Assignment No. 4

Aim

1. Linear Regression : Univariate and Multivariate
2. Least Square Method for Linear Regression
3. Measuring Performance of Linear Regression
4. Example of Linear Regression
5. Training data set and Testing data set

In [19]:
```python
import pandas as pd
import numpy as np
```

In [3]:
```python
import matplotlib.pyplot as plt
```

In [4]:
```python
x=np.array([95,85,80,70,60])
```

In [5]:
```python
y=np.array([85,95,70,65,70])
```

In [6]:
```python
model= np.polyfit(x, y, 1)
```

In [7]:
```python
model
```

Out[7]: array([0.64383562, 26.78082192])

In [8]:
```python
predict = np.poly1d(model)
predict(65)
```

Out[8]: 68.63013698630137

In [9]:
```python
y_pred= predict(x)
```

In [10]:
```python
y_pred
```

Out[10]: array([87.94520548, 81.50684932, 78.28767123, 71.84931507, 65.4109589])

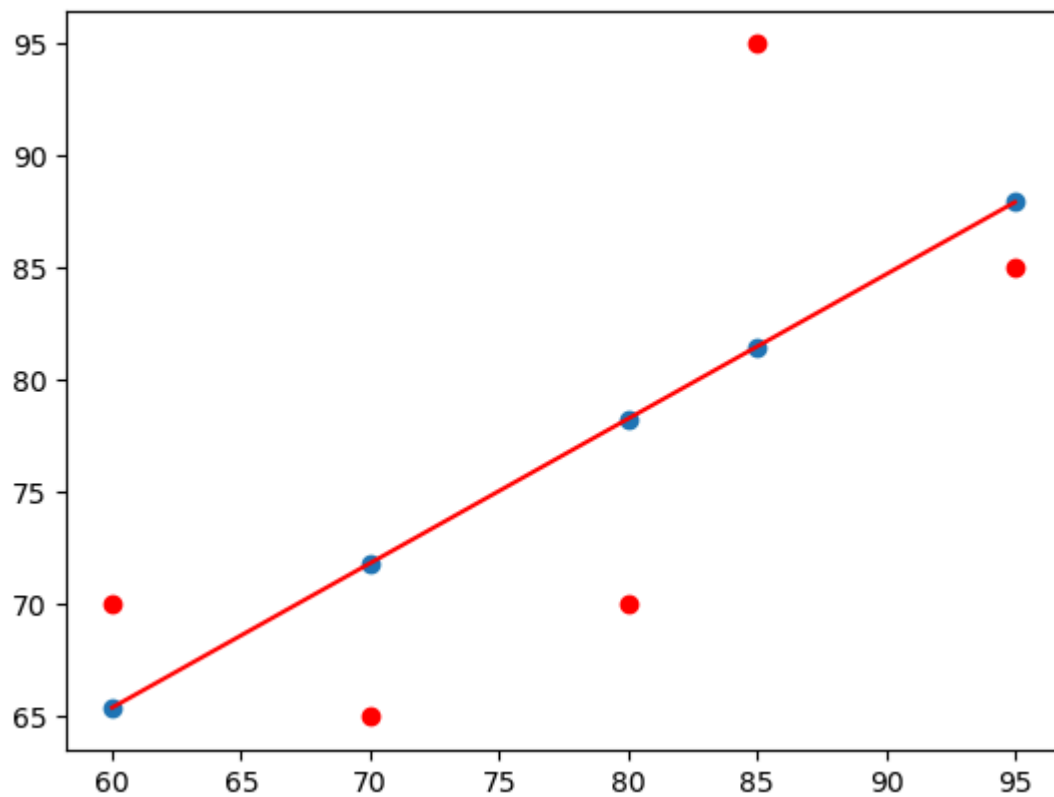In [11]:
```python
from sklearn.metrics import r2_score
```

In [12]:
```python
r2_score(y, y_pred)
```

Out[12]: 0.4803218090889326

In [13]:
```python
y_line = model[1] + model[0]* x
```

In [17]:
```
1  y_line = model[1] + model[0]* x
2  plt.plot(x, y_line, c = 'r')
3  plt.scatter(x, y_pred)
4  plt.scatter(x,y,c='r')
```

Out[17]: `<matplotlib.collections.PathCollection at 0x1aaae5b5b90>`

In [ ]:
```
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```