In [3]:

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

executed in 8ms, finished 20:01:30 2021-11-26

In [4]:

```
df=pd.read_csv('LabTAT (1).csv')
```

executed in 23ms, finished 20:01:44 2021-11-26

In [5]:

```
df
```

executed in 74ms, finished 20:01:48 2021-11-26

Out[5]:

	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]:

```
stats.shapiro(df["Laboratory 1"])
```

executed in 20ms, finished 20:02:02 2021-11-26

Out[6]:

```
ShapiroResult(statistic=0.9901824593544006, pvalue=0.5506953597068787)
```

In [7]:

```
stats.shapiro(df["Laboratory 2"])
```

executed in 23ms, finished 20:02:35 2021-11-26

Out[7]:

```
ShapiroResult(statistic=0.9936322569847107, pvalue=0.8637524843215942)
```

In [8]:

```
stats.shapiro(df["Laboratory 3"])
```

executed in 32ms, finished 20:02:51 2021-11-26

Out[8]:

```
ShapiroResult(statistic=0.9886345267295837, pvalue=0.4205053448677063)
```

In [9]:

```
stats.shapiro(df["Laboratory 4"])
```

executed in 21ms, finished 20:03:07 2021-11-26

Out[9]:

```
ShapiroResult(statistic=0.9913753271102905, pvalue=0.6618951559066772)
```

In [10]:

```
stats.levene(df["Laboratory 1"], df["Laboratory 2"], df["Laboratory 3"], df["Laboratory 4"]
```

executed in 32ms, finished 20:03:30 2021-11-26

Out[10]:

```
LeveneResult(statistic=2.599642500418024, pvalue=0.05161343808309816)
```

In [11]:

```
stats.stats.f_oneway(df["Laboratory 1"], df["Laboratory 2"], df["Laboratory 3"], df["Labora
```

executed in 15ms, finished 20:03:47 2021-11-26

Out[11]:

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