

```
In [19]: import pandas as pd
```

```
In [21]: data= pd.read_excel(r"C:\Users\moham\OneDrive\Desktop\python_project\student_pbi.xlsx")
```

```
In [23]: student=pd.DataFrame(data)
```

```
In [25]: student
```

Out[25]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60
1	102	SURESH	MBA	87	96	43	42	69	68
2	103	GANESH	BBA	46	86	68	71	72	79
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88
4	105	SOMU	MBA	72	61	81	47	80	97
5	106	SHIVU	BBA	46	41	41	94	53	69
6	107	VINOD	ANALYTICS	43	45	74	62	62	93
7	108	ROOPA	MBA	62	58	70	64	63	38
8	109	VIGNESH	BBA	63	72	93	85	67	98
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58
10	111	KUMAR	MBA	46	65	74	94	92	43
11	112	SAKSHI	BBA	96	58	78	66	51	72
12	113	ANIL	ANALYTICS	68	66	61	96	38	67
13	114	SUJITH	MBA	75	84	39	71	69	39
14	115	KRISHNA	BBA	51	84	74	61	63	73
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67

In [11]: `student.head(5)`

Out[11]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60
1	102	SURESH	MBA	87	96	43	42	69	68
2	103	GANESH	BBA	46	86	68	71	72	79
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88
4	105	SOMU	MBA	72	61	81	47	80	97

In [13]: `student.tail(4)`

Out[13]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI
13	114	SUJITH	MBA	75	84	39	71	69	39
14	115	KRISHNA	BBA	51	84	74	61	63	73
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67

In [15]: `student.columns`

Out[15]: `Index(['ROLL_NO', 'NAME', 'DEPT', 'MATHS', 'SCIENCE', 'SOCIAL', 'KANNADA', 'ENGLISH', 'HINDI'], dtype='object')`

In [17]: `student.shape`

Out[17]: `(17, 9)`

In [19]: `student.info`

```
Out[19]: <bound method DataFrame.info of
 0    101   RAMESH  ANALYTICS    70      58      67      92      36
 1    102   SURESH       MBA     87      96      43      42      69
 2    103   GANESH       BBA     46      86      68      71      72
 3    104  CHANDRU  ANALYTICS    58      74      91      38      73
 4    105    SOMU       MBA     72      61      81      47      80
 5    106   SHIVU       BBA     46      41      41      94      53
 6    107   VINOD  ANALYTICS    43      45      74      62      62
 7    108   ROOPA       MBA     62      58      70      64      63
 8    109  VIGNESH       BBA     63      72      93      85      67
 9    110  VYLESH  ANALYTICS    64      47      95      71      50
10   111    KUMAR       MBA     46      65      74      94      92
11   112   SAKSHI       BBA     96      58      78      66      51
12   113    ANIL  ANALYTICS    68      66      61      96      38
13   114   SUJITH       MBA     75      84      39      71      69
14   115   KRISHNA       BBA     51      84      74      61      63
15   116  VASANTH  ANALYTICS    96      58      78      66      51
16   117    QUEEN  ANALYTICS    68      66      61      96      38

HINDI
 0    60
 1    68
 2    79
 3    88
 4    97
 5    69
 6    93
 7    38
 8    98
 9    58
10   43
11   72
12   67
13   39
14   73
15   72
16   67  >
```

```
In [25]: student.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 17 entries, 0 to 16
Data columns (total 9 columns):
 #   Column   Non-Null Count  Dtype  
---  -- 
 0   ROLL_NO    17 non-null    int64  
 1   NAME       17 non-null    object  
 2   DEPT      17 non-null    object  
 3   MATHS      17 non-null    int64  
 4   SCIENCE    17 non-null    int64  
 5   SOCIAL     17 non-null    int64  
 6   KANNADA    17 non-null    int64  
 7   ENGLISH    17 non-null    int64  
 8   HINDI      17 non-null    int64  
dtypes: int64(7), object(2)
memory usage: 1.3+ KB
```

In [9]: `student.describe()`

Out[9]:

	ROLL_NO	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI
count	17.000000	17.000000	17.000000	17.000000	17.000000	17.000000	17.000000
mean	109.000000	65.352941	65.823529	69.882353	71.529412	60.411765	69.470588
std	5.049752	16.624309	15.322513	16.951705	18.917973	15.455819	18.439488
min	101.000000	43.000000	41.000000	39.000000	38.000000	36.000000	38.000000
25%	105.000000	51.000000	58.000000	61.000000	62.000000	51.000000	60.000000
50%	109.000000	64.000000	65.000000	74.000000	71.000000	63.000000	69.000000
75%	113.000000	72.000000	74.000000	78.000000	92.000000	69.000000	79.000000
max	117.000000	96.000000	96.000000	95.000000	96.000000	92.000000	98.000000

In [77]: `city_data= pd.read_excel(r"C:\Users\moham\OneDrive\Desktop\python_project\student_pbi.xlsx",sheet_name="city")`

In [79]: `city_data`

Out[79]:

	ROLL_NO	NAME	DEPT	CITY
0	101	RAMESH	ANALYTICS	BELGAVI
1	102	SURESH	MBA	TUMKUR
2	103	GANESH	BBA	HUBLI
3	104	CHANDRU	ANALYTICS	DAVANGERE
4	105	SOMU	MBA	NAGAMANGALA
5	106	SHIVU	BBA	BELGAVI
6	107	VINOD	ANALYTICS	MANDYA
7	108	ROOPA	MBA	SHIMOGA
8	109	VIGNESH	BBA	HUBLI
9	110	VYLESH	ANALYTICS	DAVANGERE
10	111	KUMAR	MBA	BIJAPUR
11	112	SAKSHI	BBA	HASSAN
12	113	ANIL	ANALYTICS	mysore
13	114	SUJITH	MBA	BHADRAVATHI
14	115	KRISHNA	BBA	mysore
15	116	VASANTH	ANALYTICS	BANGALORE
16	117	QUEEN	ANALYTICS	BANGALORE

In [81]: `city=pd.DataFrame(city_data)`In [35]: `city`

Out[35]:

	ROLL_NO	NAME	DEPT	CITY
0	101	RAMESH	ANALYTICS	BELGAVI
1	102	SURESH	MBA	TUMKUR
2	103	GANESH	BBA	HUBLI
3	104	CHANDRU	ANALYTICS	DAVANGERE
4	105	SOMU	MBA	NAGAMANGALA
5	106	SHIVU	BBA	BELGAVI
6	107	VINOD	ANALYTICS	MANDYA
7	108	ROOPA	MBA	SHIMOGA
8	109	VIGNESH	BBA	HUBLI
9	110	VYLESH	ANALYTICS	DAVANGERE
10	111	KUMAR	MBA	BIJAPUR
11	112	SAKSHI	BBA	HASSAN
12	113	ANIL	ANALYTICS	mysore
13	114	SUJITH	MBA	BHADRAVATHI
14	115	KRISHNA	BBA	mysore
15	116	VASANTH	ANALYTICS	BANGALORE
16	117	QUEEN	ANALYTICS	BANGALORE

In [37]: student

Out[37]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60
1	102	SURESH	MBA	87	96	43	42	69	68
2	103	GANESH	BBA	46	86	68	71	72	79
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88
4	105	SOMU	MBA	72	61	81	47	80	97
5	106	SHIVU	BBA	46	41	41	94	53	69
6	107	VINOD	ANALYTICS	43	45	74	62	62	93
7	108	ROOPA	MBA	62	58	70	64	63	38
8	109	VIGNESH	BBA	63	72	93	85	67	98
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58
10	111	KUMAR	MBA	46	65	74	94	92	43
11	112	SAKSHI	BBA	96	58	78	66	51	72
12	113	ANIL	ANALYTICS	68	66	61	96	38	67
13	114	SUJITH	MBA	75	84	39	71	69	39
14	115	KRISHNA	BBA	51	84	74	61	63	73
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67

In [29]: `student["TOTAL"] = student["MATHS"] + student["SCIENCE"] + student["SOCIAL"] + student["KANNADA"] + student["ENGLISH"] + student["HINDI"]`In [41]: `student`

Out[41]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	Total
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383
1	102	SURESH	MBA	87	96	43	42	69	68	405
2	103	GANESH	BBA	46	86	68	71	72	79	422
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422
4	105	SOMU	MBA	72	61	81	47	80	97	438
5	106	SHIVU	BBA	46	41	41	94	53	69	344
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379
7	108	ROOPA	MBA	62	58	70	64	63	38	355
8	109	VIGNESH	BBA	63	72	93	85	67	98	478
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385
10	111	KUMAR	MBA	46	65	74	94	92	43	414
11	112	SAKSHI	BBA	96	58	78	66	51	72	421
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396
13	114	SUJITH	MBA	75	84	39	71	69	39	377
14	115	KRISHNA	BBA	51	84	74	61	63	73	406
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396

In [45]: student

Out[45]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	Total	TOTAL
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	383
1	102	SURESH	MBA	87	96	43	42	69	68	405	405
2	103	GANESH	BBA	46	86	68	71	72	79	422	422
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	422
4	105	SOMU	MBA	72	61	81	47	80	97	438	438
5	106	SHIVU	BBA	46	41	41	94	53	69	344	344
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	379
7	108	ROOPA	MBA	62	58	70	64	63	38	355	355
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	478
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	385
10	111	KUMAR	MBA	46	65	74	94	92	43	414	414
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	421
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	396
13	114	SUJITH	MBA	75	84	39	71	69	39	377	377
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	406
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	421
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	396

In [31]: student["PERCENT"] = student["TOTAL"] / 600 * 100

In [49]: student

Out[49]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	Total	TOTAL	PERCENT
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	383	63.833333
1	102	SURESH	MBA	87	96	43	42	69	68	405	405	67.500000
2	103	GANESH	BBA	46	86	68	71	72	79	422	422	70.333333
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	422	70.333333
4	105	SOMU	MBA	72	61	81	47	80	97	438	438	73.000000
5	106	SHIVU	BBA	46	41	41	94	53	69	344	344	57.333333
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	379	63.166667
7	108	ROOPA	MBA	62	58	70	64	63	38	355	355	59.166667
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	478	79.666667
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	385	64.166667
10	111	KUMAR	MBA	46	65	74	94	92	43	414	414	69.000000
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	421	70.166667
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	396	66.000000
13	114	SUJITH	MBA	75	84	39	71	69	39	377	377	62.833333
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	406	67.666667
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	421	70.166667
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	396	66.000000

In [49]: `student["PERCENT"] = round(student["TOTAL"] / 600 * 100, 2)`In [53]: `student`

Out[53]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	Total	TOTAL	PERCENT
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	383	63.83
1	102	SURESH	MBA	87	96	43	42	69	68	405	405	67.50
2	103	GANESH	BBA	46	86	68	71	72	79	422	422	70.33
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	422	70.33
4	105	SOMU	MBA	72	61	81	47	80	97	438	438	73.00
5	106	SHIVU	BBA	46	41	41	94	53	69	344	344	57.33
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	379	63.17
7	108	ROOPA	MBA	62	58	70	64	63	38	355	355	59.17
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	478	79.67
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	385	64.17
10	111	KUMAR	MBA	46	65	74	94	92	43	414	414	69.00
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	421	70.17
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	396	66.00
13	114	SUJITH	MBA	75	84	39	71	69	39	377	377	62.83
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	406	67.67
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	421	70.17
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	396	66.00

In [57]: `student.sort_values(by="ROLL_NO", ascending=False)`

Out[57]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	Total	TOTAL	PERCENT
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	396	66.00
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	421	70.17
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	406	67.67
13	114	SUJITH	MBA	75	84	39	71	69	39	377	377	62.83
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	396	66.00
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	421	70.17
10	111	KUMAR	MBA	46	65	74	94	92	43	414	414	69.00
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	385	64.17
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	478	79.67
7	108	ROOPA	MBA	62	58	70	64	63	38	355	355	59.17
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	379	63.17
5	106	SHIVU	BBA	46	41	41	94	53	69	344	344	57.33
4	105	SOMU	MBA	72	61	81	47	80	97	438	438	73.00
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	422	70.33
2	103	GANESH	BBA	46	86	68	71	72	79	422	422	70.33
1	102	SURESH	MBA	87	96	43	42	69	68	405	405	67.50
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	383	63.83

In [61]:

```
#sorting data multiple columns
student.sort_values(by=["DEPT","ENGLISH"],ascending=[True, False])
```

Out[61]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	Total	TOTAL	PERCENT
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	422	70.33
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	379	63.17
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	421	70.17
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	385	64.17
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	396	66.00
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	396	66.00
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	383	63.83
2	103	GANESH	BBA	46	86	68	71	72	79	422	422	70.33
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	478	79.67
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	406	67.67
5	106	SHIVU	BBA	46	41	41	94	53	69	344	344	57.33
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	421	70.17
10	111	KUMAR	MBA	46	65	74	94	92	43	414	414	69.00
4	105	SOMU	MBA	72	61	81	47	80	97	438	438	73.00
1	102	SURESH	MBA	87	96	43	42	69	68	405	405	67.50
13	114	SUJITH	MBA	75	84	39	71	69	39	377	377	62.83
7	108	ROOPA	MBA	62	58	70	64	63	38	355	355	59.17

In [33]: `student.sort_values(by=["NAME", "TOTAL"], ascending=[True, False])`

Out[33]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	TOTAL	PERCENT
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	66.000000
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	70.333333
2	103	GANESH	BBA	46	86	68	71	72	79	422	70.333333
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	67.666667
10	111	KUMAR	MBA	46	65	74	94	92	43	414	69.000000
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	66.000000
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	63.833333
7	108	ROOPA	MBA	62	58	70	64	63	38	355	59.166667
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	70.166667
5	106	SHIVU	BBA	46	41	41	94	53	69	344	57.333333
4	105	SOMU	MBA	72	61	81	47	80	97	438	73.000000
13	114	SUJITH	MBA	75	84	39	71	69	39	377	62.833333
1	102	SURESH	MBA	87	96	43	42	69	68	405	67.500000
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	70.166667
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	79.666667
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	63.166667
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	64.166667

In [65]:

```
#Filtering data
student[student["DEPT"]=="ANALYTICS"]
```

Out[65]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	Total	TOTAL	PERCENT
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	383	63.83
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	422	70.33
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	379	63.17
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	385	64.17
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	396	66.00
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	421	70.17
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	396	66.00

In [67]:

```
student[student["TOTAL"]>400]
```

Out[67]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	Total	TOTAL	PERCENT
1	102	SURESH	MBA	87	96	43	42	69	68	405	405	67.50
2	103	GANESH	BBA	46	86	68	71	72	79	422	422	70.33
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	422	70.33
4	105	SOMU	MBA	72	61	81	47	80	97	438	438	73.00
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	478	79.67
10	111	KUMAR	MBA	46	65	74	94	92	43	414	414	69.00
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	421	70.17
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	406	67.67
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	421	70.17

In [73]:

```
student['Result'] = student['TOTAL'].apply(lambda x: 'Pass' if x > 400 else 'Fail')
print(student)
```

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	\
0	101	RAMESH	ANALYTICS	70	58	67	92	36	
1	102	SURESH	MBA	87	96	43	42	69	
2	103	GANESH	BBA	46	86	68	71	72	
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	
4	105	SOMU	MBA	72	61	81	47	80	
5	106	SHIVU	BBA	46	41	41	94	53	
6	107	VINOD	ANALYTICS	43	45	74	62	62	
7	108	ROOPA	MBA	62	58	70	64	63	
8	109	VIGNESH	BBA	63	72	93	85	67	
9	110	VYLESH	ANALYTICS	64	47	95	71	50	
10	111	KUMAR	MBA	46	65	74	94	92	
11	112	SAKSHI	BBA	96	58	78	66	51	
12	113	ANIL	ANALYTICS	68	66	61	96	38	
13	114	SUJITH	MBA	75	84	39	71	69	
14	115	KRISHNA	BBA	51	84	74	61	63	
15	116	VASANTH	ANALYTICS	96	58	78	66	51	
16	117	QUEEN	ANALYTICS	68	66	61	96	38	

	HINDI	Total	TOTAL	PERCENT	Result
0	60	383	383	63.83	Fail
1	68	405	405	67.50	Pass
2	79	422	422	70.33	Pass
3	88	422	422	70.33	Pass
4	97	438	438	73.00	Pass
5	69	344	344	57.33	Fail
6	93	379	379	63.17	Fail
7	38	355	355	59.17	Fail
8	98	478	478	79.67	Pass
9	58	385	385	64.17	Fail
10	43	414	414	69.00	Pass
11	72	421	421	70.17	Pass
12	67	396	396	66.00	Fail
13	39	377	377	62.83	Fail
14	73	406	406	67.67	Pass
15	72	421	421	70.17	Pass
16	67	396	396	66.00	Fail

```
In [79]: student[(student["DEPT"]=="MBA") & (student["PERCENT"]>60)].sort_values(by="PERCENT", ascending=False)
```

Out[79]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	Total	TOTAL	PERCENT	Result
4	105	SOMU	MBA	72	61	81	47	80	97	438	438	73.00	Pass
10	111	KUMAR	MBA	46	65	74	94	92	43	414	414	69.00	Pass
1	102	SURESH	MBA	87	96	43	42	69	68	405	405	67.50	Pass
13	114	SUJITH	MBA	75	84	39	71	69	39	377	377	62.83	Fail

In [37]:

```
student[(student["DEPT"]=="ANALYTICS") & (student["TOTAL"]>400)].sort_values(by="TOTAL", ascending=False)
```

Out[37]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	TOTAL	PERCENT
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	70.333333
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	70.166667

In [89]:

```
student.duplicated()
```

Out[89]:

```
0    False
1    False
2    False
3    False
4    False
5    False
6    False
7    False
8    False
9    False
10   False
11   False
12   False
13   False
14   False
15   False
16   False
dtype: bool
```

In [91]:

```
student.drop(columns=["Total"])
```

Out[91]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	TOTAL	PERCENT	Result
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	63.83	Fail
1	102	SURESH	MBA	87	96	43	42	69	68	405	67.50	Pass
2	103	GANESH	BBA	46	86	68	71	72	79	422	70.33	Pass
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	70.33	Pass
4	105	SOMU	MBA	72	61	81	47	80	97	438	73.00	Pass
5	106	SHIVU	BBA	46	41	41	94	53	69	344	57.33	Fail
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	63.17	Fail
7	108	ROOPA	MBA	62	58	70	64	63	38	355	59.17	Fail
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	79.67	Pass
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	64.17	Fail
10	111	KUMAR	MBA	46	65	74	94	92	43	414	69.00	Pass
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	70.17	Pass
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	66.00	Fail
13	114	SUJITH	MBA	75	84	39	71	69	39	377	62.83	Fail
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	67.67	Pass
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	70.17	Pass
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	66.00	Fail

In [55]: `student[student["NAME"].str.startswith("S")]`

Out[55]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	TOTAL	PERCENT
1	102	SURESH	MBA	87	96	43	42	69	68	405	67.50
4	105	SOMU	MBA	72	61	81	47	80	97	438	73.00
5	106	SHIVU	BBA	46	41	41	94	53	69	344	57.33
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	70.17
13	114	SUJITH	MBA	75	84	39	71	69	39	377	62.83

In [53]:

```
student[student["NAME"].str.endswith("H")]
```

Out[53]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	TOTAL	PERCENT
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	63.83
1	102	SURESH	MBA	87	96	43	42	69	68	405	67.50
2	103	GANESH	BBA	46	86	68	71	72	79	422	70.33
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	79.67
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	64.17
13	114	SUJITH	MBA	75	84	39	71	69	39	377	62.83
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	70.17

In [51]:

```
student[student["NAME"].str.contains("A")]
```

Out[51]:

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	TOTAL	PERCENT
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	63.83
2	103	GANESH	BBA	46	86	68	71	72	79	422	70.33
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	70.33
7	108	ROOPA	MBA	62	58	70	64	63	38	355	59.17
10	111	KUMAR	MBA	46	65	74	94	92	43	414	69.00
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	70.17
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	66.00
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	67.67
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	70.17

In [59]:

```
# Aggregate Functions
print(student["MATHS"].sum())
print(student["ENGLISH"].sum())
print(student["HINDI"].sum())
```

1111

1027

1181

In [63]:

```
print(student["SCIENCE"].mean().round(2))
print(student["SOCIAL"].mean().round(2))
print(student["KANNADA"].mean().round(2))
```

65.82

69.88

71.53

In [65]:

```
print(student["MATHS"].min())
print(student["ENGLISH"].min())
print(student["HINDI"].min())
```

```
43  
36  
38
```

```
In [67]: # group by in python(aggregating and summarizing data)  
  
student.groupby("DEPT")[["MATHS", "ENGLISH", "SOCIAL"]].count()
```

```
Out[67]:
```

	MATHS	ENGLISH	SOCIAL
DEPT			
ANALYTICS	7	7	7
BBA	5	5	5
MBA	5	5	5

```
In [69]: student.groupby("DEPT")[["MATHS", "ENGLISH", "SOCIAL"]].sum()
```

```
Out[69]:
```

	MATHS	ENGLISH	SOCIAL
DEPT			
ANALYTICS	467	348	527
BBA	302	306	354
MBA	342	373	307

```
In [71]: student.groupby("DEPT")["TOTAL"].agg({'count', 'sum', 'min', 'max', 'mean', 'std'})
```

```
Out[71]:
```

	max	count	sum	mean	min	std
DEPT						
ANALYTICS	422	7	2782	397.428571	379	17.633842
BBA	478	5	2071	414.200000	344	47.887368
MBA	438	5	1989	397.800000	355	32.383638

In [73]: student

	ROLL_NO	NAME	DEPT	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	TOTAL	PERCENT
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	63.83
1	102	SURESH	MBA	87	96	43	42	69	68	405	67.50
2	103	GANESH	BBA	46	86	68	71	72	79	422	70.33
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	70.33
4	105	SOMU	MBA	72	61	81	47	80	97	438	73.00
5	106	SHIVU	BBA	46	41	41	94	53	69	344	57.33
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	63.17
7	108	ROOPA	MBA	62	58	70	64	63	38	355	59.17
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	79.67
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	64.17
10	111	KUMAR	MBA	46	65	74	94	92	43	414	69.00
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	70.17
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	66.00
13	114	SUJITH	MBA	75	84	39	71	69	39	377	62.83
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	67.67
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	70.17
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	66.00

In [83]: city

Out[83]:

	ROLL_NO	NAME	DEPT	CITY
0	101	RAMESH	ANALYTICS	BELGAVI
1	102	SURESH	MBA	TUMKUR
2	103	GANESH	BBA	HUBLI
3	104	CHANDRU	ANALYTICS	DAVANGERE
4	105	SOMU	MBA	NAGAMANGALA
5	106	SHIVU	BBA	BELGAVI
6	107	VINOD	ANALYTICS	MANDYA
7	108	ROOPA	MBA	SHIMOGA
8	109	VIGNESH	BBA	HUBLI
9	110	VYLESH	ANALYTICS	DAVANGERE
10	111	KUMAR	MBA	BIJAPUR
11	112	SAKSHI	BBA	HASSAN
12	113	ANIL	ANALYTICS	mysore
13	114	SUJITH	MBA	BHADRAVATHI
14	115	KRISHNA	BBA	mysore
15	116	VASANTH	ANALYTICS	BANGALORE
16	117	QUEEN	ANALYTICS	BANGALORE

In [85]:

```
student.merge(city, left_on="ROLL_NO", right_on="ROLL_NO", how="inner")
```

Out[85]:

	ROLL_NO	NAME_x	DEPT_x	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	TOTAL	PERCENT	NAME_y	DEPT_y	CITY
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	63.83	RAMESH	ANALYTICS	BELGAVI
1	102	SURESH	MBA	87	96	43	42	69	68	405	67.50	SURESH	MBA	TUMKUR
2	103	GANESH	BBA	46	86	68	71	72	79	422	70.33	GANESH	BBA	HUBLI
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	70.33	CHANDRU	ANALYTICS	DAVANGERE
4	105	SOMU	MBA	72	61	81	47	80	97	438	73.00	SOMU	MBA	NAGAMANGALA
5	106	SHIVU	BBA	46	41	41	94	53	69	344	57.33	SHIVU	BBA	BELGAVI
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	63.17	VINOD	ANALYTICS	MANDYA
7	108	ROOPA	MBA	62	58	70	64	63	38	355	59.17	ROOPA	MBA	SHIMOGA
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	79.67	VIGNESH	BBA	HUBLI
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	64.17	VYLESH	ANALYTICS	DAVANGERE
10	111	KUMAR	MBA	46	65	74	94	92	43	414	69.00	KUMAR	MBA	BIJAPUR
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	70.17	SAKSHI	BBA	HASSAN
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	66.00	ANIL	ANALYTICS	mysore
13	114	SUJITH	MBA	75	84	39	71	69	39	377	62.83	SUJITH	MBA	BHADRAVATHI
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	67.67	KRISHNA	BBA	mysore
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	70.17	VASANTH	ANALYTICS	BANGALORE
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	66.00	QUEEN	ANALYTICS	BANGALORE

In [87]: `student.merge(city, left_on="ROLL_NO", right_on="ROLL_NO", how="right")`

Out[87]:

	ROLL_NO	NAME_x	DEPT_x	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	TOTAL	PERCENT	NAME_y	DEPT_y	CITY
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	63.83	RAMESH	ANALYTICS	BELGAVI
1	102	SURESH	MBA	87	96	43	42	69	68	405	67.50	SURESH	MBA	TUMKUR
2	103	GANESH	BBA	46	86	68	71	72	79	422	70.33	GANESH	BBA	HUBLI
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	70.33	CHANDRU	ANALYTICS	DAVANGERE
4	105	SOMU	MBA	72	61	81	47	80	97	438	73.00	SOMU	MBA	NAGAMANGALA
5	106	SHIVU	BBA	46	41	41	94	53	69	344	57.33	SHIVU	BBA	BELGAVI
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	63.17	VINOD	ANALYTICS	MANDYA
7	108	ROOPA	MBA	62	58	70	64	63	38	355	59.17	ROOPA	MBA	SHIMOGA
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	79.67	VIGNESH	BBA	HUBLI
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	64.17	VYLESH	ANALYTICS	DAVANGERE
10	111	KUMAR	MBA	46	65	74	94	92	43	414	69.00	KUMAR	MBA	BIJAPUR
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	70.17	SAKSHI	BBA	HASSAN
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	66.00	ANIL	ANALYTICS	mysore
13	114	SUJITH	MBA	75	84	39	71	69	39	377	62.83	SUJITH	MBA	BHADRAVATHI
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	67.67	KRISHNA	BBA	mysore
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	70.17	VASANTH	ANALYTICS	BANGALORE
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	66.00	QUEEN	ANALYTICS	BANGALORE

In [89]: `student.merge(city, left_on="ROLL_NO", right_on="ROLL_NO", how="left")`

Out[89]:

	ROLL_NO	NAME_x	DEPT_x	MATHS	SCIENCE	SOCIAL	KANNADA	ENGLISH	HINDI	TOTAL	PERCENT	NAME_y	DEPT_y	CITY
0	101	RAMESH	ANALYTICS	70	58	67	92	36	60	383	63.83	RAMESH	ANALYTICS	BELGAVI
1	102	SURESH	MBA	87	96	43	42	69	68	405	67.50	SURESH	MBA	TUMKUR
2	103	GANESH	BBA	46	86	68	71	72	79	422	70.33	GANESH	BBA	HUBLI
3	104	CHANDRU	ANALYTICS	58	74	91	38	73	88	422	70.33	CHANDRU	ANALYTICS	DAVANGERE
4	105	SOMU	MBA	72	61	81	47	80	97	438	73.00	SOMU	MBA	NAGAMANGALA
5	106	SHIVU	BBA	46	41	41	94	53	69	344	57.33	SHIVU	BBA	BELGAVI
6	107	VINOD	ANALYTICS	43	45	74	62	62	93	379	63.17	VINOD	ANALYTICS	MANDYA
7	108	ROOPA	MBA	62	58	70	64	63	38	355	59.17	ROOPA	MBA	SHIMOGA
8	109	VIGNESH	BBA	63	72	93	85	67	98	478	79.67	VIGNESH	BBA	HUBLI
9	110	VYLESH	ANALYTICS	64	47	95	71	50	58	385	64.17	VYLESH	ANALYTICS	DAVANGERE
10	111	KUMAR	MBA	46	65	74	94	92	43	414	69.00	KUMAR	MBA	BIJAPUR
11	112	SAKSHI	BBA	96	58	78	66	51	72	421	70.17	SAKSHI	BBA	HASSAN
12	113	ANIL	ANALYTICS	68	66	61	96	38	67	396	66.00	ANIL	ANALYTICS	mysore
13	114	SUJITH	MBA	75	84	39	71	69	39	377	62.83	SUJITH	MBA	BHADRAVATHI
14	115	KRISHNA	BBA	51	84	74	61	63	73	406	67.67	KRISHNA	BBA	mysore
15	116	VASANTH	ANALYTICS	96	58	78	66	51	72	421	70.17	VASANTH	ANALYTICS	BANGALORE
16	117	QUEEN	ANALYTICS	68	66	61	96	38	67	396	66.00	QUEEN	ANALYTICS	BANGALORE

In []:

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