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

In [2]:
```
df=pd.read_csv('E:/machine learning/carprices.csv')
```

In [3]:
```
dummy=pd.get_dummies(df.CarModel)
```

In [4]:
```
dummy
```

Out[4]:

| | Audi A5 | BMW X5 | Mercedez Benz C class |
|---|---|---|---|
| **0** | 0 | 1 | 0 |
| **1** | 0 | 1 | 0 |
| **2** | 0 | 1 | 0 |
| **3** | 0 | 1 | 0 |
| **4** | 0 | 1 | 0 |
| **5** | 1 | 0 | 0 |
| **6** | 1 | 0 | 0 |
| **7** | 1 | 0 | 0 |
| **8** | 1 | 0 | 0 |
| **9** | 0 | 0 | 1 |
| **10** | 0 | 0 | 1 |
| **11** | 0 | 0 | 1 |
| **12** | 0 | 0 | 1 |

In [5]:
```
merge=pd.concat([df,dummy] ,axis='columns')
```

In [6]:
```
merge
```

Out[6]:

| | CarModel | Mileage | Sell Price($) | Age(yrs) | Audi A5 | BMW X5 | Mercedez Benz C class |
|---|---|---|---|---|---|---|---|
| **0** | BMW X5 | 69000 | 18000 | 6 | 0 | 1 | 0 |
| **1** | BMW X5 | 35000 | 34000 | 3 | 0 | 1 | 0 |
| **2** | BMW X5 | 57000 | 26100 | 5 | 0 | 1 | 0 |
| **3** | BMW X5 | 22500 | 40000 | 2 | 0 | 1 | 0 |
| **4** | BMW X5 | 46000 | 31500 | 4 | 0 | 1 | 0 |
| **5** | Audi A5 | 59000 | 29400 | 5 | 1 | 0 | 0 |
| **6** | Audi A5 | 52000 | 32000 | 5 | 1 | 0 | 0 |
| **7** | Audi A5 | 72000 | 19300 | 6 | 1 | 0 | 0 |
| **8** | Audi A5 | 91000 | 12000 | 8 | 1 | 0 | 0 |
| **9** | Mercedez Benz C class | 67000 | 22000 | 6 | 0 | 0 | 1 |
| **10** | Mercedez Benz C class | 83000 | 20000 | 7 | 0 | 0 | 1 |
| **11** | Mercedez Benz C class | 79000 | 21000 | 7 | 0 | 0 | 1 |
| **12** | Mercedez Benz C class | 59000 | 33000 | 5 | 0 | 0 | 1 |

In [7]:
```
new_df=merge.drop(['CarModel','Mercedez Benz C class'],axis='columns')
```

In [8]:
```
new_df
```

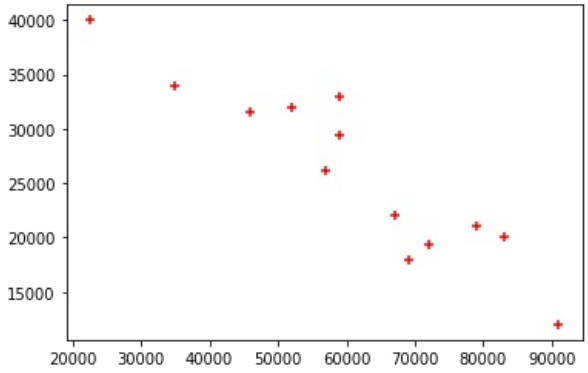
Out[8]:

| | Mileage | Sell Price($) | Age(yrs) | Audi A5 | BMW X5 |
|---|---|---|---|---|---|
| **0** | 69000 | 18000 | 6 | 0 | 1 |
| **1** | 35000 | 34000 | 3 | 0 | 1 |
| **2** | 57000 | 26100 | 5 | 0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| **3** | 22500 | 40000 | 2 | 0 | 1 |
| **4** | 46000 | 31500 | 4 | 0 | 1 |
| **5** | 59000 | 29400 | 5 | 1 | 0 |
| **6** | 52000 | 32000 | 5 | 1 | 0 |
| **7** | 72000 | 19300 | 6 | 1 | 0 |
| **8** | 91000 | 12000 | 8 | 1 | 0 |
| **9** | 67000 | 22000 | 6 | 0 | 0 |
| **10** | 83000 | 20000 | 7 | 0 | 0 |
| **11** | 79000 | 21000 | 7 | 0 | 0 |
| **12** | 59000 | 33000 | 5 | 0 | 0 |

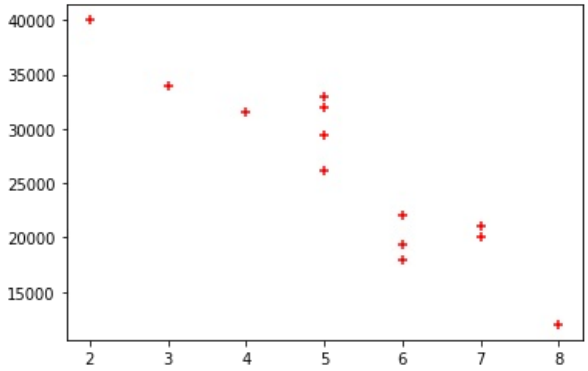
In [9]:
```
%matplotlib inline
plt.scatter(new_df['Mileage'],new_df['Sell Price($)'], color='red', marker='+')
```

Out[9]:
```
<matplotlib.collections.PathCollection at 0x1a30104ee20>
```




In [10]:
```
%matplotlib inline
plt.scatter(new_df['Age(yrs)'],new_df['Sell Price($)'], color='red', marker='+')
```

Out[10]:
```
<matplotlib.collections.PathCollection at 0x1a30315db80>
```




In [11]:
```
df
```

Out[11]:

| | CarModel | Mileage | Sell Price($) | Age(yrs) |
|---|---|---|---|---|
| **0** | BMW X5 | 69000 | 18000 | 6 |
| **1** | BMW X5 | 35000 | 34000 | 3 |
| **2** | BMW X5 | 57000 | 26100 | 5 |
| **3** | BMW X5 | 22500 | 40000 | 2 |
| **4** | BMW X5 | 46000 | 31500 | 4 |
| **5** | Audi A5 | 59000 | 29400 | 5 |
| **6** | Audi A5 | 52000 | 32000 | 5 |
| **7** | Audi A5 | 72000 | 19300 | 6 |
| **8** | Audi A5 | 91000 | 12000 | 8 |

| | | | | |
|---|---|---|---|---|
| **9** | Mercedez Benz C class | 67000 | 22000 | 6 |
| **10** | Mercedez Benz C class | 83000 | 20000 | 7 |
| **11** | Mercedez Benz C class | 79000 | 21000 | 7 |
| **12** | Mercedez Benz C class | 59000 | 33000 | 5 |

In [12]:
```
model=LinearRegression()
```

In [13]:
```
x=new_df.drop(['Sell Price($)'],axis='columns')
```

In [14]:
```
x
```

Out[14]:

| | Mileage | Age(yrs) | Audi A5 | BMW X5 |
|---|---|---|---|---|
| **0** | 69000 | 6 | 0 | 1 |
| **1** | 35000 | 3 | 0 | 1 |
| **2** | 57000 | 5 | 0 | 1 |
| **3** | 22500 | 2 | 0 | 1 |
| **4** | 46000 | 4 | 0 | 1 |
| **5** | 59000 | 5 | 1 | 0 |
| **6** | 52000 | 5 | 1 | 0 |
| **7** | 72000 | 6 | 1 | 0 |
| **8** | 91000 | 8 | 1 | 0 |
| **9** | 67000 | 6 | 0 | 0 |
| **10** | 83000 | 7 | 0 | 0 |
| **11** | 79000 | 7 | 0 | 0 |
| **12** | 59000 | 5 | 0 | 0 |

In [15]:
```
y=new_df['Sell Price($)']
```

In [16]:
```
y
```

Out[16]:
```
0     18000
1     34000
2     26100
3     40000
4     31500
5     29400
6     32000
7     19300
8     12000
9     22000
10    20000
11    21000
12    33000
Name: Sell Price($), dtype: int64
```

In [17]:
```
model.fit(x,y)
```

Out[17]:
```
LinearRegression()
```

In [18]:
```
model.predict([[75000,3,1,0]]) #predicts the selling price of an audi a5 which has mileage 75000 and has run for
```

Out[18]:
```
array([24766.56726931])
```

In [19]:
```
model.predict([[50000,1,0,1]]) #predicts the selling price of a bmw x5 which has mileage 50000 and has run for 1
```

Out[19]:
```
array([32399.86029584])
```

In [20]:
```
model.predict([[33000,5,0,0]]) #predicts the selling price of a mercedez benz c class which has mileage 33000 and
```

Out[20]:
```
array([40100.32871566])
```

In [21]:
```
model.predict([[11500,9,1,0]])
```

Out[21]:
```
array([40274.5984973])
```

In [22]:
```
model.predict([[77071,5,0,0]])
```

Out[22]:
```
array([23788.67789387])
```

In [23]:
```
model.predict([[25000,5,1,0]]) #predicts the selling price of an audi a5 which has mileage 25000 and has run for
```

Out[23]:
```
array([40607.76473351])
```

In [24]:
```
model.predict([[55016,3,0,1]]) #predict the selling price of a bmw x5 which has mileage 55016 and has run for 3 y
```

Out[24]:
```
array([27878.42061517])
```

In [25]:
```
model.score(x,y) #gives the accuracy of the model out of 1
```

Out[25]:
```
0.9417050937281082
```