```
import numpy as np
import pandas as pd
```

```
df=pd.read_csv("/content/Traffic.csv")
df
```

	Time	Date	Day of the week	CarCount	BikeCount	BusCount	TruckCount	Total	Traffic Situation
0	12:00:00 AM	10	Tuesday	31	0	4	4	39	low
1	12:15:00 AM	10	Tuesday	49	0	3	3	55	low
2	12:30:00 AM	10	Tuesday	46	0	3	6	55	low
3	12:45:00 AM	10	Tuesday	51	0	2	5	58	low
4	1:00:00 AM	10	Tuesday	57	6	15	16	94	normal
...	...	...	...	...	...	...	...	...	...
2971	10:45:00 PM	9	Thursday	16	3	1	36	56	normal
2972	11:00:00 PM	9	Thursday	11	0	1	30	42	normal
2973	11:15:00 PM	9	Thursday	15	4	1	25	45	normal
2974	11:30:00 PM	9	Thursday	16	5	0	27	48	normal
2975	11:45:00 PM	9	Thursday	14	3	1	15	33	normal

2976 rows × 9 columns

```
df.head()
```

	Time	Date	Day of the week	CarCount	BikeCount	BusCount	TruckCount	Total	Traffic Situation
0	12:00:00 AM	10	Tuesday	31	0	4	4	39	low
1	12:15:00 AM	10	Tuesday	49	0	3	3	55	low
2	12:30:00 AM	10	Tuesday	46	0	3	6	55	low
3	12:45:00 AM	10	Tuesday	51	0	2	5	58	low
4	1:00:00 AM	10	Tuesday	57	6	15	16	94	normal

```
df.tail()
```

	Time	Date	Day of the week	CarCount	BikeCount	BusCount	TruckCount	Total	Traffic Situation
2971	10:45:00 PM	9	Thursday	16	3	1	36	56	normal
2972	11:00:00 PM	9	Thursday	11	0	1	30	42	normal
2973	11:15:00 PM	9	Thursday	15	4	1	25	45	normal
2974	11:30:00 PM	9	Thursday	16	5	0	27	48	normal
2975	11:45:00 PM	9	Thursday	14	3	1	15	33	normal

```
df.size
```

```
26784
```

```
df.shape
```

```
(2976, 9)
```

```
df.columns
```

```
Index(['Time', 'Date', 'Day of the week', 'CarCount', 'BikeCount', 'BusCount',
       'TruckCount', 'Total', 'Traffic Situation'],
      dtype='object')
```

```
df.isna().sum()
```

```
Time                0
Date                0
Day of the week     0
CarCount            0
BikeCount           0
BusCount            0
TruckCount          0
Total               0
Traffic Situation   0
dtype: int64
```

```
df=df.drop(['Date','Total'],axis=1)
df
```

	Time	Day of the week	CarCount	BikeCount	BusCount	TruckCount	Traffic Situation
0	12:00:00 AM	Tuesday	31	0	4	4	low
1	12:15:00 AM	Tuesday	49	0	3	3	low
2	12:30:00 AM	Tuesday	46	0	3	6	low
3	12:45:00 AM	Tuesday	51	0	2	5	low
4	1:00:00 AM	Tuesday	57	6	15	16	normal
...	...	...	...	...	...	...	...
2971	10:45:00 PM	Thursday	16	3	1	36	normal
2972	11:00:00 PM	Thursday	11	0	1	30	normal
2973	11:15:00 PM	Thursday	15	4	1	25	normal
2974	11:30:00 PM	Thursday	16	5	0	27	normal
2975	11:45:00 PM	Thursday	14	3	1	15	normal

2976 rows × 7 columns

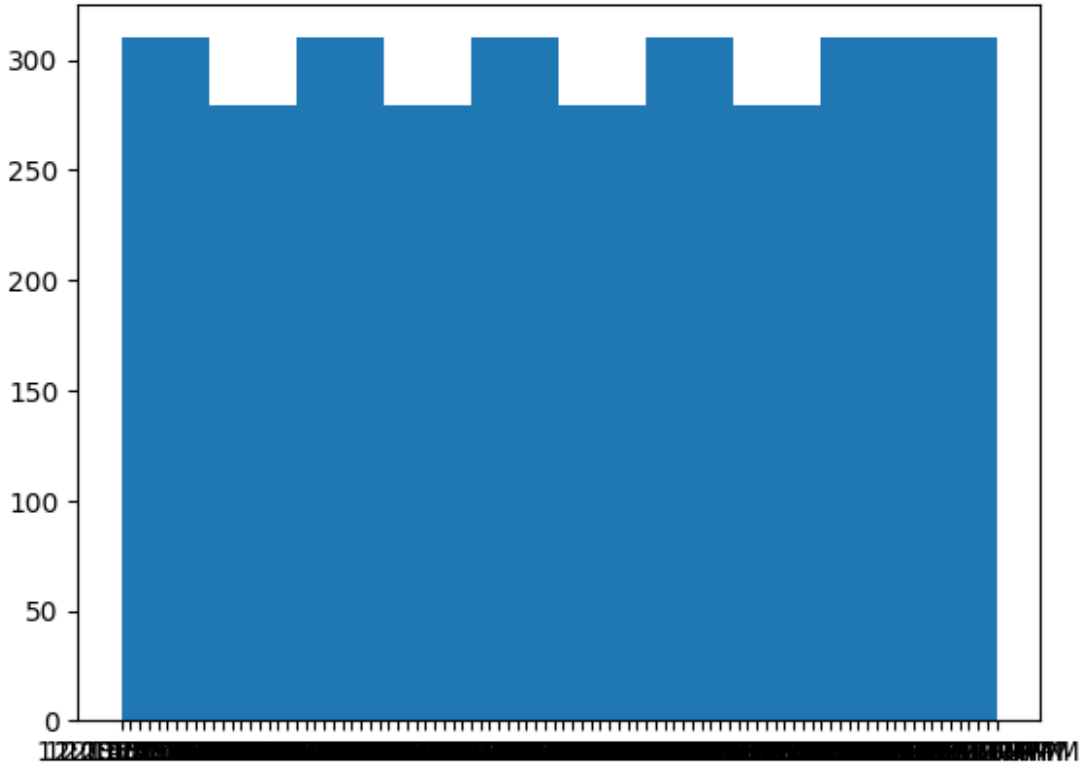
```
import matplotlib.pyplot as plt
```

```
df['Time'].value_counts()
```

```
12:00:00 AM    31
12:15:00 AM    31
5:30:00 PM     31
5:15:00 PM     31
5:00:00 PM     31
               ..
7:15:00 AM     31
7:00:00 AM     31
6:45:00 AM     31
6:30:00 AM     31
11:45:00 PM    31
Name: Time, Length: 96, dtype: int64
```

```
x=df['Time']
plt.hist(x)
```

```
(array([310., 279., 310., 279., 310., 279., 310., 279., 310., 310.]),
 array([ 0. ,  9.5, 19. , 28.5, 38. , 47.5, 57. , 66.5, 76. , 85.5, 95. ]),
 <BarContainer object of 10 artists>)
```

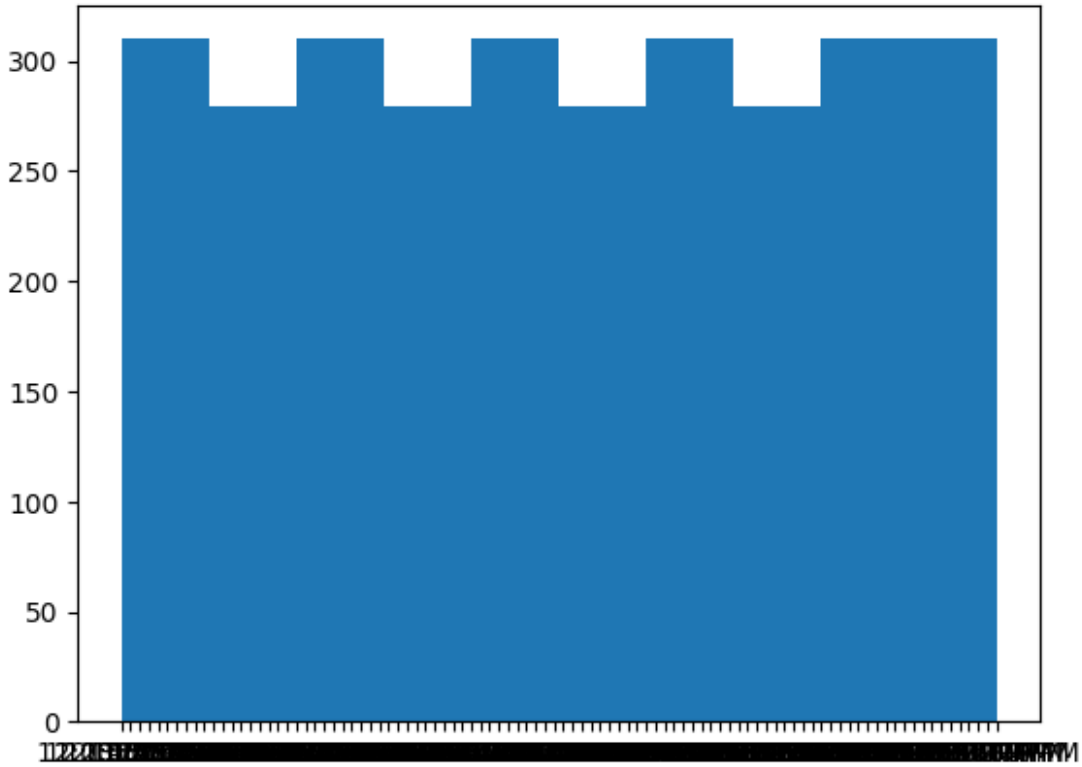


```
df['Time'].value_counts()
```

```
12:00:00 AM    31
12:15:00 AM    31
5:30:00 PM     31
5:15:00 PM     31
5:00:00 PM     31
               ..
7:15:00 AM     31
7:00:00 AM     31
6:45:00 AM     31
6:30:00 AM     31
11:45:00 PM    31
Name: Time, Length: 96, dtype: int64
```

```
x=df['Time']
plt.hist(x)
```

```
(array([310., 279., 310., 279., 310., 279., 310., 279., 310., 310.]),
 array([ 0. ,  9.5, 19. , 28.5, 38. , 47.5, 57. , 66.5, 76. , 85.5, 95. ]),
 <BarContainer object of 10 artists>)
```

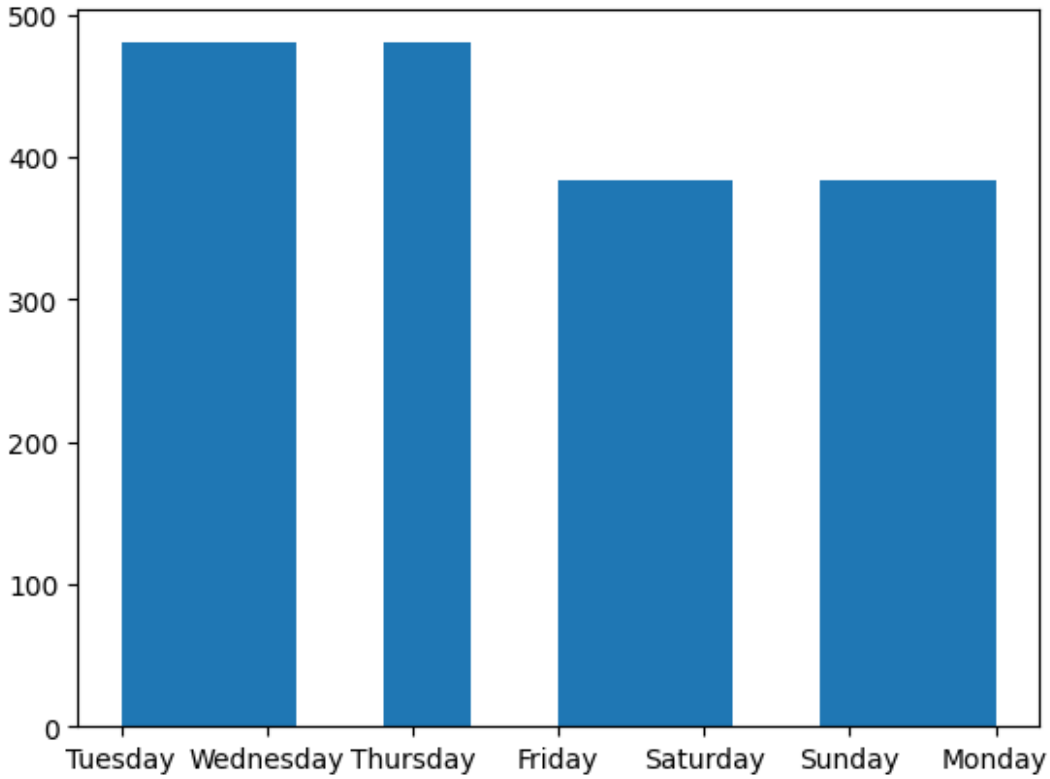


```
df['Day of the week'].value_counts()
```

```
Tuesday      480
Wednesday    480
Thursday     480
Friday       384
Saturday     384
Sunday       384
Monday       384
Name: Day of the week, dtype: int64
```

```
x=df['Day of the week']
plt.hist(x)
```

```
(array([480., 480.,   0., 480.,   0., 384., 384.,   0., 384., 384.]),
 array([0. , 0.6, 1.2, 1.8, 2.4, 3. , 3.6, 4.2, 4.8, 5.4, 6. ]),
 <BarContainer object of 10 artists>)
```

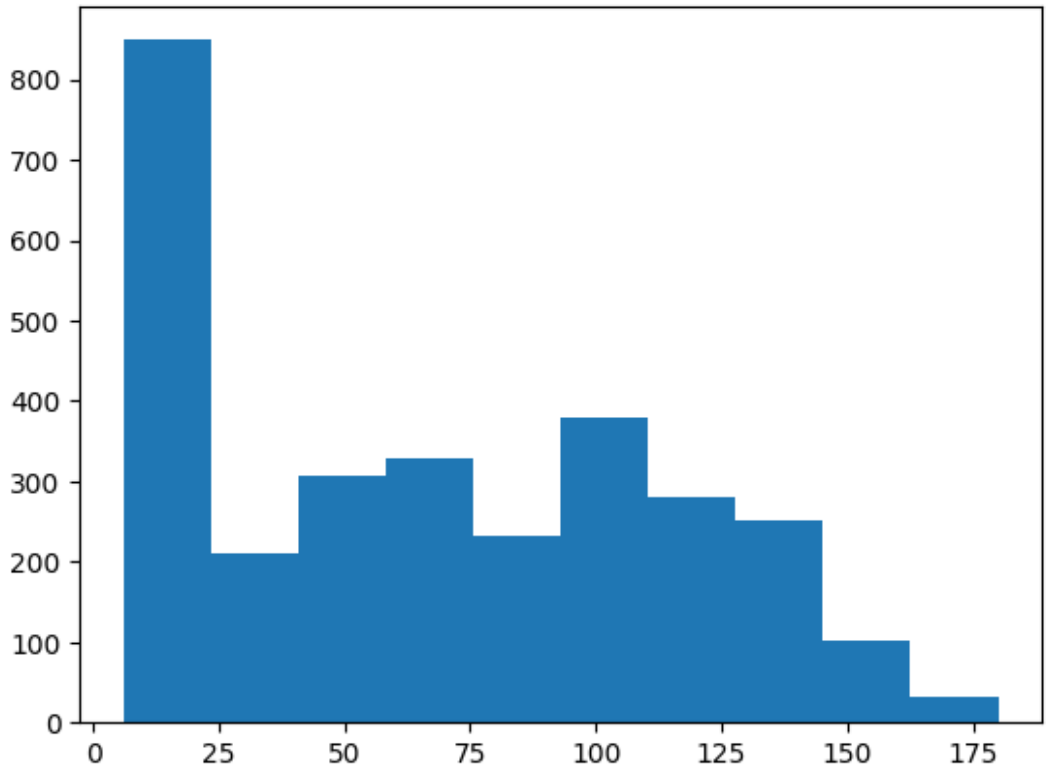



```
df['CarCount'].value_counts()
```

```
18     110
19      83
15      81
20      75
14      73
      ...
167      1
154      1
152      1
155      1
163      1
Name: CarCount, Length: 172, dtype: int64
```

```
x=df['CarCount']
plt.hist(x)
```

```
(array([849., 211., 308., 328., 233., 380., 281., 251., 102.,  33.]),
 array([  6. ,  23.4,  40.8,  58.2,  75.6,  93. , 110.4, 127.8, 145.2,
        162.6, 180. ]),
 <BarContainer object of 10 artists>)
```

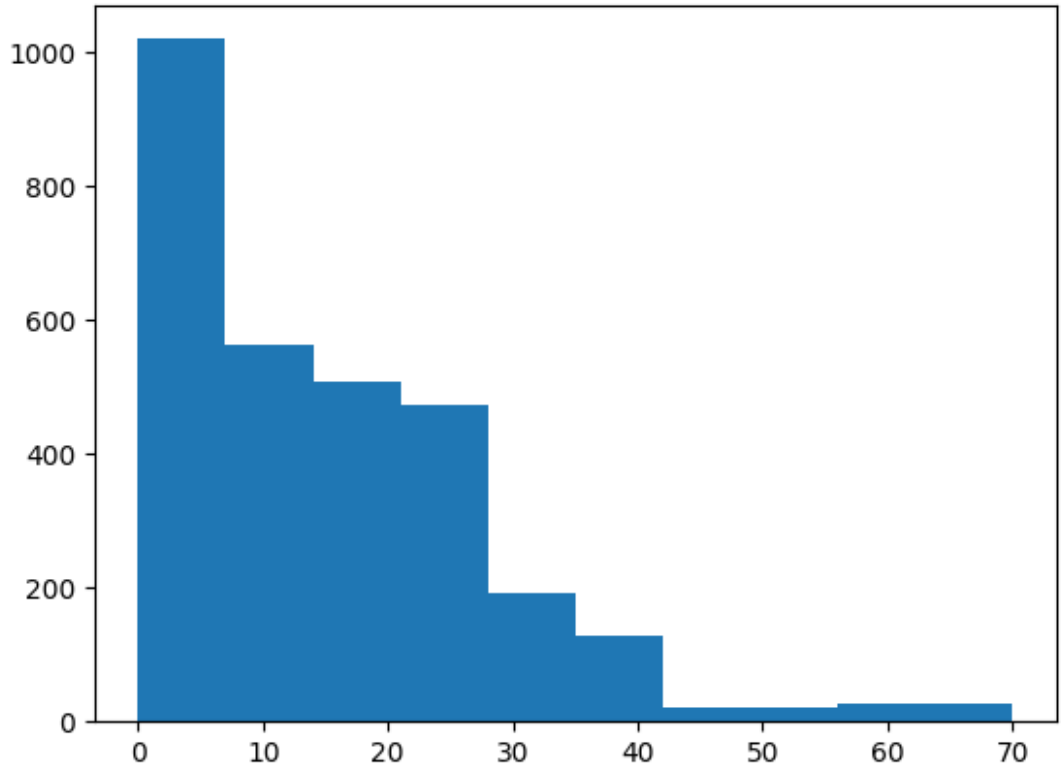


```
df['BikeCount'].value_counts()
```

```
5     211
4     165
1     156
0     145
2     137
     ...
58      2
66      1
41      1
42      1
57      1
Name: BikeCount, Length: 71, dtype: int64
```

```
x=df['BikeCount']
plt.hist(x)
```

```
(array([1019.,  563.,  507.,  473.,  191.,  128.,   21.,   20.,   26.,
         28.]),
 array([ 0.,  7., 14., 21., 28., 35., 42., 49., 56., 63., 70.]),
 <BarContainer object of 10 artists>)
```



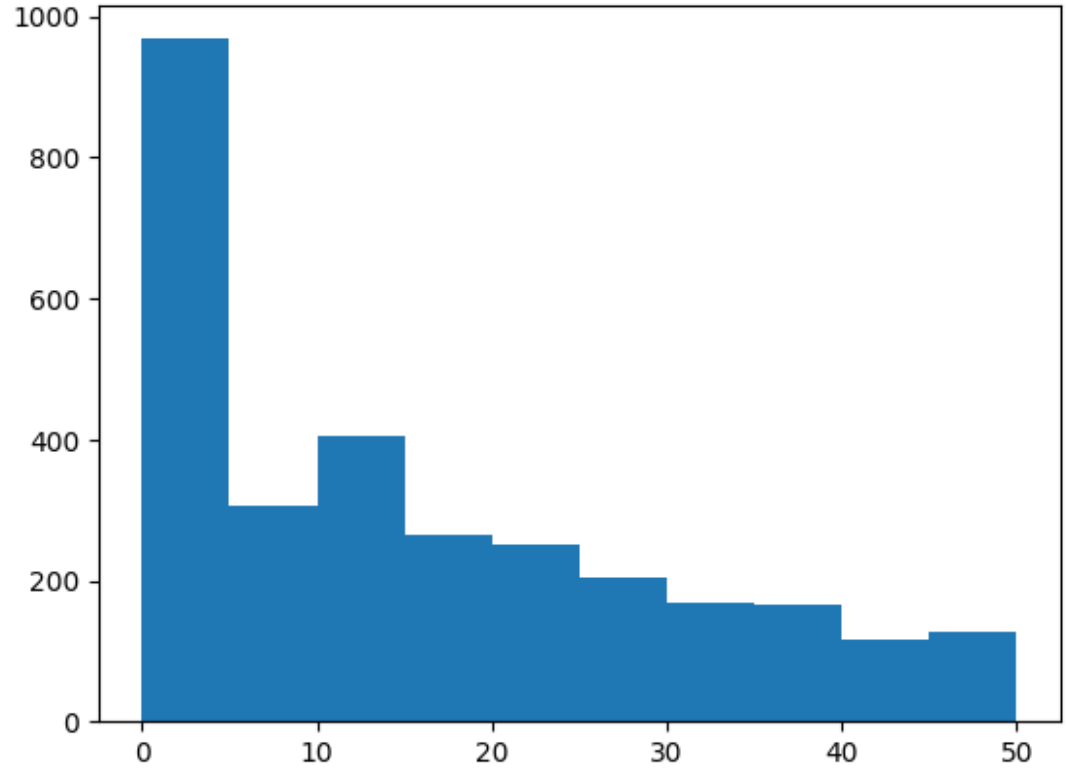

```
df['BusCount'].value_counts()
```

```
0     437
1     389
10    105
15     81
11     78
12     78
20     77
6      75
14     74
5      69
13     69
7      68
3      60
16     59
4      57
```

```
22     54
23     49
8      49
18     48
9      46
31     46
27     46
25     43
37     42
21     42
28     41
39     40
17     39
29     38
19     37
32     37
26     35
36     31
40     30
24     30
34     30
30     30
38     29
48     27
33     26
35     25
2      25
41     24
50     23
42     22
46     22
49     21
43     20
44     19
45     18
47     16
Name: BusCount, dtype: int64
```

```
x=df['BusCount']
plt.hist(x)
```

```
(array([968., 307., 404., 264., 252., 203., 169., 167., 115., 127.]),
 array([ 0.,  5., 10., 15., 20., 25., 30., 35., 40., 45., 50.]),
 <BarContainer object of 10 artists>)
```



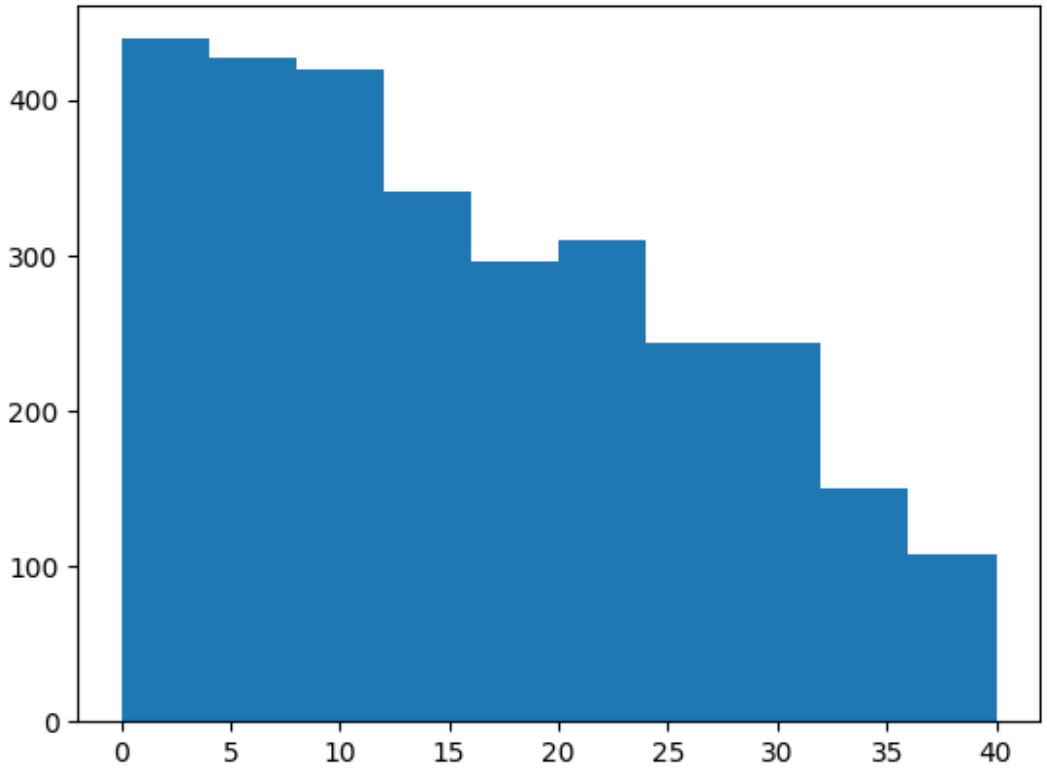

```
df['TruckCount'].value_counts()
```

```
5     167
9     123
1     119
0     119
10    114
2     112
20    110
8     100
12     97
6      91
3      89
7      88
18     88
11     83
13     83
15     82
```

```
4     81
29    81
14    79
16    76
23    72
21    70
24    69
28    68
17    68
19    64
27    63
30    61
22    58
26    57
25    54
34    41
32    40
35    35
33    34
31    33
37    25
36    23
38    23
39    20
40    16
Name: TruckCount, dtype: int64
```

```
x=df['TruckCount']
plt.hist(x)
```

```
(array([439., 427., 420., 341., 296., 310., 243., 243., 150., 107.]),
 array([ 0.,  4.,  8., 12., 16., 20., 24., 28., 32., 36., 40.]),
 <BarContainer object of 10 artists>)
```




```
dummy=pd.get_dummies(df[['Day of the week']],drop_first=True)
dummy
```

	Day of the week_Monday	Day of the week_Saturday	Day of the week_Sunday	Day of the week_Thursday	Day of the week_Tuesday	Day of the week_Wednesday
0	0	0	0	0	1	0
1	0	0	0	0	1	0
2	0	0	0	0	1	0
3	0	0	0	0	1	0
4	0	0	0	0	1	0
...	...	...	...	...	...	...
2971	0	0	0	1	0	0
2972	0	0	0	1	0	0
2973	0	0	0	1	0	0
2974	0	0	0	1	0	0
2975	0	0	0	1	0	0

2976 rows × 6 columns

```
df1=pd.concat([df,dummy],axis=1)
df1
```

	Time	Day of the week	CarCount	BikeCount	BusCount	TruckCount	Traffic Situation	Day of the week_Monday	Day of the week_Saturday	Day of the week_Sunday	Day of the week_Thursday	Da week
0	12:00:00 AM	Tuesday	31	0	4	4	low	0	0	0	0	
1	12:15:00 AM	Tuesday	49	0	3	3	low	0	0	0	0	
2	12:30:00 AM	Tuesday	46	0	3	6	low	0	0	0	0	
3	12:45:00 AM	Tuesday	51	0	2	5	low	0	0	0	0	
4	1:00:00 AM	Tuesday	57	6	15	16	normal	0	0	0	0	
...	...	...	...	...	...	...	...	...	...	...	...	
2971	10:45:00 PM	Thursday	16	3	1	36	normal	0	0	0	1	
2972	11:00:00 PM	Thursday	11	0	1	30	normal	0	0	0	1	
2973	11:15:00 PM	Thursday	15	4	1	25	normal	0	0	0	1	
2974	11:30:00 PM	Thursday	16	5	0	27	normal	0	0	0	1	
2975	11:45:00 PM	Thursday	14	3	1	15	normal	0	0	0	1	

2976 rows × 13 columns

```
df1=df1.drop(['Day of the week'],axis=1)
df1
```

	Time	CarCount	BikeCount	BusCount	TruckCount	Traffic Situation	Day of the week_Monday	Day of the week_Saturday	Day of the week_Sunday	Day of the week_Thursday	Day of the week_Tuesday
0	12:00:00 AM	31	0	4	4	low	0	0	0	0	1
1	12:15:00 AM	49	0	3	3	low	0	0	0	0	1
2	12:30:00 AM	46	0	3	6	low	0	0	0	0	1
3	12:45:00 AM	51	0	2	5	low	0	0	0	0	1
4	1:00:00 AM	57	6	15	16	normal	0	0	0	0	1
...	...	...	...	...	...	...	...	...	...	...	...
2971	10:45:00 PM	16	3	1	36	normal	0	0	0	1	0
2972	11:00:00 PM	11	0	1	30	normal	0	0	0	1	0
2973	11:15:00 PM	15	4	1	25	normal	0	0	0	1	0
2974	11:30:00 PM	16	5	0	27	normal	0	0	0	1	0
2975	11:45:00 PM	14	3	1	15	normal	0	0	0	1	0

2976 rows × 12 columns

```
df1['Time']=pd.to_datetime(df1['Time'])
```

```
df1['formatted_time']=df1['Time'].dt.strftime('%I:%M %p')
```

```
df1['hour']=df1['Time'].dt.hour
df1['minute']=df1['Time'].dt.minute
```

```
df1=df1.drop('Time', axis=1)
```

```
df1
```

	CarCount	BikeCount	BusCount	TruckCount	Traffic Situation	Day of the week_Monday	Day of the week_Saturday	Day of the week_Sunday	Day of the week_Thursday	Day of the week_Tuesday	Day of the week_Wedn
0	31	0	4	4	low	0	0	0	0	1	
1	49	0	3	3	low	0	0	0	0	1	
2	46	0	3	6	low	0	0	0	0	1	
3	51	0	2	5	low	0	0	0	0	1	
4	57	6	15	16	normal	0	0	0	0	1	
...	...	...	...	...	...	...	...	...	...	...	...
2971	16	3	1	36	normal	0	0	0	1	0	
2972	11	0	1	30	normal	0	0	0	1	0	
2973	15	4	1	25	normal	0	0	0	1	0	
2974	16	5	0	27	normal	0	0	0	1	0	
2975	14	3	1	15	normal	0	0	0	1	0	

2976 rows × 14 columns

```
df1=df1.drop(['formatted_time'],axis=1)
df1
```

	CarCount	BikeCount	BusCount	TruckCount	Traffic Situation	Day of the week_Monday	Day of the week_Saturday	Day of the week_Sunday	Day of the week_Thursday	Day of the week_Tuesday	Day (week_Wedı
0	31	0	4	4	low	0	0	0	0	1	
1	49	0	3	3	low	0	0	0	0	1	
2	46	0	3	6	low	0	0	0	0	1	
3	51	0	2	5	low	0	0	0	0	1	
4	57	6	15	16	normal	0	0	0	0	1	
...	...	...	...	...	...	...	...	...	...	...	...
2971	16	3	1	36	normal	0	0	0	1	0	
2972	11	0	1	30	normal	0	0	0	1	0	
2973	15	4	1	25	normal	0	0	0	1	0	
2974	16	5	0	27	normal	0	0	0	1	0	
2975	14	3	1	15	normal	0	0	0	1	0	

2976 rows × 13 columns

```
df1.dtypes
```

```
CarCount                    int64
BikeCount                   int64
BusCount                    int64
TruckCount                  int64
Traffic Situation          object
Day of the week_Monday      uint8
Day of the week_Saturday    uint8
Day of the week_Sunday      uint8
Day of the week_Thursday    uint8
Day of the week_Tuesday     uint8
Day of the week_Wednesday   uint8
hour                        int64
minute                      int64
dtype: object
```

```
x=df1.drop(['Traffic Situation'],axis=1)
x
```

	CarCount	BikeCount	BusCount	TruckCount	Day of the week_Monday	Day of the week_Saturday	Day of the week_Sunday	Day of the week_Thursday	Day of the week_Tuesday	Day of the week_Wednesday	hou
0	31	0	4	4	0	0	0	0	1	0	
1	49	0	3	3	0	0	0	0	1	0	
2	46	0	3	6	0	0	0	0	1	0	
3	51	0	2	5	0	0	0	0	1	0	
4	57	6	15	16	0	0	0	0	1	0	
...	...	...	...	...	...	...	...	...	...	...	...
2971	16	3	1	36	0	0	0	1	0	0	2
2972	11	0	1	30	0	0	0	1	0	0	2
2973	15	4	1	25	0	0	0	1	0	0	2
2974	16	5	0	27	0	0	0	1	0	0	2
2975	14	3	1	15	0	0	0	1	0	0	2

2976 rows × 12 columns

```
y=df1['Traffic Situation']
y
```

```
0          low
1          low
2          low
3          low
4       normal
         ...
2971    normal
2972    normal
2973    normal
2974    normal
2975    normal
Name: Traffic Situation, Length: 2976, dtype: object
```

```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,random_state=42)
x_test
```

	CarCount	BikeCount	BusCount	TruckCount	Day of the week_Monday	Day of the week_Saturday	Day of the week_Sunday	Day of the week_Thursday	Day of the week_Tuesday	Day of the week_Wednesday	hou
2404	15	5	0	10	0	1	0	0	0	0	
2866	86	15	15	23	0	0	0	0	0	1	2
2775	102	5	19	11	0	0	0	0	1	0	2
507	109	14	38	1	0	0	1	0	0	0	
1825	14	2	1	26	0	0	1	0	0	0	
...	...	...	...	...	...	...	...	...	...	...	...
1005	158	44	26	2	0	0	0	0	0	0	1
1741	19	0	0	17	0	1	0	0	0	0	
2260	26	6	9	29	0	0	0	1	0	0	1
655	77	19	16	8	1	0	0	0	0	0	1
2023	13	3	0	31	0	0	0	0	1	0	

744 rows x 12 columns

```
x_train
```

	CarCount	BikeCount	BusCount	TruckCount	Day of the week_Monday	Day of the week_Saturday	Day of the week_Sunday	Day of the week_Thursday	Day of the week_Tuesday	Day of the week_Wednesday	hou
1766	36	17	7	30	0	1	0	0	0	0	9
2602	18	5	0	22	1	0	0	0	0	0	2
2566	140	35	41	5	0	0	1	0	0	0	1
1525	94	8	15	5	0	0	0	0	0	1	2
1670	180	69	29	1	0	0	0	0	0	0	9
...	...	...	...	...	...	...	...	...	...	...	...
1638	20	2	0	17	0	0	0	0	0	0	1
1095	98	21	10	5	0	0	1	0	0	0	9
1130	116	22	23	7	0	0	1	0	0	0	1
1294	40	9	15	28	1	0	0	0	0	0	1
860	20	1	0	27	0	0	0	0	0	1	2

2232 rows × 12 columns

```
y_test
```

```
2404       low
2866      high
2775    normal
507       high
1825    normal
         ...
1005     heavy
1741    normal
2260    normal
655     normal
2023    normal
Name: Traffic Situation, Length: 744, dtype: object
```

```
y_train
```

```
1766    normal
2602    normal
```

```
2566     heavy
1525    normal
1670     heavy
          ...
1638    normal
```