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

In [2]:
```
import numpy as np
```

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

In [4]:
```
import warnings
```

In [5]:
```
warnings.filterwarnings('ignore')
```

In [6]:
```
warnings.simplefilter('ignore')
```

In [7]:
```
x=np.array([95,85,80,70,60])
y=np.array([85,95,70,65,70])
```

In [8]:
```
model= np.polyfit(x, y, 1)
```

In [9]:
```
model
```

Out[9]:
```
array([ 0.64383562, 26.78082192])
```

In [10]:
```
predict = np.poly1d(model)
predict(65)
```

Out[10]:
```
68.63013698630137
```

In [11]:
```
y_pred= predict(x)
y_pred
```

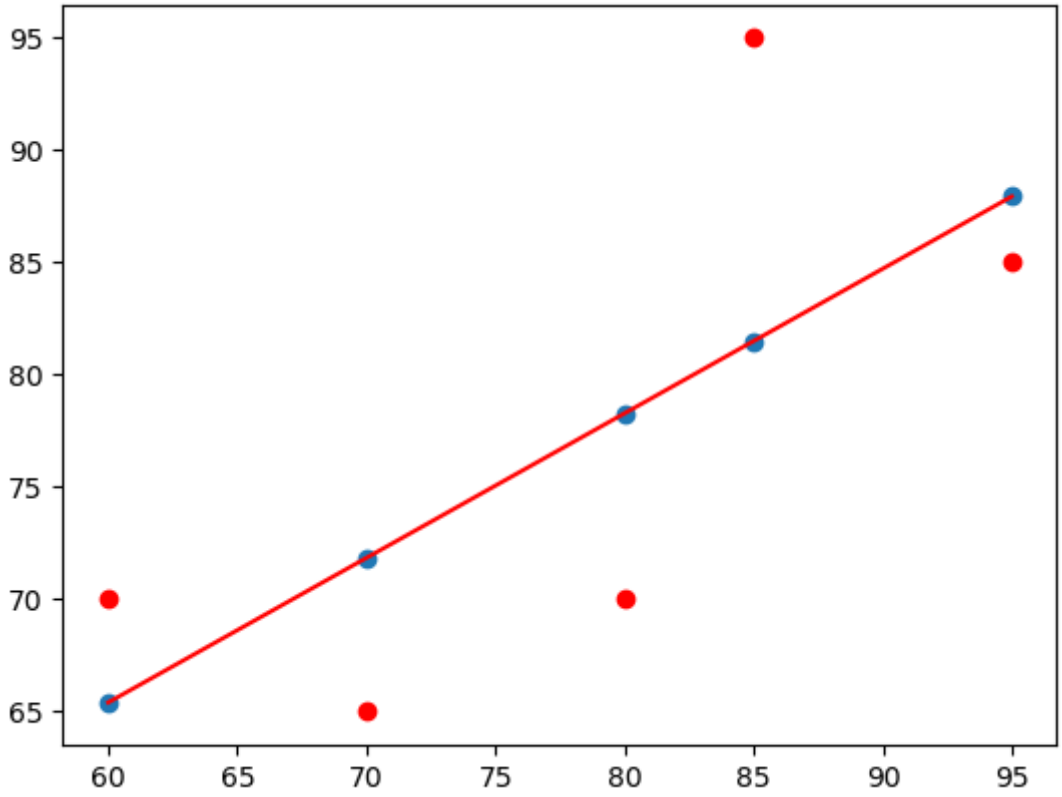
Out[11]:
```
array([87.94520548, 81.50684932, 78.28767123, 71.84931507, 65.4109589 ])
```

In [12]:
```
from sklearn.metrics import r2_score
r2_score(y, y_pred)
```

Out[12]:
```
0.4803218090889322
```

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')
```

Out[13]:
```
<matplotlib.collections.PathCollection at 0x26555523ca0>
```



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

In [15]:
```
from sklearn.datasets import load_boston
boston = load_boston()
```

In [16]:
```
data = pd.DataFrame(boston.data)
```

In [17]:
```
data.columns = boston.feature_names
data.head()
```

Out[17]:

	CRIM	ZN	INDUS	CHAS	NOX	RM	AGE	DIS	RAD	TAX	PTRATIO	B	LSTAT
0	0.00632	18.0	2.31	0.0	0.538	6.575	65.2	4.0900	1.0	296.0	15.3	396.90	4.98
1	0.02731	0.0	7.07	0.0	0.469	6.421	78.9	4.9671	2.0	242.0	17.8	396.90	9.14
2	0.02729	0.0	7.07	0.0	0.469	7.185	61.1	4.9671	2.0	242.0	17.8	392.83	4.03
3	0.03237	0.0	2.18	0.0	0.458	6.998	45.8	6.0622	3.0	222.0	18.7	394.63	2.94
4	0.06905	0.0	2.18	0.0	0.458	7.147	54.2	6.0622	3.0	222.0	18.7	396.90	5.33

In [18]:
```
data['PRICE'] = boston.target
```

In [19]:
```
data.isnull().sum()
```

Out[19]:
```
CRIM       0
ZN         0
INDUS      0
CHAS       0
NOX        0
RM         0
AGE        0
DIS        0
RAD        0
TAX        0
PTRATIO    0
B          0
LSTAT      0
PRICE      0
dtype: int64
```

In [20]:
```
x = data.drop(['PRICE'], axis = 1)
y = data['PRICE']
```

In [24]:
```
from sklearn.model_selection import train_test_split,xtrain, xtest, ytrain, ytest =
```

```
  File "C:\Users\Roshan Ramdas Kate\AppData\Local\Temp\ipykernel_17416\1038846230.py", line 1
    from sklearn.model_selection import train_test_split,xtrain, xtest, ytrain, ytest =train_test_split(x, y, test_size =0.2,random_state = 0)

^
SyntaxError: invalid syntax
```

In [25]:
```
from sklearn.model_selection import train_test_split
xtrain, xtest, ytrain, ytest =train_test_split(x, y, test_size =0.2,random_state =
```

In [26]:
```
import sklearn
from sklearn.linear_model import LinearRegression
lm = LinearRegression()
model=lm.fit(xtrain, ytrain)
```

In [27]:
```
ytrain_pred = lm.predict(xtrain)
ytest_pred = lm.predict(xtest)
```

In [28]:
```
df=pd.DataFrame(ytrain_pred,ytrain)
df=pd.DataFrame(ytest_pred,ytest)
```

In [29]:
```
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)
```

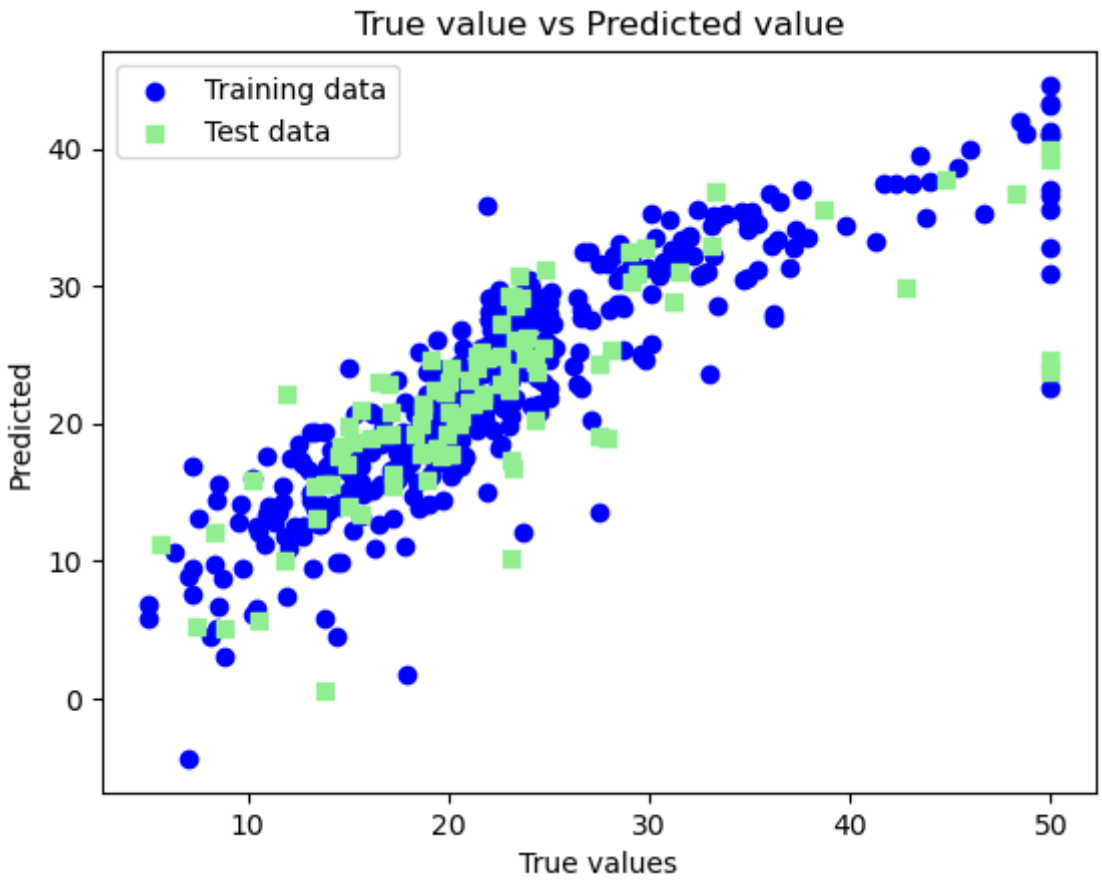
```
33.4489799976765
19.326470203585725
```

In [30]:
```
mse = mean_squared_error(ytest, ytest_pred)
print(mse)
```

```
33.4489799976765
```

In [31]:
```
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 [ ]: