In [17]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import r2_score,mean_squared_error
%matplotlib inline

df = pd.read_csv(r'D:\dataset mm\archive (1)\data.csv') # Importing the dataset
df.sample(5) #previewing dataset randomly
```

Out[17]:

	Make	Model	Year	Engine Fuel Type	Engine HP	Engine Cylinders	Transmission Type	Driven_Wheels	Number of Doors	Market Category	Vehicle Size	Vehicle Style
6498	Lincoln	LS	2004	premium unleaded (required)	232.0	6.0	AUTOMATIC	rear wheel drive	4.0	Luxury,Performance	Midsize	Sedan
8909	Volvo	S60	2017	regular unleaded	240.0	4.0	AUTOMATIC	front wheel drive	4.0	Luxury	Midsize	Sedan
11478	Suzuki	X-90	1997	regular unleaded	95.0	4.0	MANUAL	four wheel drive	2.0	NaN	Compact	2dr SUV
5142	Infiniti	G35	2008	premium unleaded (required)	306.0	6.0	AUTOMATIC	rear wheel drive	4.0	Luxury	Midsize	Sedan
154	BMW	3 Series	2016	premium unleaded (required)	320.0	6.0	AUTOMATIC	rear wheel drive	4.0	Luxury,High-Performance	Midsize	Sedan

In [18]:
```
print(df.shape) # view the dataset shape
print(df['Make'].value_counts()) # viewing Car companies with their cars number
```

```
(11914, 16)
Chevrolet        1123
Ford              881
Volkswagen        809
Toyota            746
Dodge             626
Nissan            558
GMC               515
Honda             449
Mazda             423
Cadillac          397
Mercedes-Benz     353
Suzuki            351
BMW               334
Infiniti          330
Audi              328
Hyundai           303
Volvo             281
Subaru            256
Acura             252
Kia               231
Mitsubishi        213
Lexus             202
Buick             196
Chrysler          187
Pontiac           186
Lincoln           164
Oldsmobile        150
Land Rover        143
Porsche           136
Saab              111
Aston Martin       93
Plymouth           82
Bentley            74
Ferrari            69
FIAT               62
Scion              60
Maserati           58
Lamborghini        52
Rolls-Royce        31
Lotus              29
Tesla              18
HUMMER             17
```

```
Maybach            16
Alfa Romeo          5
McLaren             5
Genesis             3
Spyker              3
Bugatti             3
Name: Make, dtype: int64
```

In [19]:
```
new_df = df[df['Make']=='Volkswagen'] # in this new dataset we only take 'Volkswagen' Cars
print(new_df.shape) # Viewing the new dataset shape
print(new_df.isnull().sum()) # Is there any Null or Empty cell presents
new_df = new_df.dropna() # Deleting the rows which have Empty cells
print(new_df.shape) # After deletion Vewing the shape
print(new_df.isnull().sum()) #Is there any Null or Empty cell presents
new_df.sample(2) # Checking the random dataset sample
```

```
(809, 16)
Make                  0
Model                 0
Year                  0
Engine Fuel Type      0
Engine HP             0
Engine Cylinders      4
Transmission Type     0
Driven_Wheels         0
Number of Doors       0
Market Category     224
Vehicle Size          0
Vehicle Style         0
highway MPG           0
city mpg              0
Popularity            0
MSRP                  0
dtype: int64
(581, 16)
Make                0
Model               0
Year                0
Engine Fuel Type    0
Engine HP           0
Engine Cylinders    0
Transmission Type   0
Driven_Wheels       0
Number of Doors     0
Market Category     0
Vehicle Size        0
Vehicle Style       0
highway MPG         0
city mpg            0
Popularity          0
MSRP                0
dtype: int64
```

Out[19]:

	Make	Model	Year	Engine Fuel Type	Engine HP	Engine Cylinders	Transmission Type	Driven_Wheels	Number of Doors	Market Category	Vehicle Size
6134	Volkswagen	Jetta	2016	premium unleaded (recommended)	210.0	4.0	MANUAL	front wheel drive	4.0	Factory Tuner,Performance	Midsize
10529	Volkswagen	Touareg 2	2009	diesel	221.0	6.0	AUTOMATIC	all wheel drive	4.0	Crossover,Diesel	Midsize

In [20]:
```
new_df = new_df[['Engine HP','MSRP']] # We only take the 'Engine HP' and 'MSRP' columns
new_df.sample(5) # Checking the random dataset sample
```

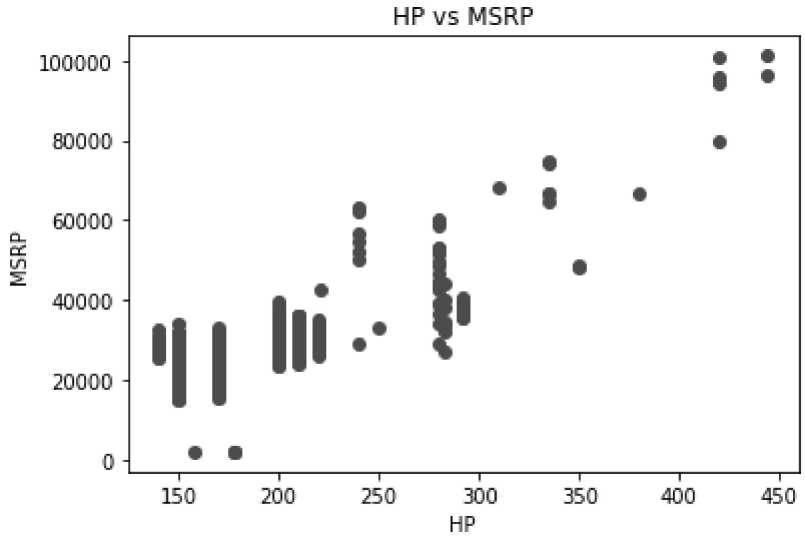
Out[20]:

	Engine HP	MSRP
2393	200.0	34275
5466	170.0	20995
5419	292.0	37895
6013	200.0	26195
5335	200.0	26895

In [21]:
```
X = np.array(new_df[['Engine HP']]) # Storing into X the 'Engine HP' as np.array
y = np.array(new_df[['MSRP']]) # Storing into y the 'MSRP' as np.array
print(X.shape) # Vewing the shape of X
print(y.shape) # Vewing the shape of y
```

```
(581, 1)
(581, 1)
```

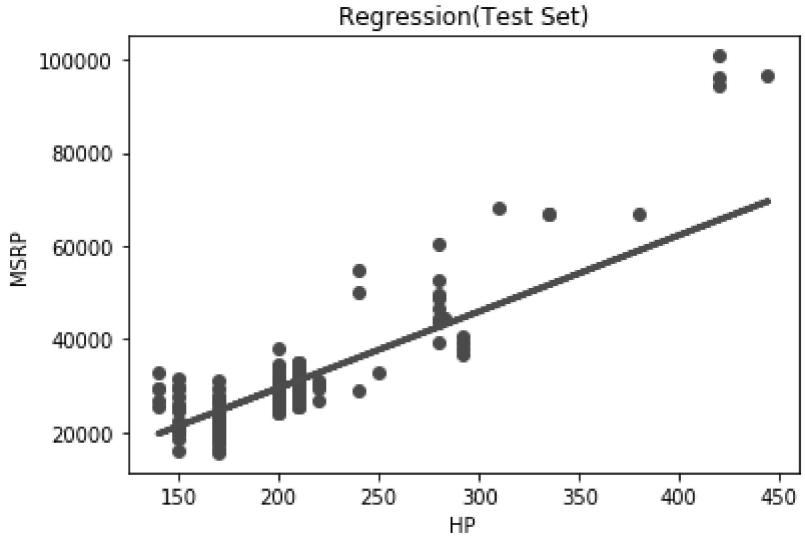
In [22]:
```
plt.scatter(X,y,color="red") # Plot a graph X vs y
plt.title('HP vs MSRP')
plt.xlabel('HP')
plt.ylabel('MSRP')
plt.show()
```



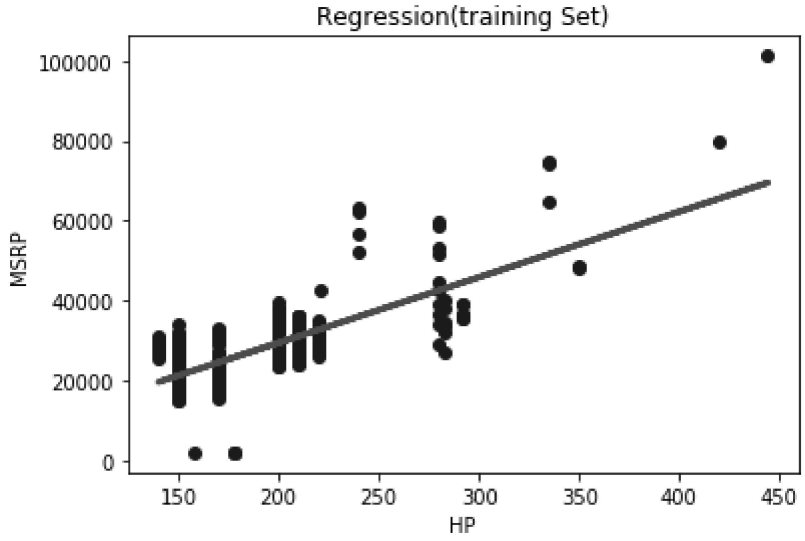
In [23]:
```
X_train,X_test,y_train,y_test = train_test_split(X,y,test_size = 0.25,random_state=15) # Spliting into train
& test dataset
regressor = LinearRegression() # Creating a regressior
regressor.fit(X_train,y_train) # Fiting the dataset into the model
```

Out[23]:
```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=1, normalize=False)
```

In [24]:
```
plt.scatter(X_test,y_test,color="green") # Plot a graph with X_test vs y_test
plt.plot(X_train,regressor.predict(X_train),color="red",linewidth=3) # Regressior line showing
plt.title('Regression(Test Set)')
plt.xlabel('HP')
plt.ylabel('MSRP')
plt.show()
```



In [25]:
```
plt.scatter(X_train,y_train,color="blue")  # Plot a graph with X_train vs y_train
plt.plot(X_train,regressor.predict(X_train),color="red",linewidth=3) # Regressior line showing
plt.title('Regression(training Set)')
plt.xlabel('HP')
plt.ylabel('MSRP')
plt.show()
```



In [26]:
```
y_pred = regressor.predict(X_test)
print('R2 score: %.2f' % r2_score(y_test,y_pred)) # Priniting R2 Score
print('Mean squared Error :',mean_squared_error(y_test,y_pred)) # Priniting the mean error
```

```
R2 score: 0.73
Mean squared Error : 55796476.51179166
```

In [27]:
```
def car_price(hp): # A function to predict the price according to Horsepower
    result = regressor.predict(np.array(hp).reshape(1, -1))
    return(result[0,0])

car_hp = int(input('Enter Volkswagen cars Horse Power : '))
print('This Volkswagen Prce will be : ',int(car_price(car_hp))*69,'₹')
```

```
Enter Volkswagen cars Horse Power : 111
This Volkswagen Prce will be :  1025202 ₹
```

In [ ]: