

```

import numpy as np
speed=[99,86,87,88,111,86,103,87,94,78,77,85,86]
sorted(speed)

[77, 78, 85, 86, 86, 86, 87, 87, 88, 94, 99, 103, 111]

np.mean(speed)

89.76923076923077

np.median(speed)

87.0

from scipy import stats
stats.mode(speed)

ModeResult(mode=86, count=3)

num=[1,2,3,4,5]
n=len(num)
get_sum=sum(num)
mean= get_sum/n
print(mean)

3.0

num=[1,2,3,4,5]
n=len(num)
num.sort()
if n%2==0:
    m1=[n//2]
    m2=num[(n//2) - 1]
    m=(m1+m2)/2
else:
    m=num[n//2]
print(m)

3

from collections import Counter
num=[1,2,3,4,5,5]
n=len(num)

data=Counter(num)
get_mode=dict(data)
mode=[k for k, v in get_mode.items() if v== max(list(data.values()))]

if len(mode)==n:
    get_mode="No mode found"
else:

```

```

    get_mode="Mode is: " + ','.join(map(str,mode))
print(get_mode)

```

Mode is: 5

```

import pandas as pd
data={
    'Age_Group':
    ['Young','Young','Middle','Middle','Middle','Senior','Senior'],
    'Income': [25000,32000,45000,38000,55000,48000,60000]
}

```

```

df=pd.DataFrame(data)
print(df.dtypes)
print(df)

```

```

Age_Group    object
Income       int64
dtype: object
   Age_Group  Income
0    Young    25000
1    Young    32000
2   Middle    45000
3   Middle    38000
4   Middle    55000
5   Senior    48000
6   Senior    60000

```

```

stats =
df.groupby('Age_Group').agg(['mean','median','min','max','std'])
print(stats)

```

	Income				
Age_Group	mean	median	min	max	std
Middle	46000.0	45000.0	38000	55000	8544.003745
Senior	54000.0	54000.0	48000	60000	8485.281374
Young	28500.0	28500.0	25000	32000	4949.747468

```

import pandas as pd
df= pd.read_csv(r"D:\python\DSBDA\3\Iris.csv")
print(df)

```

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	\
0	1	5.1	3.5	1.4	0.2	
1	2	4.9	3.0	1.4	0.2	
2	3	4.7	3.2	1.3	0.2	
3	4	4.6	3.1	1.5	0.2	
4	5	5.0	3.6	1.4	0.2	
...	
145	146	6.7	3.0	5.2	2.3	

146	147	6.3	2.5	5.0	1.9
147	148	6.5	3.0	5.2	2.0
148	149	6.2	3.4	5.4	2.3
149	150	5.9	3.0	5.1	1.8

```

      Species
0      Iris-setosa
1      Iris-setosa
2      Iris-setosa
3      Iris-setosa
4      Iris-setosa
..
145  Iris-virginica
146  Iris-virginica
147  Iris-virginica
148  Iris-virginica
149  Iris-virginica

```

[150 rows x 6 columns]

```

print('Iris-setosa')
setosa=df['Species'] == 'Iris-setosa'
print(df[setosa].describe())

```

```

Iris-setosa
      Id  SepalLengthCm  SepalWidthCm  PetalLengthCm
PetalWidthCm
count  50.00000      50.00000      50.000000      50.000000
50.00000
mean    25.50000        5.00600      3.418000      1.464000
0.24400
std     14.57738        0.35249      0.381024      0.173511
0.10721
min      1.00000        4.30000      2.300000      1.000000
0.10000
25%     13.25000        4.80000      3.125000      1.400000
0.20000
50%     25.50000        5.00000      3.400000      1.500000
0.20000
75%     37.75000        5.20000      3.675000      1.575000
0.30000
max     50.00000        5.80000      4.400000      1.900000
0.60000

```

```

print('Iris-virginica')
virginica=df['Species'] == 'Iris-virginica'
print(df[virginica].describe())

```

```

Iris-virginica
      Id  SepalLengthCm  SepalWidthCm  PetalLengthCm

```

```

PetalWidthCm
count    50.00000    50.00000    50.000000    50.000000
50.00000
mean    125.50000    6.58800    2.974000    5.552000
2.02600
std     14.57738    0.63588    0.322497    0.551895
0.27465
min     101.00000    4.90000    2.200000    4.500000
1.40000
25%     113.25000    6.22500    2.800000    5.100000
1.80000
50%     125.50000    6.50000    3.000000    5.550000
2.00000
75%     137.75000    6.90000    3.175000    5.875000
2.30000
max     150.00000    7.90000    3.800000    6.900000
2.50000

```

```
df.head(51)
```

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	\
0	1	5.1	3.5	1.4	0.2	
1	2	4.9	3.0	1.4	0.2	
2	3	4.7	3.2	1.3	0.2	
3	4	4.6	3.1	1.5	0.2	
4	5	5.0	3.6	1.4	0.2	
5	6	5.4	3.9	1.7	0.4	
6	7	4.6	3.4	1.4	0.3	
7	8	5.0	3.4	1.5	0.2	
8	9	4.4	2.9	1.4	0.2	
9	10	4.9	3.1	1.5	0.1	
10	11	5.4	3.7	1.5	0.2	
11	12	4.8	3.4	1.6	0.2	
12	13	4.8	3.0	1.4	0.1	
13	14	4.3	3.0	1.1	0.1	
14	15	5.8	4.0	1.2	0.2	
15	16	5.7	4.4	1.5	0.4	
16	17	5.4	3.9	1.3	0.4	
17	18	5.1	3.5	1.4	0.3	
18	19	5.7	3.8	1.7	0.3	
19	20	5.1	3.8	1.5	0.3	
20	21	5.4	3.4	1.7	0.2	
21	22	5.1	3.7	1.5	0.4	
22	23	4.6	3.6	1.0	0.2	
23	24	5.1	3.3	1.7	0.5	
24	25	4.8	3.4	1.9	0.2	
25	26	5.0	3.0	1.6	0.2	
26	27	5.0	3.4	1.6	0.4	
27	28	5.2	3.5	1.5	0.2	
28	29	5.2	3.4	1.4	0.2	

29	30	4.7	3.2	1.6	0.2
30	31	4.8	3.1	1.6	0.2
31	32	5.4	3.4	1.5	0.4
32	33	5.2	4.1	1.5	0.1
33	34	5.5	4.2	1.4	0.2
34	35	4.9	3.1	1.5	0.1
35	36	5.0	3.2	1.2	0.2
36	37	5.5	3.5	1.3	0.2
37	38	4.9	3.1	1.5	0.1
38	39	4.4	3.0	1.3	0.2
39	40	5.1	3.4	1.5	0.2
40	41	5.0	3.5	1.3	0.3
41	42	4.5	2.3	1.3	0.3
42	43	4.4	3.2	1.3	0.2
43	44	5.0	3.5	1.6	0.6
44	45	5.1	3.8	1.9	0.4
45	46	4.8	3.0	1.4	0.3
46	47	5.1	3.8	1.6	0.2
47	48	4.6	3.2	1.4	0.2
48	49	5.3	3.7	1.5	0.2
49	50	5.0	3.3	1.4	0.2
50	51	7.0	3.2	4.7	1.4

Species	
0	Iris-setosa
1	Iris-setosa
2	Iris-setosa
3	Iris-setosa
4	Iris-setosa
5	Iris-setosa
6	Iris-setosa
7	Iris-setosa
8	Iris-setosa
9	Iris-setosa
10	Iris-setosa
11	Iris-setosa
12	Iris-setosa
13	Iris-setosa
14	Iris-setosa
15	Iris-setosa
16	Iris-setosa
17	Iris-setosa
18	Iris-setosa
19	Iris-setosa
20	Iris-setosa
21	Iris-setosa
22	Iris-setosa
23	Iris-setosa
24	Iris-setosa

```
25 Iris-setosa
26 Iris-setosa
27 Iris-setosa
28 Iris-setosa
29 Iris-setosa
30 Iris-setosa
31 Iris-setosa
32 Iris-setosa
33 Iris-setosa
34 Iris-setosa
35 Iris-setosa
36 Iris-setosa
37 Iris-setosa
38 Iris-setosa
39 Iris-setosa
40 Iris-setosa
41 Iris-setosa
42 Iris-setosa
43 Iris-setosa
44 Iris-setosa
45 Iris-setosa
46 Iris-setosa
47 Iris-setosa
48 Iris-setosa
49 Iris-setosa
50 Iris-versicolor
```

```
print('Iris-versicolor')
versicolor=df['Species'] == 'Iris-versicolor'
print(df[versicolor].describe())
```

```
Iris-versicolor
      Id  SepalLengthCm  SepalWidthCm  PetalLengthCm
PetalWidthCm
count    50.000000      50.000000      50.000000      50.000000
50.000000
mean     75.50000      5.936000      2.770000      4.260000
1.326000
std      14.57738      0.516171      0.313798      0.469911
0.197753
min      51.00000      4.900000      2.000000      3.000000
1.000000
25%      63.25000      5.600000      2.525000      4.000000
1.200000
50%      75.50000      5.900000      2.800000      4.350000
1.300000
75%      87.75000      6.300000      3.000000      4.600000
1.500000
max     100.00000      7.000000      3.400000      5.100000
1.800000
```

