## 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 artistId0 1035 A00001 Blake, Robert artist 38 1 1036 A00002 Blake, Robert 38 artist 2 1037 Blake, Robert X00003 artist 38 3 1038 A00004 Blake, Robert 38 artist 4 1039 A00005 Blake, William artist 39 title dateText \ A Figure Bowing before a Seated Old Man with h... date not known 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 The Circle of the Lustful: Francesca da Rimini... 1826-7, reprinted 1892 medium \ Watercolour, ink, chalk and graphite on paper ... 0 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 NaN1922 1 Presented by Mrs John Richmond 1922 NaN1922 2 Presented by Mrs John Richmond 1922 1785.0 1922 3 Presented by Mrs John Richmond 1922 NaN 1922

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4 Purchased with the assistance of a special gra... 1826.0
                   dimensions
                              {\tt width}
                                       height
                                               depth units
                                                             inscription
        support: 394 x 419 mm
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                       {\tt NaN}
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     3
                       {\tt NaN}
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                            http://www.tate.org.uk/art/images/work/A/A00/A...
                       {\tt NaN}
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     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-...
[]: # dropping rows - inplace is False by default
     data.drop(0, inplace=False)
[]:
          id accession number
                                        artist artistRole artistId
     1 1036
                       A00002
                                 Blake, Robert
                                                   artist
                                                                  38
     2 1037
                       A00003
                                 Blake, Robert
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                                                   artist
     3 1038
                       A00004
                                 Blake, Robert
                                                   artist
                                                                  38
     4 1039
                       A00005 Blake, William
                                                   artist
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     5 1040
                       A00006 Blake, William
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                                                   artist
                               Blake, William
     6 1041
                       A00007
                                                   artist
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     7 1042
                       A00008 Blake, William
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                                                   artist
     8 1043
                                Blake, William
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      1044
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                                Blake, William
                                                                  39
                                                   artist
                                                                           dateText \
                                                      title
        Two Drawings of Frightened Figures, Probably f...
                                                                   date not known
                                                                           ?c.1785
     2
        The Preaching of Warning. Verso: An Old Man En...
           Six Drawings of Figures with Outstretched Arms
                                                                     date not known
     3
        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
                       The Serpent Attacking Buoso Donati 1826-7, reprinted 1892
     8
     9
                       The Pit of Disease: The Falsifiers 1826-7, reprinted 1892
```

1919

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medium \
1
                               Graphite on paper
2
   Graphite on paper. Verso: graphite on paper
3
                               Graphite on paper
4
                        Line engraving on paper
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                        Line engraving on paper
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                        Line engraving on paper
8
                        Line engraving on paper
9
                        Line engraving on paper
                                             creditLine
                                                                  acquisitionYear
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1
                  Presented by Mrs John Richmond 1922
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                 Presented by Mrs John Richmond 1922
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   Purchased with the assistance of a special gra...
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               dimensions
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                                                          inscription
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   support: 343 x 467 mm
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   support: 318 x 394 mm
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                        http://www.tate.org.uk/art/images/work/A/A00/A...
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                        http://www.tate.org.uk/art/images/work/A/A00/A...
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url

<sup>1</sup> http://www.tate.org.uk/art/artworks/blake-two-...

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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-...
[]: data
[]:
          id accession number
                                        artist artistRole
                                                           artistId \
        1035
                       A00001
                                 Blake, Robert
                                                   artist
                                                                  38
     1
       1036
                       A00002
                                Blake, Robert
                                                   artist
                                                                  38
                                 Blake, Robert
     2 1037
                       A00003
                                                   artist
                                                                  38
                                Blake, Robert
     3 1038
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                               Blake, William
     4 1039
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                               Blake, William
                       A00010
                                                   artist
                                                                  39
                                                     title
                                                                           dateText \
        A Figure Bowing before a Seated Old Man with h...
                                                                   date not known
        Two Drawings of Frightened Figures, Probably f...
                                                                   date not known
     1
     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
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        Watercolour, ink, chalk and graphite on paper...
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                                         Graphite on paper
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              Graphite on paper. Verso: graphite on paper
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     7
                                   Line engraving on paper
     8
                                   Line engraving on paper
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                                   Line engraving on paper
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2 http://www.tate.org.uk/art/artworks/blake-the-...

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acquisitionYear
                                            creditLine
                                                           year
0
                 Presented by Mrs John Richmond 1922
                                                            NaN
                                                                             1922
1
                 Presented by Mrs John Richmond 1922
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2
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                 Presented by Mrs John Richmond 1922
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9 Purchased with the assistance of a special gra...
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              dimensions
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                                           depth units
                                                         inscription
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   support: 394 x 419 mm
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   support: 311 x 213 mm
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   support: 343 x 467 mm
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   support: 318 x 394 mm
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     image: 240 x 338 mm
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     image: 243 x 340 mm
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                        http://www.tate.org.uk/art/images/work/A/A00/A...
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3
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                        http://www.tate.org.uk/art/images/work/A/A00/A...
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  http://www.tate.org.uk/art/artworks/blake-a-fi...
  http://www.tate.org.uk/art/artworks/blake-two-...
  http://www.tate.org.uk/art/artworks/blake-the-...
  http://www.tate.org.uk/art/artworks/blake-six-...
 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-...
  http://www.tate.org.uk/art/artworks/blake-the-...
7
8 http://www.tate.org.uk/art/artworks/blake-the-...
   http://www.tate.org.uk/art/artworks/blake-the-...
```

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

```
KevError
                                           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,u
 →**kwargs)
    305 if len(args) > num_allow_args:
            warnings.warn(
    307
                msg.format(arguments=arguments),
    308
                FutureWarning,
                stacklevel=stacklevel,
    309
    310
            )
--> 311 return func(*args, **kwargs)
File C:\Python310\lib\site-packages\pandas\core\frame.py:4948, in DataFrame.
 sdrop(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
   (...)
                                     0.8
   4946
                    weight 1.0
            0.00
   4947
            return super().drop(
-> 4948
                labels=labels,
   4949
   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():
```

```
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
                 A00002
                          Blake, Robert
                                                           38
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                 A00003
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                          Blake, Robert
                                            artist
                                                           38
                 A00005 Blake, William
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                 A00006 Blake, William
                                            artist
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     6
                 A00007 Blake, William
                                                           39
                                            artist
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                 A00008 Blake, William
                                            artist
                                                           39
     8
                 A00009 Blake, William
                                            artist
                                                           39
     9
                 A00010 Blake, William
                                                           39
                                            artist
                                                     title
                                                                          dateText \
       A Figure Bowing before a Seated Old Man with h...
                                                                  date not known
       Two Drawings of Frightened Figures, Probably f...
                                                                  date not known
     1
     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
       The Six-Footed Serpent Attacking Agnolo Brunel... 1826-7, reprinted 1892
```

obj = obj.\_drop\_axis(labels, axis, level=level, errors=errors)

4278

4282

4281 if inplace:

-> 4279

if labels is not None:

self.\_update\_inplace(obj)

```
8
                   The Serpent Attacking Buoso Donati 1826-7, reprinted 1892
9
                   The Pit of Disease: The Falsifiers
                                                         1826-7, reprinted 1892
0
   Watercolour, ink, chalk and graphite on paper...
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2
         Graphite on paper. Verso: graphite on paper
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                               Line engraving on paper
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8
                              Line engraving on paper
9
                               Line engraving on paper
                                             creditLine
                                                            year
                                                                  acquisitionYear
                  Presented by Mrs John Richmond 1922
0
                                                             NaN
                                                                              1922
1
                  Presented by Mrs John Richmond 1922
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2
                  Presented by Mrs John Richmond 1922
                                                          1785.0
                                                                              1922
3
                  Presented by Mrs John Richmond 1922
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                                                             NaN
  Purchased with the assistance of a special gra...
                                                       1826.0
                                                                            1919
 Purchased with the assistance of a special gra...
                                                       1826.0
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 Purchased with the assistance of a special gra...
                                                       1826.0
                                                                            1919
7 Purchased with the assistance of a special gra...
                                                       1826.0
                                                                            1919
 Purchased with the assistance of a special gra...
                                                       1826.0
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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
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   support: 311 x 213 mm
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1
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   support: 343 x 467 mm
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3
   support: 318 x 394 mm
                           318.0
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4
     image: 243 x 335 mm
                           243.0
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     image: 240 x 338 mm
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     image: 242 x 334 mm
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     image: 246 x 340 mm
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     image: 241 x 335 mm
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     image: 243 x 340 mm
                           243.0
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   thumbnailCopyright
                                                                thumbnailUrl
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                        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
                        http://www.tate.org.uk/art/images/work/A/A00/A...
                   {\tt NaN}
3
                        http://www.tate.org.uk/art/images/work/A/A00/A...
                   {\tt NaN}
4
                        http://www.tate.org.uk/art/images/work/A/A00/A...
                   \mathtt{NaN}
5
                        http://www.tate.org.uk/art/images/work/A/A00/A...
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                        http://www.tate.org.uk/art/images/work/A/A00/A...
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7
                            http://www.tate.org.uk/art/images/work/A/A00/A...
                       NaN http://www.tate.org.uk/art/images/work/A/A00/A...
     8
     9
                            http://www.tate.org.uk/art/images/work/A/A00/A...
                                                       url
       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-...
[]: # columns can be dropped with columns param instead of axis as well
     data.drop(columns=['id'])
[]:
       accession_number
                                 artist artistRole artistId
                 A00001
                          Blake, Robert
                                             artist
                                                           38
                          Blake, Robert
     1
                 A00002
                                             artist
                                                           38
     2
                          Blake, Robert
                 A00003
                                                           38
                                             artist
     3
                 A00004
                          Blake, Robert
                                                           38
                                             artist
     4
                 A00005 Blake, William
                                             artist
                                                           39
     5
                 A00006 Blake, William
                                                           39
                                             artist
     6
                 A00007 Blake, William
                                             artist
                                                           39
     7
                 A00008 Blake, William
                                             artist
                                                           39
     8
                         Blake, William
                                                           39
                 A00009
                                             artist
     9
                 A00010
                         Blake, William
                                             artist
                                                           39
                                                     title
                                                                           dateText \
        A Figure Bowing before a Seated Old Man with h...
                                                                   date not known
        Two Drawings of Frightened Figures, Probably f...
                                                                   date not known
     1
                                                                          ?c.1785
       The Preaching of Warning. Verso: An Old Man En...
     2
           Six Drawings of Figures with Outstretched Arms
     3
                                                                     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
                              The Baffled Devils Fighting 1826-7, reprinted 1892
     6
     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...
                                         Graphite on paper
     1
     2
              Graphite on paper. Verso: graphite on paper
```

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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
                                                                  acquisitionYear
                                             creditLine
                                                            year
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
   Purchased with the assistance of a special gra...
                                                       1826.0
                                                                           1919
  Purchased with the assistance of a special gra...
                                                       1826.0
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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
                                    419.0
   support: 394 x 419 mm
                           394.0
                                             NaN
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0
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   support: 311 x 213 mm
1
                           311.0
                                    213.0
                                             NaN
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   support: 343 x 467 mm
                           343.0
                                    467.0
                                             NaN
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3
   support: 318 x 394 mm
                           318.0
                                    394.0
                                             NaN
                                                                  NaN
4
     image: 243 x 335 mm
                           243.0
                                    335.0
                                             NaN
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5
     image: 240 x 338 mm
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6
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7
     image: 246 x 340 mm
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8
     image: 241 x 335 mm
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   thumbnailCopyright
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0
                   NaN
                        http://www.tate.org.uk/art/images/work/A/A00/A...
                        http://www.tate.org.uk/art/images/work/A/A00/A...
1
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9
                        http://www.tate.org.uk/art/images/work/A/A00/A...
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 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-...
[]: 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
                          Blake, Robert
                 A00003
                                             artist
                                                            38
     3
                          Blake, Robert
                 A00004
                                             artist
                                                            38
                 A00005 Blake, William
     4
                                             artist
                                                            39
     5
                 A00006
                         Blake, William
                                                            39
                                             artist
                         Blake, William
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     6
                 A00007
                                             artist
     7
                 A00008 Blake, William
                                                            39
                                             artist
                 A00009
                         Blake, William
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                                                            39
                                                      title
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        A Figure Bowing before a Seated Old Man with h...
                                                                   date not known
        Two Drawings of Frightened Figures, Probably f...
                                                                   date not known
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     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
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        Watercolour, ink, chalk and graphite on paper...
     1
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              Graphite on paper. Verso: graphite on paper
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                                   Line engraving on paper
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                                   Line engraving on paper
```

```
acquisitionYear
                                            creditLine
                                                          year
0
                 Presented by Mrs John Richmond 1922
                                                           NaN
                                                                            1922
1
                 Presented by Mrs John Richmond 1922
                                                           NaN
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                 Presented by Mrs John Richmond 1922
                                                        1785.0
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                 Presented by Mrs John Richmond 1922
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  Purchased with the assistance of a special gra...
                                                      1826.0
                                                                          1919
  Purchased with the assistance of a special gra...
                                                      1826.0
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6 Purchased with the assistance of a special gra...
                                                      1826.0
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7 Purchased with the assistance of a special gra...
                                                      1826.0
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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
   support: 394 x 419 mm
                                         NaN
                                                              NaN
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   support: 311 x 213 mm
                                         NaN
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   support: 343 x 467 mm
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3
   support: 318 x 394 mm
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     image: 243 x 335 mm
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     image: 240 x 338 mm
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                                                              NaN
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6
     image: 242 x 334 mm
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7
                                                              NaN
     image: 246 x 340 mm
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   http://www.tate.org.uk/art/images/work/A/A00/A...
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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...
  http://www.tate.org.uk/art/images/work/A/A00/A...
 http://www.tate.org.uk/art/images/work/A/A00/A...
   http://www.tate.org.uk/art/images/work/A/A00/A...
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  http://www.tate.org.uk/art/artworks/blake-a-fi...
  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-...
```

```
[]: # removing rows with labels parameter
     data.drop(labels=[0, 1, 2])
[]:
          id accession_number
                                         artist artistRole
                                                            artistId
                                                                      \
        1038
     3
                        A00004
                                 Blake, Robert
                                                                   38
                                                    artist
     4
        1039
                                Blake, William
                        A00005
                                                    artist
                                                                   39
     5
       1040
                        A00006
                                Blake, William
                                                    artist
                                                                   39
                                Blake, William
     6
        1041
                        A00007
                                                                   39
                                                    artist
     7
        1042
                        80000A
                                Blake, William
                                                    artist
                                                                   39
        1043
                        A00009
                                Blake, William
                                                                   39
     8
                                                    artist
        1044
                        A00010
                                Blake, William
                                                    artist
                                                                   39
                                                      title
                                                                             dateText \
     3
           Six Drawings of Figures with Outstretched Arms
                                                                      date not known
        The Circle of the Lustful: Francesca da Rimini... 1826-7, reprinted 1892
     4
     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
       Line engraving on paper
                                  Purchased with the assistance of a special gra...
      Line engraving on paper
                                  Purchased with the assistance of a special gra...
      Line engraving on paper
                                  Purchased with the assistance of a special gra...
                                  Purchased with the assistance of a special gra...
     7 Line engraving on paper
     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...
                acquisitionYear
                                              dimensions
                                                          width
                                                                  height
                                                                          depth units
          year
                                  support: 318 x 394 mm
                                                           318.0
     3
           NaN
                            1922
                                                                   394.0
                                                                             NaN
                                                                                    mm
        1826.0
                                                           243.0
                                                                   335.0
                                                                            NaN
     4
                            1919
                                    image: 243 x 335 mm
                                                                                    mm
        1826.0
     5
                            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
                                                                            \mathtt{NaN}
                                                                                    mm
     7
        1826.0
                                    image: 246 x 340 mm
                                                                   340.0
                            1919
                                                           246.0
                                                                            NaN
                                                                                    mm
        1826.0
                                                                   335.0
     8
                            1919
                                    image: 241 x 335 mm
                                                           241.0
                                                                            NaN
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        1826.0
                                    image: 243 x 340 mm
                            1919
                                                           243.0
                                                                   340.0
                                                                            NaN
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                      thumbnailCopyright
        inscription
     3
                NaN
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                NaN
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     9
                NaN
                                     NaN
```

```
thumbnailUrl

http://www.tate.org.uk/art/images/work/A/A00/A...

http://www.tate.org.uk/art/images/work/A/A00/A...

http://www.tate.org.uk/art/images/work/A/A00/A...

http://www.tate.org.uk/art/images/work/A/A00/A...

http://www.tate.org.uk/art/images/work/A/A00/A...

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http://www.tate.org.uk/art/images/work/A/A00/A...

url

http://www.tate.org.uk/art/artworks/blake-six-...

http://www.tate.org.uk/art/artworks/blake-the-...

http://www.tate.org.uk/art/artworks/blake-the-...

http://www.tate.org.uk/art/artworks/blake-the-...

http://www.tate.org.uk/art/artworks/blake-the-...

http://www.tate.org.uk/art/artworks/blake-the-...

http://www.tate.org.uk/art/artworks/blake-the-...
```

### []: help(data.drop)

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

9 http://www.tate.org.uk/art/artworks/blake-the-...

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

```
D
   Α
0
  0
       3
  4
      7
1
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
        speed
                45.0
                        30.0
lama
        weight 200.0
                        100.0
        length 1.5
                        1.0
        speed
                30.0
                        20.0
COW
        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'))
                        small
                big
                45.0
                        30.0
lama
        speed
        weight 200.0
                        100.0
        length 1.5
                        1.0
        speed
                30.0
                        20.0
COW
        weight 250.0
                        150.0
        length 1.5
                        0.8
falcon
       speed
                320.0
                        250.0
```

length 0.3

0.2

```
big
                         45.0
        lama
                speed
                weight
                         200.0
                length
                        1.5
        falcon speed
                         320.0
                weight
                        1.0
                length 0.3
        >>> df.drop(index='length', level=1)
                                 small
                         big
                         45.0
                                 30.0
        lama
                speed
                        200.0
                                 100.0
                weight
                speed
                         30.0
                                 20.0
        COW
                         250.0
                weight
                                 150.0
        falcon speed
                         320.0
                                 250.0
                weight
                        1.0
                                 0.8
[]: import numpy as np
     data.drop(labels=np.arange(2,6))
[]:
          id accession number
                                        artist artistRole
                                                          artistId
       1035
                                Blake, Robert
     0
                       A00001
                                                                  38
                                                   artist
     1 1036
                       A00002
                                Blake, Robert
                                                   artist
                                                                  38
     6
      1041
                       A00007
                               Blake, William
                                                   artist
                                                                  39
     7 1042
                               Blake, William
                       80000A
                                                                  39
                                                   artist
     8 1043
                       A00009
                               Blake, William
                                                                  39
                                                   artist
     9 1044
                       A00010 Blake, William
                                                   artist
                                                                  39
                                                     title
                                                                           dateText \
       A Figure Bowing before a Seated Old Man with h...
                                                                   date not known
        Two Drawings of Frightened Figures, Probably f...
                                                                   date not known
                              The Baffled Devils Fighting 1826-7, reprinted 1892
       The Six-Footed Serpent Attacking Agnolo Brunel... 1826-7, reprinted 1892
     7
                       The Serpent Attacking Buoso Donati 1826-7, reprinted 1892
     8
     9
                       The Pit of Disease: The Falsifiers 1826-7, reprinted 1892
                                                    medium \
        Watercolour, ink, chalk and graphite on paper...
     0
     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
```

>>> df.drop(index='cow', columns='small')

```
0
                      Presented by Mrs John Richmond 1922
                                                                NaN
                                                                                 1922
     1
                      Presented by Mrs John Richmond 1922
                                                                NaN
                                                                                 1922
      Purchased with the assistance of a special gra...
                                                                               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...
                                                                               1919
                                                           1826.0
                   dimensions width height
                                               depth units
                                                             inscription
        support: 394 x 419 mm
                                394.0
                                        419.0
                                                  NaN
                                                                      NaN
     0
        support: 311 x 213 mm
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                                311.0
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     6
          image: 242 x 334 mm
                                242.0
                                        334.0
                                                  NaN
                                                                     NaN
     7
          image: 246 x 340 mm
                                246.0
                                        340.0
                                                  NaN
                                                                     NaN
                                                         mm
     8
          image: 241 x 335 mm
                                241.0
                                        335.0
                                                 NaN
                                                         mm
                                                                     NaN
     9
          image: 243 x 340 mm
                                243.0
                                        340.0
                                                  NaN
                                                                     NaN
                                                         mm
        thumbnailCopyright
                                                                   thumbnailUrl \
     0
                             http://www.tate.org.uk/art/images/work/A/A00/A...
                             http://www.tate.org.uk/art/images/work/A/A00/A...
     1
                       {\tt NaN}
                             http://www.tate.org.uk/art/images/work/A/A00/A...
     6
     7
                             http://www.tate.org.uk/art/images/work/A/A00/A...
                       \mathtt{NaN}
                             http://www.tate.org.uk/art/images/work/A/A00/A...
     8
                       {\tt NaN}
     9
                            http://www.tate.org.uk/art/images/work/A/A00/A...
                       NaN
                                                        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-...
[]: data = pd.read_csv('./data/artwork_sample.csv')
     # 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,u
       →**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
            0.00
   4947
            return super().drop(
-> 4948
   4949
                labels=labels,
   4950
                axis=axis,
   4951
                index=index,
                columns=columns,
   4952
   4953
                level=level,
   4954
                inplace=inplace,
   4955
                errors=errors,
   4956
            )
File C:\Python310\lib\site-packages\pandas\core\generic.py:4279, in NDFrame.
 sdrop(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.
 adrop_axis(self, labels, axis, level, errors, consolidate, only_slice)
                new_axis = axis.drop(labels, level=level, errors=errors)
   4321
   4322
            else:
                new_axis = axis.drop(labels, errors=errors)
-> 4323
   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)
```

```
6643
                  if errors != "ignore":
                      raise KeyError(f"{list(labels[mask])} not found in axis")
      -> 6644
         6645
                  indexer = indexer[~mask]
         6646 return self.delete(indexer)
     KeyError: '[False, False, False, False, False, True, True, True, True]
       onot 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
                                                           38
                                             artist
     2
                 A00003
                          Blake, Robert
                                             artist
                                                           38
                          Blake, Robert
     3
                 A00004
                                             artist
                                                           38
     4
                 A00005 Blake, William
                                             artist
                                                           39
                 A00006 Blake, William
     5
                                             artist
                                                           39
     6
                 A00007 Blake, William
                                             artist
                                                           39
     7
                 A00008 Blake, William
                                             artist
                                                           39
     8
                 A00009 Blake, William
                                                           39
                                             artist
     9
                 A00010 Blake, William
                                                           39
                                             artist
                                                     title
                                                                          dateText \
        A Figure Bowing before a Seated Old Man with h...
                                                                  date not known
       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
                              The Baffled Devils Fighting 1826-7, reprinted 1892
     6
        The Six-Footed Serpent Attacking Agnolo Brunel... 1826-7, reprinted 1892
    7
                       The Serpent Attacking Buoso Donati 1826-7, reprinted 1892
     8
                       The Pit of Disease: The Falsifiers 1826-7, reprinted 1892
     9
                                                    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
```

6642 if mask.any():

```
7
                              Line engraving on paper
8
                              Line engraving on paper
9
                              Line engraving on paper
                                            creditLine
                                                                 acquisitionYear
                                                           year
0
                 Presented by Mrs John Richmond 1922
                                                            NaN
                                                                             1922
                                                            NaN
                                                                             1922
1
                 Presented by Mrs John Richmond 1922
2
                 Presented by Mrs John Richmond 1922
                                                         1785.0
                                                                             1922
3
                 Presented by Mrs John Richmond 1922
                                                            NaN
                                                                             1922
  Purchased with the assistance of a special gra...
                                                       1826.0
                                                                           1919
   Purchased with the assistance of a special gra...
                                                       1826.0
                                                                           1919
 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
   support: 394 x 419 mm
                           394.0
                                   419.0
                                             NaN
                                                                 NaN
   support: 311 x 213 mm
                           311.0
                                    213.0
                                             NaN
                                                                 NaN
1
                                                    mm
                                   467.0
                                             NaN
                                                                 NaN
   support: 343 x 467 mm
                           343.0
                                                    mm
3
   support: 318 x 394 mm
                           318.0
                                   394.0
                                             NaN
                                                                 NaN
                                                    mm
4
     image: 243 x 335 mm
                           243.0
                                   335.0
                                             NaN
                                                                 NaN
                                                    mm
5
     image: 240 x 338 mm
                                             NaN
                           240.0
                                   338.0
                                                                 NaN
                                                    mm
6
     image: 242 x 334 mm
                           242.0
                                   334.0
                                             NaN
                                                    mm
                                                                 NaN
7
     image: 246 x 340 mm
                           246.0
                                             NaN
                                   340.0
                                                                 NaN
8
     image: 241 x 335 mm
                           241.0
                                    335.0
                                             NaN
                                                                 NaN
                                                    mm
9
     image: 243 x 340 mm
                           243.0
                                    340.0
                                             NaN
                                                                 NaN
   thumbnailCopyright
                                                               thumbnailUrl
0
                        http://www.tate.org.uk/art/images/work/A/A00/A...
                  NaN
                        http://www.tate.org.uk/art/images/work/A/A00/A...
1
                  NaN
2
                        http://www.tate.org.uk/art/images/work/A/A00/A...
                  NaN
3
                        http://www.tate.org.uk/art/images/work/A/A00/A...
                        http://www.tate.org.uk/art/images/work/A/A00/A...
4
                  NaN
5
                        http://www.tate.org.uk/art/images/work/A/A00/A...
                  NaN
6
                  NaN
                        http://www.tate.org.uk/art/images/work/A/A00/A...
7
                        http://www.tate.org.uk/art/images/work/A/A00/A...
                  NaN
                        http://www.tate.org.uk/art/images/work/A/A00/A...
8
                  NaN
9
                  NaN
                        http://www.tate.org.uk/art/images/work/A/A00/A...
                                                   url
  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'])
      KevError
                                                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, i
      ⇒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,u
       →**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):
                  .....
```

Drop specified labels from rows or columns.

0.8

weight 1.0

return super().drop(

axis=axis,

index=index,

labels=labels,

columns=columns,

4811 4812

4813 (...) 4946

4947 **->** 4948

4949

4950

4951

4952

```
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:
                  self._update_inplace(obj)
         4282
     File C:\Python310\lib\site-packages\pandas\core\generic.py:4323, in NDFrame.
       →_drop_axis(self, labels, axis, level, errors, consolidate, only_slice)
                      new_axis = axis.drop(labels, level=level, errors=errors)
         4322
                  else:
                      new_axis = axis.drop(labels, errors=errors)
      -> 4323
         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():
                  if errors != "ignore":
         6643
      -> 6644
                      raise KeyError(f"{list(labels[mask])} not found in axis")
                  indexer = indexer[~mask]
         6645
         6646 return self.delete(indexer)
      KeyError: "['id'] not found in axis"
[]: # read only required columns of data from csv file
     data = pd.read_csv('./data/artwork_sample.csv', usecols=['artist', 'title'])
     data
[]:
                artist
                                                                     title
        Blake, Robert A Figure Bowing before a Seated Old Man with h...
     0
        Blake, Robert
                        Two Drawings of Frightened Figures, Probably f...
     1
     2
        Blake, Robert
                        The Preaching of Warning. Verso: An Old Man En...
                           Six Drawings of Figures with Outstretched Arms
     3
        Blake, Robert
     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
                                       The Pit of Disease: The Falsifiers
     9 Blake, William
```

[]:[