EXPERIMENT -13

Hypothetical using T-Test

Aim:

To test whether the average IQ score of a sample of students differs significantly from a population mean IQ score of 100

Procedure:

- Null hypothesis
- Alternative hypothesis
- Sample
- Z-Test
- Decision Rule

Program:

```
import numpy as np
import scipy.stats as stats
np.random.seed(42)
size=25
data=np.random.normal(loc=102,scale=15,size=size)
mean=100
sample_mean=np.mean(data)
std=np.std(data,ddof=1)
n=len(data)
t_stat,p_value=stats.ttest_1samp(data,mean)
print(f"Sample mean:{sample_mean:.2f}")
print(f"T-statistic:{t_stat:.4f}")
print(f"P-value:{p_value:.4f}")
alpha=0.05
if p_value < alpha :
  print("Reject the null hypothesis.The average scoreIQ score is significantly different from 100.")
else:
  print("Fail to reject the null hypothesis:There is no significant difference in average IQ score from 100")
```

```
Sample mean:99.55
T-statistic:-0.1577
P-value:0.8760
Fail to reject the null hypothesis:There is no significant difference in average IQ score from 100
```

Result:

Thus the python program for hypothetical test using T-Test is executed and output is verified successfully