

In [2]: `import pandas as pd  
import numpy as np  
from scipy import stats`

In [13]: `lab_data=pd.read_csv('LabTAT.csv')  
lab_data`

Out[13]:

	Laboratory 1	Laboratory 2	Laboratory 3	Laboratory 4
0	185.35	165.53	176.70	166.13
1	170.49	185.91	198.45	160.79
2	192.77	194.92	201.23	185.18
3	177.33	183.00	199.61	176.42
4	193.41	169.57	204.63	152.60
...	...	...	...	...
115	178.49	170.66	193.80	172.68
116	176.08	183.98	215.25	177.64
117	202.48	174.54	203.99	170.27
118	182.40	197.18	194.52	150.87
119	182.09	215.17	221.49	162.21

120 rows × 4 columns

In [6]: `lab_data.shape`

Out[6]: (120, 4)

In [7]: `lab_data.dtypes`

Out[7]: Laboratory 1 float64  
Laboratory 2 float64  
Laboratory 3 float64  
Laboratory 4 float64  
dtype: object

In [8]: `lab_data.isna().sum()`

Out[8]: Laboratory 1 0  
Laboratory 2 0  
Laboratory 3 0  
Laboratory 4 0  
dtype: int64

In [ ]: Hypothesis Ho **as** No Varaince: All samples TAT population means are same  
  
Alternate Hypothesis Ha **as** It has Variance: Atleast one sample TAT population mean **is** different

In [14]: `# Anova ftest statistics: stats.f_oneway(column-1,column-2,column-3,column-4)  
p_value=stats.f_oneway(lab_data.iloc[:,0],lab_data.iloc[:,1],lab_data.iloc[:,2],lab_data.iloc[:,3])  
p_value`

Out[14]: F\_onewayResult(statistic=118.70421654401437, pvalue=2.1156708949992414e-57)

Here P-value is less than 0.05. So, it will reject Null Hypot

Atleast one sample TAT population mean is different..

In [ ]: