AMCAT_EDA_PROJECT

October 15, 2024

[1]:

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

[2]:

```
df=pd.read_csv(r'C:\Users\premc\Downloads\data.xlsx - Sheet1.csv')
```

[3]:

```
df.shape
```

[3]:

```
(3998, 39)
```

[4]:

```
df.head()
```

[4]:

```
  Unnamed: 0      ID     Salary          DOJ          DOL  \
0      train  203097   420000.0  6/1/12 0:00      present
1      train  579905   500000.0  9/1/13 0:00      present
2      train  810601   325000.0  6/1/14 0:00      present
3      train  267447  1100000.0  7/1/11 0:00      present
4      train  343523   200000.0  3/1/14 0:00  3/1/15 0:00

                Designation    JobCity Gender           DOB  10percentage  \
0   senior quality engineer  Bangalore      f  2/19/90 0:00          84.3
1         assistant manager     Indore      m  10/4/89 0:00          85.4
2          systems engineer    Chennai      f   8/3/92 0:00          85.0
3  senior software engineer    Gurgaon      m  12/5/89 0:00          85.6
4                       get    Manesar      m  2/27/91 0:00          78.0

   … ComputerScience  MechanicalEngg  ElectricalEngg TelecomEngg  CivilEngg  \
0  …              -1              -1              -1          -1         -1
1  …              -1              -1              -1          -1         -1
2  …              -1              -1              -1          -1         -1
3  …              -1              -1              -1          -1         -1
4  …              -1              -1              -1          -1         -1

   conscientiousness agreeableness extraversion  nueroticism  \
0             0.9737        0.8128       0.5269      1.35490
1            -0.7335        0.3789       1.2396     -0.10760
2             0.2718        1.7109       0.1637     -0.86820
```

```
3            0.0464       0.3448      -0.3440     -0.40780
4           -0.8810      -0.2793      -1.0697      0.09163

   openess_to_experience
0                -0.4455
1                 0.8637
2                 0.6721
3                -0.9194
4                -0.1295

[5 rows x 39 columns]
```

[5]:
```
df.describe()
```

[5]:
```
                 ID        Salary  10percentage  12graduation  12percentage  \
count  3.998000e+03  3.998000e+03   3998.000000   3998.000000   3998.000000
mean   6.637945e+05  3.076998e+05     77.925443   2008.087544     74.466366
std    3.632182e+05  2.127375e+05      9.850162      1.653599     10.999933
min    1.124400e+04  3.500000e+04     43.000000   1995.000000     40.000000
25%    3.342842e+05  1.800000e+05     71.680000   2007.000000     66.000000
50%    6.396000e+05  3.000000e+05     79.150000   2008.000000     74.400000
75%    9.904800e+05  3.700000e+05     85.670000   2009.000000     82.600000
max    1.298275e+06  4.000000e+06     97.760000   2013.000000     98.700000

          CollegeID  CollegeTier   collegeGPA  CollegeCityID  CollegeCityTier  \
count   3998.000000  3998.000000  3998.000000    3998.000000      3998.000000
mean    5156.851426     1.925713    71.486171    5156.851426         0.300400
std     4802.261482     0.262270     8.167338    4802.261482         0.458489
min        2.000000     1.000000     6.450000       2.000000         0.000000
25%      494.000000     2.000000    66.407500     494.000000         0.000000
50%     3879.000000     2.000000    71.720000    3879.000000         0.000000
75%     8818.000000     2.000000    76.327500    8818.000000         1.000000
max    18409.000000     2.000000    99.930000   18409.000000         1.000000

       …  ComputerScience  MechanicalEngg  ElectricalEngg  TelecomEngg  \
count  …      3998.000000     3998.000000     3998.000000  3998.000000
mean   …        90.742371       22.974737       16.478739    31.851176
std    …       175.273083       98.123311       87.585634   104.852845
min    …        -1.000000       -1.000000       -1.000000    -1.000000
25%    …        -1.000000       -1.000000       -1.000000    -1.000000
50%    …        -1.000000       -1.000000       -1.000000    -1.000000
75%    …        -1.000000       -1.000000       -1.000000    -1.000000
max    …       715.000000      623.000000      676.000000   548.000000

         CivilEngg  conscientiousness  agreeableness  extraversion  \
count  3998.000000        3998.000000    3998.000000   3998.000000
mean      2.683842          -0.037831       0.146496      0.002763
```

```
std      36.658505           1.028666       0.941782      0.951471
min      -1.000000          -4.126700      -5.781600     -4.600900
25%      -1.000000          -0.713525      -0.287100     -0.604800
50%      -1.000000           0.046400       0.212400      0.091400
75%      -1.000000           0.702700       0.812800      0.672000
max     516.000000           1.995300       1.904800      2.535400

       nueroticism  openess_to_experience
count  3998.000000            3998.000000
mean     -0.169033              -0.138110
std       1.007580               1.008075
min      -2.643000              -7.375700
25%      -0.868200              -0.669200
50%      -0.234400              -0.094300
75%       0.526200               0.502400
max       3.352500               1.822400

[8 rows x 27 columns]
```

[6]:

```python
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 3998 entries, 0 to 3997
Data columns (total 39 columns):
 #   Column                 Non-Null Count  Dtype
---  ------                 --------------  -----
 0   Unnamed: 0             3998 non-null   object
 1   ID                     3998 non-null   int64
 2   Salary                 3998 non-null   float64
 3   DOJ                    3998 non-null   object
 4   DOL                    3998 non-null   object
 5   Designation            3998 non-null   object
 6   JobCity                3998 non-null   object
 7   Gender                 3998 non-null   object
 8   DOB                    3998 non-null   object
 9   10percentage           3998 non-null   float64
 10  10board                3998 non-null   object
 11  12graduation           3998 non-null   int64
 12  12percentage           3998 non-null   float64
 13  12board                3998 non-null   object
 14  CollegeID              3998 non-null   int64
 15  CollegeTier            3998 non-null   int64
 16  Degree                 3998 non-null   object
 17  Specialization         3998 non-null   object
 18  collegeGPA             3998 non-null   float64
 19  CollegeCityID          3998 non-null   int64
 20  CollegeCityTier        3998 non-null   int64
 21  CollegeState           3998 non-null   object
 22  GraduationYear         3998 non-null   int64
 23  English                3998 non-null   int64
 24  Logical                3998 non-null   int64
 25  Quant                  3998 non-null   int64
 26  Domain                 3998 non-null   float64
 27  ComputerProgramming    3998 non-null   int64
 28  ElectronicsAndSemicon  3998 non-null   int64
 29  ComputerScience        3998 non-null   int64
 30  MechanicalEngg         3998 non-null   int64
 31  ElectricalEngg         3998 non-null   int64
 32  TelecomEngg            3998 non-null   int64
 33  CivilEngg              3998 non-null   int64
 34  conscientiousness      3998 non-null   float64
 35  agreeableness          3998 non-null   float64
 36  extraversion           3998 non-null   float64
 37  nueroticism            3998 non-null   float64
 38  openess_to_experience  3998 non-null   float64
dtypes: float64(10), int64(17), object(12)
memory usage: 1.2+ MB
```

[7]:
```
df.columns=df.columns.str.lower()
```

[8]:
```
numerical_features=list(df.select_dtypes(include=['number']).columns)
categorical_features=list(df.select_dtypes(include=['object']).columns)
```

[9]:
```
print(numerical_features)
```

```
['id', 'salary', '10percentage', '12graduation', '12percentage', 'collegeid',
'collegetier', 'collegegpa', 'collegecityid', 'collegecitytier',
'graduationyear', 'english', 'logical', 'quant', 'domain',
'computerprogramming', 'electronicsandsemicon', 'computerscience',
'mechanicalengg', 'electricalengg', 'telecomengg', 'civilengg',
'conscientiousness', 'agreeableness', 'extraversion', 'nueroticism',
'openess_to_experience']
```

[10]:
```
categorical_features.remove('unnamed: 0')
```

[11]:
```
print(categorical_features)
```

```
['doj', 'dol', 'designation', 'jobcity', 'gender', 'dob', '10board', '12board',
'degree', 'specialization', 'collegestate']
```

[12]:
```
num_continuos_features=['salary','10percentage','12percentage','collegegpa','domain','conscien
```

[13]:
```
numerical_features=[feature for feature  in numerical_features if feature not␣
  ↪in num_continuos_features]
```

[14]:
```
numerical_features
```

```
[14]: ['id',
       '12graduation',
       'collegeid',
       'collegetier',
       'collegecityid',
       'collegecitytier',
       'graduationyear',
       'english',
       'logical',
       'quant',
       'computerprogramming',
       'electronicsandsemicon',
       'computerscience',
       'mechanicalengg',
       'electricalengg',
       'telecomengg',
       'civilengg']
```

```
[15]: ### mean salary
      print(df['salary'].mean())
```

```
307699.8499249625
```

```
[16]: df['salary'].median()
```

```
[16]: 300000.0
```

```
[66]: data=df['salary']
      data=pd.DataFrame(data)
      q1=df.salary.quantile(0.25)
      q3=df.salary.quantile(0.75)
      iqr=q3-q1
```

```
[67]: lower_bound=q1-1.5*iqr
      upper_bound=q3+1.5*iqr
```

```
[68]: outliers1=df[(df['salary']<lower_bound) | (df['salary']>upper_bound)]
      outliers1
```

```
[68]:            id     salary            doj           dol   \
      3      267447  1100000.0    7/1/11 0:00       present
      76     361583   800000.0    6/1/12 0:00       present
      92    1250429  1500000.0   11/1/14 0:00   7/1/14 0:00
      123    312164  1200000.0    7/1/10 0:00   7/1/11 0:00
      128    206734   675000.0   11/1/11 0:00       present
      …         …        …            …            …
      3823   918568   775000.0    8/1/14 0:00       present
      3904   267121   850000.0    9/1/11 0:00       present
```

```
3912   231229   730000.0   7/1/13 0:00      present
3961   230702   700000.0   7/1/11 0:00  9/1/14 0:00
3992   344407   800000.0   4/1/14 0:00  4/1/15 0:00

                     designation      jobcity gender           dob  \
3       senior software engineer      Gurgaon      m   12/5/89 0:00
76             software engineer    Bangalore      m   1/25/91 0:00
92         application developer    Hyderabad      m    1/4/92 0:00
123             engineer trainee  Maharajganj      m   4/25/88 0:00
128     senior software engineer        Noida      m   11/7/88 0:00
…                            …          …    …            …
3823  mechanical design engineer       Dammam      m   1/12/91 0:00
3904        operations assistant        Noida      m    1/5/89 0:00
3912          research scientist        Pune       m  11/15/89 0:00
3961           planning engineer      Rajpura      m  12/27/87 0:00
3992                     manager       Rajkot      m   6/22/90 0:00

      10percentage               10board  …  computerscience  \
3            85.60                  cbse  …               -1
76           93.44  karnataka state board  …               -1
92           79.00           state board  …              346
123          59.80                  icse  …               -1
128          60.00                     0  …               -1
…            …                      …  …               …
3823         87.40                  cbse  …               -1
3904         83.40                  cbse  …               -1
3912         84.67                     0  …               -1
3961         84.20                     0  …               -1
3992         73.00                     0  …               -1

      mechanicalengg electricalengg  telecomengg  civilengg conscientiousness  \
3                 -1             -1           -1         -1            0.0464
76                -1             -1           -1         -1           -0.4173
92                -1             -1           -1         -1            0.4155
123              206             -1           -1         -1            0.2009
128               -1             -1           -1         -1           -0.8810
…              …             …          …         …               …
3823             469             -1           -1         -1           -0.8772
3904              -1             -1           -1         -1           -0.8810
3912              -1             -1           -1         -1           -1.3447
3961              -1             -1           -1        460           -1.3447
3992              -1             -1           -1        480            0.3555

     agreeableness  extraversion  nueroticism  openess_to_experience
3           0.3448       -0.3440     -0.40780                -0.9194
76          0.9688       -0.1988     -0.29020                 0.3049
92          0.5454        0.9322     -0.61470                 0.8637
```

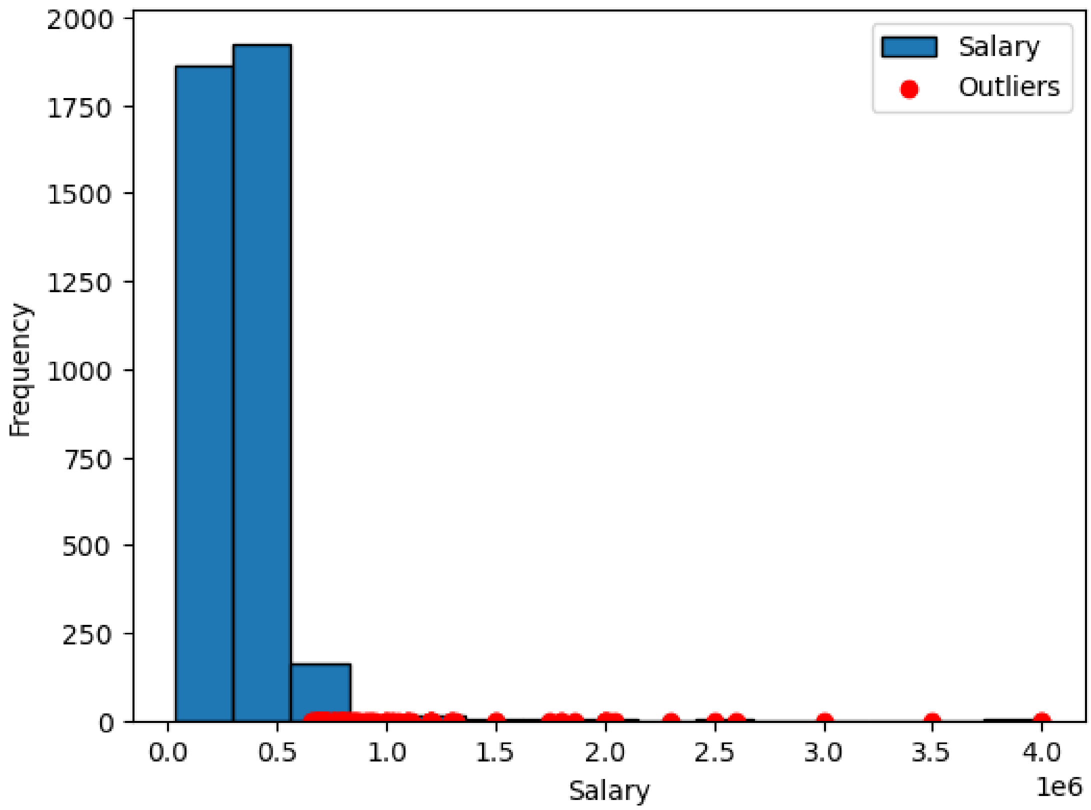
```
123         1.1248        1.1074     -1.11280                 0.9763
128        -0.2793       -0.6343     -0.64280                -2.9731
…            …           …          …                    …
3823       -0.1206       -0.1437     -0.23440                -0.0943
3904        0.1888       -0.1988     -0.05520                -1.0774
3912       -1.0593        0.6720      1.00240                -1.7093
3961        0.0328       -2.3759     -0.99530                 0.3444
3992       -0.9033        0.9623      0.64983                -0.4229

[109 rows x 38 columns]
```

[20]:

```
outliers1=outliers1['salary']
```

[21]:

```
plt.hist(df['salary'],bins=15,edgecolor='black',label='Salary')
plt.scatter(outliers1,np.zeros_like(outliers1),color='red',label='Outliers')
plt.xlabel('Salary')
plt.ylabel('Frequency')
plt.legend()
plt.show()
```



[22]:

```
q1=df['collegegpa'].quantile(0.25)
q3=df['collegegpa'].quantile(0.75)
iqr=q3-q1
l=q1-1.5*iqr
u=q3+1.5*iqr
print(l,u)
```

```
51.527499999999996 91.20750000000001
```

[23]:

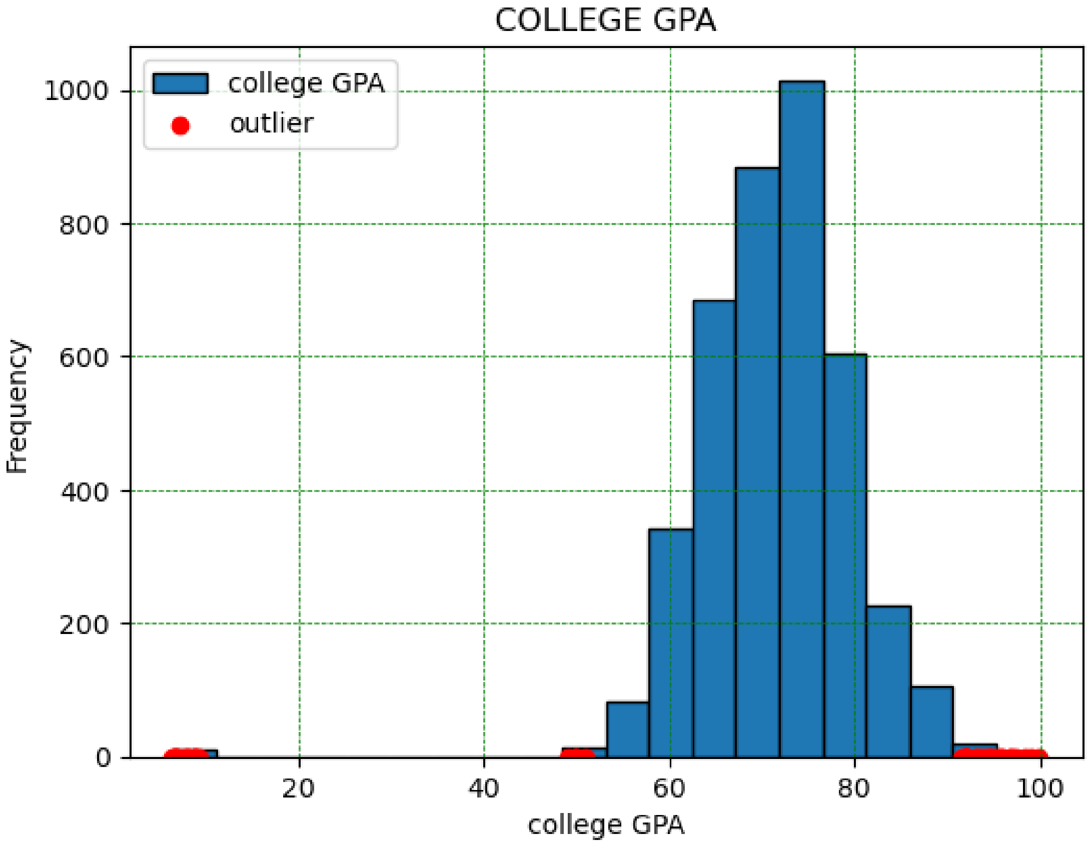
```
outliers=df[(df['collegegpa']<l) | (df['collegegpa']>u)]
```

[24]:

```
outliers=outliers['collegegpa']
```

[25]:

```
plt.hist(df['collegegpa'],bins=20,edgecolor='black',label='college GPA')
plt.scatter(outliers,np.zeros_like(outliers),color='red',label='outlier')
plt.xlabel('college GPA')
plt.ylabel('Frequency')
plt.title('COLLEGE GPA')
plt.legend()
plt.grid(color='green',linestyle='--',linewidth=0.5)
plt.show()
```



[26]:

```
df['collegegpa'].min(),df['collegegpa'].max()
```

[26]:

```
(6.45, 99.93)
```

[27]:

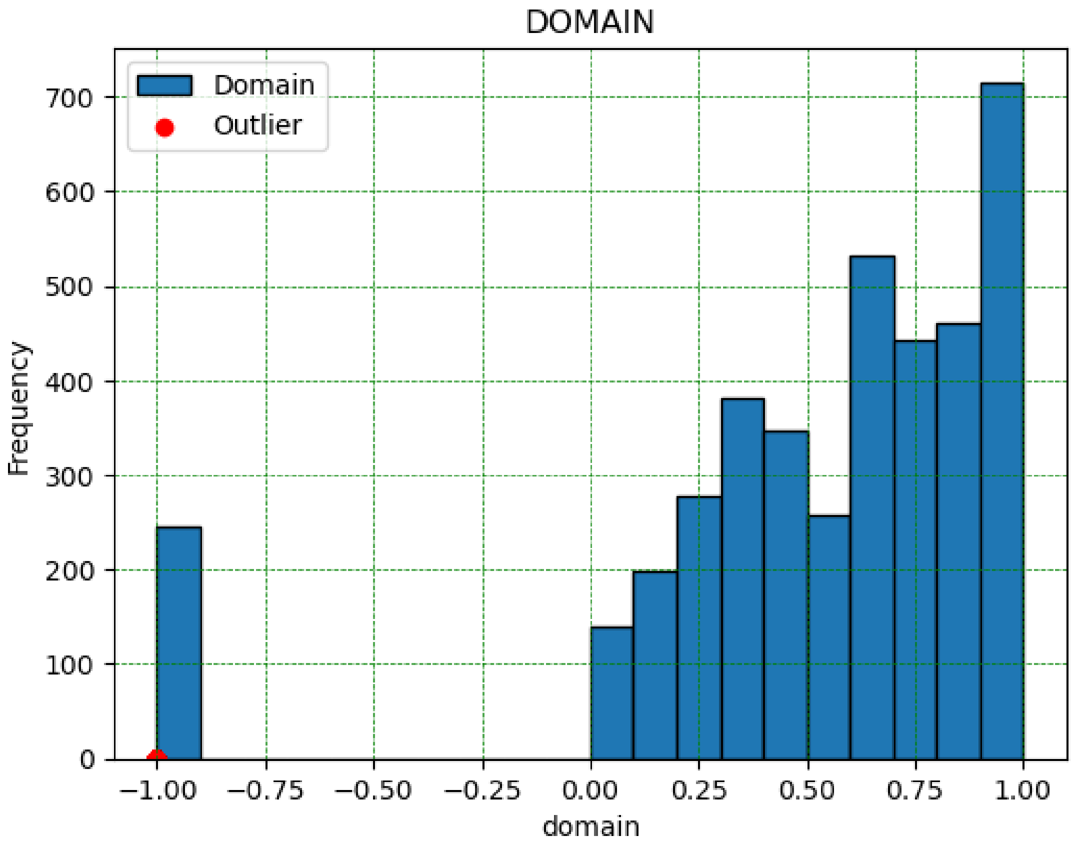
```
q1=df['domain'].quantile(0.25)
q3=df['domain'].quantile(0.75)
iqr=q3-q1
l=q1-1.5*iqr
u=q3+1.5*iqr
```

[28]:

```
domain_o=df[(df['domain']<l) | (df['domain']>u)]
domain_o=domain_o['domain']
```

[29]:

```
plt.hist(df['domain'],bins=20,edgecolor='black',label='Domain')
plt.scatter(domain_o,np.zeros_like(domain_o),color='red',label='Outlier')
plt.xlabel('domain')
plt.ylabel('Frequency')
plt.title('DOMAIN')
plt.legend()
plt.grid(color='green',linestyle='--',linewidth=0.5)
plt.show()
```



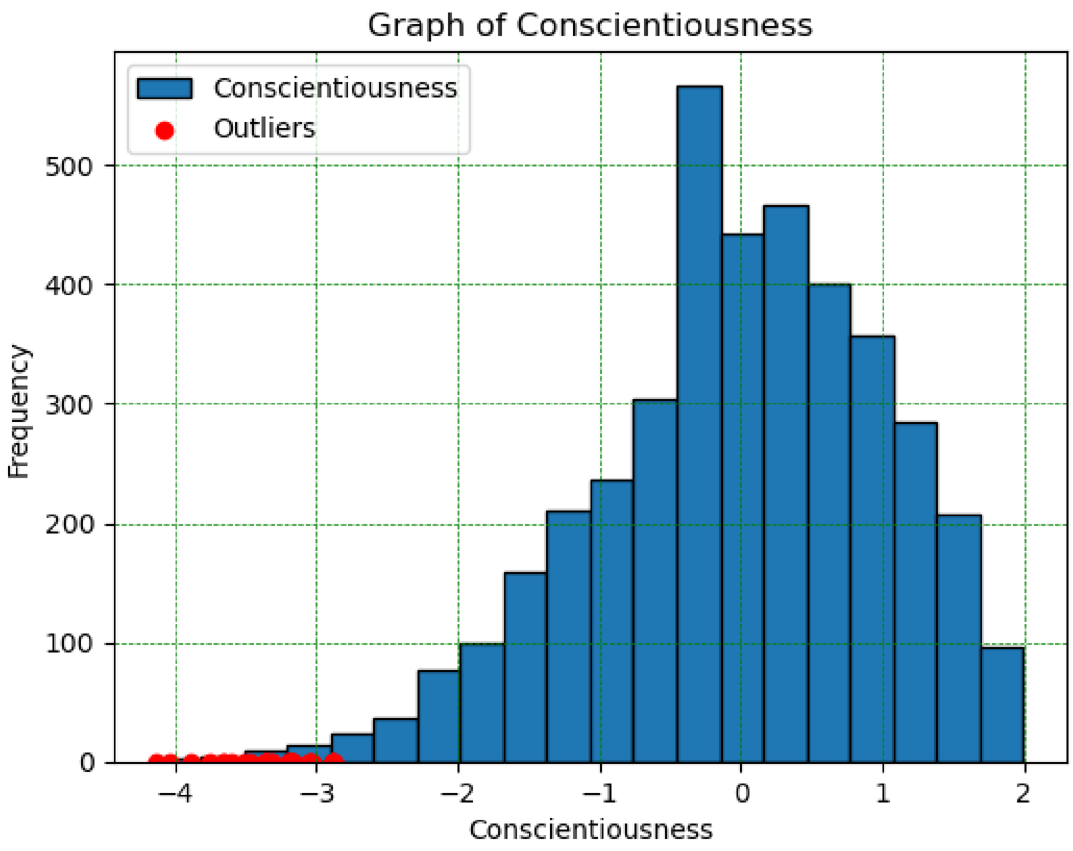
0.0.1 PERSONAL TRAITS

[30]:
```
q1=df['conscientiousness'].quantile(0.25)
q3=df['conscientiousness'].quantile(0.75)
iqr=q3-q1
lower_bound=q1-1.5*iqr
upper_bound=q3+1.5*iqr
```

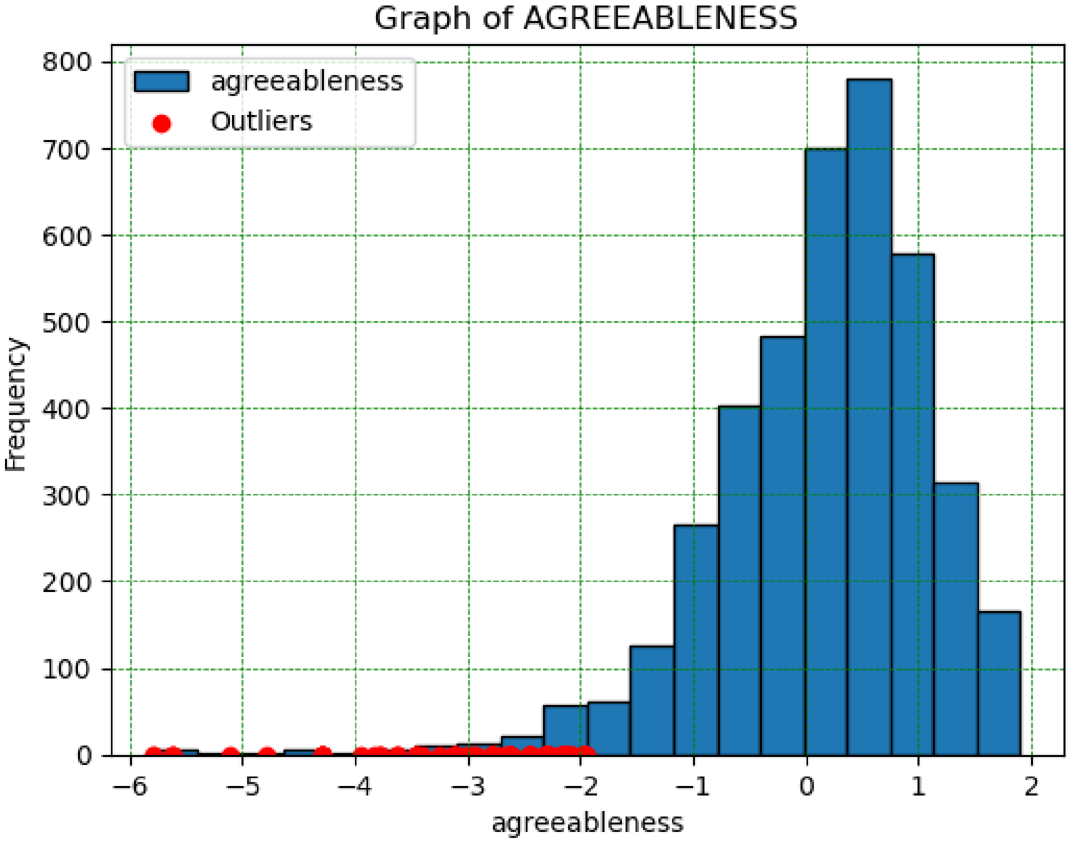
[31]:
```
outliers=df[(df['conscientiousness']<lower_bound)|␣
  ↪(df['conscientiousness']>upper_bound)]
```

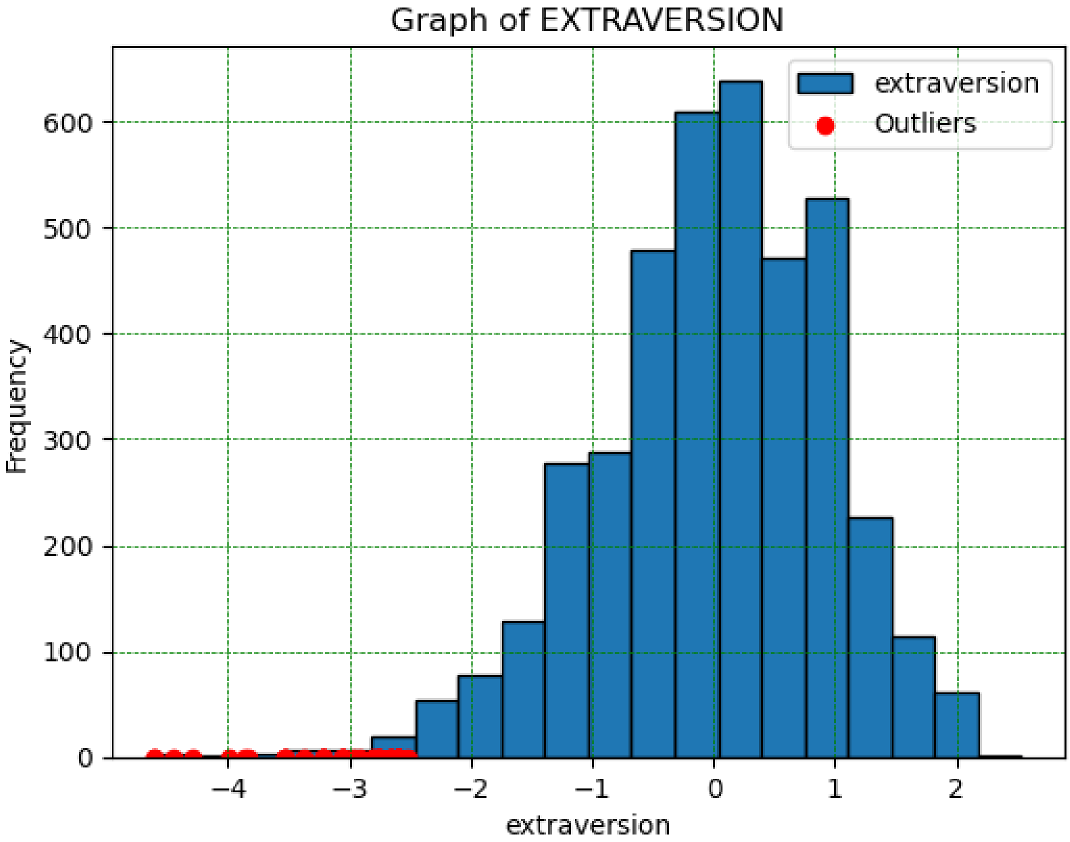
[32]:
```
outliers=outliers['conscientiousness']
```

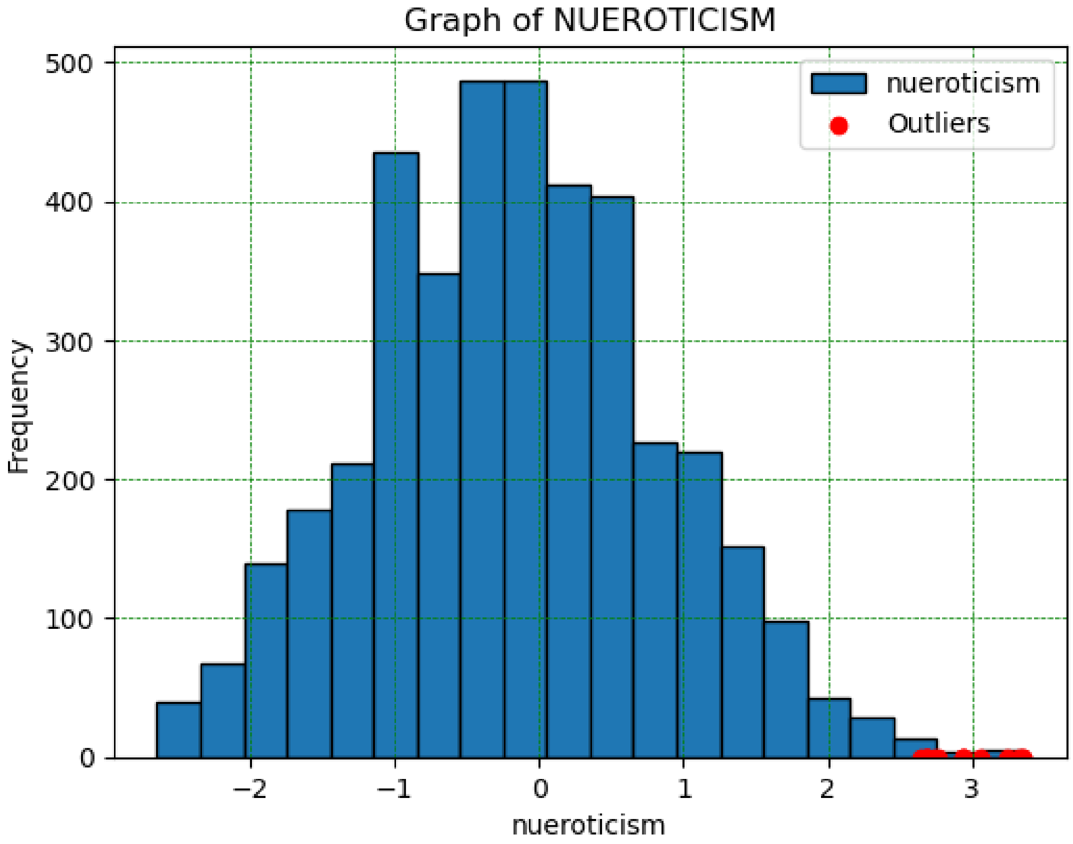
[33]:
```
plt.
  ↪hist(df['conscientiousness'],bins=20,edgecolor='black',label='Conscientiousness')
plt.scatter(outliers,np.zeros_like(outliers),color='red',label='Outliers')
plt.xlabel('Conscientiousness')
plt.ylabel('Frequency')
plt.legend()
plt.grid(color='green',linestyle='--',linewidth=0.5)
plt.title('Graph of Conscientiousness')
plt.show()
```

