In [1]:

```
#Import packages and read the data
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

path=r"C:\Users\omkar\OneDrive\Documents\Data science\Naresh IT\Datafiles\V
visa_df=pd.read_csv(path)
visa_df.head(3)
```

Out[1]:

	case_id	continent	education_of_employee	has_job_experience	requires_job_training	no_
0	EZYV01	Asia	High School	N	N	
1	EZYV02	Asia	Master's	Y	N	
2	EZYV03	Asia	Bachelor's	N	Y	

In [2]:

```
visa_df.columns
```

Out[2]:

```
Index(['case_id', 'continent', 'education_of_employee', 'has_job_experienc
e',
       'requires_job_training', 'no_of_employees', 'yr_of_estab',
       'region_of_employment', 'prevailing_wage', 'unit_of_wage',
       'full_time_position', 'case_status'],
      dtype='object')
```

In [3]:

```
visa_df.select_dtypes(exclude='object').columns
```

Out[3]:

```
Index(['no_of_employees', 'yr_of_estab', 'prevailing_wage'], dtype='objec
t')
```

prevailingwage

- In the numerical analysis
- mean median std count 25p 50p

In [4]:

```
visa_df['prevailing_wage']
```

Out[4]:

```
0           592.2029
1         83425.6500
2        122996.8600
3         83434.0300
4        149907.3900
            ...
25475     77092.5700
25476    279174.7900
25477    146298.8500
25478     86154.7700
25479     70876.9100
Name: prevailing_wage, Length: 25480, dtype: float64
```

count

```
In [5]: len(visa_df['prevailing_wage'])
```

```
Out[5]: 25480
```

```
In [6]: visa_df['prevailing_wage'].count()
```

```
Out[6]: 25480
```

mean

```
In [7]: visa_df['prevailing_wage'].mean()   # pandas
```

```
Out[7]: 74455.81459209183
```

```
In [8]: np.mean(visa_df['prevailing_wage'])
```

```
Out[8]: 74455.81459209183
```

medain

```
In [9]: visa_df['prevailing_wage'].median()
```

```
Out[9]: 70308.20999999999
```

```
In [10]: np.median(visa_df['prevailing_wage'])
```

```
Out[10]: 70308.20999999999
```

max

```
In [11]: visa_df['prevailing_wage'].max()
```

```
Out[11]: 319210.27
```

```
In [12]: np.max(visa_df['prevailing_wage'])
```

```
Out[12]: 319210.27
```

min

```
In [13]: visa_df['prevailing_wage'].min()
```

```
Out[13]: 2.1367
```

```
In [14]: np.min(visa_df['prevailing_wage'])
```

```
Out[14]: 2.1367
```

std

In [16]:
```
visa_df['prevailing_wage'].std()
```

Out[16]:
```
52815.94232687357
```

In [22]:
```
## all together
wage_count=round(visa_df['prevailing_wage'].count(),2)
wage_max=round(visa_df['prevailing_wage'].max(),2)
wage_min=round(visa_df['prevailing_wage'].min(),2)
wage_mean=round(visa_df['prevailing_wage'].mean(),2)
wage_median=round(visa_df['prevailing_wage'].median(),2)
wage_std=round(visa_df['prevailing_wage'].std(),2)

l=[wage_count,wage_max,wage_min,wage_mean,wage_median,wage_std]
cols=['prevailing_wage']
index=['count','max','min','mean','median','std']
pd.DataFrame(l,columns=cols,index=index)
```

Out[22]:

	prevailing_wage
count	25480.00
max	319210.27
min	2.14
mean	74455.81
median	70308.21
std	52815.94

percentile-quantile

- perecntile and quantile available in numpy
- np.percentile()
  - column name
  - percentile value between 0 to 100
- np.quantile()
  - column name
  - 0 to 1
- In quantile 0.25 means 25 in percentile

In [23]:
```
np.percentile(visa_df['prevailing_wage'],25)
```

Out[23]:
```
34015.479999999996
```

In [26]:
```
np.quantile(visa_df['prevailing_wage'],0.25)
```

Out[26]:
```
34015.479999999996
```

what is the mean of 25percentile=34015.47

- 25percentage of total data has wage less than 34014.47
- Find 25percentage of total data =25*25480/100= 6370
- 6370 person wages has less than 34014

In [36]:

```
con=visa_df['prevailing_wage']<34014
len(visa_df[con])
```

Out[36]:

```
6370
```

In [38]:

```
# Can you valid quickly for 50p data
wage_50=np.percentile(visa_df['prevailing_wage'],50)
con=visa_df['prevailing_wage']<wage_50
len(visa_df[con])
```

Out[38]:

```
12740
```

In [39]:

```
## all together
wage_count=round(visa_df['prevailing_wage'].count(),2)
wage_max=round(visa_df['prevailing_wage'].max(),2)
wage_min=round(visa_df['prevailing_wage'].min(),2)
wage_mean=round(visa_df['prevailing_wage'].mean(),2)
wage_median=round(visa_df['prevailing_wage'].median(),2)
wage_std=round(visa_df['prevailing_wage'].std(),2)
wage_25=np.percentile(visa_df['prevailing_wage'],25)
wage_50=np.percentile(visa_df['prevailing_wage'],50)
wage_75=np.percentile(visa_df['prevailing_wage'],75)

l=[wage_count,wage_max,wage_min,
   wage_mean,wage_median,wage_std,
  wage_25,wage_50,wage_75]
cols=['prevailing_wage']
index=['count','max','min',
       'mean','median','std',
      '25%','50%','75%']
pd.DataFrame(l,columns=cols,index=index)
```

Out[39]:

	prevailing_wage
count	25480.0000
max	319210.2700
min	2.1400
mean	74455.8100
median	70308.2100
std	52815.9400
25%	34015.4800
50%	70308.2100
75%	107735.5125

In [40]:
```
visa_df.describe()
# 3 numerical columns
```

Out[40]:

	no_of_employees	yr_of_estab	prevailing_wage
count	25480.000000	25480.000000	25480.000000
mean	5667.043210	1979.409929	74455.814592
std	22877.928848	42.366929	52815.942327
min	-26.000000	1800.000000	2.136700
25%	1022.000000	1976.000000	34015.480000
50%	2109.000000	1997.000000	70308.210000
75%	3504.000000	2005.000000	107735.512500
max	602069.000000	2016.000000	319210.270000

In [48]:
```
## all together
cols=visa_df.select_dtypes(exclude='object').columns
l=[]
for i in cols:
    count=round(visa_df[i].count(),2)
    maxx=round(visa_df[i].max(),2)
    minn=round(visa_df[i].min(),2)
    mean=round(visa_df[i].mean(),2)
    median=round(visa_df[i].median(),2)
    std=round(visa_df[i].std(),2)
    p_25=np.percentile(visa_df[i],25)
    p_50=np.percentile(visa_df[i],50)
    p_75=np.percentile(visa_df[i],75)

    l.append([count,maxx,minn,mean,median,std,
             p_25,p_50,p_75])

print(l)
index=['count','max','min',
       'mean','median','std',
      '25%','50%','75%']
pd.DataFrame(zip(l[0],l[1],l[2]),columns=cols,index=index)
```

Out[48]:

	no_of_employees	yr_of_estab	prevailing_wage
count	25480.00	25480.00	25480.0000
max	602069.00	2016.00	319210.2700
min	-26.00	1800.00	2.1400
mean	5667.04	1979.41	74455.8100
median	2109.00	1997.00	70308.2100
std	22877.93	42.37	52815.9400
25%	1022.00	1976.00	34015.4800
50%	2109.00	1997.00	70308.2100
75%	3504.00	2005.00	107735.5125

In [49]:

```
## all together
cols=visa_df.select_dtypes(exclude='object').columns
d={}
for i in cols:
    count=round(visa_df[i].count(),2)
    maxx=round(visa_df[i].max(),2)
    minn=round(visa_df[i].min(),2)
    mean=round(visa_df[i].mean(),2)
    median=round(visa_df[i].median(),2)
    std=round(visa_df[i].std(),2)
    p_25=np.percentile(visa_df[i],25)
    p_50=np.percentile(visa_df[i],50)
    p_75=np.percentile(visa_df[i],75)

    d[i]=[count,maxx,minn,mean,median,std,p_25,p_50,p_75]


index=['count','max','min',
       'mean','median','std',
      '25%','50%','75%']
pd.DataFrame(d,index=index)
```

Out[49]:

	no_of_employees	yr_of_estab	prevailing_wage
count	25480.00	25480.00	25480.0000
max	602069.00	2016.00	319210.2700
min	-26.00	1800.00	2.1400
mean	5667.04	1979.41	74455.8100
median	2109.00	1997.00	70308.2100
std	22877.93	42.37	52815.9400
25%	1022.00	1976.00	34015.4800
50%	2109.00	1997.00	70308.2100
75%	3504.00	2005.00	107735.5125

In [1]:

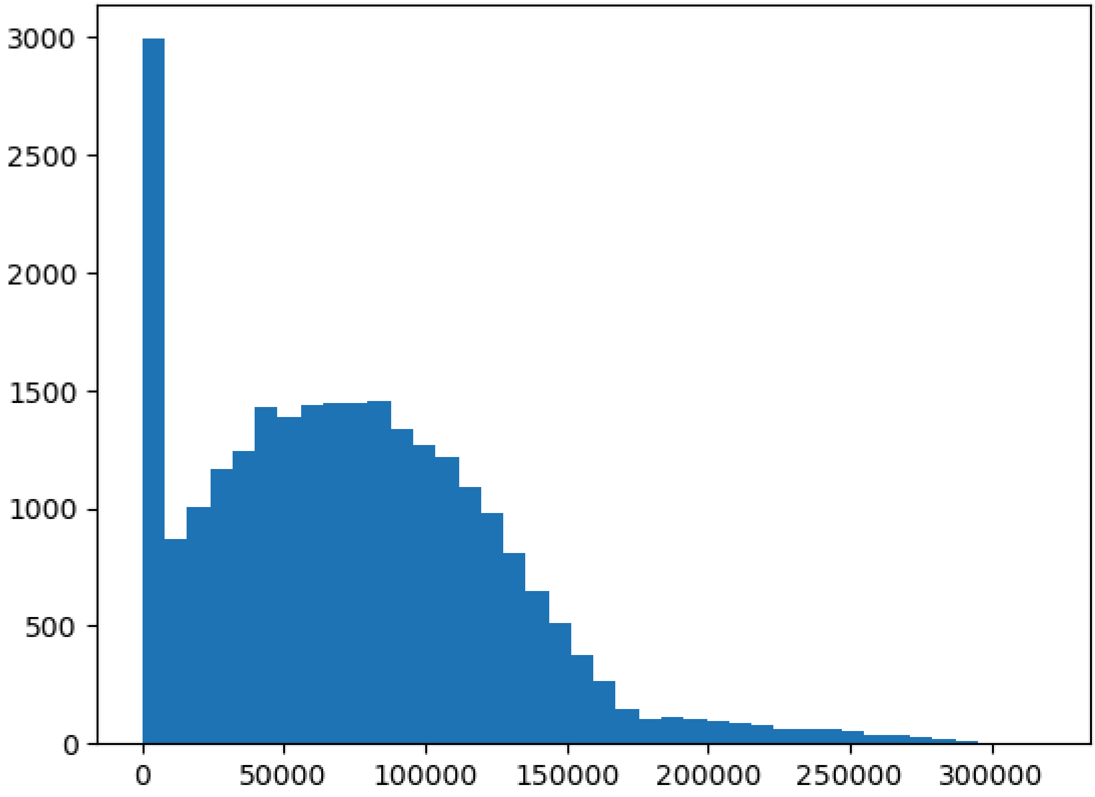
```
# Import the packages
# Read the data

#Import packages and read the data
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

path=r"C:\Users\omkar\OneDrive\Documents\Data science\Naresh IT\Datafiles\Vi
visa_df=pd.read_csv(path)
visa_df.head(3)
```

Out[1]:

tinent	education_of_employee	has_job_experience	requires_job_training	no_of_employees	yr_
Asia	High School	N	N	14513	
Asia	Master's	Y	N	2412	
Asia	Bachelor's	N	Y	44444	

histogram

```
In [5]: f,i,n=plt.hist(visa_df['prevailing_wage'],
                 bins=40)
```



```
In [8]: len(f),len(i),len(n)

Out[8]: (40, 41, 40)
```

```
In [ ]: 
```

```
In [9]: f

Out[9]: array([2992.,  871., 1005., 1170., 1242., 1434., 1385., 1443., 1444.,
               1445., 1457., 1335., 1268., 1217., 1088.,  978.,  807.,  645.,
                509.,  373.,  264.,  144.,  105.,  111.,  107.,   99.,   88.,
                 79.,   65.,   64.,   58.,   53.,   33.,   33.,   29.,   19.,
                  7.,    3.,    6.,    5.])
```

```
In [10]: i

Out[10]: array([2.13670000e+00, 7.98234003e+03, 1.59625434e+04, 2.39427467e+04,
                3.19229500e+04, 3.99031534e+04, 4.78833567e+04, 5.58635600e+04,
                6.38437634e+04, 7.18239667e+04, 7.98041700e+04, 8.77843734e+04,
                9.57645767e+04, 1.03744780e+05, 1.11724983e+05, 1.19705187e+05,
                1.27685390e+05, 1.35665593e+05, 1.43645797e+05, 1.51626000e+05,
                1.59606203e+05, 1.67586407e+05, 1.75566610e+05, 1.83546813e+05,
                1.91527017e+05, 1.99507220e+05, 2.07487423e+05, 2.15467627e+05,
                2.23447830e+05, 2.31428033e+05, 2.39408237e+05, 2.47388440e+05,
                2.55368643e+05, 2.63348847e+05, 2.71329050e+05, 2.79309253e+05,
                2.87289457e+05, 2.95269660e+05, 3.03249863e+05, 3.11230067e+05,
                3.19210270e+05])
```

In [ ]:

```
between 2.13670000e+00 to 7.98234003e+03
we have 2992 observations

between 7.98234003e+03 to 1.59625434e+04
we have 871 observations
```

In [20]:

```
l=2.13670000e+00
u=7.98234003e+03
c1=visa_df['prevailing_wage']>=l
c2=visa_df['prevailing_wage']<u
c=c1&c2
len(visa_df[c])
```

Out[20]:

```
2992
```

In [22]:

```
def frquency(l,u):
    c1=visa_df['prevailing_wage']>=l
    c2=visa_df['prevailing_wage']<u
    c=c1&c2
    print(len(visa_df[c]))
frquency(7.98234003e+03,1.59625434e+04)
```

```
871
```

In [ ]:

```
# Task-1
Craeate a dataframe

lower   upper    frquency
2.136   7.98       2992
```

In [ ]:

```
# task-2:
# In seaborn how to plot histogram
```

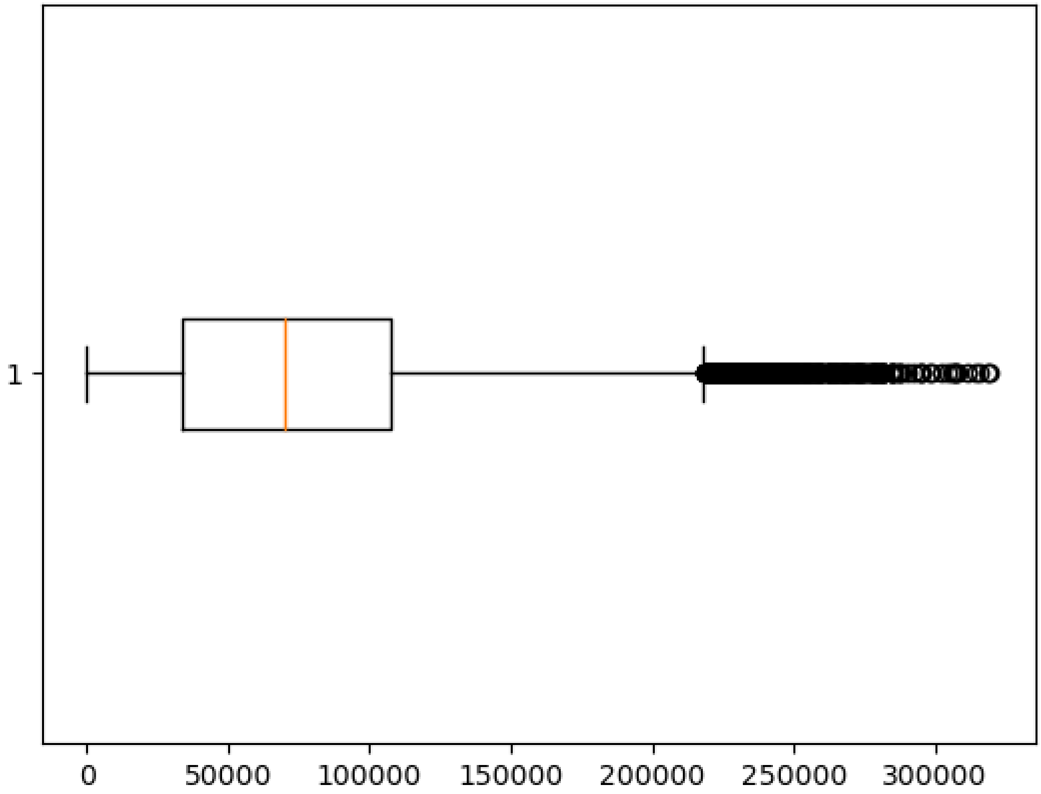
Boxplot

- Boxplot is used to identify outliers
- In box plot we have
    - Q1: 25p value
    - Q2: 50p value
    - Q3: 75p value
    - IQR: Q3-Q1
    - Mild outliers Q1-1.5*IQR and Q3+1.5*IQR
    - huge outliers Q1-3*IQR and Q3+3*IQR

```
            Q1-1.5IQR   Q1   median  Q3   Q3+1.5IQR

                       |-----:-----|
       o      |--------|     :     |--------|    o  o
                       |-----:-----|

     flier             <----------->            fliers
                            IQR
```

In [28]:

```python
plt.boxplot(visa_df['prevailing_wage'],
            vert=False)
plt.show()

# black dots are outliers
# orange line is median
```



In [ ]:

```
CI : Part 2 statistics
```