrame without the removed index or column labels or
    None if ``inplace=True``.

Raises
------
KeyError
    If any of the labels is not found in the selected axis.

See Also
--------
DataFrame.loc : Label-location based indexer for selection by label.
DataFrame.dropna : Return DataFrame with labels on given axis omitted
    where (all or any) data are missing.
DataFrame.drop_duplicates : Return DataFrame with duplicate rows
    removed, optionally only considering certain columns.
Series.drop : Return Series with specified index labels removed.

Examples
--------
>>> df = pd.DataFrame(np.arange(12).reshape(3, 4),
...                   columns=['A', 'B', 'C', 'D'])
>>> df
   A  B   C   D
0  0  1   2   3
1  4  5   6   7
2  8  9  10  11

Drop columns

>>> df.drop(['B', 'C'], axis=1)
   A   D
0  0   3
1  4   7
2  8  11

>>> df.drop(columns=['B', 'C'])
```

15

```
    A   D
0   0   3
1   4   7
2   8   11
```

Drop a row by index

```
>>> df.drop([0, 1])
   A  B   C   D
2  8  9  10  11
```

Drop columns and/or rows of MultiIndex DataFrame

```
>>> midx = pd.MultiIndex(levels=[['lama', 'cow', 'falcon'],
...                              ['speed', 'weight', 'length']],
...                      codes=[[0, 0, 0, 1, 1, 1, 2, 2, 2],
...                             [0, 1, 2, 0, 1, 2, 0, 1, 2]])
>>> df = pd.DataFrame(index=midx, columns=['big', 'small'],
...                   data=[[45, 30], [200, 100], [1.5, 1], [30, 20],
...                         [250, 150], [1.5, 0.8], [320, 250],
...                         [1, 0.8], [0.3, 0.2]])
>>> df
                big     small
lama    speed   45.0    30.0
        weight  200.0   100.0
        length  1.5     1.0
cow     speed   30.0    20.0
        weight  250.0   150.0
        length  1.5     0.8
falcon  speed   320.0   250.0
        weight  1.0     0.8
        length  0.3     0.2
```

Drop a specific index combination from the MultiIndex
DataFrame, i.e., drop the combination ``'falcon'`` and
``'weight'``, which deletes only the corresponding row

```
>>> df.drop(index=('falcon', 'weight'))
                big     small
lama    speed   45.0    30.0
        weight  200.0   100.0
        length  1.5     1.0
cow     speed   30.0    20.0
        weight  250.0   150.0
        length  1.5     0.8
falcon  speed   320.0   250.0
        length  0.3     0.2
```

```
>>> df.drop(index='cow', columns='small')
                big
lama    speed   45.0
        weight  200.0
        length  1.5
falcon  speed   320.0
        weight  1.0
        length  0.3

>>> df.drop(index='length', level=1)
                big     small
lama    speed   45.0    30.0
        weight  200.0   100.0
cow     speed   30.0    20.0
        weight  250.0   150.0
falcon  speed   320.0   250.0
        weight  1.0     0.8
```

```python
import numpy as np
data.drop(labels=np.arange(2,6))
```

```
      id accession_number          artist artistRole  artistId  \
0   1035           A00001   Blake, Robert     artist        38
1   1036           A00002   Blake, Robert     artist        38
6   1041           A00007  Blake, William     artist        39
7   1042           A00008  Blake, William     artist        39
8   1043           A00009  Blake, William     artist        39
9   1044           A00010  Blake, William     artist        39

                                              title             dateText  \
0  A Figure Bowing before a Seated Old Man with h…        date not known
1  Two Drawings of Frightened Figures, Probably f…        date not known
6                      The Baffled Devils Fighting  1826-7, reprinted 1892
7  The Six-Footed Serpent Attacking Agnolo Brunel…  1826-7, reprinted 1892
8                 The Serpent Attacking Buoso Donati  1826-7, reprinted 1892
9                 The Pit of Disease: The Falsifiers  1826-7, reprinted 1892

                                          medium  \
0  Watercolour, ink, chalk and graphite on paper…
1                               Graphite on paper
6                         Line engraving on paper
7                         Line engraving on paper
8                         Line engraving on paper
9                         Line engraving on paper

                                      creditLine    year  acquisitionYear  \
```

```
0              Presented by Mrs John Richmond 1922     NaN                1922
1              Presented by Mrs John Richmond 1922     NaN                1922
6  Purchased with the assistance of a special gra…  1826.0                1919
7  Purchased with the assistance of a special gra…  1826.0                1919
8  Purchased with the assistance of a special gra…  1826.0                1919
9  Purchased with the assistance of a special gra…  1826.0                1919


             dimensions  width  height  depth units  inscription  \
0  support: 394 x 419 mm  394.0   419.0    NaN    mm          NaN
1  support: 311 x 213 mm  311.0   213.0    NaN    mm          NaN
6    image: 242 x 334 mm  242.0   334.0    NaN    mm          NaN
7    image: 246 x 340 mm  246.0   340.0    NaN    mm          NaN
8    image: 241 x 335 mm  241.0   335.0    NaN    mm          NaN
9    image: 243 x 340 mm  243.0   340.0    NaN    mm          NaN


   thumbnailCopyright                                       thumbnailUrl  \
0                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
1                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
6                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
7                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
8                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
9                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…


                                       url
0  http://www.tate.org.uk/art/artworks/blake-a-fi…
1  http://www.tate.org.uk/art/artworks/blake-two-…
6  http://www.tate.org.uk/art/artworks/blake-the-…
7  http://www.tate.org.uk/art/artworks/blake-the-…
8  http://www.tate.org.uk/art/artworks/blake-the-…
9  http://www.tate.org.uk/art/artworks/blake-the-…
```

```python
data = pd.read_csv('./data/artwork_sample.csv')
```

```python
# data.drop(labels=[x>5 for x in data.index])
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
Input In [27], in <cell line: 1>()
----> 1 data.drop(labels=[x>5 for x in data.index])

File C:\Python310\lib\site-packages\pandas\util\_decorators.py:311, in
  deprecate_nonkeyword_arguments.<locals>.decorate.<locals>.wrapper(*args,
  **kwargs)
    305 if len(args) > num_allow_args:
    306     warnings.warn(
    307         msg.format(arguments=arguments),
    308         FutureWarning,
```

```
    309          stacklevel=stacklevel,
    310      )
--> 311 return func(*args, **kwargs)

File C:\Python310\lib\site-packages\pandas\core\frame.py:4948, in DataFrame.
 ↪drop(self, labels, axis, index, columns, level, inplace, errors)
   4800 @deprecate_nonkeyword_arguments(version=None, allowed_args=["self",␣
 ↪"labels"])
   4801 def drop(
   4802     self,
   (…)
   4809     errors: str = "raise",
   4810 ):
   4811     """
   4812     Drop specified labels from rows or columns.
   4813
   (…)
   4946             weight  1.0     0.8
   4947     """
-> 4948     return super().drop(
   4949         labels=labels,
   4950         axis=axis,
   4951         index=index,
   4952         columns=columns,
   4953         level=level,
   4954         inplace=inplace,
   4955         errors=errors,
   4956     )

File C:\Python310\lib\site-packages\pandas\core\generic.py:4279, in NDFrame.
 ↪drop(self, labels, axis, index, columns, level, inplace, errors)
   4277 for axis, labels in axes.items():
   4278     if labels is not None:
-> 4279         obj = obj._drop_axis(labels, axis, level=level, errors=errors)
   4281 if inplace:
   4282     self._update_inplace(obj)

File C:\Python310\lib\site-packages\pandas\core\generic.py:4323, in NDFrame.
 ↪_drop_axis(self, labels, axis, level, errors, consolidate, only_slice)
   4321         new_axis = axis.drop(labels, level=level, errors=errors)
   4322     else:
-> 4323         new_axis = axis.drop(labels, errors=errors)
   4324     indexer = axis.get_indexer(new_axis)
   4326 # Case for non-unique axis
   4327 else:

File C:\Python310\lib\site-packages\pandas\core\indexes\base.py:6644, in Index.
 ↪drop(self, labels, errors)
```

```
   6642 if mask.any():
   6643     if errors != "ignore":
-> 6644         raise KeyError(f"{list(labels[mask])} not found in axis")
   6645     indexer = indexer[~mask]
   6646 return self.delete(indexer)

KeyError: '[False, False, False, False, False, False, True, True, True, True]␣
  ↪not found in axis'
```

```
[ ]:
```

```
[ ]: data.drop(columns=['id'], inplace=True)
```

```
[ ]: data
```

```
[ ]:    accession_number          artist artistRole  artistId  \
     0           A00001   Blake, Robert     artist        38
     1           A00002   Blake, Robert     artist        38
     2           A00003   Blake, Robert     artist        38
     3           A00004   Blake, Robert     artist        38
     4           A00005  Blake, William     artist        39
     5           A00006  Blake, William     artist        39
     6           A00007  Blake, William     artist        39
     7           A00008  Blake, William     artist        39
     8           A00009  Blake, William     artist        39
     9           A00010  Blake, William     artist        39

                                                   title                dateText  \
     0  A Figure Bowing before a Seated Old Man with h…          date not known
     1  Two Drawings of Frightened Figures, Probably f…          date not known
     2  The Preaching of Warning. Verso: An Old Man En…                   ?c.1785
     3     Six Drawings of Figures with Outstretched Arms          date not known
     4  The Circle of the Lustful: Francesca da Rimini…  1826-7, reprinted 1892
     5     Ciampolo the Barrator Tormented by the Devils  1826-7, reprinted 1892
     6                      The Baffled Devils Fighting  1826-7, reprinted 1892
     7  The Six-Footed Serpent Attacking Agnolo Brunel…  1826-7, reprinted 1892
     8            The Serpent Attacking Buoso Donati  1826-7, reprinted 1892
     9            The Pit of Disease: The Falsifiers  1826-7, reprinted 1892

                                                medium  \
     0  Watercolour, ink, chalk and graphite on paper…
     1                              Graphite on paper
     2       Graphite on paper. Verso: graphite on paper
     3                              Graphite on paper
     4                       Line engraving on paper
     5                       Line engraving on paper
     6                       Line engraving on paper
```

```
7                            Line engraving on paper
8                            Line engraving on paper
9                            Line engraving on paper


                                        creditLine     year  acquisitionYear  \
0                 Presented by Mrs John Richmond 1922      NaN             1922
1                 Presented by Mrs John Richmond 1922      NaN             1922
2                 Presented by Mrs John Richmond 1922   1785.0             1922
3                 Presented by Mrs John Richmond 1922      NaN             1922
4   Purchased with the assistance of a special gra…   1826.0             1919
5   Purchased with the assistance of a special gra…   1826.0             1919
6   Purchased with the assistance of a special gra…   1826.0             1919
7   Purchased with the assistance of a special gra…   1826.0             1919
8   Purchased with the assistance of a special gra…   1826.0             1919
9   Purchased with the assistance of a special gra…   1826.0             1919


              dimensions  width  height  depth units  inscription  \
0   support: 394 x 419 mm  394.0   419.0    NaN    mm          NaN
1   support: 311 x 213 mm  311.0   213.0    NaN    mm          NaN
2   support: 343 x 467 mm  343.0   467.0    NaN    mm          NaN
3   support: 318 x 394 mm  318.0   394.0    NaN    mm          NaN
4     image: 243 x 335 mm  243.0   335.0    NaN    mm          NaN
5     image: 240 x 338 mm  240.0   338.0    NaN    mm          NaN
6     image: 242 x 334 mm  242.0   334.0    NaN    mm          NaN
7     image: 246 x 340 mm  246.0   340.0    NaN    mm          NaN
8     image: 241 x 335 mm  241.0   335.0    NaN    mm          NaN
9     image: 243 x 340 mm  243.0   340.0    NaN    mm          NaN


   thumbnailCopyright                                       thumbnailUrl  \
0                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
1                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
2                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
3                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
4                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
5                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
6                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
7                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
8                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…
9                 NaN  http://www.tate.org.uk/art/images/work/A/A00/A…


                                        url
0  http://www.tate.org.uk/art/artworks/blake-a-fi…
1  http://www.tate.org.uk/art/artworks/blake-two-…
2  http://www.tate.org.uk/art/artworks/blake-the-…
3  http://www.tate.org.uk/art/artworks/blake-six-…
4  http://www.tate.org.uk/art/artworks/blake-the-…
5  http://www.tate.org.uk/art/artworks/blake-ciam…
```

```
6  http://www.tate.org.uk/art/artworks/blake-the-…
7  http://www.tate.org.uk/art/artworks/blake-the-…
8  http://www.tate.org.uk/art/artworks/blake-the-…
9  http://www.tate.org.uk/art/artworks/blake-the-…
```

```
[ ]: # since data does not have id column now, if we try to drop it again, it will␣
     ↪raise error
     data.drop(columns=['id'])
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
Input In [20], in <cell line: 2>()
      1 # since data does not have id column now, if we try to drop it again, it ␣
  ↪will raise error
----> 2 data.drop(columns=['id'])

File C:\Python310\lib\site-packages\pandas\util\_decorators.py:311, in␣
  ↪deprecate_nonkeyword_arguments.<locals>.decorate.<locals>.wrapper(*args,␣
  ↪**kwargs)
    305 if len(args) > num_allow_args:
    306     warnings.warn(
    307         msg.format(arguments=arguments),
    308         FutureWarning,
    309         stacklevel=stacklevel,
    310     )
--> 311 return func(*args, **kwargs)

File C:\Python310\lib\site-packages\pandas\core\frame.py:4948, in DataFrame.
  ↪drop(self, labels, axis, index, columns, level, inplace, errors)
   4800 @deprecate_nonkeyword_arguments(version=None, allowed_args=["self",␣
  ↪"labels"])
   4801 def drop(
   4802     self,
   (…)
   4809     errors: str = "raise",
   4810 ):
   4811     """
   4812     Drop specified labels from rows or columns.
   4813
   (…)
   4946             weight  1.0     0.8
   4947     """
-> 4948     return super().drop(
   4949         labels=labels,
   4950         axis=axis,
   4951         index=index,
   4952         columns=columns,
```

```
4953          level=level,
4954          inplace=inplace,
4955          errors=errors,
4956      )

File C:\Python310\lib\site-packages\pandas\core\generic.py:4279, in NDFrame.
 ↪drop(self, labels, axis, index, columns, level, inplace, errors)
   4277 for axis, labels in axes.items():
   4278     if labels is not None:
-> 4279         obj = obj._drop_axis(labels, axis, level=level, errors=errors)
   4281 if inplace:
   4282     self._update_inplace(obj)

File C:\Python310\lib\site-packages\pandas\core\generic.py:4323, in NDFrame.
 ↪_drop_axis(self, labels, axis, level, errors, consolidate, only_slice)
   4321         new_axis = axis.drop(labels, level=level, errors=errors)
   4322     else:
-> 4323         new_axis = axis.drop(labels, errors=errors)
   4324     indexer = axis.get_indexer(new_axis)
   4326 # Case for non-unique axis
   4327 else:

File C:\Python310\lib\site-packages\pandas\core\indexes\base.py:6644, in Index.
 ↪drop(self, labels, errors)
   6642 if mask.any():
   6643     if errors != "ignore":
-> 6644         raise KeyError(f"{list(labels[mask])} not found in axis")
   6645     indexer = indexer[~mask]
   6646 return self.delete(indexer)

KeyError: "['id'] not found in axis"
```

```python
# read only required columns of data from csv file
data = pd.read_csv('./data/artwork_sample.csv', usecols=['artist', 'title'])
data
```

```
            artist                                             title
0    Blake, Robert  A Figure Bowing before a Seated Old Man with h…
1    Blake, Robert  Two Drawings of Frightened Figures, Probably f…
2    Blake, Robert  The Preaching of Warning. Verso: An Old Man En…
3    Blake, Robert     Six Drawings of Figures with Outstretched Arms
4  Blake, William  The Circle of the Lustful: Francesca da Rimini…
5  Blake, William        Ciampolo the Barrator Tormented by the Devils
6  Blake, William                          The Baffled Devils Fighting
7  Blake, William  The Six-Footed Serpent Attacking Agnolo Brunel…
8  Blake, William                 The Serpent Attacking Buoso Donati
9  Blake, William                 The Pit of Disease: The Falsifiers
```

[ ]: