```
In [1]:  import pandas as pd

         data = {'Name': ['ABC', 'XYZ', 'SITA',
          'RAM', 'Ravi', 'QWER', 'OPQ'],
          'Age': [17, 17, 18, 17, 18, 17, 17],
          'Gender': ['M', 'F', 'M', 'M', 'M', 'F', 'F'],
          'Marks': [90, 76, 'NaN', 74, 65, 'NaN', 71]}

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

Out[1]:

	Name	Age	Gender	Marks
0	ABC	17	M	90
1	XYZ	17	F	76
2	SITA	18	M	NaN
3	RAM	17	M	74
4	Ravi	18	M	65
5	QWER	17	F	NaN
6	OPQ	17	F	71

```
In [2]:  c=avg = 0
         for ele in df['Marks']:
             if str(ele).isnumeric():
                 c+=1
                 avg +=ele
         avg /=c
         df = df.replace(to_replace ='NaN',value = avg)
         df
```

Out[2]:

	Name	Age	Gender	Marks
0	ABC	17	M	90.0
1	XYZ	17	F	76.0

	Name	Age	Gender	Marks
2	SITA	18	M	75.2
3	RAM	17	M	74.0
4	Ravi	18	M	65.0
5	QWER	17	F	75.2
6	OPQ	17	F	71.0

In [3]:
```python
df['Gender']=df['Gender'].map({'M':0,'F':1}).astype(float)
df
```

Out[3]:

	Name	Age	Gender	Marks
0	ABC	17	0.0	90.0
1	XYZ	17	1.0	76.0
2	SITA	18	0.0	75.2
3	RAM	17	0.0	74.0
4	Ravi	18	0.0	65.0
5	QWER	17	1.0	75.2
6	OPQ	17	1.0	71.0

In [4]:
```python
df = df[df['Marks']>=70].copy()
df
```

Out[4]:

	Name	Age	Gender	Marks
0	ABC	17	0.0	90.0
1	XYZ	17	1.0	76.0
2	SITA	18	0.0	75.2
3	RAM	17	0.0	74.0

	Name	Age	Gender	Marks
5	QWER	17	1.0	75.2
6	OPQ	17	1.0	71.0

In [6]:
```python
import pandas as pd
details = pd.DataFrame({
'ID': [1,2,3,4,5,6,7,8,9,10],
'NAME': ['Ann', 'Paul', 'Candy',
'Ben', 'Kennedy', 'Dennis',
'Lisa', 'David', 'Mathew', 'Jennifer'],
'BRANCH': ['MEC', 'CSE', 'CSE', 'EEE', 'CIVIL',
'IT', 'CSE', 'MEC', 'EEE', 'CIVIL']})
print(details)
```

```
   ID      NAME BRANCH
0   1       Ann    MEC
1   2      Paul    CSE
2   3     Candy    CSE
3   4       Ben    EEE
4   5   Kennedy  CIVIL
5   6    Dennis     IT
6   7      Lisa    CSE
7   8     David    MEC
8   9    Mathew    EEE
9  10  Jennifer  CIVIL
```

In [8]:
```python
import pandas as pd
fees_status = pd.DataFrame(
{'ID': [1,2,3,4,5,6,7,8,9,10],
'PENDING': ['5000', '250', 'NIL',
'9000', '15000', 'NIL',
'4500', '1800', '250', 'NIL']})
print(fees_status)
```

```
   ID PENDING
0   1    5000
1   2     250
2   3     NIL
3   4    9000
4   5   15000
```

```
5   6       NIL
6   7      4500
7   8      1800
8   9       250
9  10       NIL
```

```python
import pandas as pd
details = pd.DataFrame({
'ID': [1,2,3,4,5,6,7,8,9,10],
'NAME': ['Ann', 'Paul', 'Candy',
'Ben', 'Kennedy', 'Dennis',
'Lisa', 'David', 'Mathew', 'Jennifer'],
'BRANCH': ['MEC', 'CSE', 'CSE', 'EEE', 'CIVIL',
'IT', 'CSE', 'MEC', 'EEE', 'CIVIL']})

fees_status = pd.DataFrame(
{'ID': [1,2,3,4,5,6,7,8,9,10],
'PENDING': ['5000', '250', 'NIL',
'9000', '15000', 'NIL',
'4500', '1800', '250', 'NIL']})
print(pd.merge(details, fees_status, on='ID'))
```

```
    ID     NAME BRANCH PENDING
0    1      Ann    MEC    5000
1    2     Paul    CSE     250
2    3    Candy    CSE     NIL
3    4      Ben    EEE    9000
4    5  Kennedy  CIVIL   15000
5    6   Dennis     IT     NIL
6    7     Lisa    CSE    4500
7    8    David    MEC    1800
8    9   Mathew    EEE     250
9   10  Jennifer CIVIL     NIL
```

```python
import pandas as pd

car_selling_data = {'Brand': ['Maruti', 'Maruti', 'Maruti',
 'Maruti', 'Hyundai', 'Hyundai',
 'Toyota', 'Mahindra', 'Mahindra',
 'Ford', 'Toyota', 'Ford'],
 'Year': [2010, 2011, 2009, 2013,
 2010, 2011, 2011, 2010,
```

```
       2013, 2010, 2010, 2011],
       'Sold': [6, 7, 9, 8, 3, 5,
       2, 8, 7, 2, 4, 2]}

df = pd.DataFrame(car_selling_data)

print(df)
```

```
        Brand  Year  Sold
0      Maruti  2010     6
1      Maruti  2011     7
2      Maruti  2009     9
3      Maruti  2013     8
4     Hyundai  2010     3
5     Hyundai  2011     5
6       Toyota  2011     2
7    Mahindra  2010     8
8    Mahindra  2013     7
9        Ford  2010     2
10      Toyota  2010     4
11       Ford  2011     2
```

In [11]:
```
car_selling_data = {'Brand': ['Maruti', 'Maruti', 'Maruti',
    'Maruti', 'Hyundai', 'Hyundai',
    'Toyota', 'Mahindra', 'Mahindra',
    'Ford', 'Toyota', 'Ford'],
    'Year': [2010, 2011, 2009, 2013,
    2010, 2011, 2011, 2010,
    2013, 2010, 2010, 2011],
    'Sold': [6, 7, 9, 8, 3, 5,
    2, 8, 7, 2, 4, 2]}

df = pd.DataFrame(car_selling_data)
grouped = df.groupby('Year')
print(grouped.get_group(2010))
```

```
        Brand  Year  Sold
0      Maruti  2010     6
4     Hyundai  2010     3
7    Mahindra  2010     8
9        Ford  2010     2
10      Toyota  2010     4
```

```python
import pandas as pd

student_data = {'Name':['Amit','Praveen','Sameera','Surbhi','Rahul','Vishal','Rishab','Ameena','Amit','Rahul','Praveen','Amit'],
                'Roll_no':[23,54,29,36,59,38,12,45,34,59,54,23],
                'Email':['amit345@gmail.com','praveen098@gmail.com','sammy123@gmail.com','surbhi67@gmail.com','rahulguru@gmail.com'
df = pd.DataFrame(student_data)
print(df)
```

```
       Name  Roll_no                 Email
0      Amit       23      amit345@gmail.com
1    Praveen       54   praveen098@gmail.com
2    Sameera       29     sammy123@gmail.com
3     Surbhi       36     surbhi67@gmail.com
4      Rahul       59    rahulguru@gmail.com
5     Vishal       38     vishalwer@gmail.com
6     Rishab       12         rishab@gmail.com
7     Ameena       45     ameena123@gmail.com
8       Amit       34      amit345@gmail.com
9      Rahul       59    rahulguru@gmail.com
10   Praveen       54   praveen098@gmail.com
11      Amit       23      amit345@gmail.com
```

```python
student_data = {'Name':['Amit','Praveen','Sameera','Surbhi','Rahul','Vishal','Rishab','Ameena','Amit','Rahul','Praveen','Amit'],
                'Roll_no':[23,54,29,36,59,38,12,45,34,59,54,23],
                'Email':['amit345@gmail.com','praveen098@gmail.com','sammy123@gmail.com','surbhi67@gmail.com','rahulguru@gmail.com'
df = pd.DataFrame(student_data)
non_duplicate = df[~df.duplicated('Roll_no')]
print(non_duplicate)
```

```
      Name  Roll_no                 Email
0     Amit       23      amit345@gmail.com
1   Praveen       54   praveen098@gmail.com
2   Sameera       29     sammy123@gmail.com
3    Surbhi       36     surbhi67@gmail.com
4     Rahul       59    rahulguru@gmail.com
5    Vishal       38     vishalwer@gmail.com
6    Rishab       12         rishab@gmail.com
7    Ameena       45     ameena123@gmail.com
8      Amit       34      amit345@gmail.com
```

```python
import pandas as pd

data1 = {'Name':['Jai', 'Princi', 'Gaurav', 'Anuj'],
 'Age':[27, 24, 22, 32],
 'Address':['Nagpur', 'Kanpur', 'Allahabad', 'Kannuaj'],
 'Qualification':['Msc', 'MA', 'MCA', 'Phd'],
 'Mobile No': [97, 91, 58, 76]}
data2 = {'Name':['Gaurav', 'Anuj', 'Dhiraj', 'Hitesh'],
 'Age':[22, 32, 12, 52],
 'Address':['Allahabad', 'Kannuaj', 'Allahabad', 'Kannuaj'],
 'Qualification':['MCA', 'Phd', 'Bcom', 'B.hons'],
 'Salary':[1000, 2000, 3000, 4000]}

df = pd.DataFrame(data1,index=[0, 1, 2, 3])
df1 = pd.DataFrame(data2, index=[2, 3, 6, 7])
res = pd.concat([df, df1])

print(res)
```

```
     Name  Age    Address Qualification  Mobile No  Salary
0     Jai   27     Nagpur           Msc       97.0     NaN
1  Princi   24     Kanpur            MA       91.0     NaN
2  Gaurav   22  Allahabad           MCA       58.0     NaN
3    Anuj   32    Kannuaj           Phd       76.0     NaN
2  Gaurav   22  Allahabad           MCA        NaN  1000.0
3    Anuj   32    Kannuaj           Phd        NaN  2000.0
6  Dhiraj   12  Allahabad          Bcom        NaN  3000.0
7  Hitesh   52    Kannuaj        B.hons        NaN  4000.0
```