In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

In [2]:
```
x=np.array([95,85,80,70,60])
y=np.array([85,95,70,65,70])
```

In [3]:
```
model = np.polyfit(x,y,1)
model
```

Out[3]:
```
array([ 0.64383562, 26.78082192])
```

In [4]:
```
predict = np.poly1d(model)
predict(65)
```

Out[4]:
```
68.63013698630137
```

In [5]:
```
y_pred = predict(x)
y_pred
```

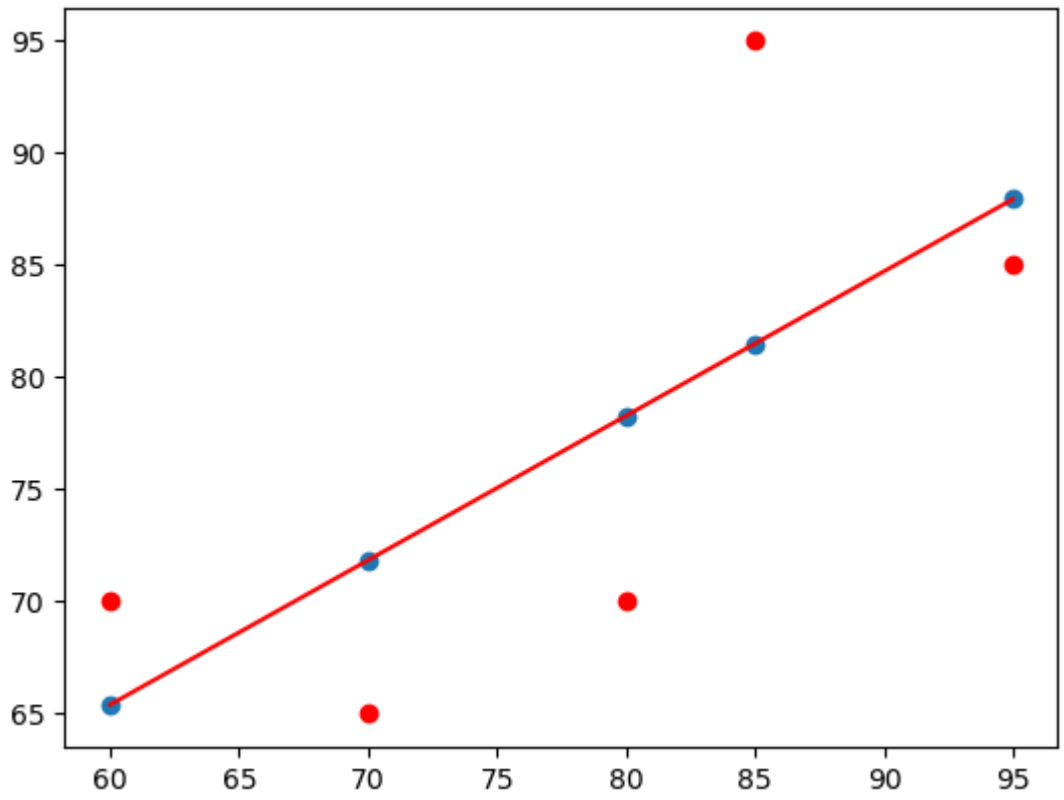
Out[5]:
```
array([87.94520548, 81.50684932, 78.28767123, 71.84931507, 65.4109589 ])
```

In [6]:
```
from sklearn.metrics import r2_score
r2_score(y,y_pred)
```

Out[6]:
```
0.4803218090889326
```

In [7]:
```
y_line = model[1] + model[0]* x
plt.plot(x,y_line,c = 'r')
plt.scatter(x,y_pred)
plt.scatter(x,y,c='r')
```

Out[7]:
```
<matplotlib.collections.PathCollection at 0x19c62e03cd0>
```



In [12]:
```
from sklearn.datasets import fetch_california_housing
housing = fetch_california_housing()
```

In [14]:
```
data = pd.DataFrame(housing.data)
```

In [15]:
```
data
```

Out[15]:

	0	1	2	3	4	5	6	7
0	8.3252	41.0	6.984127	1.023810	322.0	2.555556	37.88	-122.23
1	8.3014	21.0	6.238137	0.971880	2401.0	2.109842	37.86	-122.22
2	7.2574	52.0	8.288136	1.073446	496.0	2.802260	37.85	-122.24
3	5.6431	52.0	5.817352	1.073059	558.0	2.547945	37.85	-122.25
4	3.8462	52.0	6.281853	1.081081	565.0	2.181467	37.85	-122.25
...	...	...	...	...	...	...	...	...
20635	1.5603	25.0	5.045455	1.133333	845.0	2.560606	39.48	-121.09
20636	2.5568	18.0	6.114035	1.315789	356.0	3.122807	39.49	-121.21
20637	1.7000	17.0	5.205543	1.120092	1007.0	2.325635	39.43	-121.22
20638	1.8672	18.0	5.329513	1.171920	741.0	2.123209	39.43	-121.32
20639	2.3886	16.0	5.254717	1.162264	1387.0	2.616981	39.37	-121.24

20640 rows × 8 columns

In [16]:
```
data.columns = housing.feature_names
data.head()
```

Out[16]:

	MedInc	HouseAge	AveRooms	AveBedrms	Population	AveOccup	Latitude	Longitude
0	8.3252	41.0	6.984127	1.023810	322.0	2.555556	37.88	-122.23
1	8.3014	21.0	6.238137	0.971880	2401.0	2.109842	37.86	-122.22
2	7.2574	52.0	8.288136	1.073446	496.0	2.802260	37.85	-122.24
3	5.6431	52.0	5.817352	1.073059	558.0	2.547945	37.85	-122.25
4	3.8462	52.0	6.281853	1.081081	565.0	2.181467	37.85	-122.25

In [17]:
```
data['MedInc'] = housing.target
```

In [18]:
```
data.isnull().sum()
```

Out[18]:
```
MedInc        0
HouseAge      0
AveRooms      0
AveBedrms     0
Population    0
AveOccup      0
Latitude      0
Longitude     0
dtype: int64
```

In [19]:
```
x = data.drop(['MedInc'],axis = 1)
y = data['MedInc']
```

In [20]:
```
from sklearn.model_selection import train_test_split
xtrain, xtest, ytrain, ytest=train_test_split(x,y, test_size=0.2,random_state=0)
```

In [21]:
```
import sklearn
from sklearn.linear_model import LinearRegression
lm = LinearRegression()
model=lm.fit(xtrain,ytrain)
```

In [22]:
```
ytrain_pred = lm.predict(xtrain)
ytest_pred = lm.predict(xtest)
```

In [24]:
```
df=pd.DataFrame(ytrain_pred,ytrain)
df=pd.DataFrame(ytest_pred,ytest)
```

In [25]:
```
from sklearn.metrics import mean_squared_error, r2_score
mse = mean_squared_error(ytest,ytest_pred)
print(mse)
```

```
0.8195128774610314
```

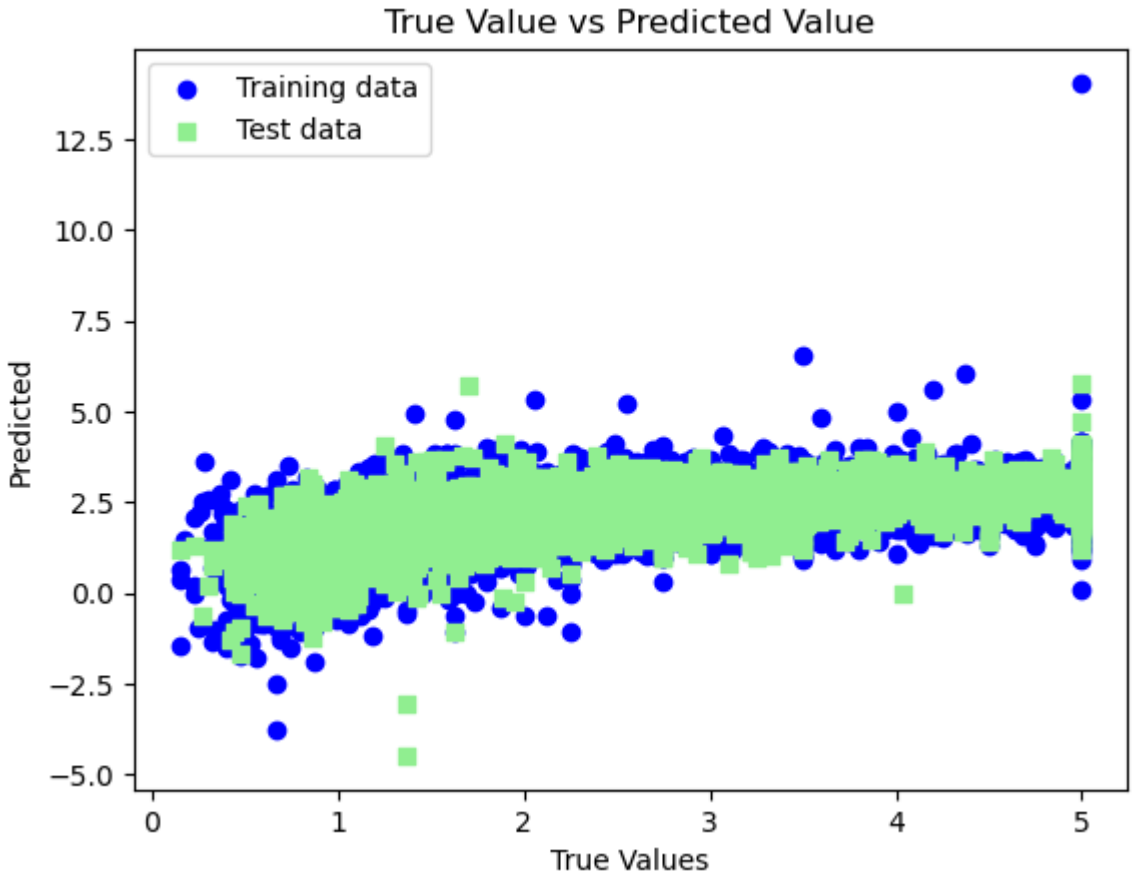
In [26]:
```
mse = mean_squared_error(ytrain_pred,ytrain)
print(mse)
```

```
0.7957123632209536
```

In [27]:
```
mse = mean_squared_error(ytest,ytest_pred)
print(mse)
```

```
0.8195128774610314
```

In [29]:
```
plt.scatter(ytrain,ytrain_pred,c='blue',marker='o',label='Training data')
plt.scatter(ytest,ytest_pred,c='lightgreen',marker='s',label='Test data')
plt.xlabel('True Values')
plt.ylabel('Predicted')
plt.title("True Value vs Predicted Value")
plt.legend(loc= 'upper left')
#plt.hlines(y=0,xmin=0,xmax=50)
plt.plot()
plt.show()
```



In [ ]:
```
Name=  Anurag Jadhav Roll No=13171
```