

Q2. A hospital wants to determine whether there is any difference in the average Turn Around Time (TAT) of reports of the laboratories on their preferred list. They collected a random sample and recorded TAT for reports of 4 laboratories. TAT is defined as sample collected to report dispatch. Analyze the data and determine whether there is any difference in average TAT among the different laboratories at 5% significance level.

In [1]:

```
import pandas as pd
import numpy as np
from scipy import stats
from scipy.stats import norm
```

In [2]:

```
data = pd.read_csv('LabTAT.csv')
data
```

Out[2]:

	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 [3]:

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

Out[3]:

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

In [4]:

```
p_value[1] #compare it with  $\alpha = 0.05$ 
```

Out[4]:

```
2.1156708949992414e-57
```

different. Thus there is variance or difference in average Turn Around Time (TAT) of reports of the laboratories on their preferred list.

In []: