In [1]:

```
# Import Libraries
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

Load the data

In [4]:

```
inc_exp_data = pd.read_csv(r'E:\1st, 2nd - Intro to Stats, Descriptive Stats\PRO
inc_exp_data
```

Out[4]:

	Mthly_HH_Income	Mthly_HH_Expense	No_of_Fly_Members	Emi_or_Rent_Amt	Annu
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	
5	14000	8000	2	0	
6	15000	16000	3	35000	
7	18000	20000	5	8000	
8	19000	9000	2	0	
9	20000	9000	4	0	
10	20000	18000	4	8000	
11	22000	25000	6	12000	
12	23400	5000	3	0	
13	24000	10500	6	0	
14	24000	10000	4	0	
15	25000	12300	3	0	
16	25000	20000	3	3500	
17	25000	10000	6	0	
18	29000	6600	2	2000	
19	30000	13000	4	0	
20	30500	25000	5	5000	
21	32000	15000	4	0	
22	34000	19000	6	0	
23	34000	25000	3	4000	
24	35000	12000	3	0	
25	35000	25000	4	0	
26	39000	8000	4	0	
27	40000	10000	4	0	
28	42000	15000	4	0	
29	43000	12000	4	0	
30	45000	25000	6	0	
31	45000	40000	6	3500	
32	45000	10000	2	1000	

	Mthly_HH_Income	Mthly_HH_Expense	No_of_Fly_Members	Emi_or_Rent_Amt	Annu
33	45000	22000	4	2500	
34	46000	25000	5	3500	
35	47000	15000	7	0	
36	50000	20000	4	0	
37	50500	20000	3	0	
38	55000	45000	6	12000	
39	60000	10000	3	0	
40	60000	50000	6	10000	
41	65000	20000	4	5000	
42	70000	9000	2	0	
43	80000	20000	4	0	
44	85000	25000	5	0	
45	90000	48000	7	0	
46	98000	25000	5	0	
47	100000	30000	6	0	
48	100000	50000	4	20000	
49	100000	40000	6	10000	

In [8]:

```
# preview the data
inc_exp_data.head()
```

Out[8]:

	Mthly_HH_Income	Mthly_HH_Expense	No_of_Fly_Members	Emi_or_Rent_Amt	Annua
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	

In [10]:

```
inc_exp_data.shape
```

Out[10]:

```
(50, 7)
```

In [14]:

```
# summery of inc_exp_data dataset
inc_exp_data.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 [16]:

```
len(inc_exp_data)
```

Out[16]:

```
50
```

In [60]:

```
inc_exp_data.isna().any() # No missing values
```

Out[60]:

```
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
```

In [31]:

```
# describe the statistic properties of dataset
inc_exp_data.describe().T
```

Out[31]:

	count	mean	std	min	25%	50%
Mthly_HH_Income	50.0	41558.00	26097.908979	5000.0	23550.0	35000.0
Mthly_HH_Expense	50.0	18818.00	12090.216824	2000.0	10000.0	15500.0
No_of_Fly_Members	50.0	4.06	1.517382	1.0	3.0	4.0
Emi_or_Rent_Amt	50.0	3060.00	6241.434948	0.0	0.0	0.0
Annual_HH_Income	50.0	490019.04	320135.792123	64200.0	258750.0	447420.0
No_of_Earning_Members	50.0	1.46	0.734291	1.0	1.0	1.0

Mean of the Monthly House Expenses

In [21]:

```
inc_exp_data['Mthly_HH_Expense'].mean()
```

Out[21]:

```
18818.0
```

Median of the Monthly House Expenses

In [23]:

```
inc_exp_data['Mthly_HH_Expense'].median()
```

Out[23]:

```
15500.0
```

Monthly Expenses for most of the households

In [56]:

```
# created a crosstab means a seperate table for counting only the monthly expens

# count the expenses amount for all members across the dataset.

mnth_exp = pd.crosstab(index=inc_exp_data['Mthly_HH_Expense'],columns='count')
mnth_exp.reset_index(inplace=True)
mnth_exp

mnth_exp[mnth_exp['count'] == inc_exp_data['Mthly_HH_Expense'].value_counts().ma
```

Out[56]:

col_0	Mthly_HH_Expense	count
18	25000	8

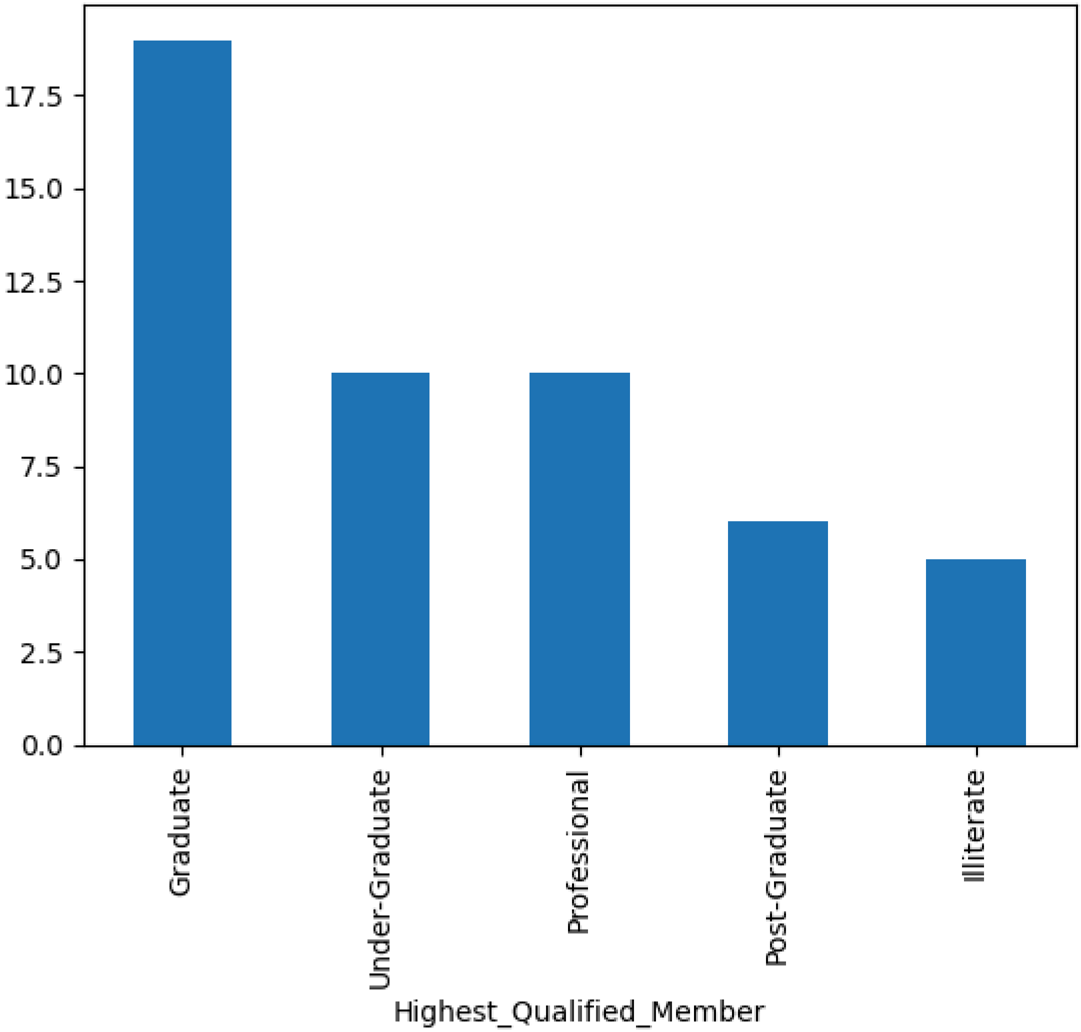
Ploting the histogram graph for most qualified members

In [65]:

```
inc_exp_data['Highest_Qualified_Member'].value_counts().plot(kind='bar')
```

Out[65]:

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

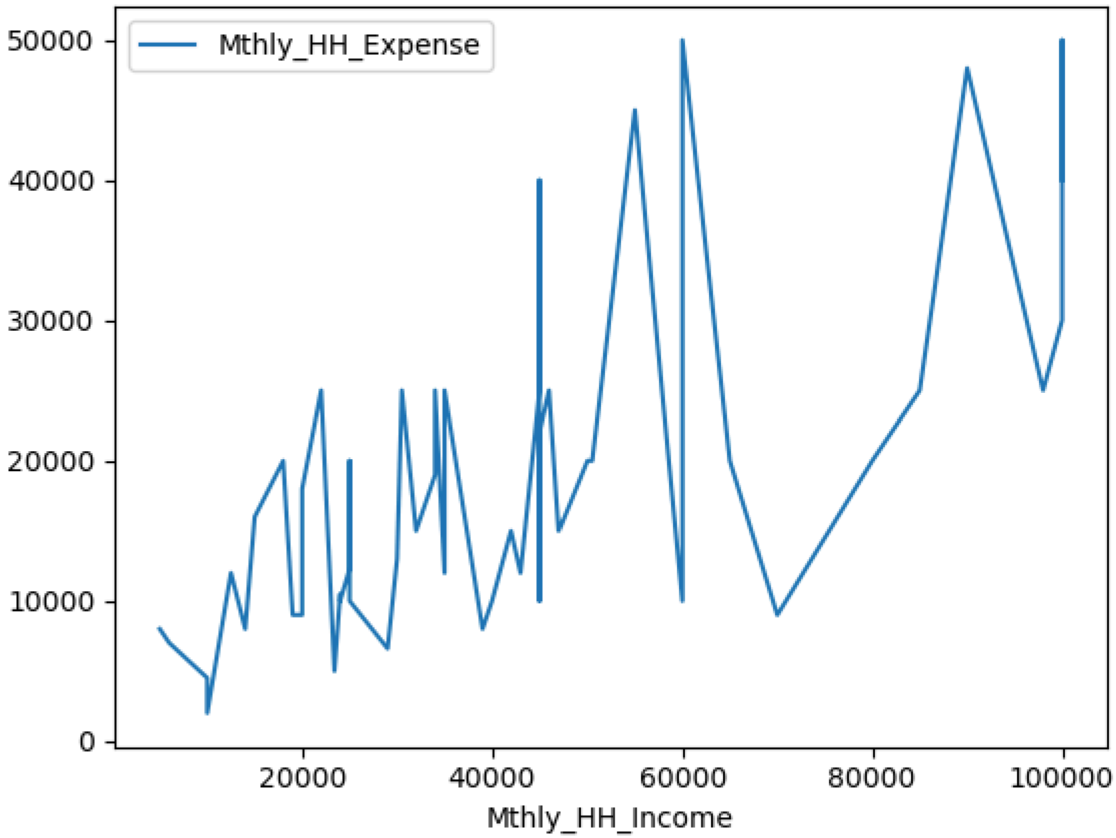


Caliculate IQR between 75% and 25%

In [70]:
```
inc_exp_data.plot(x='Mthly_HH_Income',y = 'Mthly_HH_Expense')

IQR = inc_exp_data['Mthly_HH_Expense'].quantile(0.75)-inc_exp_data['Mthly_HH_Exp
IQR
```

Out[70]:
```
15000.0
```



Calculte standard deviation for first 4 columns

In [77]:
```
pd.DataFrame(inc_exp_data.iloc[:,0:5].std().to_frame().T)
```

Out[77]:

	Mthly_HH_Income	Mthly_HH_Expense	No_of_Fly_Members	Emi_or_Rent_Amt	Annua
0	26097.908979	12090.216824	1.517382	6241.434948	3.

Calculate the variance for first 3 columns

In [80]:
```
pd.DataFrame(inc_exp_data.iloc[:,0:4].var().to_frame().T)
```

Out[80]:

	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

In [85]:
```
inc_exp_data['Highest_Qualified_Member'].value_counts().T
```

```
Out[85]: Highest_Qualified_Member
         Graduate          19
         Under-Graduate    10
         Professional      10
         Post-Graduate      6
         Illiterate         5
         Name: count, dtype: int64
```

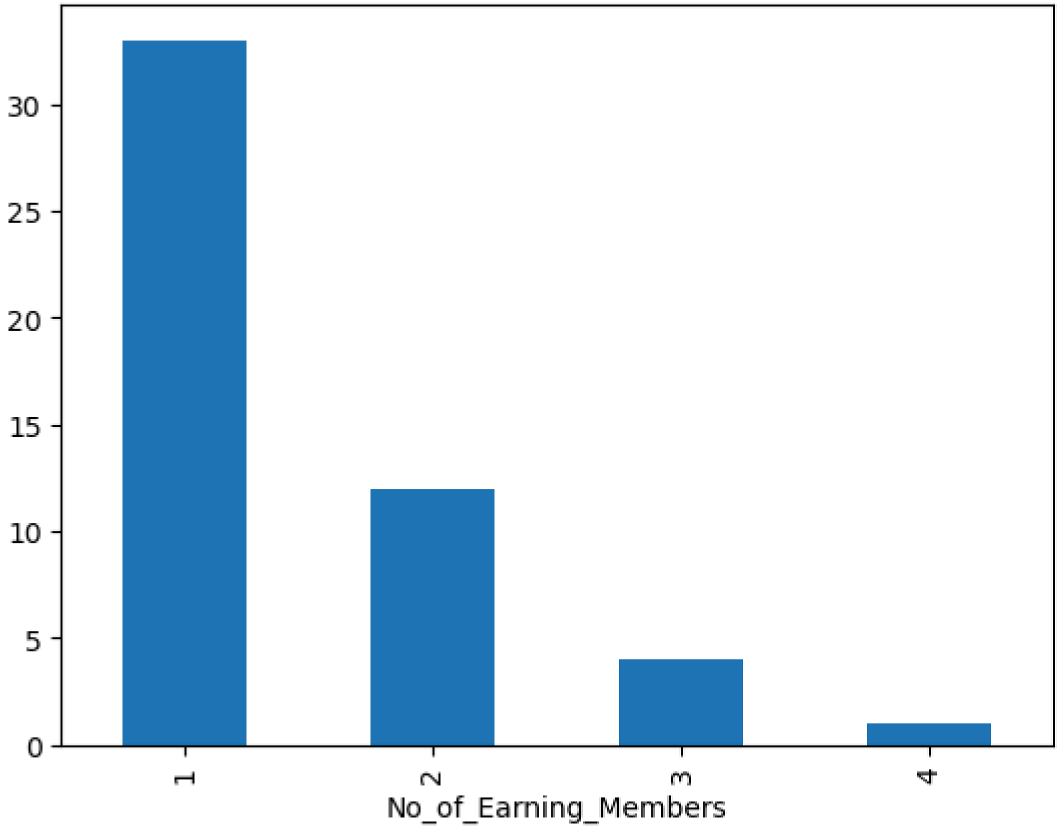
Plot the Histogram to count the No_of_Earning_Members

```
In [94]: inc_exp_data['No_of_Earning_Members'].value_counts()
```

```
Out[94]: No_of_Earning_Members
         1    33
         2    12
         3     4
         4     1
         Name: count, dtype: int64
```

```
In [89]: inc_exp_data['No_of_Earning_Members'].value_counts().plot(kind='bar')
```

```
Out[89]: <Axes: xlabel='No_of_Earning_Members'>
```


No_of_Earning_Members