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

```python
In [2]:  df = pd.read_csv('car.data', sep=',', names=['buying','maint','doors','persons','lug_boot','safety','class'], i

         #Drop person field as it's not needed for the analysis
         df = df.drop(columns='persons')
         df.head()
```

Out[2]:

	buying	maint	doors	lug_boot	safety	class
0	vhigh	vhigh	2	small	low	unacc
1	vhigh	vhigh	2	small	med	unacc
2	vhigh	vhigh	2	small	high	unacc
3	vhigh	vhigh	2	med	low	unacc
4	vhigh	vhigh	2	med	med	unacc

Descriptive Analysis

```python
In [3]:  df.shape
```

Out[3]: (1728, 6)

```python
In [4]:  df.describe()
```

Out[4]:

	buying	maint	doors	lug_boot	safety	class
count	1728	1728	1728	1728	1728	1728
unique	4	4	4	3	3	4
top	vhigh	vhigh	2	small	low	unacc
freq	432	432	432	576	576	1210

```python
In [5]:  df.dtypes
```

```
Out[5]:  buying      object
         maint       object
         doors       object
         lug_boot    object
         safety      object
         class       object
         dtype: object
```

Multiple Linear Regression

```python
In [6]:  X = df[['maint', 'doors', 'lug_boot', 'safety', 'class']]
         X = pd.get_dummies(data=X, drop_first=True)
         X.head()
```

Out[6]:

	maint_low	maint_med	maint_vhigh	doors_3	doors_4	doors_5more	lug_boot_med	lug_boot_small	safety_low	safety_med	class_good	cl
0	0	0	1	0	0	0	0	1	1	0	0	
1	0	0	1	0	0	0	0	1	0	1	0	
2	0	0	1	0	0	0	0	1	0	0	0	
3	0	0	1	0	0	0	1	0	1	0	0	
4	0	0	1	0	0	0	1	0	0	1	0	

```python
In [7]:  y = df['buying']
         y = pd.get_dummies(data=y, drop_first=True)
         y.head()
```

Out[7]:

	low	med	vhigh
0	0	0	1
1	0	0	1
2	0	0	1
3	0	0	1
4	0	0	1

Create train and test datasets

```python
In [8]:  model = LinearRegression()
         model.fit(X, y)
```

Out[8]: LinearRegression()

```python
In [9]:  print(model.intercept_)
```

```
[0.23110089 0.2917526  0.19384845]
```

```python
In [10]:  #coeff_parameter = pd.DataFrame(model.coef_,X.columns,columns=['Coefficient'])
          #coeff_parameter
```

```python
In [11]:  #Predict the buying price given the following parameters:
          params = [['high', '4', 'big', 'high', 'good']]
          predict = pd.DataFrame(params, columns=['maint', 'doors', 'lug_boot', 'safety', 'class'])
```

```python
In [12]:  #Calculate buying price based on the regression equation
          #predictions = model.predict(predict)
          #predictions
```