1. Import the NumPy library and create a 2D array data from the given data in the table above.

In [1]:
```
# import numpy and pandas is reading purpose
import numpy as np
import pandas as pd
import csv
# read the csv file in pandas
df = pd.read_csv('padas_question.csv')
# get list in index
x=list(df)
# convert to numpy 2d array
arr = np.array(df,order='K',dtype=None)

# print the result
print (x,'\n',arr)
```

```
['Name', 'Gender', 'Age', 'Height (cm)', 'Weight (kg)', 'City']
 [['Alice' 'Female' 25 165 58 'New York']
 ['Bob' 'Male' 30 180 80 'Los Angeles']
 ['Charlie' 'Male' 35 175 70 'Chicago']
 ['Diana' 'Female' 28 170 65 'Miami']
 ['Eva' 'Female' 27 175 60 'New York']
 ['Frank' 'Male' 40 190 85 'Houston']
 ['Grace' 'Female' 32 168 55 'Chicago']
 ['Henry' 'Male' 45 175 75 'Los Angeles']
 ['Ivy' 'Female' 26 172 63 'Miami']
 ['Jack' 'Male' 28 180 78 'New York']]
```

2. Print the shape of the data array.

In [4]:
```
print (arr.shape)
```

```
(10, 6)
```

3. Extract the column of heights from the data array and assign it to a new variable heights

In [5]:
```
height = arr[:,3]
```

In [6]:
```
height
```

Out[6]:
```
array([165, 180, 175, 170, 175, 190, 168, 175, 172, 180], dtype=object)
```

4. Calculate the mean height of the group using NumPy.

In [13]:
```
print (np.mean(height))
```

```
175.0
```

5. Extract the rows of females from the data array and assign it to a new variable females.

In [28]:
```
gender=np.atleast_2d(arr[arr[:,1]=='Female'])
```

In [29]:
```
gender
```

Out[29]:
```
array([['Alice', 'Female', 25, 165, 58, 'New York'],
       ['Diana', 'Female', 28, 170, 65, 'Miami'],
       ['Eva', 'Female', 27, 175, 60, 'New York'],
       ['Grace', 'Female', 32, 168, 55, 'Chicago'],
       ['Ivy', 'Female', 26, 172, 63, 'Miami']], dtype=object)
```

In [52]:
```
arr1 = np.array([['Girl', 'Female', 25, 165, 58, 'Coimbatore']])
```

In [56]:
```
newvar = np.concatenate((gender,arr1))
```

In [57]:
```
newvar
```

Out[57]:
```
array([['Alice', 'Female', 25, 165, 58, 'New York'],
       ['Diana', 'Female', 28, 170, 65, 'Miami'],
       ['Eva', 'Female', 27, 175, 60, 'New York'],
       ['Grace', 'Female', 32, 168, 55, 'Chicago'],
       ['Ivy', 'Female', 26, 172, 63, 'Miami'],
       ['Girl', 'Female', '25', '165', '58', 'Coimbatore']], dtype=object)
```

6. Calculate the mean weight of the females in the group using NumPy

In [65]:
```
weight = arr[:,4]
print (weight,'\n', np.mean(weight))
```

```
[58 80 70 65 60 85 55 75 63 78]
 68.9
```

In [ ]: