In [1]:

```
import pandas as pd
import numpy as np
```

In [2]:

```
df = pd.read_csv('shoppingmall.csv')
```

In [3]:

```
df.head()
```

Out[3]:

	ID	Gender	Age	Income	Score
0	1	Male	19	15	39
1	2	Male	21	15	81
2	3	Female	20	16	6
3	4	Female	23	16	77
4	5	Female	31	17	40

In [4]:

```
# Q1. select * from cust

df
```

Out[4]:

	ID	Gender	Age	Income	Score
0	1	Male	19	15	39
1	2	Male	21	15	81
2	3	Female	20	16	6
3	4	Female	23	16	77
4	5	Female	31	17	40
...	...	...	...	...	...
195	196	Female	35	120	79
196	197	Female	45	126	28
197	198	Male	32	126	74
198	199	Male	32	137	18
199	200	Male	30	137	83

200 rows × 5 columns

In [5]:

```
# Q2. select * from cust limit 8

df.head(8)
```

Out[5]:

	ID	Gender	Age	Income	Score
0	1	Male	19	15	39
1	2	Male	21	15	81
2	3	Female	20	16	6
3	4	Female	23	16	77
4	5	Female	31	17	40
5	6	Female	22	17	76
6	7	Female	35	18	6
7	8	Female	23	18	94

In [6]:

```
# Q3. select * from cust where Income = 23

df[df['Income'] == 23]
```

Out[6]:

	ID	Gender	Age	Income	Score
18	19	Male	52	23	29
19	20	Female	35	23	98

In [7]:

```
# Q4. select ID from cust where income=23

df[df['Income'] == 23]['ID']
```

Out[7]:

```
18    19
19    20
Name: ID, dtype: int64
```

In [8]:

```
# Q5. select ID,Gender from cust where income=23

df[df['Income'] == 23][['ID', 'Gender']]
```

Out[8]:

	ID	Gender
18	19	Male
19	20	Female

In [9]:

```
# Q6. select * from cust where income=23 and Score=98

df[(df['Income'] == 23) & (df['Score'] == 98)]
```

Out[9]:

	ID	Gender	Age	Income	Score
19	20	Female	35	23	98

In [10]:

```
# Q7. select ID, Age from cust where Income=23 and Score=98

df[(df['Income'] == 23) & (df['Score'] == 98)][['ID', 'Age']]
```

Out[10]:

	ID	Age
19	20	35

In [11]:

```
# Q8. select mean(Age),max(Age),min(Age) from cust

print("mean age : ", df['Age'].mean())
print("max age : ", df['Age'].max())
print("min age : ", df['Age'].mean())
```

```
mean age :  38.85
max age :  70
min age :  38.85
```

In [12]:

```
# Q9. select distinct Income from cust

np.unique(df['Income'])
```

Out[12]:

```
array([ 15,  16,  17,  18,  19,  20,  21,  23,  24,  25,  28,  29,
30,
        33,  34,  37,  38,  39,  40,  42,  43,  44,  46,  47,  48,
49,
        50,  54,  57,  58,  59,  60,  61,  62,  63,  64,  65,  67,
69,
        70,  71,  72,  73,  74,  75,  76,  77,  78,  79,  81,  85,
86,
        87,  88,  93,  97,  98,  99, 101, 103, 113, 120, 126, 137])
```

In [13]:

```
df.drop_duplicates('Income')['Income']
```

Out[13]:

```
0       15
2       16
4       17
6       18
8       19
      ...
188    103
192    113
194    120
196    126
198    137
Name: Income, Length: 64, dtype: int64
```

In [14]:

```
# Q10. select * from cust where gender='Female' order by Score

df[df['Gender'] == 'Female'].sort_values(by = ['Score'])
```

Out[14]:

	ID	Gender	Age	Income	Score
140	141	Female	57	75	5
22	23	Female	46	25	5
2	3	Female	20	16	6
6	7	Female	35	18	6
136	137	Female	44	73	7
...	...	...	...	...	...
163	164	Female	31	81	93
7	8	Female	23	18	94
167	168	Female	33	86	95
19	20	Female	35	23	98
11	12	Female	35	19	99

112 rows × 5 columns

In [15]:

```
# Q11. select * from cust where gender='Female' order by Score desc

df[df['Gender'] == 'Female'].sort_values(by = ['Score'], ascending = False)
```

Out[15]:

	ID	Gender	Age	Income	Score
11	12	Female	35	19	99
19	20	Female	35	23	98
167	168	Female	33	86	95
7	8	Female	23	18	94
163	164	Female	31	81	93
...	...	...	...	...	...
136	137	Female	44	73	7
6	7	Female	35	18	6
2	3	Female	20	16	6
22	23	Female	46	25	5
140	141	Female	57	75	5

112 rows × 5 columns

In [16]:

```
# Q12. select Gender, Age, count(*) from cust group by Gender, Age

df.groupby(['Gender', 'Age']).agg('count')
```

Out[16]:

		ID	Income	Score
Gender	**Age**			
	18	1	1	1
	19	2	2	2
Female	**20**	2	2	2
	21	4	4	4
	22	2	2	2
...	**...**	...	...	...
	66	1	1	1
	67	3	3	3
Male	**68**	1	1	1
	69	1	1	1
	70	2	2	2

87 rows × 3 columns

In [17]:

```
# Q13. select Gender, Age, count(*) from cust group by Gender, Age order by Age d

df.groupby(['Gender', 'Age']).agg('count').sort_values(by='Age')
```

Out[17]:

		ID	Income	Score
Gender	**Age**			
Female	**18**	1	1	1
Male	**18**	3	3	3
	19	6	6	6
Female	**19**	2	2	2
Male	**20**	3	3	3
...	**...**	...	...	...
Female	**67**	1	1	1
Male	**68**	1	1	1
Female	**68**	2	2	2
Male	**69**	1	1	1
	70	2	2	2

87 rows × 3 columns

In [18]:

```
# Q14. select * from cust where Age in(20,30,40)

df[(df['Age'] >= 20) & (df['Age'] <= 40 )]
```

Out[18]:

	ID	Gender	Age	Income	Score
1	2	Male	21	15	81
2	3	Female	20	16	6
3	4	Female	23	16	77
4	5	Female	31	17	40
5	6	Female	22	17	76
...	...	...	...	...	...
193	194	Female	38	113	91
195	196	Female	35	120	79
197	198	Male	32	126	74
198	199	Male	32	137	18
199	200	Male	30	137	83

110 rows × 5 columns

In [19]:

```
# Q15. select * from cust where Age not in(20,30,40)

df[(df['Age'] < 20) | (df['Age'] > 40 )]
```

Out[19]:

	ID	Gender	Age	Income	Score
0	1	Male	19	15	39
8	9	Male	64	19	3
10	11	Male	67	19	14
12	13	Female	58	20	15
18	19	Male	52	23	29
...	...	...	...	...	...
184	185	Female	41	99	39
186	187	Female	54	101	24
188	189	Female	41	103	17
194	195	Female	47	120	16
196	197	Female	45	126	28

90 rows × 5 columns

In [20]:

```
# Q17. select * from cust order by Score desc limit 10

df.sort_values(by = 'Score', ascending=False)
```

Out[20]:

	ID	Gender	Age	Income	Score
11	12	Female	35	19	99
19	20	Female	35	23	98
145	146	Male	28	77	97
185	186	Male	30	99	97
127	128	Male	40	71	95
...	...	...	...	...	...
30	31	Male	60	30	4
32	33	Male	53	33	4
8	9	Male	64	19	3
158	159	Male	34	78	1
156	157	Male	37	78	1

200 rows × 5 columns

In [21]:

```
# Q18. select * from cust order by Score desc limit 10 offset 5

df.sort_values(by = 'Score', ascending=False)[5:15]
```

Out[21]:

	ID	Gender	Age	Income	Score
167	168	Female	33	86	95
7	8	Female	23	18	94
141	142	Male	32	75	93
163	164	Female	31	81	93
41	42	Male	24	38	92
33	34	Male	18	33	92
173	174	Male	36	87	92
123	124	Male	39	69	91
193	194	Female	38	113	91
179	180	Male	35	93	90

In [22]:

```
# Q19. select * from cust order by Score desc limit 20 offset 10

df.sort_values(by = 'Score', ascending=False)[10:30]
```

Out[22]:

	ID	Gender	Age	Income	Score
33	34	Male	18	33	92
173	174	Male	36	87	92
123	124	Male	39	69	91
193	194	Female	38	113	91
179	180	Male	35	93	90
149	150	Male	34	78	90
155	156	Female	27	78	89
135	136	Female	29	73	88
183	184	Female	29	98	88
151	152	Male	39	78	88
143	144	Female	32	76	87
29	30	Female	23	29	87
181	182	Female	32	97	86
175	176	Female	30	88	86
189	190	Female	36	103	85
161	162	Female	29	79	83
199	200	Male	30	137	83
25	26	Male	29	28	82
1	2	Male	21	15	81
35	36	Female	21	33	81