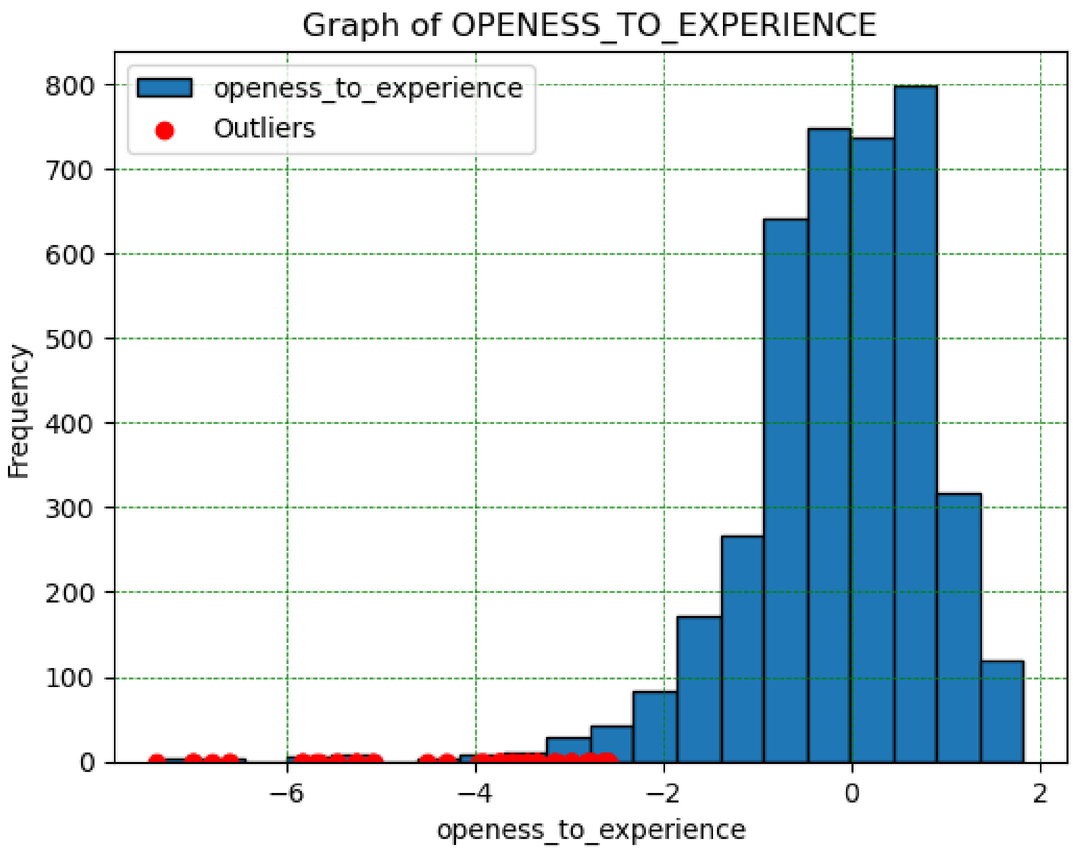


[34]:
```python
a=['agreeableness','extraversion','nueroticism','openess_to_experience']
for i in a:
    q1=df[i].quantile(0.25)
    q3=df[i].quantile(0.75)
    iqr=q3-q1
    lower_bound=q1-1.5*iqr
    upper_bound=q3+1.5*iqr
    outlier=df[(df[i]<lower_bound) | (df[i]>upper_bound)]
    outlier=outlier[i]
    plt.hist(df[i],bins=20,edgecolor='black',label=i)
    plt.scatter(outlier,np.zeros_like(outlier),color='red',label='Outliers')
    plt.grid(color='green',linestyle='--',linewidth=0.5)
    plt.xlabel(i)
    plt.ylabel('Frequency')
    plt.legend()
    plt.title(f"""Graph of {i.upper()}""")
    plt.show()
```

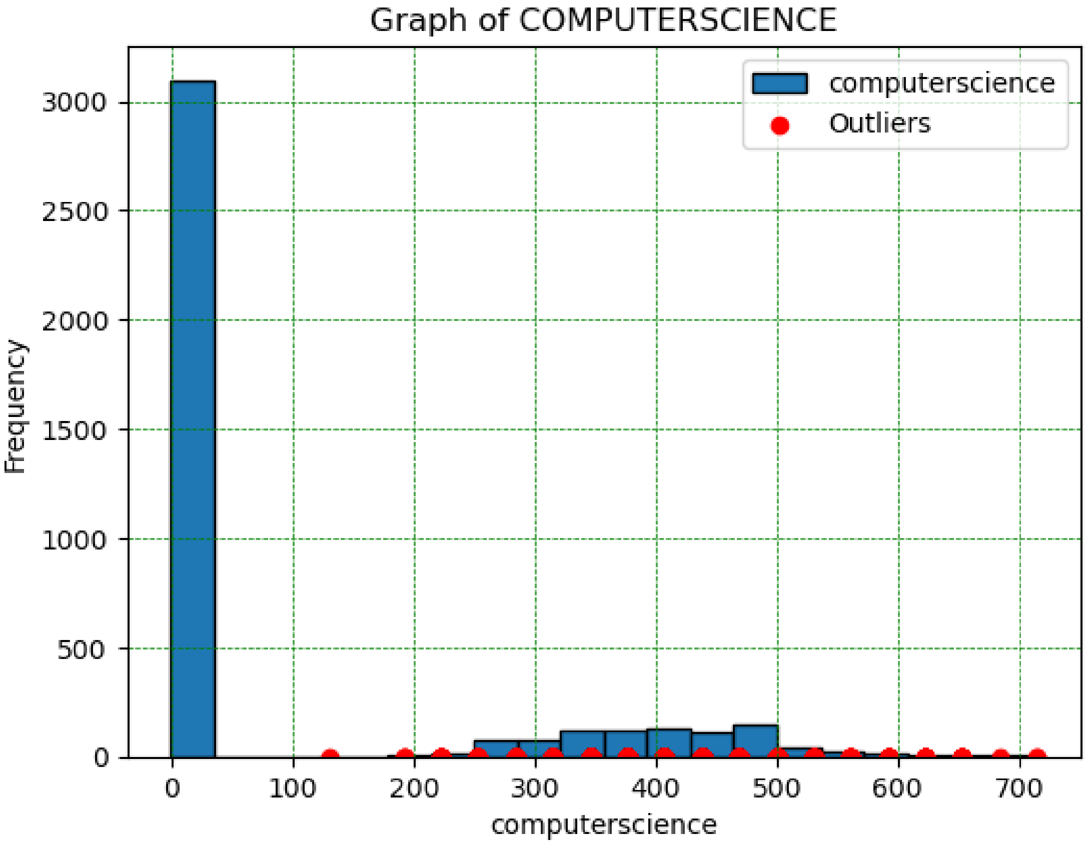

Graph of AGREEABLENESS
agreeableness
Outliers
Frequency
0
100
200
300
400
500
600
700
800
−6
−5
−4
−3
−2
−1
0
1
2
agreeableness

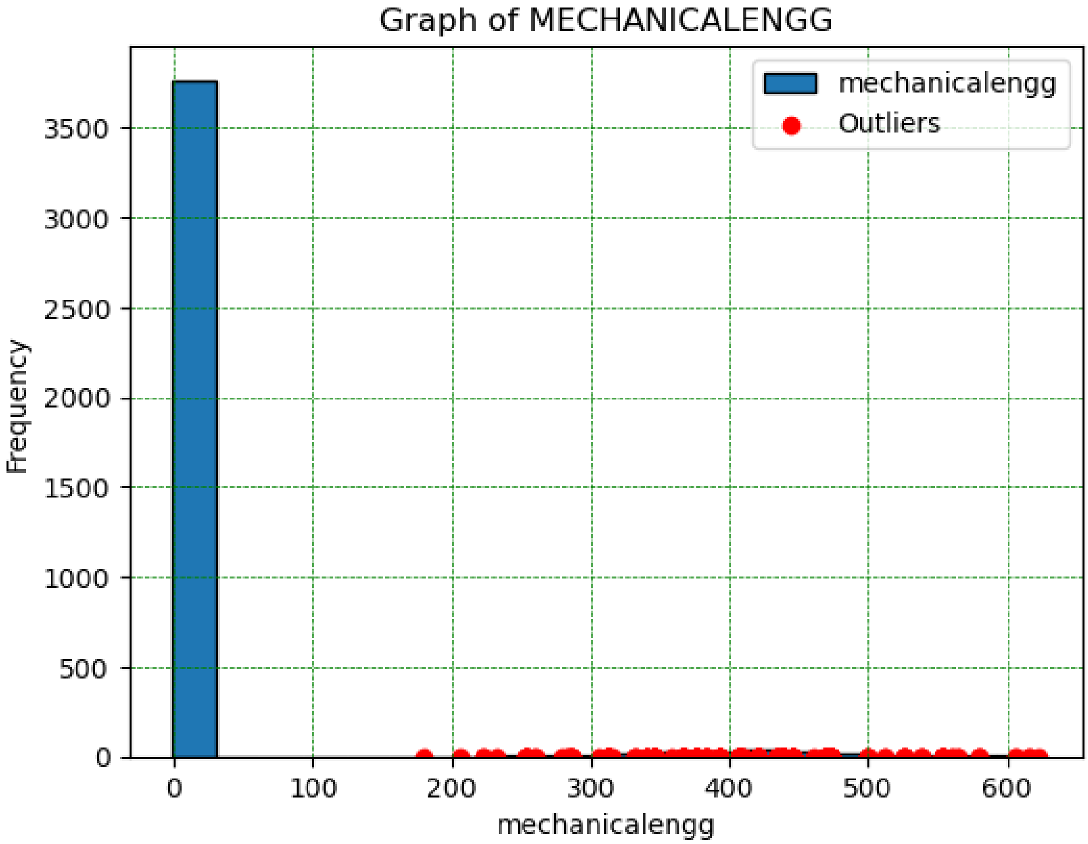

Graph of EXTRAVERSION
extraversion
Outliers
Frequency
0
100
200
300
400
500
600
−4
−3
−2
−1
0
1
2
extraversion

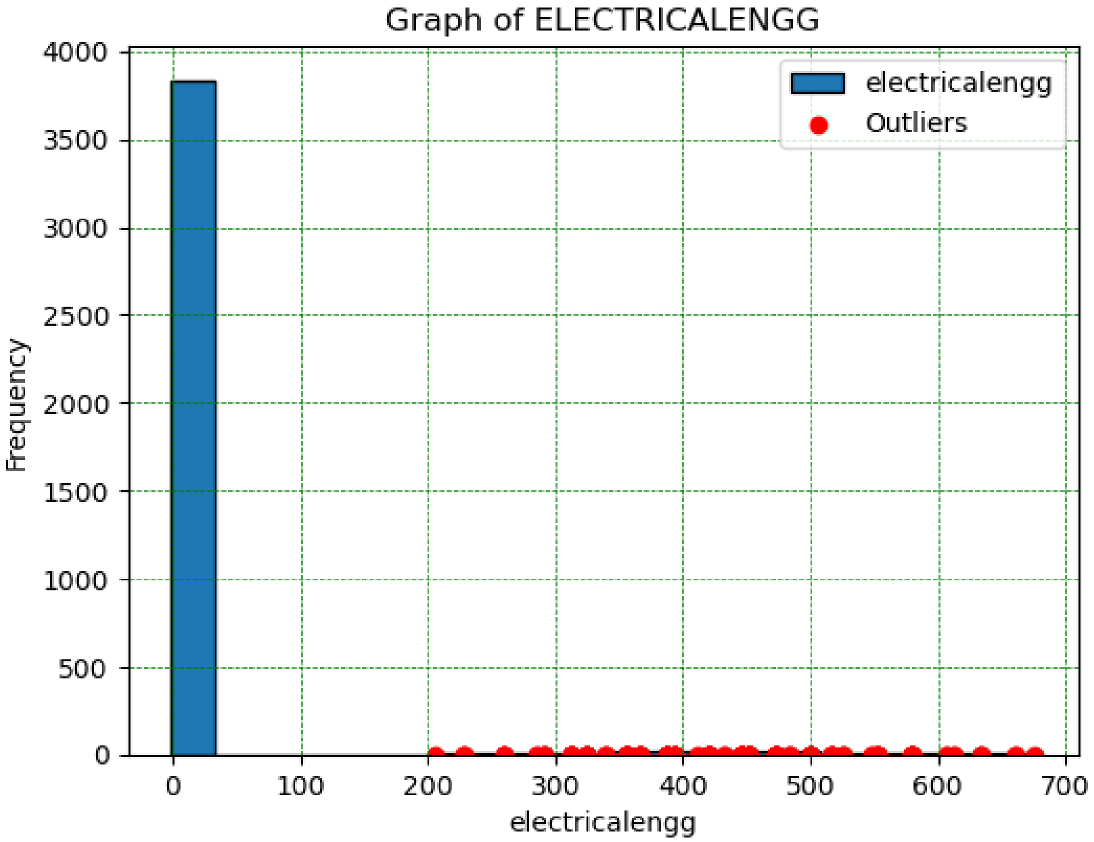

Graph of NUEROTICISM
nueroticism
Outliers
Frequency
0
100
200
300
400
500
−2
−1
0
1
2
3
nueroticism

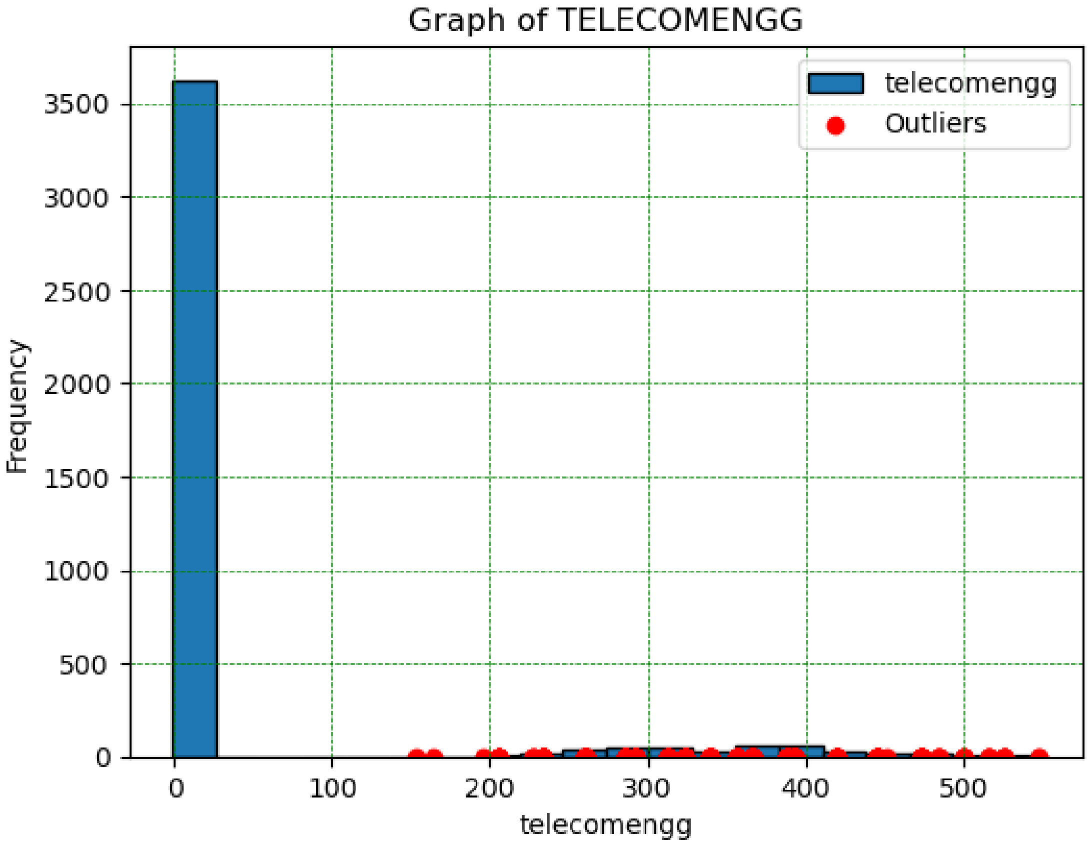


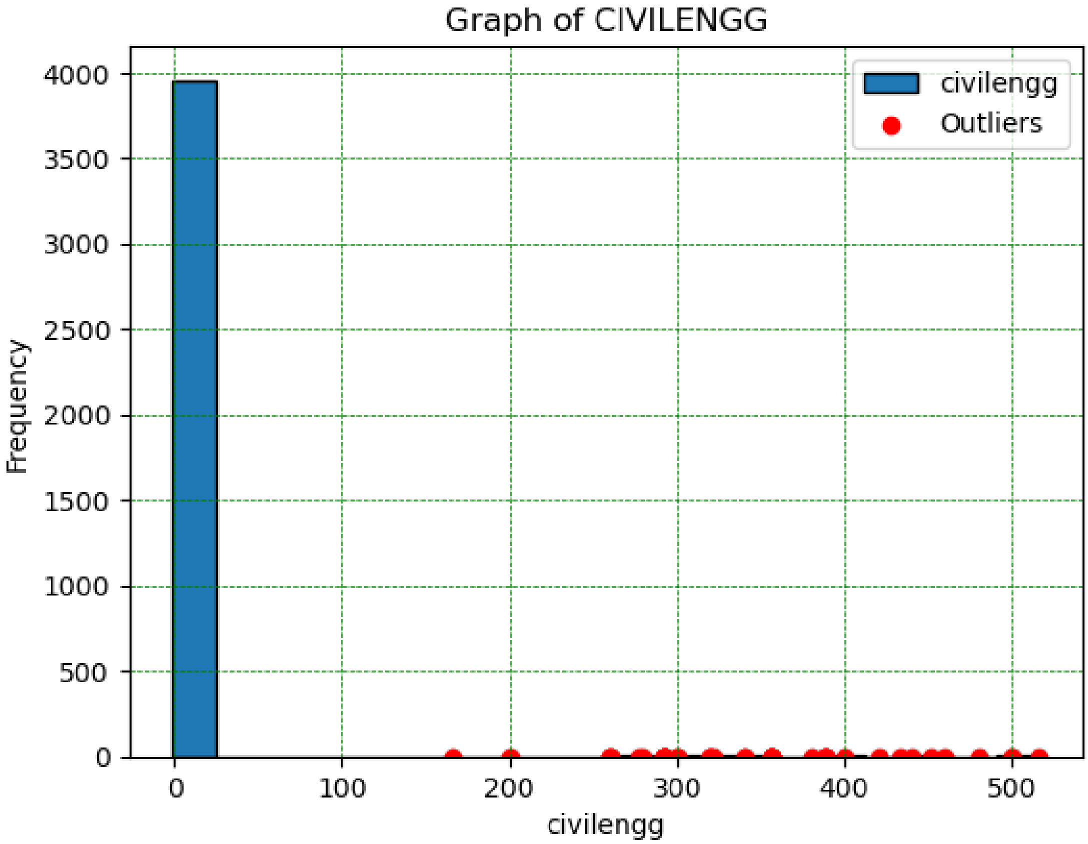
```
[35]: a=['computerscience','mechanicalengg','electricalengg','telecomengg','civilengg']
for i in a:
    q1=df[i].quantile(0.25)
    q3=df[i].quantile(0.75)
    iqr=q3-q1
    lower_bound=q1-1.5*iqr
    upper_bound=q3+1.5*iqr
    outlier=df[(df[i]<lower_bound) | (df[i]>upper_bound)]
    outlier=outlier[i]
    plt.hist(df[i],bins=20,edgecolor='black',label=i)
    plt.scatter(outlier,np.zeros_like(outlier),color='red',label='Outliers')
    plt.grid(color='green',linestyle='--',linewidth=0.5)
    plt.xlabel(i)
    plt.ylabel('Frequency')
    plt.legend()
    plt.title(f"""Graph of {i.upper()}""")
    plt.show()
```


Graph of COMPUTERSCIENCE
computerscience
Outliers
Frequency
0
500
1000
1500
2000
2500
3000
0
100
200
300
400
500
600
700
computerscience


Graph of MECHANICALENGG
mechanicalengg
Outliers
Frequency
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
mechanicalengg

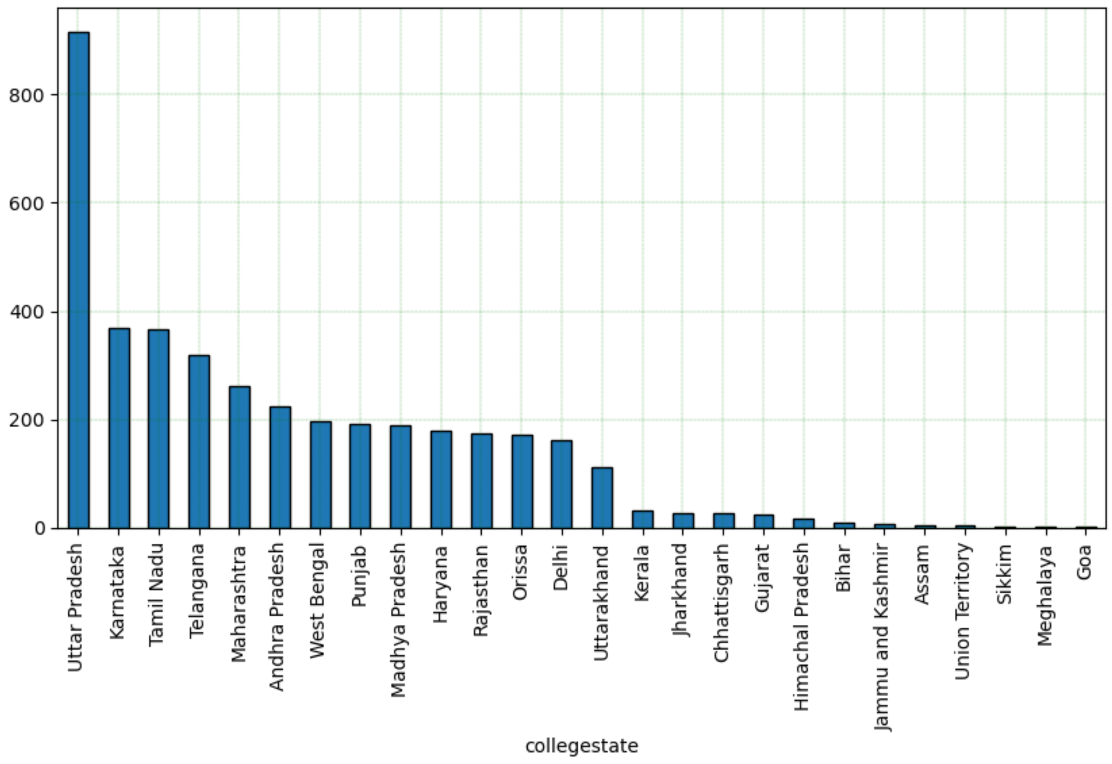

Graph of ELECTRICALENGG
Frequency
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
electricalengg
electricalengg
Outliers


Graph of TELECOMENGG
Frequency
0
500
1000
1500
2000
2500
3000
3500
0
100
200
300
400
500
telecomengg
telecomengg
Outliers



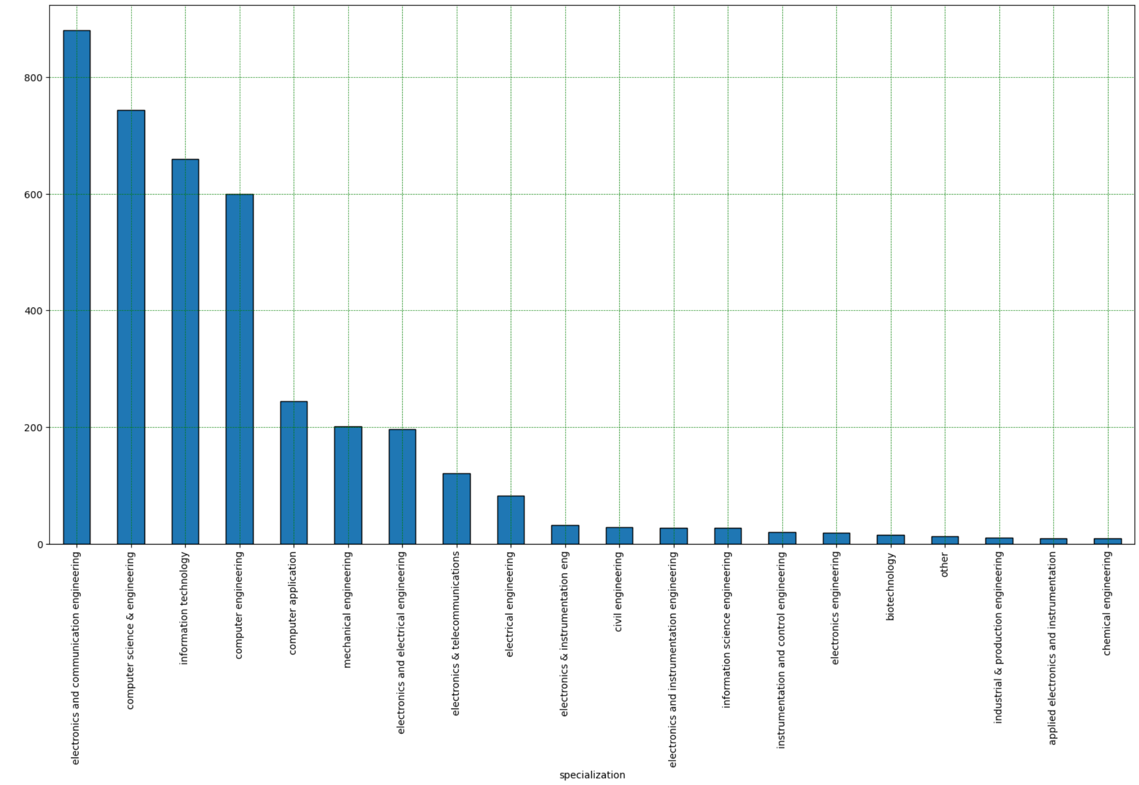
```
[36]: x=df['collegestate'].value_counts()
```

```
[37]: plt.figure(figsize=(10,5))
      x.plot(kind='bar',edgecolor='black')
      plt.grid(color='green',linestyle='--',linewidth=0.2)
      plt.show()
```



[38]:
```
y=df['specialization'].value_counts()[:20]
```

[39]:
```
plt.figure(figsize=(20,10))
y.plot(kind='bar',edgecolor='black')
plt.grid(color='green',linestyle='--',linewidth=0.5)
plt.show()
```



[40]:

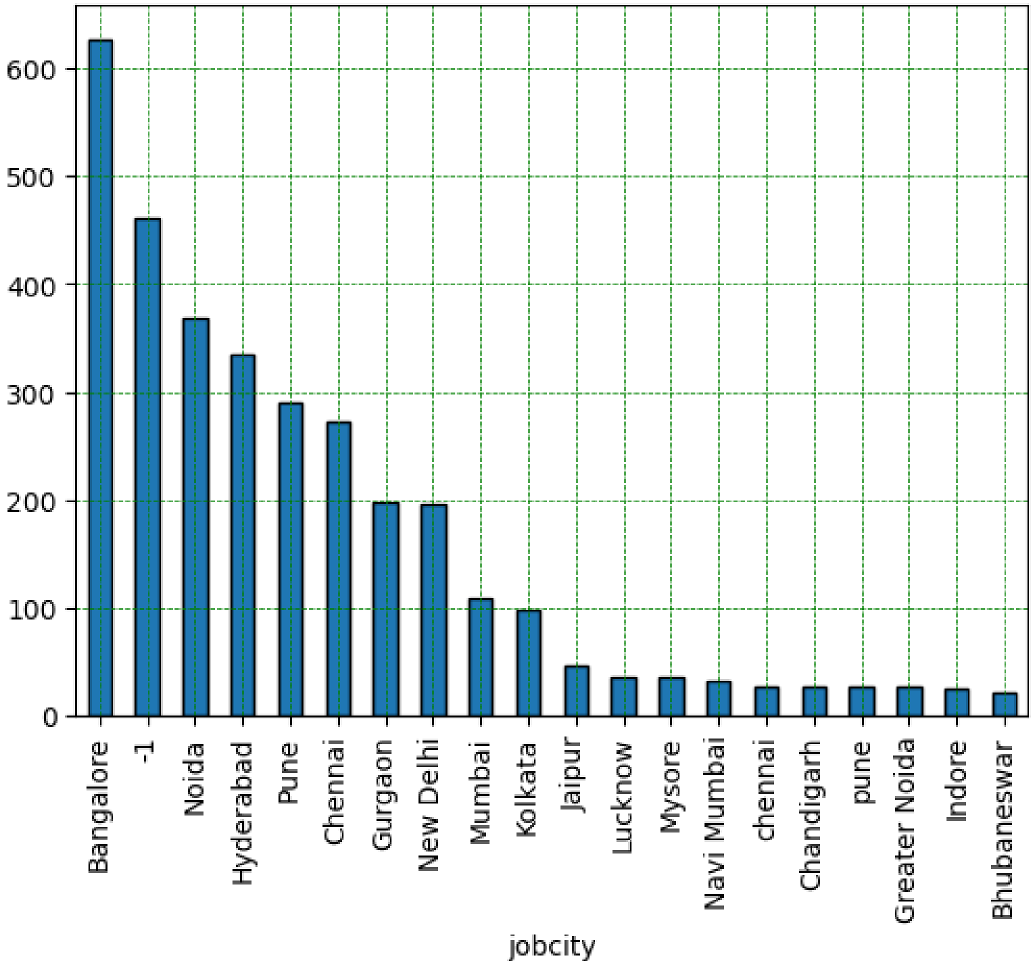
```
job_city=df['jobcity'].value_counts()[:20]
job_city
```

[40]:

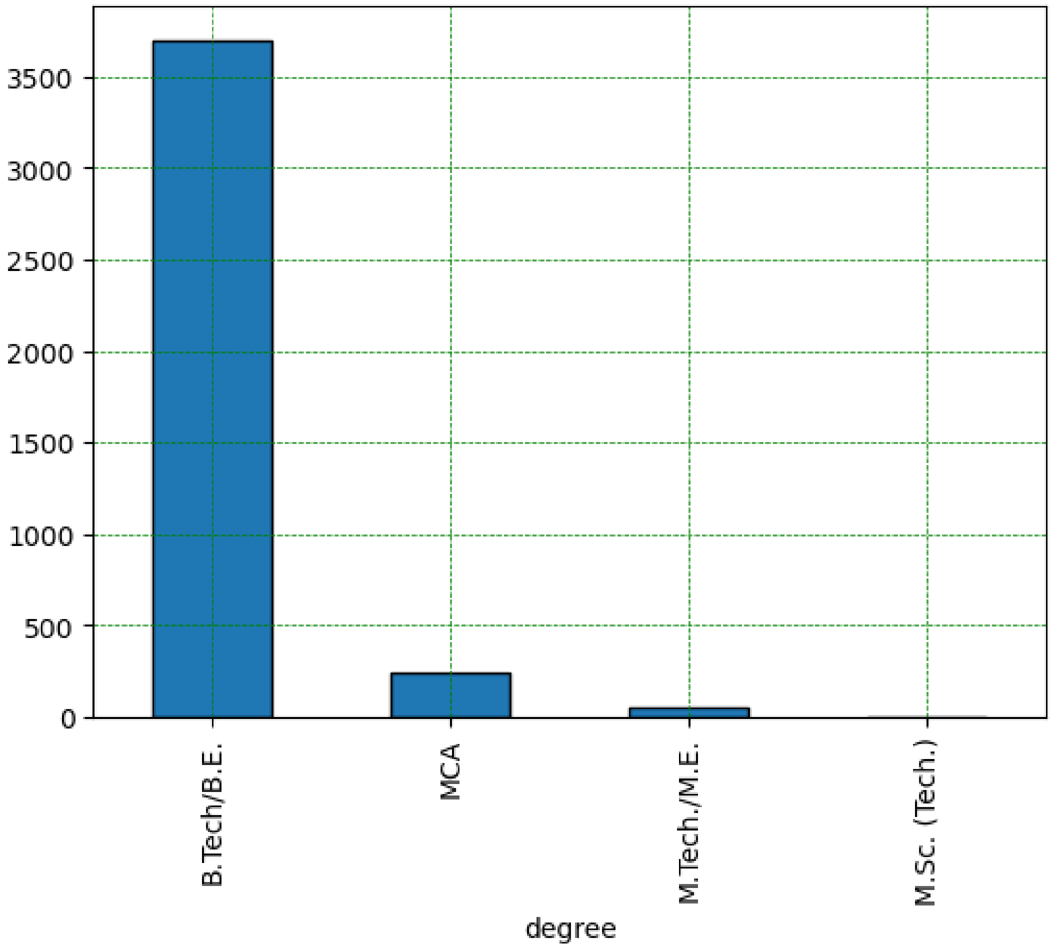
```
jobcity
Bangalore        627
-1               461
Noida            368
Hyderabad        335
Pune             290
Chennai          272
Gurgaon          198
New Delhi        196
Mumbai           108
Kolkata           98
Jaipur            46
Lucknow           36
Mysore            36
Navi Mumbai       32
chennai           27
Chandigarh        26
pune              26
Greater Noida     26
```

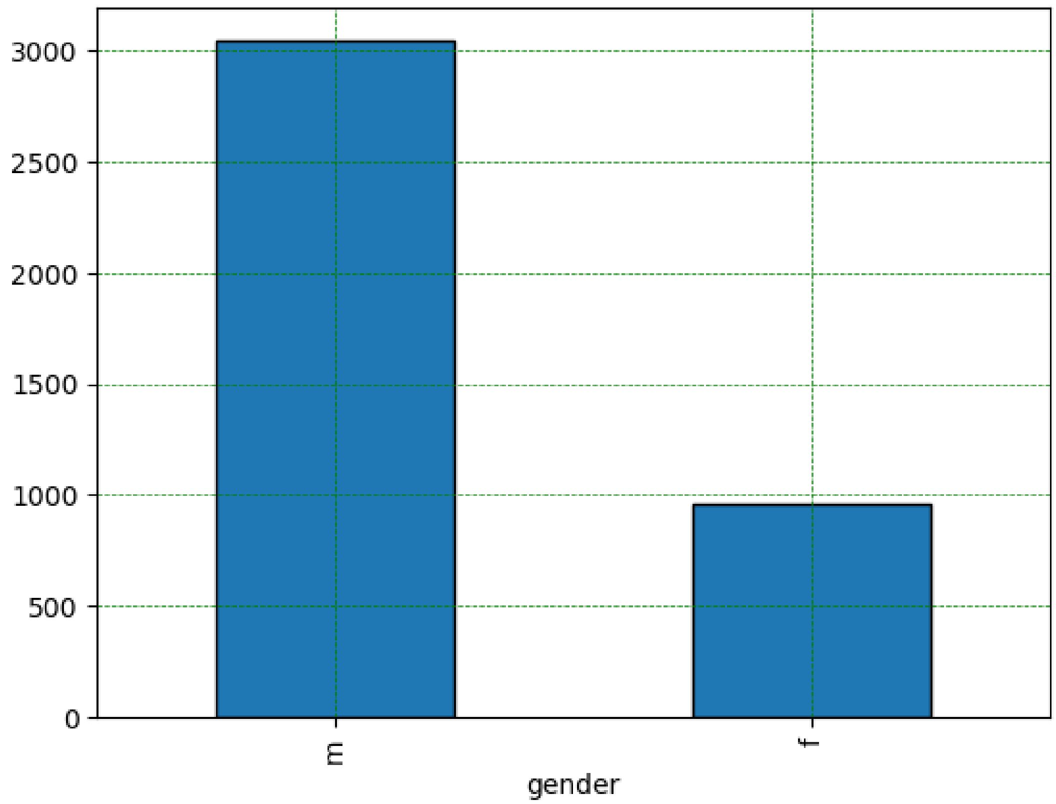
```
Indore             24
Bhubaneswar        22
Name: count, dtype: int64
```

[41]:
```
job_city.plot(kind='bar',edgecolor='black')
plt.grid(color='green',linestyle='--',linewidth=0.5)
plt.show()
```



[42]:
```
board=['degree','gender']
for i in board:
    x=df[i].value_counts()
    x.plot(kind='bar',edgecolor='black')
    plt.grid(color='green',linestyle='--',linewidth=0.5)
    plt.show()
```


3500
3000
2500
2000
1500
1000
500
0
B.Tech/B.E.
MCA
M.Tech./M.E.
M.Sc. (Tech.)
degree

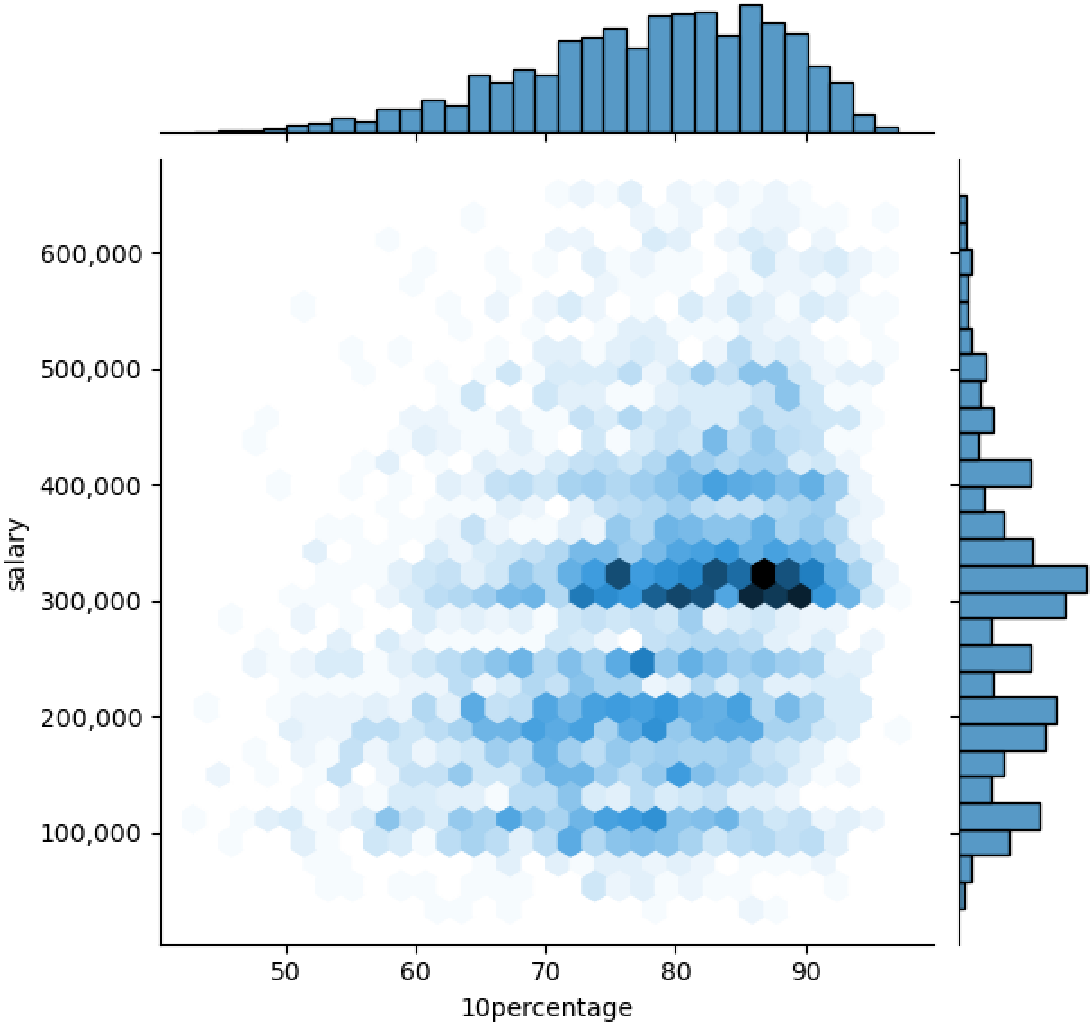


[49]:
```
df.drop(columns='unnamed: 0',inplace=True)
```

[70]:
```
data=df[(df['salary']>lower_bound) & (df['salary']<upper_bound)]
```

[78]:
```
sns.jointplot(x="10percentage",y="salary",data=data,kind='hex')
plt.gca().yaxis.set_major_formatter(plt.FuncFormatter(lambda x,pos:f"{x:,.0f}"))
```

```
C:\ProgramData\anaconda3\Lib\site-packages\seaborn\_oldcore.py:1119:
FutureWarning: use_inf_as_na option is deprecated and will be removed in a
future version. Convert inf values to NaN before operating instead.
  with pd.option_context('mode.use_inf_as_na', True):
C:\ProgramData\anaconda3\Lib\site-packages\seaborn\_oldcore.py:1119:
FutureWarning: use_inf_as_na option is deprecated and will be removed in a
future version. Convert inf values to NaN before operating instead.
  with pd.option_context('mode.use_inf_as_na', True):
```



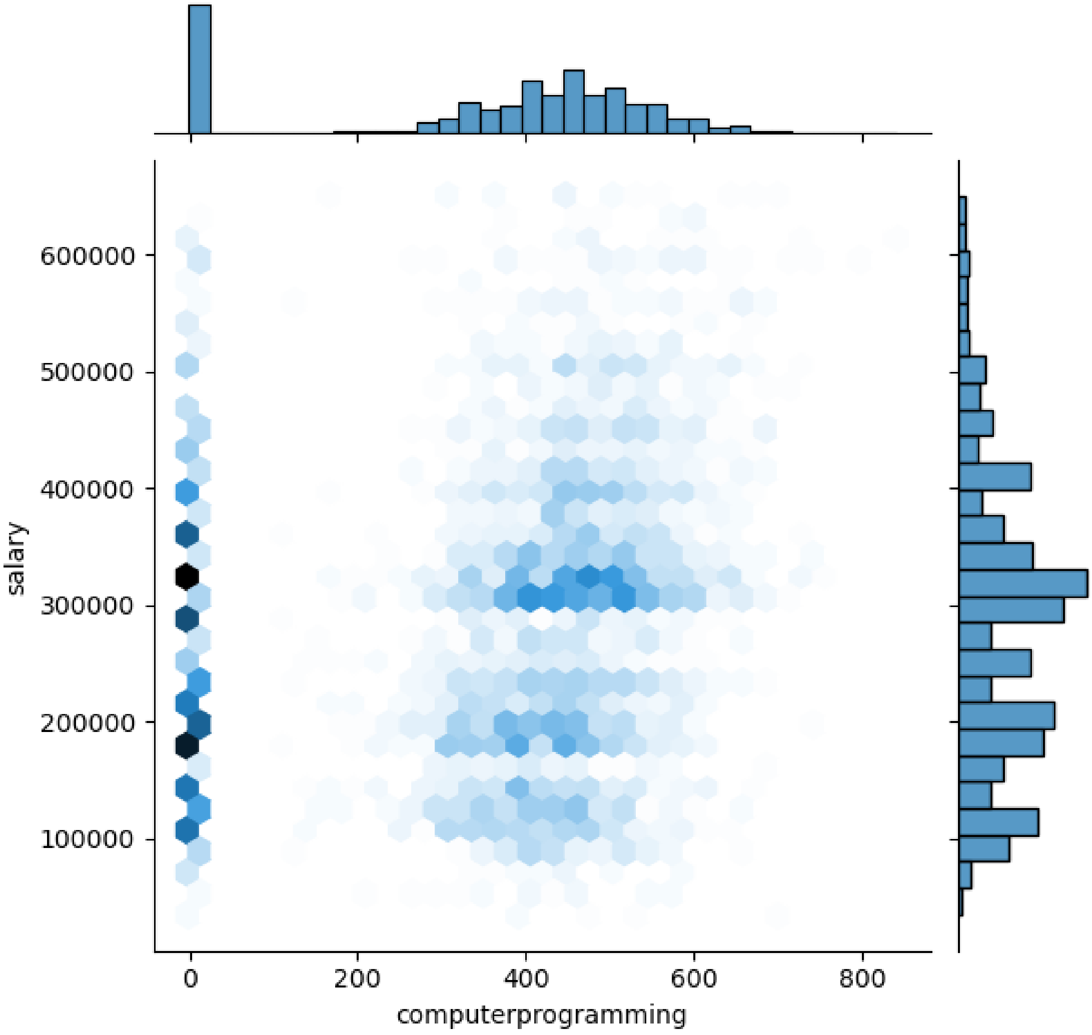
[81]:

```
sns.jointplot(x='computerprogramming',y='salary',data=data,kind='hex')
```

```
C:\ProgramData\anaconda3\Lib\site-packages\seaborn\_oldcore.py:1119:
FutureWarning: use_inf_as_na option is deprecated and will be removed in a
future version. Convert inf values to NaN before operating instead.
  with pd.option_context('mode.use_inf_as_na', True):
C:\ProgramData\anaconda3\Lib\site-packages\seaborn\_oldcore.py:1119:
FutureWarning: use_inf_as_na option is deprecated and will be removed in a
future version. Convert inf values to NaN before operating instead.
  with pd.option_context('mode.use_inf_as_na', True):
```

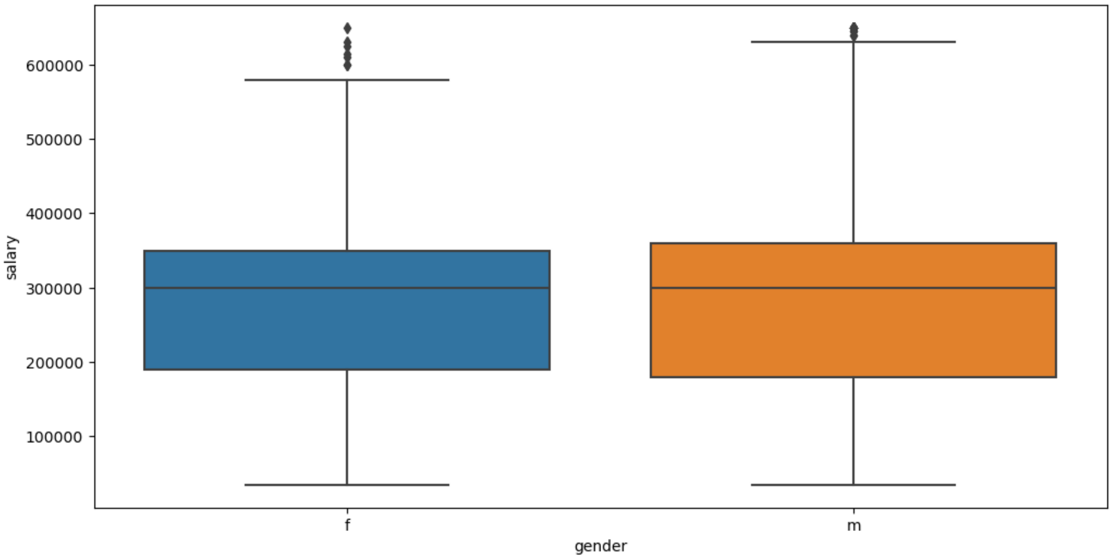
[81]:

```
<seaborn.axisgrid.JointGrid at 0x1fad2d20290>
```



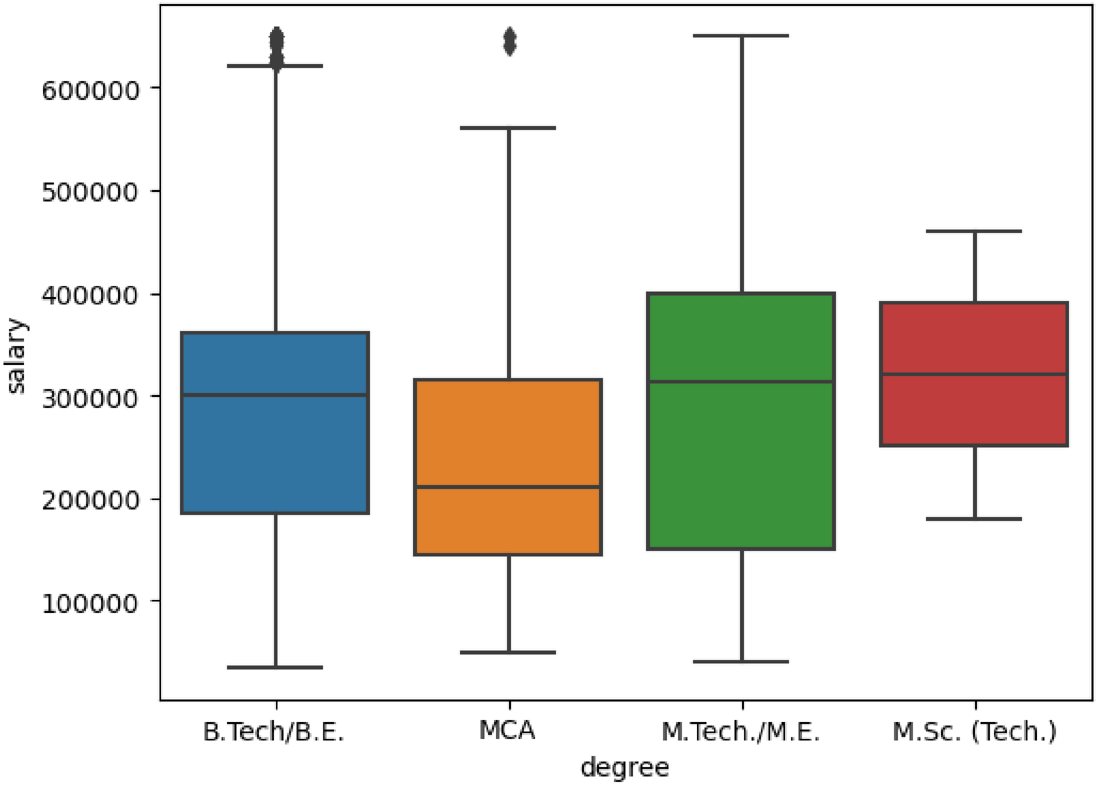
[102]:
```
plt.figure(figsize=(12,6))
sns.boxplot(data=data,x='gender',y='salary')
```

[102]:
```
<Axes: xlabel='gender', ylabel='salary'>
```



[104]:
```
sns.boxplot(data=data,x='degree',y='salary')
```

[104]:
```
<Axes: xlabel='degree', ylabel='salary'>
```



[105]:

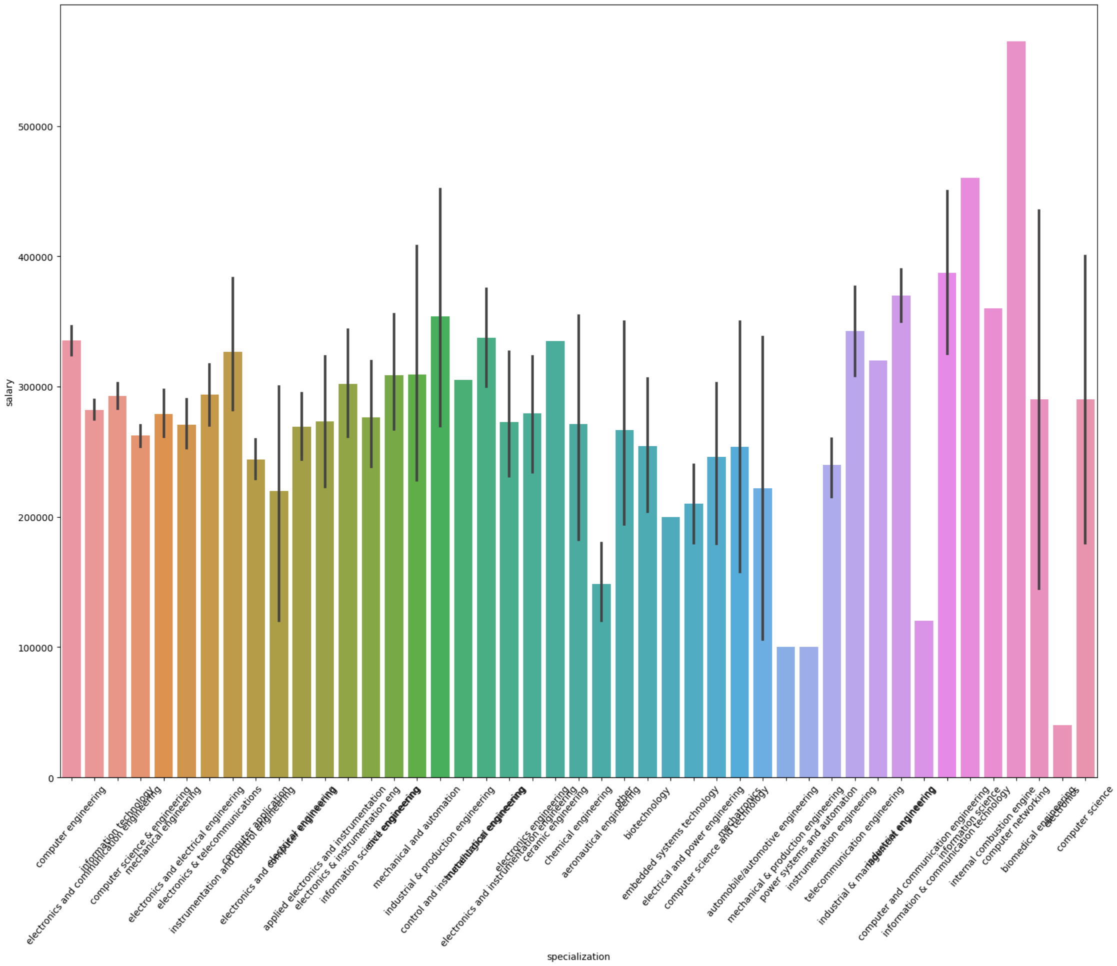
```
data.head()
```

[105]:

```
        id    salary          doj          dol              designation  \
0   203097  420000.0  6/1/12 0:00      present  senior quality engineer
1   579905  500000.0  9/1/13 0:00      present        assistant manager
2   810601  325000.0  6/1/14 0:00      present         systems engineer
4   343523  200000.0  3/1/14 0:00  3/1/15 0:00                      get
5  1027655  300000.0  6/1/14 0:00      present          system engineer

     jobcity gender          dob  10percentage  \
0  Bangalore      f  2/19/90 0:00         84.30
1     Indore      m  10/4/89 0:00         85.40
2    Chennai      f   8/3/92 0:00         85.00
4    Manesar      m  2/27/91 0:00         78.00
5  Hyderabad      m   7/2/92 0:00         89.92

                          10board  …  computerscience  mechanicalengg  \
0  board ofsecondary education,ap  …               -1              -1
1                            cbse  …               -1              -1
2                            cbse  …               -1              -1
4                            cbse  …               -1              -1
5                     state board  …              407              -1

  electricalengg  telecomengg  civilengg conscientiousness agreeableness  \
0             -1           -1         -1            0.9737        0.8128
1             -1           -1         -1           -0.7335        0.3789
2             -1           -1         -1            0.2718        1.7109
4             -1           -1         -1           -0.8810       -0.2793
5             -1           -1         -1           -0.3027       -0.6201

   extraversion  nueroticism  openess_to_experience
0        0.5269      1.35490                -0.4455
1        1.2396     -0.10760                 0.8637
2        0.1637     -0.86820                 0.6721
4       -1.0697      0.09163                -0.1295
5       -2.2954     -0.74150                -0.8608

[5 rows x 38 columns]
```

[122]:

```
plt.figure(figsize=(20,15))
sns.barplot(data=data,x='specialization',y='salary')
plt.xticks(rotation=50)
plt.show()
```


salary
0
100000
200000
300000
400000
500000
computer engineering
electronics and communication engineering
information technology
computer science & engineering
mechanical engineering
electronics and electrical engineering
electronics & telecommunications
instrumentation and control engineering
computer application
electronics and computer engineering
electrical engineering
applied electronics and instrumentation
electronics & instrumentation eng
information science engineering
civil engineering
mechanical and automation
industrial & production engineering
control and instrumentation engineering
metallurgical engineering
electronics and instrumentation engineering
electronics engineering
ceramic engineering
chemical engineering
aeronautical engineering
other
biotechnology
embedded systems technology
electrical and power engineering
computer science and technology
mechatronics
automobile/automotive engineering
mechanical & production engineering
power systems and automation
instrumentation engineering
telecommunication engineering
industrial & management engineering
industrial engineering
computer and communication engineering
information science
information & communication technology
internal combustion engine
computer networking
biomedical engineering
electronics
computer science
specialization

[ ]:

[ ]: