

```
In [1]: import numpy as np

In [2]: import pandas as pd

In [3]: import matplotlib.pyplot as plt

In [4]: ds=pd.read_csv("D:\president_heights.csv")

In [5]: ds
Out[5]:
   order  name  height(cm)
0      1  George Washington    189
1      2    John Adams        170
2      3  Thomas Jefferson    189
3      4  James Madison      163
4      5  James Monroe       183
5      6  John Quincy Adams    171
6      7  Andrew Jackson      185
7      8  Martin Van Buren     168
8      9  William Henry Harrison  173
9     10    John Tyler        183
10     11  James K. Polk        173
11     12  Zachary Taylor       173
12     13  Millard Fillmore      175
13     14  Franklin Pierce       178
14     15  James Buchanan       183
15     16  Abraham Lincoln      193
16     17  Andrew Johnson       178
17     18  Ulysses S. Grant       173
18     19  Rutherford B. Hayes    174
19     20  James A. Garfield      183
20     21  Chester A. Arthur      183
21     22  Benjamin Harrison     168
22     23  William McKinley       170
23     24  Theodore Roosevelt     178
24     25  William Howard Taft     182
25     26  Woodrow Wilson        180
26     27  Warren G. Harding       183
27     28  Calvin Coolidge        178
28     29  Herbert Hoover         182
29     30  Franklin D. Roosevelt    188
30     31  Harry S. Truman         175
31     32  Dwight D. Eisenhower    179
32     33  John F. Kennedy         183
33     34  Lyndon B. Johnson        193
34     35  Richard Nixon          182
35     36  Gerald Ford            183
36     37  Jimmy Carter           177
37     38  Ronald Reagan           185
38     39  George H. W. Bush       188
39     40  Bill Clinton            188
40     41  George W. Bush          182
41     42  Barack Obama           185

In [6]: ds.rename(columns={'height(cm)':'height'})
Out[6]:
   order  name  height
0      1  George Washington    189
1      2    John Adams        170
2      3  Thomas Jefferson    189
3      4  James Madison      163
4      5  James Monroe       183
5      6  John Quincy Adams    171
6      7  Andrew Jackson      185
7      8  Martin Van Buren     168
8      9  William Henry Harrison  173
9     10    John Tyler        183
10     11  James K. Polk        173
11     12  Zachary Taylor       173
12     13  Millard Fillmore      175
13     14  Franklin Pierce       178
14     15  James Buchanan       183
15     16  Abraham Lincoln      193
16     17  Andrew Johnson       178
17     18  Ulysses S. Grant       173
18     19  Rutherford B. Hayes    174
19     20  James A. Garfield      183
20     21  Chester A. Arthur      183
21     22  Benjamin Harrison     168
22     23  William McKinley       170
23     24  Theodore Roosevelt     178
24     25  William Howard Taft     182
25     26  Woodrow Wilson        180
26     27  Warren G. Harding       183
27     28  Calvin Coolidge        178
28     29  Herbert Hoover         182
29     30  Franklin D. Roosevelt    188
30     31  Harry S. Truman         175
31     32  Dwight D. Eisenhower    179
32     33  John F. Kennedy         183
33     34  Lyndon B. Johnson        193
34     35  Richard Nixon          182
35     36  Gerald Ford            183
36     37  Jimmy Carter           177
37     38  Ronald Reagan           185
38     39  George H. W. Bush       188
39     40  Bill Clinton            188
40     41  George W. Bush          182
41     42  Barack Obama           185

In [8]: ds.rename(columns={'height(cm)':'height'},inplace=True)

In [9]: ds
Out[9]:
   order  name  height
0      1  George Washington    189
1      2    John Adams        170
2      3  Thomas Jefferson    189
3      4  James Madison      163
4      5  James Monroe       183
5      6  John Quincy Adams    171
6      7  Andrew Jackson      185
7      8  Martin Van Buren     168
8      9  William Henry Harrison  173
9     10    John Tyler        183
10     11  James K. Polk        173
11     12  Zachary Taylor       173
12     13  Millard Fillmore      175
13     14  Franklin Pierce       178
14     15  James Buchanan       183
15     16  Abraham Lincoln      193
16     17  Andrew Johnson       178
17     18  Ulysses S. Grant       173
18     19  Rutherford B. Hayes    174
19     20  James A. Garfield      183
20     21  Chester A. Arthur      183
21     22  Benjamin Harrison     168
22     23  William McKinley       170
23     24  Theodore Roosevelt     178
24     25  William Howard Taft     182
25     26  Woodrow Wilson        180
26     27  Warren G. Harding       183
27     28  Calvin Coolidge        178
28     29  Herbert Hoover         182
29     30  Franklin D. Roosevelt    188
30     31  Harry S. Truman         175
31     32  Dwight D. Eisenhower    179
32     33  John F. Kennedy         183
33     34  Lyndon B. Johnson        193
34     35  Richard Nixon          182
35     36  Gerald Ford            183
36     37  Jimmy Carter           177
37     38  Ronald Reagan           185
38     39  George H. W. Bush       188
39     40  Bill Clinton            188
40     41  George W. Bush          182
41     42  Barack Obama           185

In [10]: ds.insert(3,"quality","good")

In [11]: ds
Out[11]:
   order  name  height  quality
0      1  George Washington    189  good
1      2    John Adams        170  good
2      3  Thomas Jefferson    189  good
3      4  James Madison      163  good
4      5  James Monroe       183  good
5      6  John Quincy Adams    171  good
6      7  Andrew Jackson      185  good
7      8  Martin Van Buren     168  good
8      9  William Henry Harrison  173  good
9     10    John Tyler        183  good
10     11  James K. Polk        173  good
11     12  Zachary Taylor       173  good
12     13  Millard Fillmore      175  good
13     14  Franklin Pierce       178  good
14     15  James Buchanan       183  good
15     16  Abraham Lincoln      193  good
16     17  Andrew Johnson       178  good
17     18  Ulysses S. Grant       173  good
18     19  Rutherford B. Hayes    174  good
19     20  James A. Garfield      183  good
20     21  Chester A. Arthur      183  good
21     22  Benjamin Harrison     168  good
22     23  William McKinley       170  good
23     24  Theodore Roosevelt     178  good
24     25  William Howard Taft     182  good
25     26  Woodrow Wilson        180  good
26     27  Warren G. Harding       183  good
27     28  Calvin Coolidge        178  good
28     29  Herbert Hoover         182  good
29     30  Franklin D. Roosevelt    188  good
30     31  Harry S. Truman         175  good
31     32  Dwight D. Eisenhower    179  good
32     33  John F. Kennedy         183  good
33     34  Lyndon B. Johnson        193  good
34     35  Richard Nixon          182  good
35     36  Gerald Ford            183  good
36     37  Jimmy Carter           177  good
37     38  Ronald Reagan           185  good
38     39  George H. W. Bush       188  good
39     40  Bill Clinton            188  good
40     41  George W. Bush          182  good
41     42  Barack Obama           185  good

In [13]: ds.drop(columns=["quality"])

In [13]: ds
Out[13]:
   order  name  height
0      1  George Washington    189
1      2    John Adams        170
2      3  Thomas Jefferson    189
3      4  James Madison      163
4      5  James Monroe       183
5      6  John Quincy Adams    171
6      7  Andrew Jackson      185
7      8  Martin Van Buren     168
8      9  William Henry Harrison  173
9     10    John Tyler        183
10     11  James K. Polk        173
11     12  Zachary Taylor       173
12     13  Millard Fillmore      175
13     14  Franklin Pierce       178
14     15  James Buchanan       183
15     16  Abraham Lincoln      193
16     17  Andrew Johnson       178
17     18  Ulysses S. Grant       173
18     19  Rutherford B. Hayes    174
19     20  James A. Garfield      183
20     21  Chester A. Arthur      183
21     22  Benjamin Harrison     168
22     23  William McKinley       170
23     24  Theodore Roosevelt     178
24     25  William Howard Taft     182
25     26  Woodrow Wilson        180
26     27  Warren G. Harding       183
27     28  Calvin Coolidge        178
28     29  Herbert Hoover         182
29     30  Franklin D. Roosevelt    188
30     31  Harry S. Truman         175
31     32  Dwight D. Eisenhower    179
32     33  John F. Kennedy         183
33     34  Lyndon B. Johnson        193
34     35  Richard Nixon          182
35     36  Gerald Ford            183
36     37  Jimmy Carter           177
37     38  Ronald Reagan           185
38     39  George H. W. Bush       188
39     40  Bill Clinton            188
40     41  George W. Bush          182
41     42  Barack Obama           185

In [14]: ds
Out[14]:
   order  name  height  quality
0      1  George Washington    189  good
1      2    John Adams        170  good
2      3  Thomas Jefferson    189  good
3      4  James Madison      163  good
4      5  James Monroe       183  good
5      6  John Quincy Adams    171  good
6      7  Andrew Jackson      185  good
7      8  Martin Van Buren     168  good
8      9  William Henry Harrison  173  good
9     10    John Tyler        183  good
10     11  James K. Polk        173  good
11     12  Zachary Taylor       173  good
12     13  Millard Fillmore      175  good
13     14  Franklin Pierce       178  good
14     15  James Buchanan       183  good
15     16  Abraham Lincoln      193  good
16     17  Andrew Johnson       178  good
17     18  Ulysses S. Grant       173  good
18     19  Rutherford B. Hayes    174  good
19     20  James A. Garfield      183  good
20     21  Chester A. Arthur      183  good
21     22  Benjamin Harrison     168  good
22     23  William McKinley       170  good
23     24  Theodore Roosevelt     178  good
24     25  William Howard Taft     182  good
25     26  Woodrow Wilson        180  good
26     27  Warren G. Harding       183  good
27     28  Calvin Coolidge        178  good
28     29  Herbert Hoover         182  good
29     30  Franklin D. Roosevelt    188  good
30     31  Harry S. Truman         175  good
31     32  Dwight D. Eisenhower    179  good
32     33  John F. Kennedy         183  good
33     34  Lyndon B. Johnson        193  good
34     35  Richard Nixon          182  good
35     36  Gerald Ford            183  good
36     37  Jimmy Carter           177  good
37     38  Ronald Reagan           185  good
38     39  George H. W. Bush       188  good
39     40  Bill Clinton            188  good
40     41  George W. Bush          182  good
41     42  Barack Obama           185  good

In [16]: ds.drop(columns=["quality"],inplace=True)

KeyError: "['quality'] not found in axis"
Traceback (most recent call last):
~\AppData\Local\Temp\ipykernel_3160\1856824728.py in <code>>
----> 1 ds.drop(columns=["quality"],inplace=True)
~\anaconda3\lib\site-packages\pandas\util\decorators.py in wrapper(*args, **kwargs)
    318     return func(*args, **kwargs)
    319
    312     return wrapper
~\anaconda3\lib\site-packages\pandas\core\frame.py in drop(self, labels, axis, index, columns, level, inplace, errors)
    4955     height = 0.8
-> 4957     return super().drop(
    4958         labels=labels,
    4959         axis=axis)
~\anaconda3\lib\site-packages\pandas\core\generic.py in drop(self, labels, axis, index, columns, level, inplace, errors)
    4285     for axis, labels in axes.items():
    4286         if labels is not None:
-> 4287             (obj, i_obj).drop_axis(labels, axis, level=level, errors=errors)
    4288
    4289         if inplace:
~\anaconda3\lib\site-packages\pandas\core\generic.py in drop_axis(self, labels, axis, level, errors, consolidate, only_slice)
    4309         new_axis = axis.drop(labels, errors=errors)
-> 4311         else
    4312             indexer = axis.get_indexer(new_axis)
    4313
~\anaconda3\lib\site-packages\pandas\core\indexes\base.py in drop(self, labels, errors)
    6609         if mask.any():
    6610             if errors in ["ignore":
-> 6661                 raise KeyError(f"list(labels={mask}) not found in axis")
    6662                 indexer = indexer[mask]
    6663                 return self.delete(indexer)
KeyError: "['quality'] not found in axis"

In [18]: ds['height']<175
Out[18]:
0  False
1   True
2  False
3   True
4  False
5   True
6  False
7   True
8  False
9  False
10  True
11  True
12  False
13  False
14  False
15  False
16  False
17  True
18  True
19  False
20  False
21  True
22  True
23  False
24  False
25  False
26  False
27  False
28  False
29  False
30  False
31  False
32  False
33  False
34  False
35  False
36  False
37  False
38  False
39  False
40  False
41  False
Name: height, dtype: bool

In [19]: ds[ds['height']>=175]
Out[19]:
   order  name  height  quality
0      1  George Washington    189  good
1      2    John Adams        170  good
2      3  Thomas Jefferson    189  good
3      4  James Madison      163  good
4      5  James Monroe       183  good
5      6  John Quincy Adams    171  good
6      7  Andrew Jackson      185  good
7      8  Martin Van Buren     168  good
8      9  William Henry Harrison  173  good
9     10    John Tyler        183  good
10     11  James K. Polk        173  good
11     12  Zachary Taylor       173  good
12     13  Millard Fillmore      175  good
13     14  Franklin Pierce       178  good
14     15  James Buchanan       183  good
15     16  Abraham Lincoln      193  good
16     17  Andrew Johnson       178  good
17     18  Ulysses S. Grant       173  good
18     19  Rutherford B. Hayes    174  good
19     20  James A. Garfield      183  good
20     21  Chester A. Arthur      183  good
21     22  Benjamin Harrison     168  good
22     23  William McKinley       170  good
23     24  Theodore Roosevelt     178  good
24     25  William Howard Taft     182  good
25     26  Woodrow Wilson        180  good
26     27  Warren G. Harding       183  good
27     28  Calvin Coolidge        178  good
28     29  Herbert Hoover         182  good
29     30  Franklin D. Roosevelt    188  good
30     31  Harry S. Truman         175  good
31     32  Dwight D. Eisenhower    179  good
32     33  John F. Kennedy         183  good
33     34  Lyndon B. Johnson        193  good
34     35  Richard Nixon          182  good
35     36  Gerald Ford            183  good
36     37  Jimmy Carter           177  good
37     38  Ronald Reagan           185  good
38     39  George H. W. Bush       188  good
39     40  Bill Clinton            188  good
40     41  George W. Bush          182  good
41     42  Barack Obama           185  good

In [23]: ds[[(ds['height']>=175)&(ds['height']<189)]]
Out[23]:
   order  name  height  quality
12     13  Millard Fillmore      175  good
13     14  Franklin Pierce       178  good
16     17  Andrew Johnson       178  good
23     24  Theodore Roosevelt     178  good
27     30  Calvin Coolidge        178  good
30     33  Harry S. Truman         175  good
36     39  Jimmy Carter           177  good

In [24]: ds.isnull()
Out[24]:
   order  name  height  quality
0  False  False  False  False
1  False  False  False  False
2  False  False  False  False
3  False  False  False  False
4  False  False  False  False
5  False  False  False  False
6  False  False  False  False
7  False  False  False  False
8  False  False  False  False
9  False  False  False  False
10  False  False  False  False
11  False  False  False  False
12  False  False  False  False
13  False  False  False  False
14  False  False  False  False
15  False  False  False  False
16  False  False  False  False
17  False  False  False  False
18  False  False  False  False
19  False  False  False  False
20  False  False  False  False
21  False  False  False  False
22  False  False  False  False
23  False  False  False  False
24  False  False  False  False
25  False  False  False  False
26  False  False  False  False
27  False  False  False  False
28  False  False  False  False
29  False  False  False  False
30  False  False  False  False
31  False  False  False  False
32  False  False  False  False
33  False  False  False  False
34  False  False  False  False
35  False  False  False  False
36  False  False  False  False
37  False  False  False  False
38  False  False  False  False
39  False  False  False  False
40  False  False  False  False
41  False  False  False  False

In [40]: sns.barplot(x='name',y='height',data=ds)
Out[40]:
<AxesSubplot:xlabel='name', ylabel='height', data=ds>

```