In [7]:

```
#Importing necessary liabraries
import warnings
warnings.filterwarnings('ignore')
import pandas as pd
import numpy as np
from scipy import stats
from scipy.stats import f_oneway
```

Importing dataset

In [3]:

```
lab_test=pd.read_csv("LabTAT.csv")
lab_test.head()
```

Out[3]:

	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

Initial analysis

In [4]:

```
lab_test.shape
```

Out[4]:

```
(120, 4)
```

In [5]:

```
lab_test.dtypes
```

Out[5]:

```
Laboratory 1    float64
Laboratory 2    float64
Laboratory 3    float64
Laboratory 4    float64
dtype: object
```

In [6]:

```
lab_test.isna().sum()
```

Out[6]:

```
Laboratory 1    0
Laboratory 2    0
Laboratory 3    0
Laboratory 4    0
dtype: int64
```

In [8]:

```
lab1=lab_test['Laboratory 1']
```

In [9]:

```
lab2=lab_test['Laboratory 2']
```

In [11]:

```
lab3=lab_test['Laboratory 3']
```

In [12]:

```
lab4=lab_test['Laboratory 4']
```

Using ANOVA test , we have more than 2 samples.

If p_value<0.05: we reject the Null Hyothesis #Ha: Alternate Hypothesis

else: we do not reject the Null Hypothesis #H0: Null Hypothesis

In [13]:

```
p_value=f_oneway(lab1,lab2,lab3,lab4)
p_value
```

Out[13]:

```
F_onewayResult(statistic=118.70421654401437, pvalue=2.1156708949992414e-57)
```

In [18]:

```
p_value[1]      # Comparing it with alpha=0.05
```

Out[18]:

```
2.1156708949992414e-57
```

Inference: As (p-value=2.1156708949e-57) < (α = 0.05); Reject Null Hypothesis i.e. Atleast one sample TAT population mean is different .There is variance or difference in average Turn Around Time (TAT) of reports of the laboratories on their preferred list.

In [19]:

```
#p_value is less than 0.05 that's why we reject the Null hypothesis means accepting Alterna
```

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>The End!!<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<