1.Import necessary packages

In [1]:
```
import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)
import seaborn as sns
import matplotlib.pyplot as plt
```

In [2]:
```
import os
for dirname, _, filenames in os.walk('/kaggle/input'):
    for filename in filenames:
        print(os.path.join(dirname, filename))
```

2.Load the file

In [4]:
```
income_df=pd.read_csv(r"C:\Users\Rachana Jena\Downloads\10th, 11th- Intro to Stats, Descriptive Stats (1)\10th, 11th-
```

In [6]:
```
income_df.head()
```

Out[6]:

	Mthly_HH_Income	Mthly_HH_Expense	No_of_Fly_Members	Emi_or_Rent_Amt	Annual_HH_Income	Highest_Qualified_Member
0	5000	8000	3	2000	64200	Under-Graduate
1	6000	7000	2	3000	79920	Illiterate
2	10000	4500	2	0	112800	Under-Graduate
3	10000	2000	1	0	97200	Illiterate
4	12500	12000	2	3000	147000	Graduate

3.Analyze the data

In [7]:
```
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
```

In [8]:
```
income_df.shape
```

Out[8]: (50, 7)

In [9]:
```
income_df.describe().T
```

Out[9]:

	count	mean	std	min	25%	50%	75%	max
Mthly_HH_Income	50.0	41558.00	26097.908979	5000.0	23550.0	35000.0	50375.0	100000.0
Mthly_HH_Expense	50.0	18818.00	12090.216824	2000.0	10000.0	15500.0	25000.0	50000.0
No_of_Fly_Members	50.0	4.06	1.517382	1.0	3.0	4.0	5.0	7.0
Emi_or_Rent_Amt	50.0	3060.00	6241.434948	0.0	0.0	0.0	3500.0	35000.0
Annual_HH_Income	50.0	490019.04	320135.792123	64200.0	258750.0	447420.0	594720.0	1404000.0
No_of_Earning_Members	50.0	1.46	0.734291	1.0	1.0	1.0	2.0	4.0

In [10]:
```
income_df.isna().any()
```

Out[10]:
```
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
```

4.What is the Mean Expense of a Household?

In [11]:
```
income_df["Mthly_HH_Expense"].mean()
```

Out[11]:
```
18818.0
```

5.What is the Median Household Expense?

In [12]:
```
income_df["Mthly_HH_Expense"].median()
```

Out[12]:
```
15500.0
```

6.What is the Monthly Expense for most of the Households?

In [13]:
```
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_counts().max()]
```

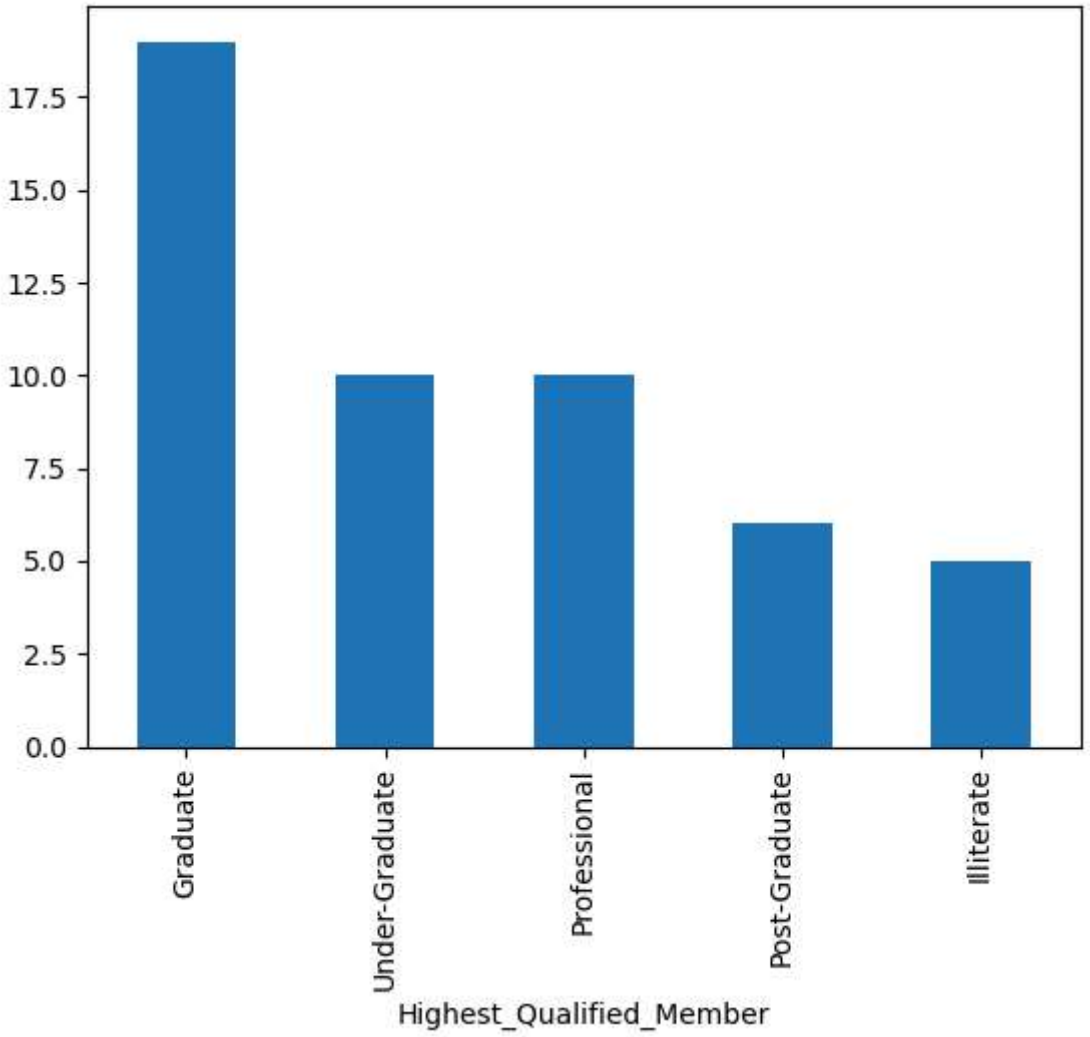
Out[13]:

col_0	Mthly_HH_Expense	count
18	25000	8

7.Plot the Histogram to count the Highest qualified member

In [14]:
```
income_df["Highest_Qualified_Member"].value_counts().plot(kind="bar")
```

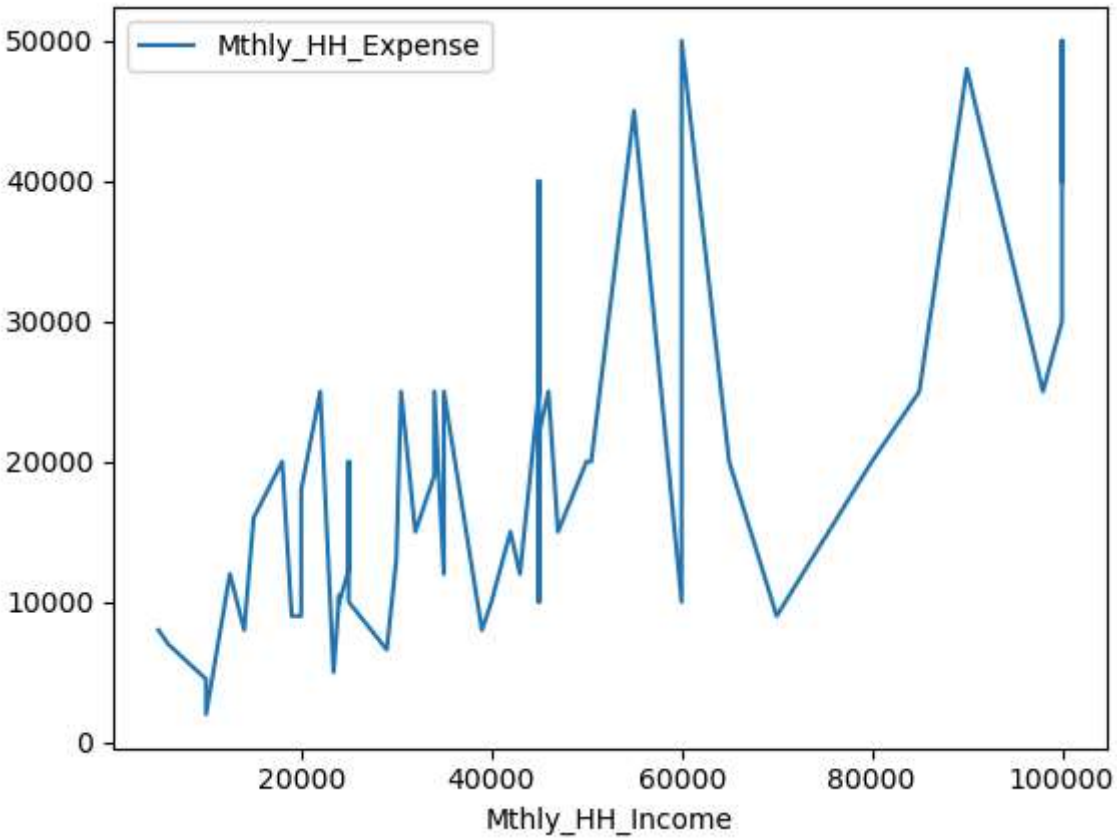
Out[14]: <Axes: xlabel='Highest_Qualified_Member'>



8.Calculate IQR(difference between 75% and 25% quartile)

In [15]:
```
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)
IQR
```

Out[15]: 15000.0



9.Calculate Standard Deviation for first 4 columns.

In [16]:
```
pd.DataFrame(income_df.iloc[:,0:5].std().to_frame()).T
```

Out[16]:

	Mthly_HH_Income	Mthly_HH_Expense	No_of_Fly_Members	Emi_or_Rent_Amt	Annual_HH_Income
0	26097.908979	12090.216824	1.517382	6241.434948	320135.792123

10.Calculate Variance for first 3 columns.

In [17]:
```
pd.DataFrame(income_df.iloc[:,0:4].var().to_frame()).T
```

Out[17]:

	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

11.Calculate the count of Highest qualified member.

In [18]:
```
income_df["Highest_Qualified_Member"].value_counts().to_frame().T
```

Out[18]:

Highest_Qualified_Member	Graduate	Under-Graduate	Professional	Post-Graduate	Illiterate
count	19	10	10	6	5

11.Calculate the count of Highest qualified member.

In [19]:
```
income_df["Highest_Qualified_Member"].value_counts().to_frame().T
```

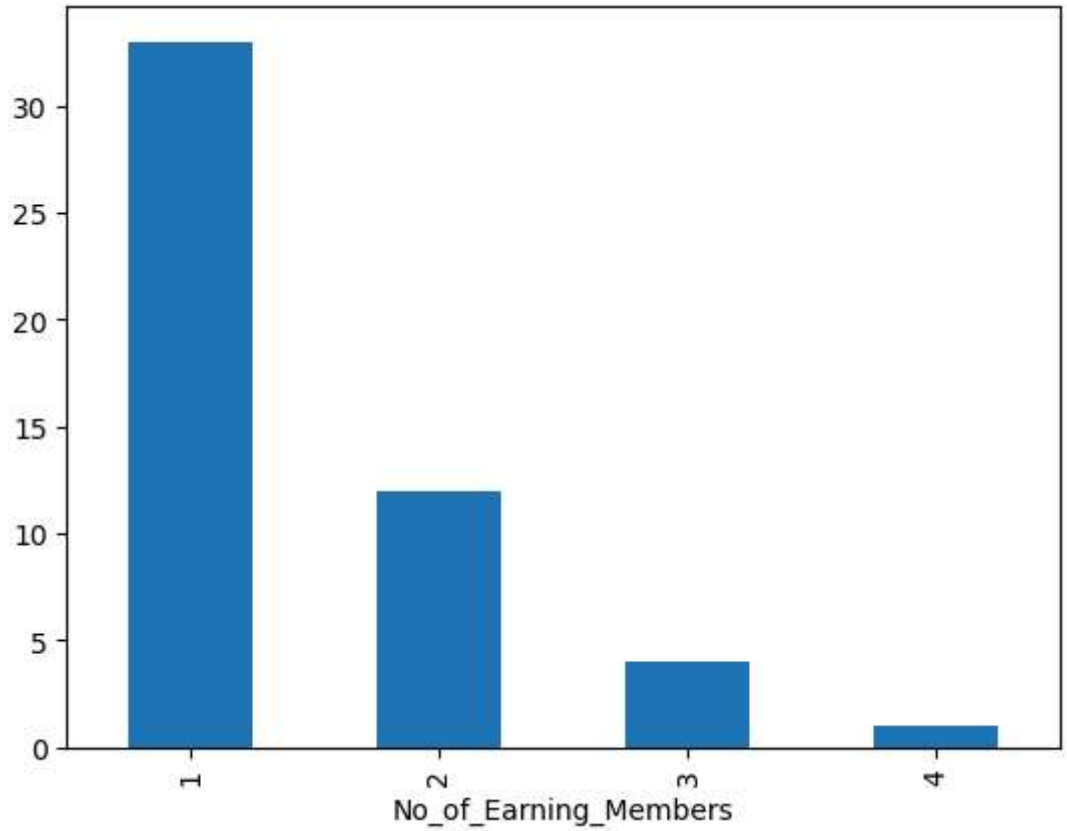
Out[19]:

Highest_Qualified_Member	Graduate	Under-Graduate	Professional	Post-Graduate	Illiterate
count	19	10	10	6	5

12.Plot the Histogram to count the No_of_Earning_Members

In [20]:
```
income_df["No_of_Earning_Members"].value_counts().plot(kind="bar")
```

Out[20]: <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.

In [21]:
```
#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)
```

```
0.6666666666666666
0.5
```

In [ ]: