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

In [2]:
```
df = pd.read_csv('car data.csv')
```

In [5]:
```
df.head()
```

Out[5]:

	Car_Name	Year	Selling_Price	Present_Price	Kms_Driven	Fuel_Type	Seller_Type	Transmission	Owner
0	ritz	2014	3.35	5.59	27000	Petrol	Dealer	Manual	0
1	sx4	2013	4.75	9.54	43000	Diesel	Dealer	Manual	0
2	ciaz	2017	7.25	9.85	6900	Petrol	Dealer	Manual	0
3	wagon r	2011	2.85	4.15	5200	Petrol	Dealer	Manual	0
4	swift	2014	4.60	6.87	42450	Diesel	Dealer	Manual	0

In [7]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 301 entries, 0 to 300
Data columns (total 9 columns):
 #   Column         Non-Null Count  Dtype  
---  ------         --------------  -----  
 0   Car_Name       301 non-null    object 
 1   Year           301 non-null    int64  
 2   Selling_Price  301 non-null    float64
 3   Present_Price  301 non-null    float64
 4   Kms_Driven     301 non-null    int64  
 5   Fuel_Type      301 non-null    object 
 6   Seller_Type    301 non-null    object 
 7   Transmission   301 non-null    object 
 8   Owner          301 non-null    int64  
dtypes: float64(2), int64(3), object(4)
memory usage: 21.3+ KB
```

In [11]:
```
##look for the missing values in the dataset
df.isnull().sum()
```

Out[11]:
```
Car_Name         0
Year             0
Selling_Price    0
Present_Price    0
Kms_Driven       0
Fuel_Type        0
Seller_Type      0
Transmission     0
Owner            0
dtype: int64
```

In [13]:
```
## checking for the distribution for the categroical data
df.Fuel_Type.value_counts()
```

Out[13]:
```
Fuel_Type
Petrol    239
Diesel     60
CNG         2
Name: count, dtype: int64
```

In [15]:
```
df.Seller_Type.value_counts()
```

Out[15]:
```
Seller_Type
Dealer        195
Individual    106
Name: count, dtype: int64
```

In [17]:
```
df.Transmission.value_counts()
```

Out[17]:
```
Transmission
Manual       261
Automatic     40
Name: count, dtype: int64
```

In [19]:
```
##replacing the values in the categorical variable
df.replace({"Fuel_Type":{"Petrol":0,"Diesel":1,"CNG":2}},inplace=True)
df.replace({"Seller_Type":{"Dealer":0,"Individual":1}},inplace = True)
df.replace({"Transmission":{"Manual":0,"Automatic":1}},inplace = True)
```

In [21]:
```
df
```

Out[21]:

	Car_Name	Year	Selling_Price	Present_Price	Kms_Driven	Fuel_Type	Seller_Type	Transmission	Owner
0	ritz	2014	3.35	5.59	27000	0	0	0	0
1	sx4	2013	4.75	9.54	43000	1	0	0	0
2	ciaz	2017	7.25	9.85	6900	0	0	0	0
3	wagon r	2011	2.85	4.15	5200	0	0	0	0
4	swift	2014	4.60	6.87	42450	1	0	0	0
...	...	...	...	...	...	...	...	...	...
296	city	2016	9.50	11.60	33988	1	0	0	0
297	brio	2015	4.00	5.90	60000	0	0	0	0
298	city	2009	3.35	11.00	87934	0	0	0	0
299	city	2017	11.50	12.50	9000	1	0	0	0
300	brio	2016	5.30	5.90	5464	0	0	0	0

301 rows × 9 columns

In [23]:
```
## lets divide our dataset into independent and dependent variable
# x is our independent and y is our dependent
x = df.drop(["Car_Name","Selling_Price"],axis=1)
y = df['Selling_Price']
```

In [25]:
```
x
```

Out[25]:

	Year	Present_Price	Kms_Driven	Fuel_Type	Seller_Type	Transmission	Owner
0	2014	5.59	27000	0	0	0	0
1	2013	9.54	43000	1	0	0	0
2	2017	9.85	6900	0	0	0	0
3	2011	4.15	5200	0	0	0	0
4	2014	6.87	42450	1	0	0	0
...	...	...	...	...	...	...	...
296	2016	11.60	33988	1	0	0	0
297	2015	5.90	60000	0	0	0	0
298	2009	11.00	87934	0	0	0	0
299	2017	12.50	9000	1	0	0	0
300	2016	5.90	5464	0	0	0	0

301 rows × 7 columns

In [27]:
```
y
```

Out[27]:
```
0       3.35
1       4.75
2       7.25
3       2.85
4       4.60
       ...
296     9.50
297     4.00
298     3.35
299    11.50
300     5.30
Name: Selling_Price, Length: 301, dtype: float64
```

In [29]:
```
## splitting the dataset into training and test set
```

In [31]:
```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test = train_test_split(x,y,test_size = 0.1 , random_state = 2)
```

In [33]:
```
##import the regression model
from sklearn.linear_model import Lasso
a = Lasso()
a.fit(x_train,y_train)
```

Out[33]:
```
Lasso()
```

In [35]:
```
y_pred_train = a.predict(x_train)
```

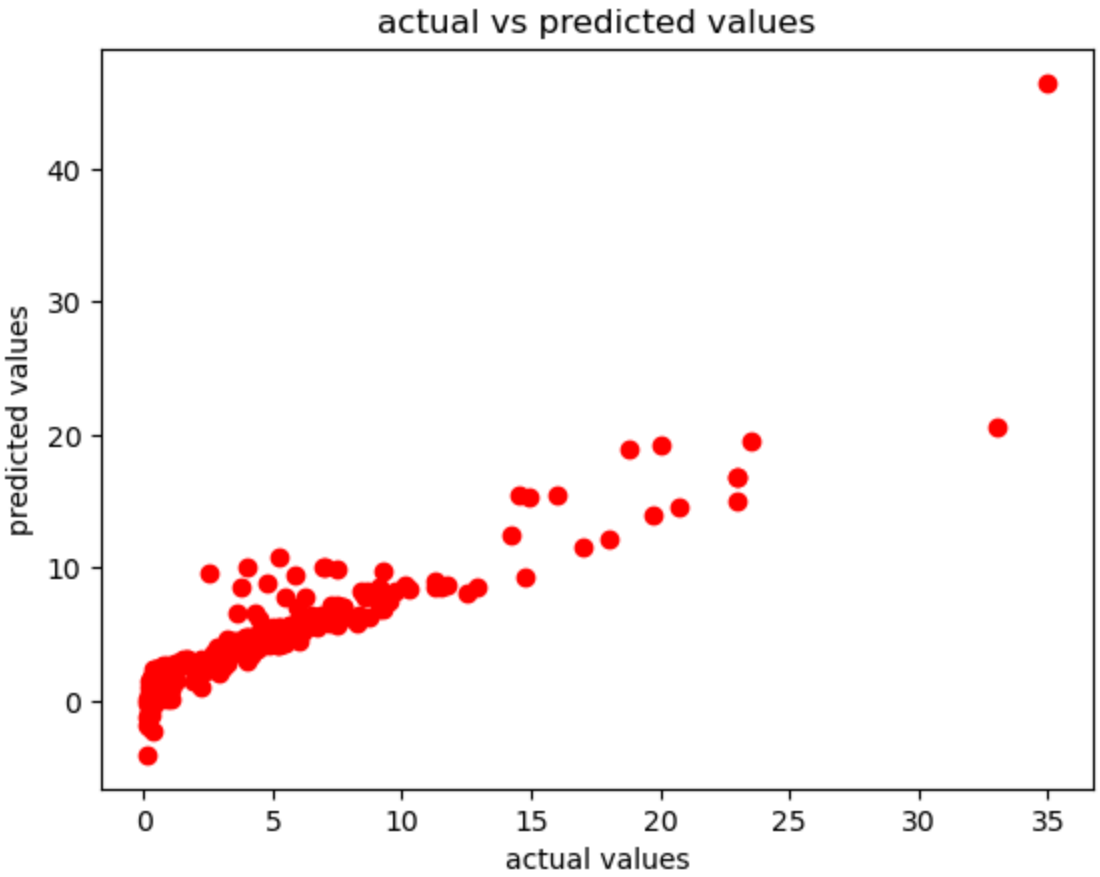
In [37]:
```
##to calculate the r2 error
```

In [39]:
```
from sklearn import metrics
error = metrics.r2_score(y_train , y_pred_train)
```

In [41]:
```
error
```

Out[41]:
```
0.8427856123435794
```

In [43]:
```
#visualize
plt.scatter(y_train , y_pred_train,color = 'red')
plt.xlabel("actual values")
plt.ylabel("predicted values")
plt.title("actual vs predicted values")
plt.show()
```



In [45]:
```
##visualization for the test set
```

In [47]:
```
y_pred_test = a.predict(x_test)
```

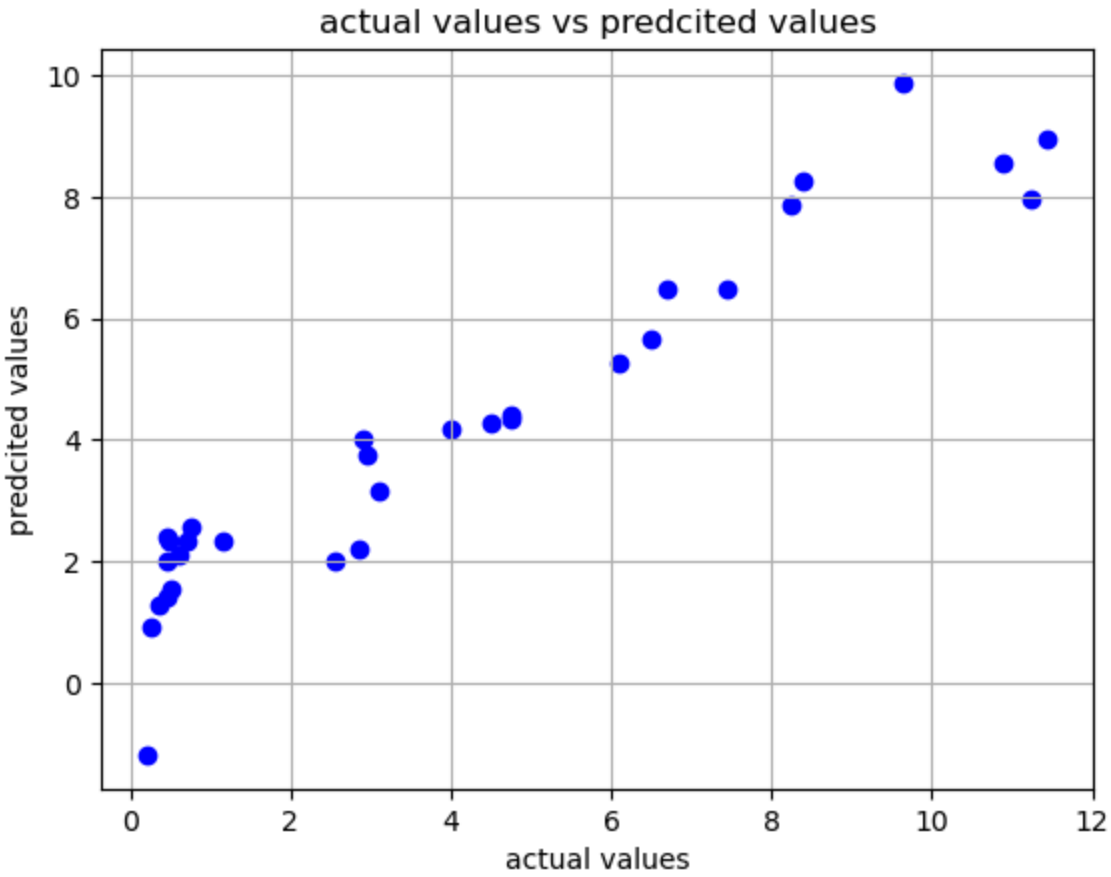
In [49]:
```
error_test = metrics.r2_score(y_test,y_pred_test)
```

In [51]:
```
error_test
```

Out[51]: 0.8709167941173195

In [53]:
```
plt.scatter(y_test,y_pred_test,color = 'blue')
plt.xlabel("actual values")
plt.ylabel("predcited values")
```

```
plt.title("actual values vs predcited values")
plt.grid("True")
plt.show()
```



In [ ]: