```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from datetime import datetime

data=pd.read_csv('C:\\Users\\kumar\\Desktop\\householdtask3.csv')

display(data)
```

```
    year  tot_hhs      own  own_wm  own_prop  own_wm_prop  prop_hhs
age  \
0   2008  1560859  1087580  574406      69.7         36.8     100.0
35.9
1   2008   185965    71256   39405      38.3         21.2      11.9
29.9
2   2008   312376   191470   48424      61.3         15.5      20.0
40.0
3   2008   312333   196203   84171      62.8         26.9      20.0
34.7
4   2008   312240   217657  141318      69.7         45.3      20.0
31.5
..   ...      ...      ...     ...       ...          ...       ...
...
65  2020   352564   213893  119637      60.7         33.9      20.1
36.9
66  2020   350182   235256  141104      67.2         40.3      19.9
35.0
67  2020   351328   288779  187838      82.2         53.5      20.0
39.6
68  2020   329588   156459  107753      47.5         32.7      18.8
31.1
69  2020   388013   314154   38270      81.0          9.9      22.1
69.8

    size  income  expenditure  eqv_income  eqv_exp
0    2.7   46704        42394       26869    25132
1    2.6   23404        25270       14258    15824
2    2.3   16747        21145       13402    14408
3    2.8   31308        29855       18917    18266
4    3.0   49106        46561       26870    24672
..   ...     ...          ...         ...      ...
65   2.8   69779        57351       38889    33468
66   3.0   88944        83038       48929    45978
67   2.6  104277       123424       62718    71985
68   3.2   69581        54141       35075    29684
69   1.7   34712        34643       25077    27037

[70 rows x 13 columns]
```

```
display(data.head(10))
```

```
   year  tot_hhs      own  own_wm  own_prop  own_wm_prop  prop_hhs
age  \
0  2008  1560859  1087580  574406      69.7         36.8     100.0
35.9
1  2008   185965    71256   39405      38.3         21.2      11.9
29.9
2  2008   312376   191470   48424      61.3         15.5      20.0
40.0
3  2008   312333   196203   84171      62.8         26.9      20.0
34.7
4  2008   312240   217657  141318      69.7         45.3      20.0
31.5
5  2008   312336   229014  147658      73.3         47.3      20.0
35.3
6  2008   311574   253235  152835      81.3         49.1      20.0
39.3
7  2008   312761   194358   49448      62.1         15.8      20.0
38.7
8  2008   311973   206342   86390      66.1         27.7      20.0
36.1
9  2008   311840   194361  108065      62.3         34.7      20.0
33.0

   size  income  expenditure  eqv_income  eqv_exp
0   2.7   46704        42394       26869    25132
1   2.6   23404        25270       14258    15824
2   2.3   16747        21145       13402    14408
3   2.8   31308        29855       18917    18266
4   3.0   49106        46561       26870    24672
5   2.6   61674        52776       36691    31958
6   2.5   96861        72822       55637    42932
7   2.5   23680        16413       15190    11015
8   2.7   34155        29085       20357    18121
9   2.8   49771        42662       27203    25132
```

```
display(data.tail(10))
```

```
    year  tot_hhs     own  own_wm  own_prop  own_wm_prop  prop_hhs
age  \
60  2020   351497  210229  121764      59.8         34.6      20.0
33.8
61  2020   351517  229772  154104      65.4         43.8      20.0
36.9
62  2020   350840  282193  170510      80.4         48.6      20.0
39.8
63  2020   352137  182056   45300      51.7         12.9      20.0
40.6
64  2020   350530  198616   80783      56.7         23.0      20.0
```

```
37.4
65  2020   352564  213893  119637      60.7          33.9       20.1
36.9
66  2020   350182  235256  141104      67.2          40.3       19.9
35.0
67  2020   351328  288779  187838      82.2          53.5       20.0
39.6
68  2020   329588  156459  107753      47.5          32.7       18.8
31.1
69  2020   388013  314154   38270      81.0           9.9       22.1
69.8
```

	size	income	expenditure	eqv_income	eqv_exp
60	3.0	66897	57775	37147	32476
61	2.8	92531	71932	52359	41522
62	2.7	146672	98187	78217	55989
63	2.5	33200	20063	21993	14308
64	2.8	51756	40102	28481	24061
65	2.8	69779	57351	38889	33468
66	3.0	88944	83038	48929	45978
67	2.6	104277	123424	62718	71985
68	3.2	69581	54141	35075	29684
69	1.7	34712	34643	25077	27037

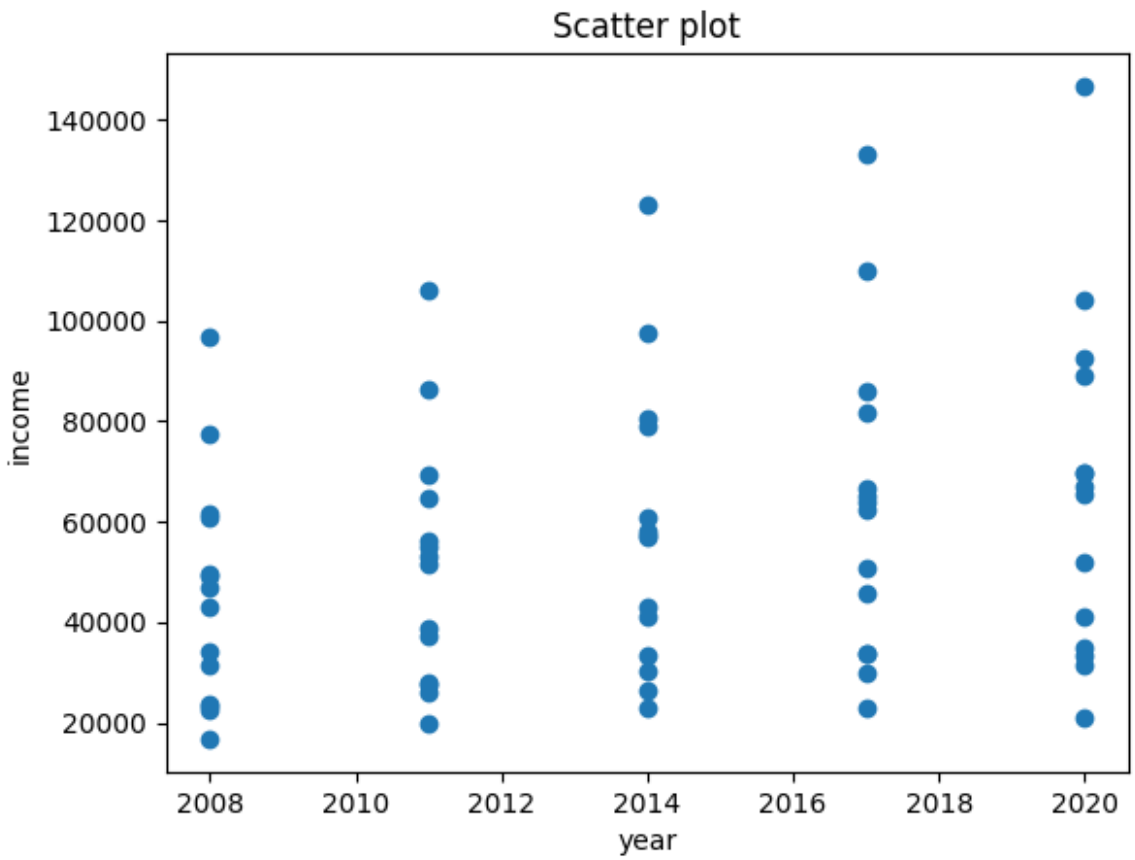
```
#scatter year against own
plt.scatter(data['year'], data['income'])

#adding title to the plot
plt.title("Scatter plot")

#setting x and y table
plt.xlabel('year')
plt.ylabel('income')

#adding the legends
plt.show
```

```
<function matplotlib.pyplot.show(close=None, block=None)>
```



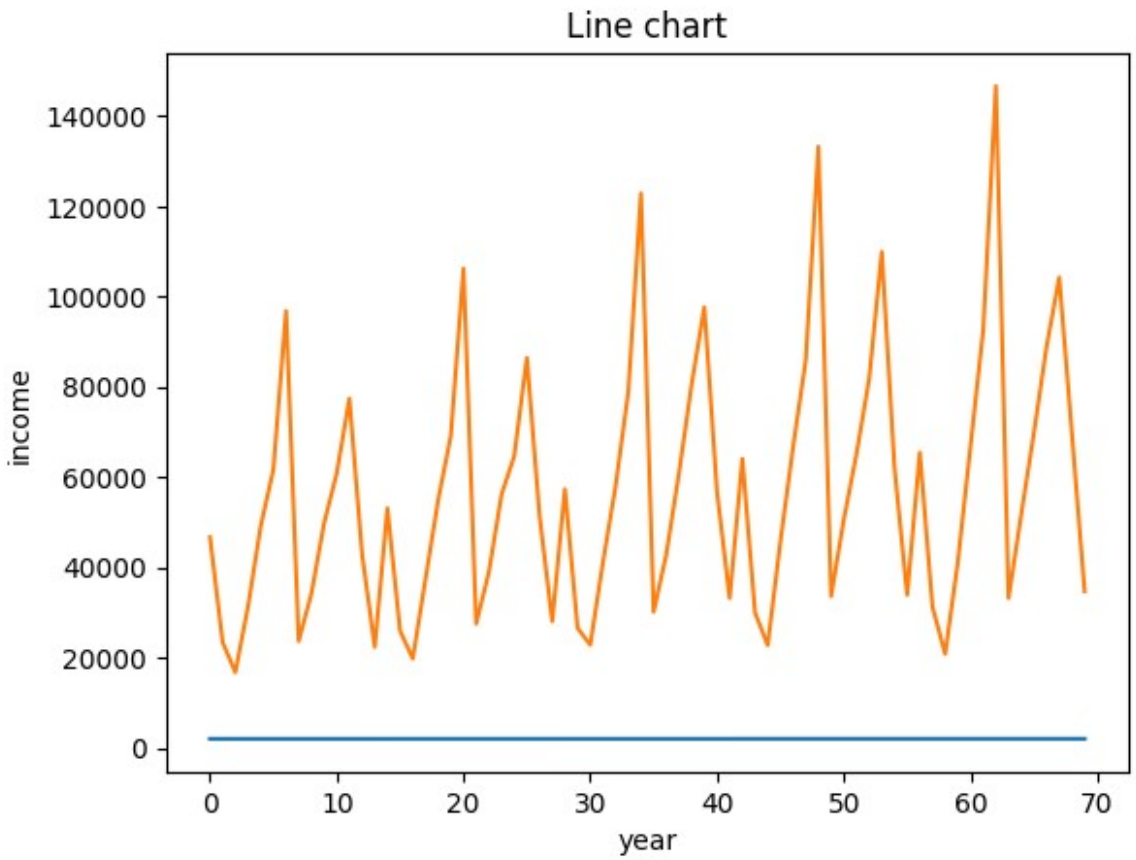

```
#line chart
plt.plot(data['year'])
plt.plot(data['income'])

#adding title to the plot
plt.title("Line chart")

#setting x and y labels
plt.xlabel('year')
plt.ylabel('income')

#adding the legends
plt.show
```

```
<function matplotlib.pyplot.show(close=None, block=None)>
```



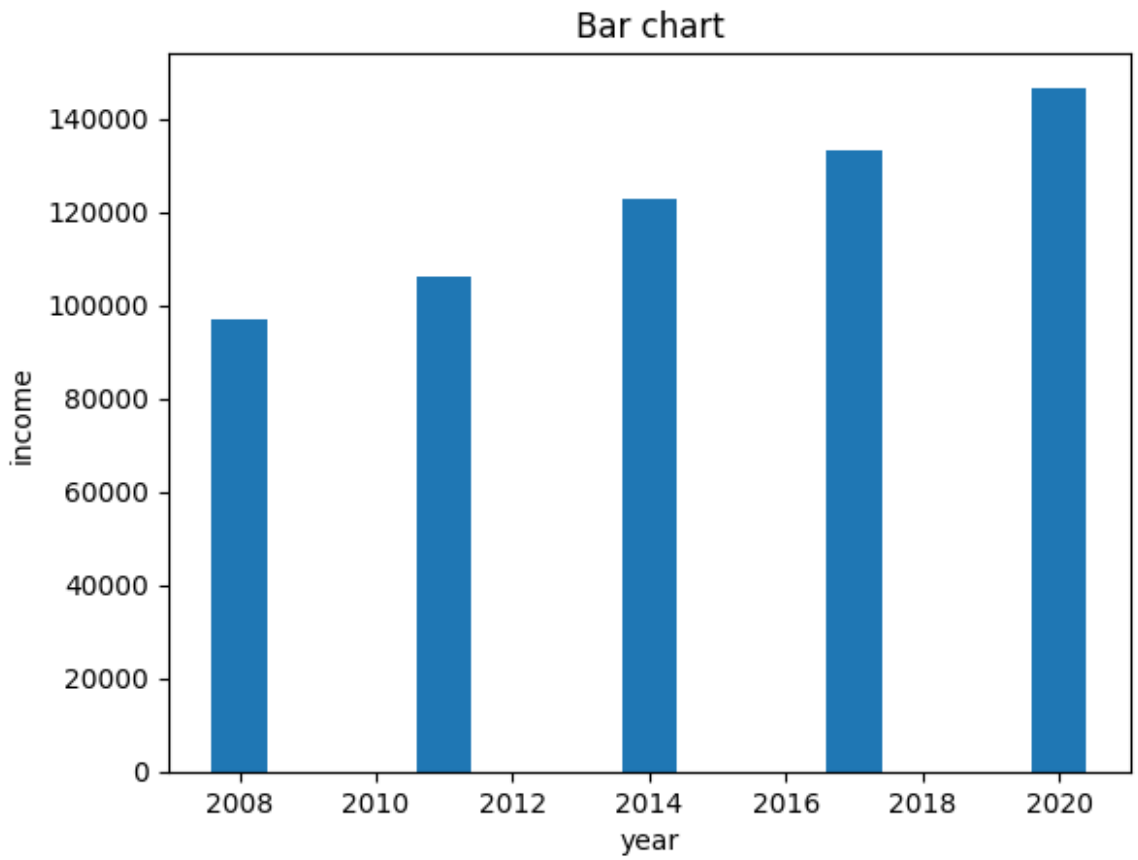

```
#bar chart
plt.bar(data['year'], data['income'])

#adding title to the plot
plt.title("Bar chart")

#setting x and y labels
plt.xlabel('year')
plt.ylabel('income')

#adding the legends
plt.show
```

```
<function matplotlib.pyplot.show(close=None, block=None)>
```

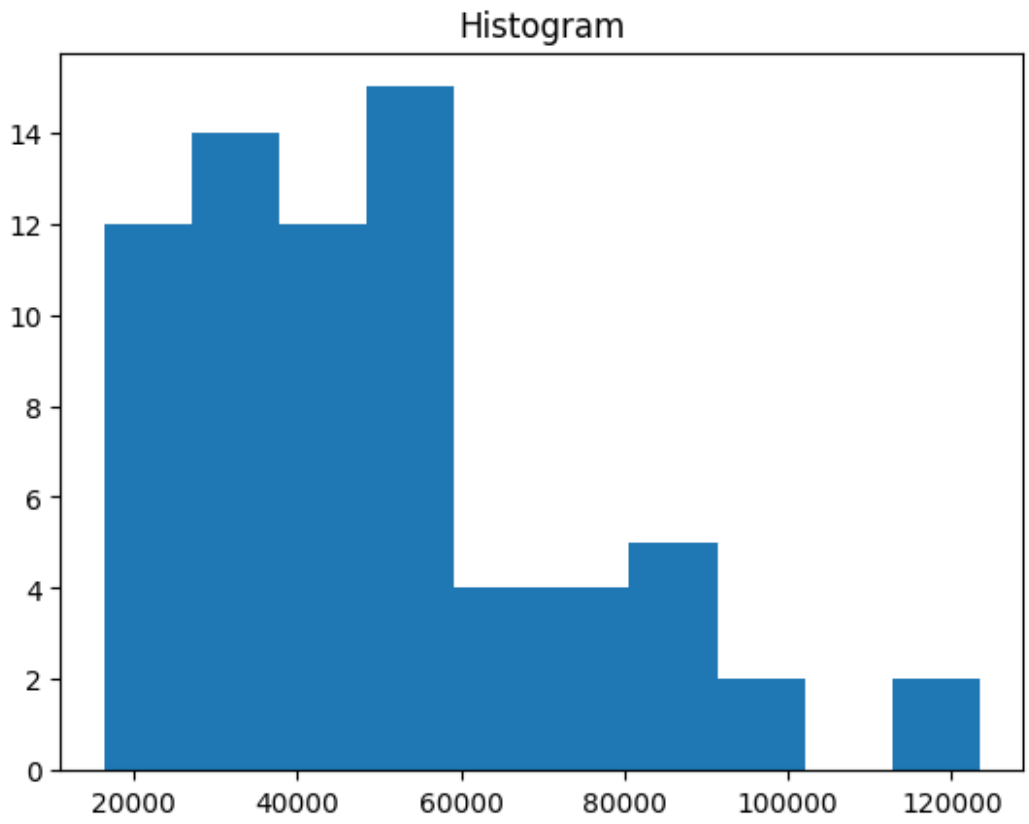



```
#histogram
plt.hist(data['expenditure'])

plt.title("Histogram")

plt.show
```

```
<function matplotlib.pyplot.show(close=None, block=None)>
```


Histogram
0
2
4
6
8
10
12
14
20000
40000
60000
80000
100000
120000