In [1]:
```
# Aim : To perform hypothesis testing using ANOVA (F-TEST) One-Way F-Test(Anova).
```

In [2]:
```
# Name : Kaushal A. Bharade
# class : 3rd year
# Section : A
# Roll No. : 11
```

F-Test

In [3]:
```
ages=[10,20,35,50,28,40,55,18,16,55,30,25,43,18,30,28,14,24,16,17,32,35,26,27,65,18,43,2
```

In [4]:
```
len(ages)
```

Out[4]:
```
56
```

In [5]:
```
import numpy as np
```

In [6]:
```
## Lets take sample

sample_size=10
age_sample=np.random.choice(ages,sample_size)
```

In [7]:
```
# Python program to implement One-Way f-test
# Importing the required libraries
import scipy.stats
import numpy as np
```

In [8]:
```
# Creating sample data
data1 = [0.0842, 0.0368, 0.0847, 0.0935, 0.0376, 0.0963, 0.0684,
0.0758, 0.0854, 0.0855]
data2 = [0.0785, 0.0845, 0.0758, 0.0853, 0.0946, 0.0785, 0.0853,
0.0685]
data3 = [0.0864, 0.2522, 0.0894, 0.2724, 0.0853, 0.1367, 0.853]
```

In [9]:
```
# Performing the F-Test
f_test, p_val = scipy.stats.f_oneway(data1, data2, data3)
print("p-value is: ", p_val)
```

```
p-value is:  0.04043792126789144
```

In [10]:
```
# taking the threshold value as 0.05 or 5%
if p_val < 0.05:
    print(" We can reject the null hypothesis")
else:
    print("We can accept the null hypothesis")
```

```
 We can reject the null hypothesis
```

In [11]:
```
variance1 = np.var(data1)
```

In [12]:
```
print(variance1)
```

```
0.0004094956000000005
```

In [13]:
```
variance2 = np.var(data2)
```

In [14]:
```
print(variance2)
```

```
5.3606874999999995e-05
```

In [15]:
```
variance3 = np.var(data3)
```

In [16]:
```
print(variance3)
```

```
0.06522053346938775
```

In [ ]:
```

```