```
import numpy as np
from scipy import stats


data1=np.array([28,21,26,29,23])
data2=np.array([21,27,25,28,19])
print(data1.mean())
print(data2.mean())
```

```
25.4
24.0
```

```
#peform t-test assuming unequal variances
t_stat,p_value=stats.ttest_ind(data1,data2,equal_var=False)


#print the results
print("T-statistic :",t_stat)
print("P-Value     :",p_value)
```

```
T-statistic : 0.6104290082757257
P-Value     : 0.5588425874104368
```

```
alpha=0.05


if p_value < alpha:
  print("Reject the null hypothesis.The means are significant difference")
else:
  print("Fail to Reject the null hypothesis.The means are Not significant difference")
```

```
Fail to Reject the null hypothesis.The means are Not significant difference
```

```
import pandas as pd
df=pd.read_csv("/content/Vaccine.csv")


group_A=df["Efficiency"]
group_B=df["Rec_Rate"]
t_stat,p_value = stats.ttest_ind(group_A,group_B)
print("t_val :",t_stat)
print("p_val :",p_value)
```

```
t_val : 43.144276880141796
p_val : 8.95811181993363e-46
```

```
alpha=0.05
if p_value>alpha:
  print("H0 - Related")
else:
  print("H1 - Not Related")
```

```
H1 - Not Related
```

ANOVA (One - Way ANOVA)

```
dfA=df[df['Vaccine']=='A']['Efficiency']
dfB=df[df["Vaccine"]=='B']['Efficiency']
f_stat,p_value=stats.f_oneway(dfA,dfB)
print("F-statistic:",f_stat)
print("P-value:",p_value)
```

```
F-statistic: 1.0757234023273485
P-value: 0.3133894618484353
```

```
alpha=0.05
if p_value>alpha:
  print("H0-related")
else:
  print("H1-not related")
```

```
H0-related
```

```
from scipy import interpolate
# Interpolation
x_data = np.array([0,1,2,3,4])
y_data = np.array([0,2,1,3,5])
interp_func = interpolate.interp1d(x_data,y_data,kind="linear")
interp_result = interp_func(2.5)
print("Interpolation Result :",interp_result)
```

```
Interpolation Result : 2.0
```