#### **Solution 1:**

```
In [1]: import pandas as pd
       import numpy as np
       df = pd.read csv("Toyota.csv")
       print(df.head())
       # we can use to string method for reading csv file we can use head and tail funtion to read from bottom and top of the file,by
                                  KM FuelType HP MetColor Automatic
                                                                    CC \
         Unnamed: 0 Price
                          Age
                 0 13500 23.0 46986
                                      Diesel 90
                                                      1.0
                                                                  0 2000
                 1 13750 23.0 72937 Diesel 90
      1
                                                      1.0
                                                                  0 2000
                 2 13950 24.0 41711 Diesel 90
                                                      NaN
                                                                 0 2000
                                                           0 2000
      3
                 3 14950 26.0 48000
                                      Diesel 90
                                                      0.0
                 4 13750 30.0 38500 Diesel 90
                                                      0.0
                                                                 0 2000
         Doors Weight
        three
                 1165
            3
                1165
              1165
            3
                1165
            3
                1170
```

### Solution 2

```
In [2]: new_string = df.replace("?", " ")
    new_string1 = df.replace("***", " ")
    new_string2 = df.replace("??", " ")
    print(new_string)
    print(new_string1)
    print(new_string2)
```

	Unnamed: 0	Price	Age	KM	FuelType	HP	MetColor	Automatic	CC	\
0	0	13500	23.0	46986	Diesel	90	1.0	0	2000	
1	1	13750	23.0	72937	Diesel	90	1.0	0	2000	
2	2	13950	24.0	41711	Diesel	90	NaN	0	2000	
3	3	14950	26.0	48000	Diesel	90	0.0	0	2000	
4	4	13750	30.0	38500	Diesel	90	0.0	0	2000	
• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	
1431	1431		NaN	20544	Petrol	86	1.0	0	1300	
1432	1432		72.0	??	Petrol	86	0.0	0	1300	
1433	1433		NaN	17016	Petrol	86	0.0	0	1300	
1434	1434		70.0	??	NaN	86	1.0	0	1300	
1435	1435	6950	76.0	1	Petrol	110	0.0	0	1600	
	Doors Wei	ah+								
0		165								
1		165 165								
2		165								
3		165 165								
3 4		170								
4										
1431		025								
1432		1015								
1433		1015								
1434		1015								
1435		1114								
[1436	rows x 11									
	Unnamed: 0		Age		FuelType	HP	MetColor	Automatic	CC	\
0	0		23.0	46986	Diesel	90	1.0	0	2000	
1	1		23.0	72937	Diesel	90	1.0	0	2000	
2	2	13950	24.0	41711	Diesel	90	NaN	0	2000	
3	3	14950	26.0	48000	Diesel	90	0.0	0	2000	
4	4	13750	30.0	38500	Diesel	90	0.0	0	2000	
• • •		• • •	• • •			• • •		• • •	• • •	
1431	1431		NaN	20544	Petrol	86	1.0	0	1300	
1432	1432		72.0	33	Petrol	86	0.0	0	1300	
1433	1433		NaN	17016	Petrol	86	0.0	0	1300	
1434	1434		70.0	33	NaN	86	1.0	0	1300	
1435	1435	6950	76.0	1	Petrol	110	0.0	0	1600	

Doors Weight

```
0
      three
               1165
1
               1165
          3
2
          3
               1165
3
               1165
4
          3
               1170
                . . .
. . .
        . . .
          3
               1025
1431
1432
          3
               1015
               1015
1433
          3
1434
          3
               1015
1435
          5
               1114
[1436 rows x 11 columns]
      Unnamed: 0 Price
                                                  HP MetColor
                                                                 Automatic
                           Age
                                                                               CC \
                                    KM FuelType
0
               0 13500
                          23.0 46986
                                         Diesel
                                                  90
                                                            1.0
                                                                          0 2000
1
               1 13750
                                                                             2000
                          23.0 72937
                                                  90
                                                            1.0
                                         Diesel
2
               2 13950
                          24.0
                                                                             2000
                               41711
                                         Diesel
                                                  90
                                                            NaN
                                                                          0
               3 14950
                          26.0
                                48000
                                                                             2000
3
                                         Diesel
                                                  90
                                                            0.0
4
                          30.0
                                                                             2000
                  13750
                                 38500
                                         Diesel
                                                  90
                                                            0.0
. . .
             . . .
                     . . .
                           . . .
                                   . . .
                                            . . .
                                                  . . .
                                                            . . .
                                                                              . . .
            1431
                    7500
                           NaN 20544
                                                                          0 1300
1431
                                                  86
                                                            1.0
                                         Petrol
1432
            1432
                                                                          0 1300
                  10845
                          72.0
                                         Petrol
                                                  86
                                                            0.0
1433
            1433
                           NaN 17016
                                                  86
                                                                          0 1300
                    8500
                                         Petrol
                                                            0.0
            1434
1434
                          70.0
                                                  86
                                                                          0 1300
                    7250
                                            NaN
                                                            1.0
1435
            1435
                    6950
                          76.0
                                     1
                                         Petrol 110
                                                            0.0
                                                                          0 1600
      Doors Weight
0
               1165
      three
1
          3
               1165
2
          3
               1165
3
          3
               1165
4
          3
               1170
                . . .
. . .
        . . .
1431
          3
               1025
1432
          3
               1015
1433
          3
               1015
1434
               1015
          3
1435
          5
               1114
```

[1436 rows x 11 columns]

# Solution 3:

0

1

2

4

1431

1432

1433

1434

1435

23.0

23.0 24.0

26.0

30.0

60.0

72.0

60.0

70.0

76.0

Name: Age, Length: 1436, dtype: float64

```
In [3]: print(" \nCount total NaN at each column in a DataFrame : \n\n", df.isnull().sum() )
       Count total NaN at each column in a DataFrame :
                       0
       Unnamed: 0
       Price
                      0
       Age
                    100
       ΚM
                      0
       FuelType
                    100
       HP
                      0
                    150
      MetColor
      Automatic
                      0
      CC
      Doors
                      0
      Weight
       dtype: int64
        Solution: 4
In [4]: df['Age'] = df['Age'].fillna(df['Age'].median())
        print(df['Age'])
```

# Solution:5

```
In [5]: new_string = df.replace("three", "3")
    new_string1 = df.replace("four", "4")
    new_string2= df.replace("two", "2")
    new_string3 = df.replace("one", "1")
    print(new_string)
    print(new_string1)
    print(new_string2)
    print(new_string3)
```

	Unname	d: 0	Price	Age	KM	FuelType	НР	MetColor	Automatic	СС	\
0		0	13500	23.0	46986	Diesel	90	1.0	0	2000	
1		1	13750	23.0	72937	Diesel	90	1.0	0	2000	
2		2	13950	24.0	41711	Diesel	90	NaN	0	2000	
3		3	14950	26.0	48000	Diesel	90	0.0	0	2000	
4		4	13750	30.0	38500	Diesel	90	0.0	0	2000	
1431		1431	7500	60.0	20544	Petrol	86	1.0	0	1300	
1432		1432	10845	72.0	33	Petrol	86	0.0	0	1300	
1433		1433	8500	60.0	17016	Petrol	86	0.0	0	1300	
1434		1434	7250	70.0	??	NaN	86	1.0	0	1300	
1435		1435	6950	76.0	1	Petrol	110	0.0	0	1600	
Desire Unicht											
		Weigh									
0	3	116									
1	3	1165									
2	3	116									
3	3	1165									
4	3	117									
1421	3	100									
1431	3	1025									
1432 1433	3	1015									
1434		1015									
1434	3 5	1015 1114									
1433	5	111	4								
[1436	rows x	11 c	olumns]								
	Unname	d: 0	Price	Age	KM	FuelType	HP	MetColor	Automatic	CC	\
0		0	13500	23.0	46986	Diesel	90	1.0	0	2000	
1		1	13750	23.0	72937	Diesel	90	1.0	0	2000	
2		2	13950	24.0	41711	Diesel	90	NaN	0	2000	
3		3	14950	26.0	48000	Diesel	90	0.0	0	2000	
4		4	13750	30.0	38500	Diesel	90	0.0	0	2000	
1431		1431	7500	60.0	20544	Petrol	86	1.0	0	1300	
1432		1432	10845	72.0	33	Petrol	86	0.0	0	1300	
1433		1433	8500	60.0	17016	Petrol	86	0.0	0	1300	
1434		1434	7250	70.0	??	NaN	86	1.0	0	1300	
1435		1435	6950	76.0	1	Petrol	110	0.0	0	1600	

Doors Weight

```
0
      three
               1165
1
          3
               1165
2
          3
               1165
3
          3
               1165
4
          3
               1170
                . . .
. . .
        . . .
          3
               1025
1431
1432
          3
               1015
1433
          3
               1015
1434
          3
               1015
1435
          5
               1114
[1436 rows x 11 columns]
                                                 HP MetColor
      Unnamed: 0 Price
                          Age
                                                               Automatic
                                                                             CC \
                                   KM FuelType
0
               0 13500
                         23.0 46986
                                        Diesel
                                                 90
                                                           1.0
                                                                        0 2000
1
               1 13750 23.0 72937
                                                                           2000
                                        Diesel
                                                 90
                                                           1.0
2
               2 13950
                         24.0 41711
                                                                           2000
                                        Diesel
                                                 90
                                                           NaN
               3 14950
                         26.0
                                                                           2000
3
                                48000
                                        Diesel
                                                 90
                                                           0.0
                         30.0
                                38500
                                                                           2000
4
                  13750
                                        Diesel
                                                 90
                                                           0.0
. . .
             . . .
                          . . .
                                  . . .
                                           . . .
                                                 . . .
                                                           . . .
                                                                             . . .
            1431
                   7500
                         60.0
                                20544
                                                                        0 1300
1431
                                                 86
                                                           1.0
                                        Petrol
                                                                        0 1300
1432
            1432
                 10845
                         72.0
                                   ??
                                        Petrol
                                                 86
                                                           0.0
1433
            1433
                   8500
                         60.0 17016
                                                 86
                                                                        0 1300
                                        Petrol
                                                           0.0
1434
            1434
                   7250
                         70.0
                                   ??
                                                 86
                                                                        0 1300
                                           NaN
                                                           1.0
1435
            1435
                   6950
                         76.0
                                    1
                                        Petrol 110
                                                           0.0
                                                                        0 1600
     Doors Weight
0
               1165
      three
1
          3
               1165
2
          3
               1165
3
          3
               1165
4
          3
               1170
                . . .
        . . .
          3
1431
               1025
1432
          3
               1015
1433
          3
               1015
1434
          3
               1015
1435
          5
               1114
[1436 rows x 11 columns]
                        Age
     Unnamed: 0 Price
                                   KM FuelType HP MetColor Automatic
                                                                             CC \
```

```
0
                                                                          2000
               0 13500
                         23.0
                               46986
                                       Diesel
                                                90
                                                          1.0
                         23.0 72937
                                                90
                                                                          2000
1
                                       Diesel
                                                          1.0
               1 13750
2
                         24.0 41711
               2 13950
                                       Diesel
                                                90
                                                                          2000
                                                          NaN
3
                         26.0
                               48000
                                                          0.0
                                                                          2000
                  14950
                                       Diesel
                  13750
                         30.0
                               38500
                                       Diesel
                                                90
                                                          0.0
                                                                          2000
                          . . .
                                                          . . .
                                                                           . . .
                   7500
                         60.0
                               20544
                                                86
                                                                          1300
1431
            1431
                                       Petrol
                                                          1.0
            1432
                  10845
                         72.0
                                  ??
                                                86
                                                                       0 1300
1432
                                       Petrol
                                                          0.0
1433
            1433
                   8500
                         60.0
                              17016
                                                86
                                                          0.0
                                                                          1300
                                       Petrol
1434
            1434
                   7250
                         70.0
                                  ??
                                                86
                                                                       0 1300
                                          NaN
                                                          1.0
1435
            1435
                   6950
                         76.0
                                   1
                                                                       0 1600
                                       Petrol 110
                                                          0.0
```

```
Doors Weight
0
      three
                1165
1
           3
                1165
2
                1165
           3
3
                1165
4
                1170
                 . . .
         . . .
1431
           3
                1025
1432
           3
                1015
1433
                1015
1434
                1015
           3
1435
           5
                1114
```

[1436 rows x 11 columns]

Name: count, dtype: int64

# Solution: 6

```
In [6]: df['FuelType'].value_counts()

Out[6]: FuelType
    Petrol    1177
    Diesel    144
    CNG     15
```

## Solution 7

```
In [7]: df['FuelType'] = df['FuelType'].fillna(df['FuelType'].mode())
        print(df['FuelType'])
       0
               Diesel
       1
               Diesel
       2
               Diesel
               Diesel
       3
               Diesel
                . . .
       1431
               Petrol
       1432
               Petrol
       1433
               Petrol
       1434
                  NaN
       1435
               Petrol
       Name: FuelType, Length: 1436, dtype: object
        Solution 8
In [8]: df['MetColor'] = df['MetColor'].fillna(df['MetColor'].mode())
        print(df['MetColor'])
               1.0
       0
       1
               1.0
       2
               NaN
               0.0
       3
               0.0
              . . .
       1431
              1.0
               0.0
       1432
       1433
               0.0
       1434
               1.0
               0.0
       1435
       Name: MetColor, Length: 1436, dtype: float64
        Solution: 9
In [9]: df['FuelType'] = df['FuelType'].replace(" Petrol", "0")
        df['FuelType']= df['FuelType'].replace("diesel", "1")
```

```
df['FuelType']= df['FuelType'].replace("CNG", "2")
print(df['FuelType'])
     Diesel
     Diesel
2
     Diesel
     Diesel
     Diesel
     . . .
1431
    Petrol
1432
    Petrol
1433
    Petrol
1434
       NaN
1435
     Petrol
Name: FuelType, Length: 1436, dtype: object
```

#### Solution:1

```
In [ ]:
```