Lesson17_Assignment

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Let's assume we have the following DataFrame, which represents information about students' scores:

```python
In [1]: import pandas as pd
        import numpy as np
```

```python
In [2]: data = {'Name': ['Alice', 'Bob', 'Charlie', 'David'],
                'Math Score': [85, 92, 78, 88],
                'English Score': [90, 86, 92, 80]
               }

        df = pd.DataFrame(data)
```

```python
In [3]: df
```

Out[3]:

	Name	Math Score	English Score
0	Alice	85	90
1	Bob	92	86
2	Charlie	78	92
3	David	88	80

1) Retrieve the English score of 'Charlie'.

```python
In [4]: df.loc[df['Name']=='Charlie', 'English Score'].values[0]
```

Out[4]: 92

2) Get the Math scores of all students.

```python
In [5]: df.loc[:, 'Math Score']
```

```
Out[5]: 0    85
        1    92
        2    78
        3    88
        Name: Math Score, dtype: int64
```

3) Access the English score of the first student.

```python
In [6]: df.loc[0, 'English Score']
```

Out[6]: 90

4) Retrieve the Math score of the last student.

```
In [7]: df.loc[df.index[-1], 'Math Score']
```

Out[7]: 88

5) Update Bob's Math score to 95.

```
In [8]: df.loc[df['Name']=='Bob', 'Math Score'] = 95
        df
```

Out[8]:

	Name	Math Score	English Score
0	Alice	85	90
1	Bob	95	86
2	Charlie	78	92
3	David	88	80

6) Increase Charlie's English score by 5 points.

```
In [9]: df.loc[df['Name']=='Charlie', 'English Score'] += 5
        df
```

Out[9]:

	Name	Math Score	English Score
0	Alice	85	90
1	Bob	95	86
2	Charlie	78	97
3	David	88	80

7) Add a new row for 'Eve' with Math Score 88 and English Score 95.

```
In [10]: df.loc[len(df)] = ['Eve', 88, 95]
         df
```

Out[10]:

	Name	Math Score	English Score
0	Alice	85	90
1	Bob	95	86
2	Charlie	78	97
3	David	88	80
4	Eve	88	95

8) Delete the row for 'David' from the DataFrame.

```
In [11]: df.drop(df.index[df['Name']=='David'].values[0], inplace=True)
```

```
In [12]: df
```

Out[12]:

	Name	Math Score	English Score
0	Alice	85	90
1	Bob	95	86
2	Charlie	78	97
4	Eve	88	95

9) Insert a new column called 'Science Score' with values [92, 84, 89, 78].

```
In [13]: df['Science Score'] = [92, 84, 89, 78]
         df
```

Out[13]:

	Name	Math Score	English Score	Science Score
0	Alice	85	90	92
1	Bob	95	86	84
2	Charlie	78	97	89
4	Eve	88	95	78

10) Delete the 'English Score' column from the DataFrame.

```
In [14]: del df['English Score']
         df
```

Out[14]:

	Name	Math Score	Science Score
0	Alice	85	92
1	Bob	95	84
2	Charlie	78	89
4	Eve	88	78

11) Create a new column 'Total Score' that represents the sum of Math Score and English Score for each student.

```
In [15]: data = {'Name': ['Alice', 'Bob', 'Charlie', 'David'],
             'Math Score': [85, 92, 78, 88],
             'English Score': [90, 86, 92, 80]
             }

df = pd.DataFrame(data)
df
```

Out[15]:

	Name	Math Score	English Score
0	Alice	85	90
1	Bob	92	86
2	Charlie	78	92
3	David	88	80

```
In [16]: df['Total Score'] = df['Math Score'] + df['English Score']
df
```

Out[16]:

	Name	Math Score	English Score	Total Score
0	Alice	85	90	175
1	Bob	92	86	178
2	Charlie	78	92	170
3	David	88	80	168

12) Find the student with the highest Total Score.

```
In [17]: df.loc[df['Total Score'].idxmax(), 'Name']
```

Out[17]: 'Bob'

Create a second DataFrame with the following data:

```
In [18]: data2 = {'Name': ['Eve', 'Frank'],
             'Math Score': [87, 76],
             'English Score': [94, 82]
             }
df2 = pd.DataFrame(data2)
```

```
In [19]: df2
```

Out[19]:

	Name	Math Score	English Score
0	Eve	87	94
1	Frank	76	82

```
In [20]: df2['Total Score'] = df2['Math Score'] + df2['English Score']
         df2
```

Out[20]:

	Name	Math Score	English Score	Total Score
0	Eve	87	94	181
1	Frank	76	82	158

Combine this DataFrame (df2) with the original DataFrame (df) to create a new DataFrame that includes all students.

```
In [21]: merged_df = pd.concat([df, df2], ignore_index=True)
         merged_df
```

Out[21]:

	Name	Math Score	English Score	Total Score
0	Alice	85	90	175
1	Bob	92	86	178
2	Charlie	78	92	170
3	David	88	80	168
4	Eve	87	94	181
5	Frank	76	82	158