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

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)
```

In [4]:
```
model
```

Out[4]:
```
array([ 0.64383562, 26.78082192])
```

In [6]:
```
predict=np.poly1d(model)
predict(65)
```

Out[6]:
```
68.63013698630137
```

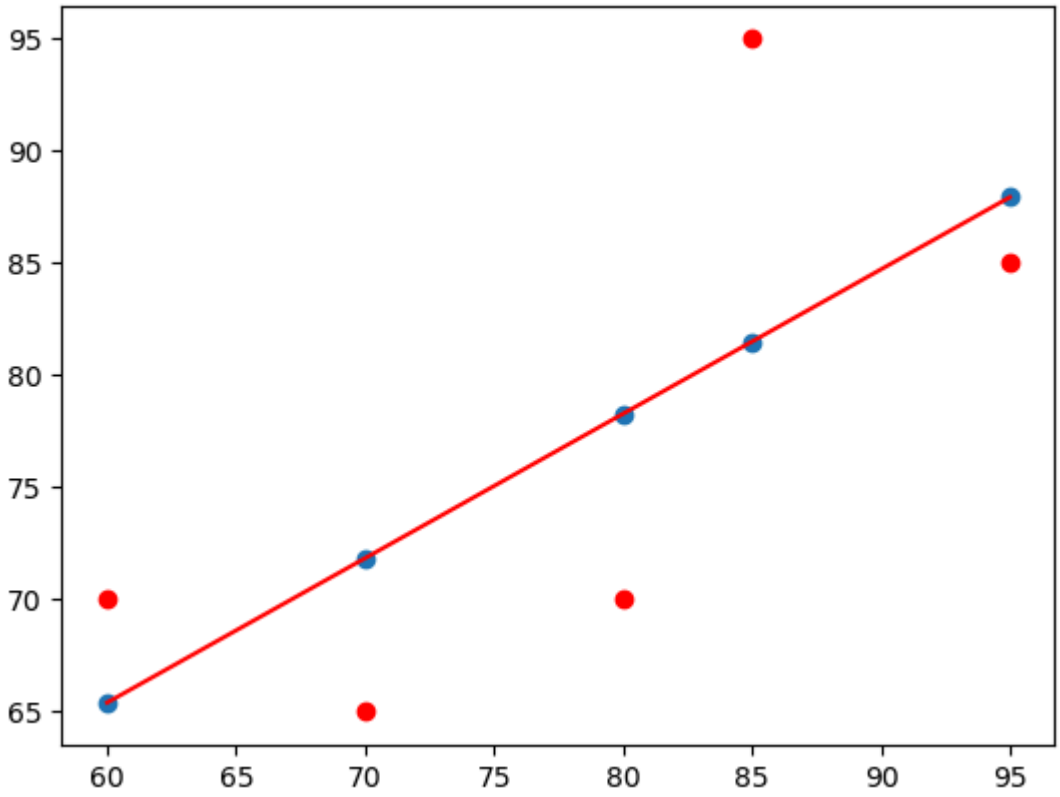
In [7]:
```
y_pred=predict(x)
y_pred
```

Out[7]:
```
array([87.94520548, 81.50684932, 78.28767123, 71.84931507, 65.4109589 ])
```

In [11]:
```
from sklearn.metrics import r2_score
r2_score(y,y_pred)
```

Out[11]:
```
0.4803218090889326
```

In [13]:
```
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')
plt.show()
```



In [14]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as se
```

In [15]:
```
sp=pd.read_csv("/home/student/Desktop/Boston.csv")
```

In [16]:
```
sp.head(6)
```

Out[16]:

	Unnamed: 0	crim	zn	indus	chas	nox	rm	age	dis	rad	tax	ptratio	black	lstat
0	1	0.00632	18.0	2.31	0	0.538	6.575	65.2	4.0900	1	296	15.3	396.90	4.98
1	2	0.02731	0.0	7.07	0	0.469	6.421	78.9	4.9671	2	242	17.8	396.90	9.14
2	3	0.02729	0.0	7.07	0	0.469	7.185	61.1	4.9671	2	242	17.8	392.83	4.03
3	4	0.03237	0.0	2.18	0	0.458	6.998	45.8	6.0622	3	222	18.7	394.63	2.94
4	5	0.06905	0.0	2.18	0	0.458	7.147	54.2	6.0622	3	222	18.7	396.90	5.33
5	6	0.02985	0.0	2.18	0	0.458	6.430	58.7	6.0622	3	222	18.7	394.12	5.21

In [17]:
```
sp['crim']
```

Out[17]:
```
0      0.00632
1      0.02731
2      0.02729
3      0.03237
4      0.06905
        ...
501    0.06263
502    0.04527
503    0.06076
504    0.10959
505    0.04741
Name: crim, Length: 506, dtype: float64
```

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

Out[18]:
```
Unnamed: 0    0
crim          0
zn            0
indus         0
chas          0
nox           0
rm            0
age           0
dis           0
rad           0
tax           0
ptratio       0
black         0
lstat         0
medv          0
dtype: int64
```

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

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

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

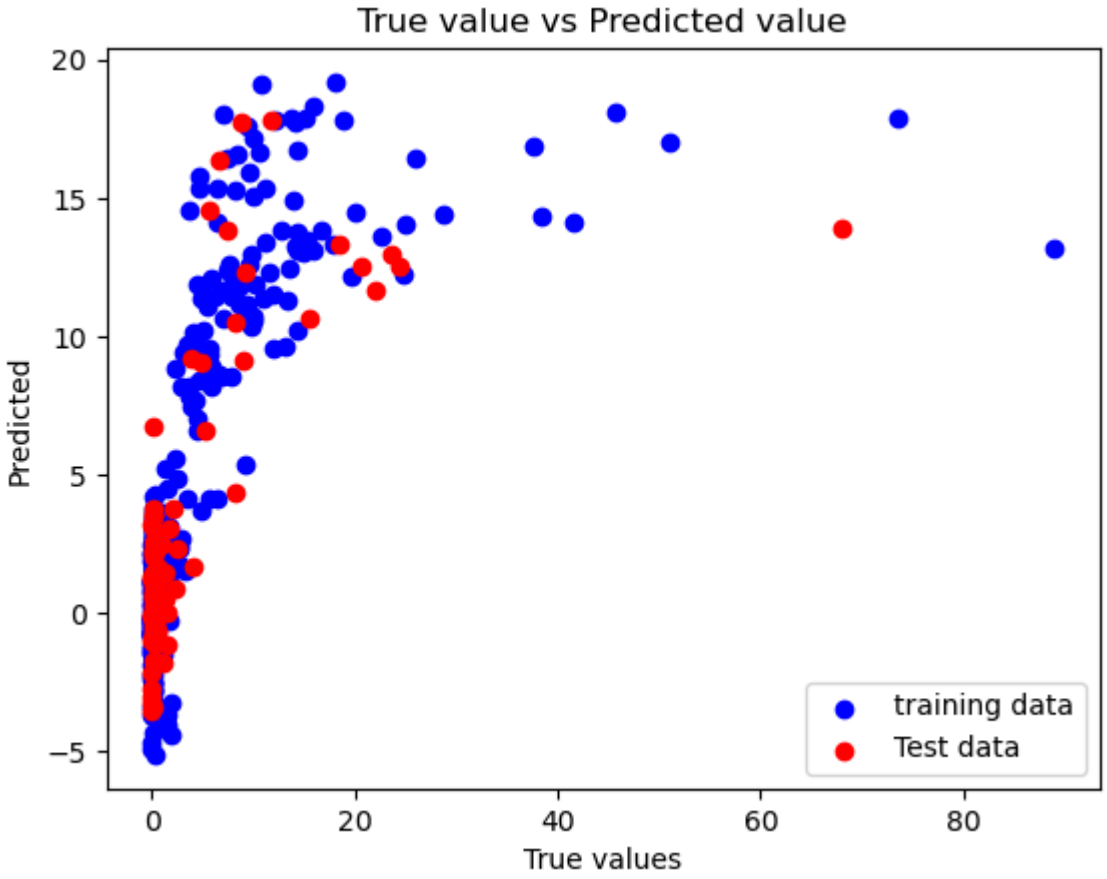
In [22]:
```
ytrain_pred=lm.predict(xtrain)
ytest_pred=lm.predict(xtest)
```

In [23]:
```
sp=(ytrain_pred,ytrain)
sp=(ytest_pred,ytest)
```

In [24]:
```
#from sklearn.metrics import mean_squared_error.r2_score
#mse=mean_squared_error(ytest,ytest_pred)
#print(mse)
#mse=mean_squared_error(ytrain_pred,ytrain)
#print(mse)
```

In [25]:
```
#mse=mean_squared_error(ytest,ytest_pred)
#print(mse)
```

In [26]:
```
plt.scatter(ytrain,ytrain_pred,c='blue',marker='o',label='training data')
plt.scatter(ytest,ytest_pred,c='red',marker='o',label='Test data')
plt.xlabel('True values')
plt.ylabel('Predicted')
plt.title("True value vs Predicted value")
plt.legend(loc='lower right')
plt.plot()
plt.show()
```



In [ ]: