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

import os
for dirname, _,filenames in os.walk('/kaggle/input'):
    for filename in filenames:
        print(os.path.join(dirname, filename))

##load the file
income_df=pd.read_csv(r"C:\Users\Admin\OneDrive\Pictures\Documents\
Inc_Exp_Data.csv")

income_df.head()

   Mthly_HH_Income  Mthly_HH_Expense  No_of_Fly_Members
Emi_or_Rent_Amt  \
0             5000              8000                  3
2000
1             6000              7000                  2
3000
2            10000              4500                  2
0
3            10000              2000                  1
0
4            12500             12000                  2
3000

   Annual_HH_Income Highest_Qualified_Member  No_of_Earning_Members
0             64200           Under-Graduate                      1
1             79920               Illiterate                      1
2            112800           Under-Graduate                      1
3             97200               Illiterate                      1
4            147000                 Graduate                      1

##Analyze the data
income_df.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 50 entries, 0 to 49
Data columns (total 7 columns):
 #   Column                    Non-Null Count  Dtype
---  ------                    --------------  -----
 0   Mthly_HH_Income           50 non-null     int64
 1   Mthly_HH_Expense          50 non-null     int64
 2   No_of_Fly_Members         50 non-null     int64
 3   Emi_or_Rent_Amt           50 non-null     int64
 4   Annual_HH_Income          50 non-null     int64
 5   Highest_Qualified_Member  50 non-null     object
 6   No_of_Earning_Members     50 non-null     int64
```

```
dtypes: int64(6), object(1)
memory usage: 2.9+ KB
```

```
income_df.shape
```

```
(50, 7)
```

```
income_df.describe().T
```

```
                       count       mean            std      min
25%  \
Mthly_HH_Income         50.0   41558.00   26097.908979   5000.0
23550.0
Mthly_HH_Expense        50.0   18818.00   12090.216824   2000.0
10000.0
No_of_Fly_Members       50.0       4.06       1.517382      1.0
3.0
Emi_or_Rent_Amt         50.0    3060.00    6241.434948      0.0
0.0
Annual_HH_Income        50.0  490019.04  320135.792123  64200.0
258750.0
No_of_Earning_Members   50.0       1.46       0.734291      1.0
1.0

                            50%       75%        max
Mthly_HH_Income         35000.0   50375.0   100000.0
Mthly_HH_Expense        15500.0   25000.0    50000.0
No_of_Fly_Members           4.0       5.0        7.0
Emi_or_Rent_Amt             0.0    3500.0    35000.0
Annual_HH_Income       447420.0  594720.0  1404000.0
No_of_Earning_Members       1.0       2.0        4.0
```

```
income_df.isna().any()
```

```
Mthly_HH_Income            False
Mthly_HH_Expense           False
No_of_Fly_Members          False
Emi_or_Rent_Amt            False
Annual_HH_Income           False
Highest_Qualified_Member   False
No_of_Earning_Members      False
dtype: bool
```

```
##What is the mean expense of a household?
income_df["Mthly_HH_Expense"].mean()
```

```
18818.0
```

```
##What is the median household expense?
income_df["Mthly_HH_Expense"].median()
```

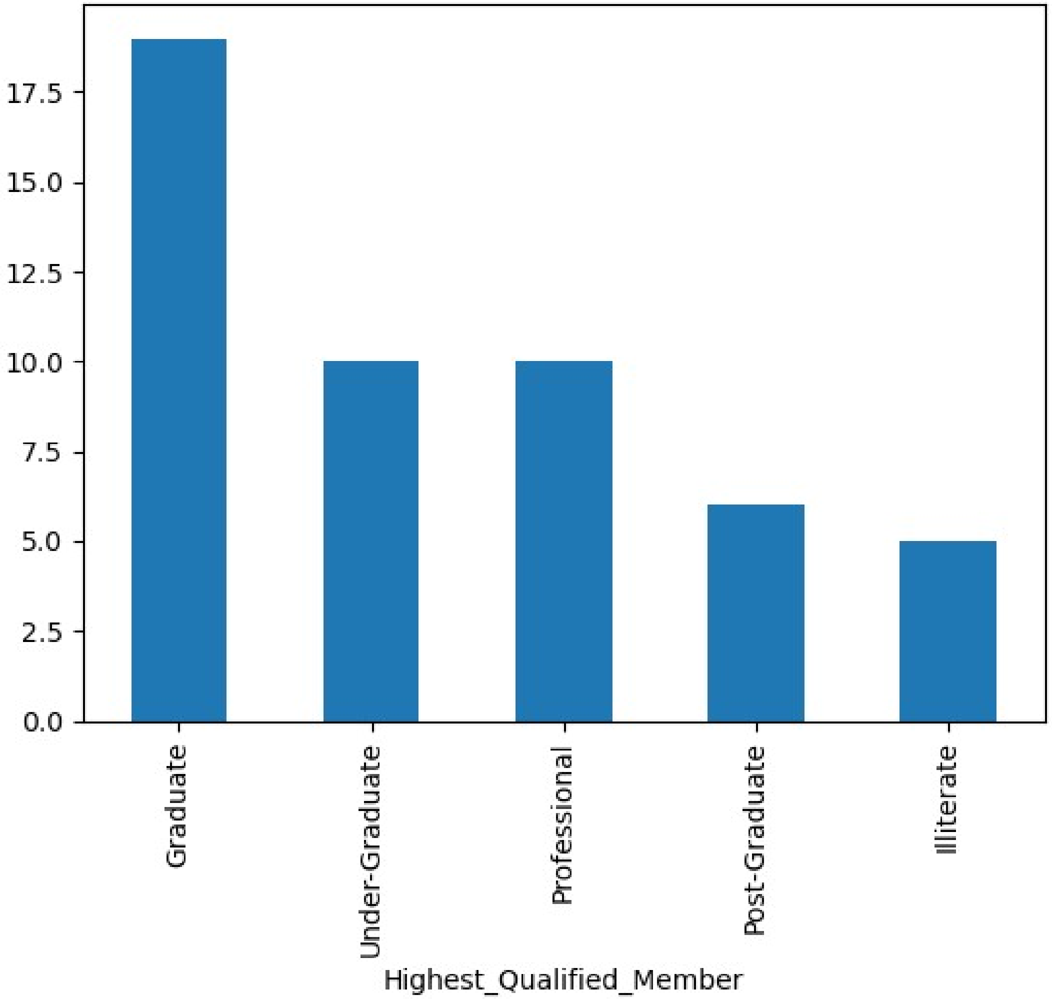
```
15500.0
```

```python
##What is the monthly expense for most of the household?
mth_exp_tmp=pd.crosstab(index=income_df["Mthly_HH_Expense"],
columns="count")
mth_exp_tmp.reset_index(inplace=True)
mth_exp_tmp[mth_exp_tmp['count']==income_df.Mthly_HH_Expense.value_cou
nts().max()]
```

```
col_0  Mthly_HH_Expense  count
18                25000      8
```

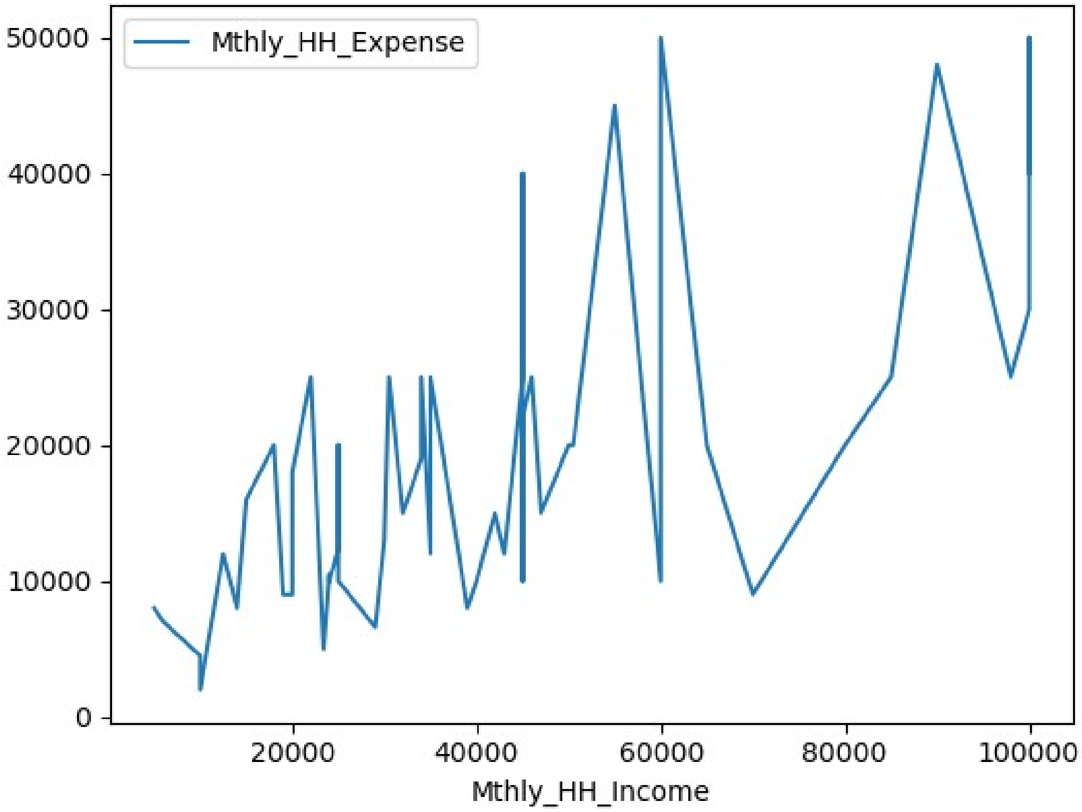
```python
##Plot the histogram to count the highest qualified member
income_df["Highest_Qualified_Member"].value_counts().plot(kind="bar")
```

```
<Axes: xlabel='Highest_Qualified_Member'>
```



```python
##Calculate IQR(difference between 75% and 25% quartile)
income_df.plot(x="Mthly_HH_Income", y="Mthly_HH_Expense")
```

```
IQR=income_df["Mthly_HH_Expense"].quantile(0.75)-
income_df["Mthly_HH_Expense"].quantile(0.25)
```

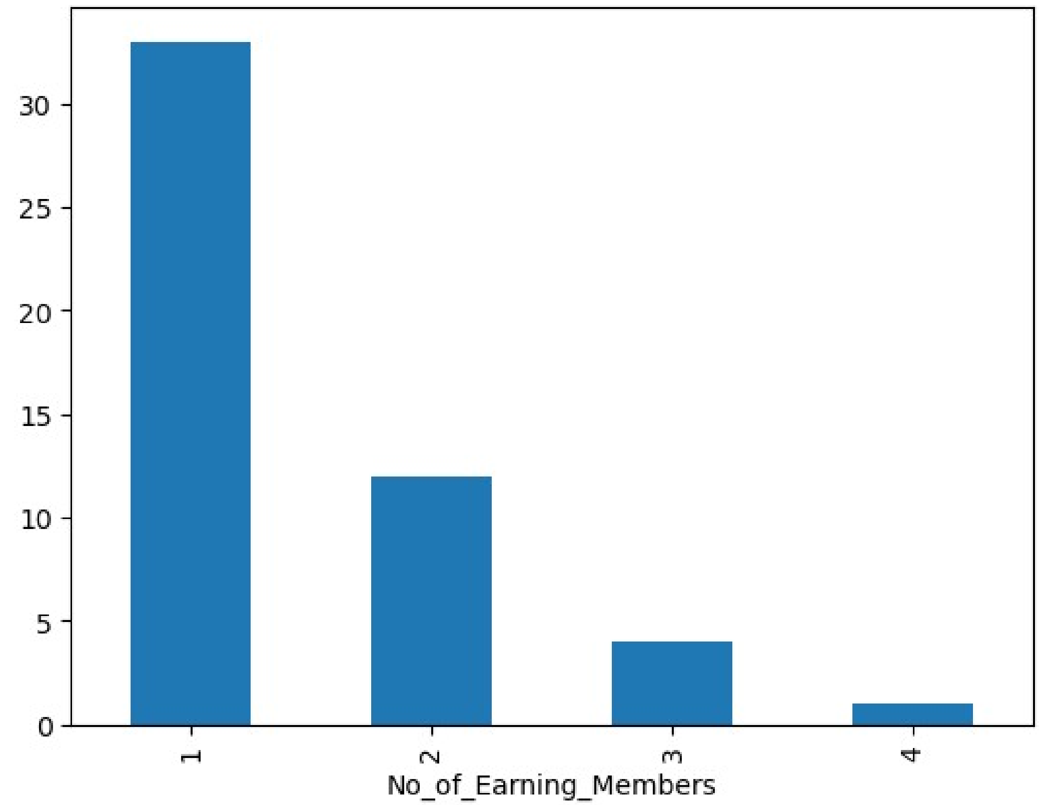


```
##Calculate standard deviation for the first 4 columns
pd.DataFrame(income_df.iloc[:,0:5].std().to_frame()).T

   Mthly_HH_Income  Mthly_HH_Expense  No_of_Fly_Members
Emi_or_Rent_Amt  \
0     26097.908979      12090.216824           1.517382
6241.434948

   Annual_HH_Income
0     320135.792123

##Calculate variance for first 3 columns
pd.DataFrame(income_df.iloc[:,0:4].var().to_frame()).T

   Mthly_HH_Income  Mthly_HH_Expense  No_of_Fly_Members
Emi_or_Rent_Amt
0     6.811009e+08      1.461733e+08           2.302449
3.895551e+07

##Calculate the count of highest qualified member
income_df["Highest_Qualified_Member"].value_counts().to_frame().T
```

```
Highest_Qualified_Member  Graduate  Under-Graduate  Professional  \
count                           19              10            10

Highest_Qualified_Member  Post-Graduate  Illiterate
count                                 6           5
```

```
##Plot the Histogram to count the No_of_Earning_Members
income_df["No_of_Earning_Members"].value_counts().plot(kind="bar")
```

```
<Axes: xlabel='No_of_Earning_Members'>
```



```
# 13.Suppose you have option to invest in Stock A or Stock B. The
stocks • have different expected returns and standard deviations. The
expected return of Stock A is 15% and Stock B is 10%. Standard
Deviation of the returns of these stocks is 10% and 5% respectively.

##Which is better investment?

#Here we need to calculate the coeff of variation

Coeff_of_var_StockA=10/15
print(Coeff_of_var_StockA)
Coeff_of_var_StockB=5/10
print(Coeff_of_var_StockB)
```