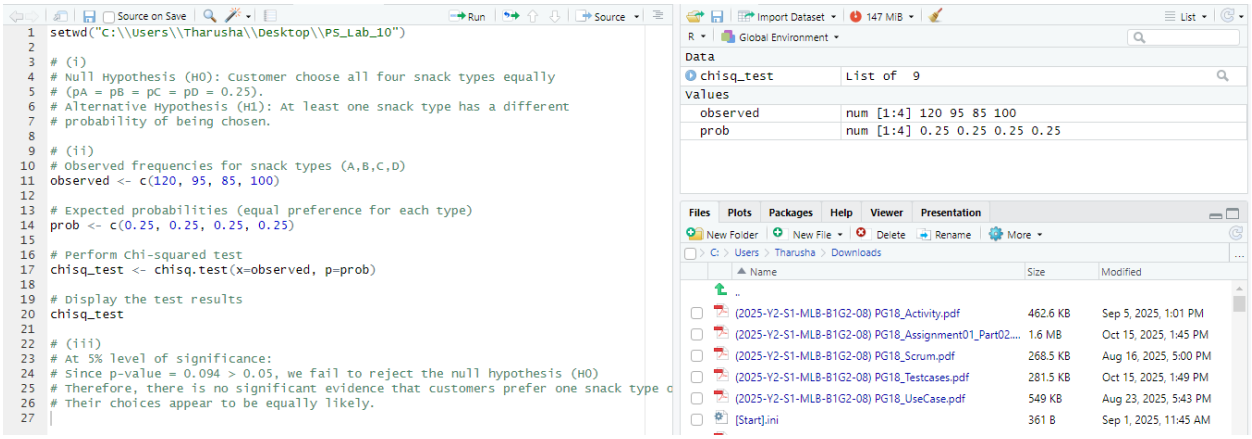
SLIIT UNI

# Faculty of Computing

## Year 2 Semester 1 (2025)

IT2120 - Probability and Statistics  Lab Sheet 10



```
setwd("C:\\Users\\Tharusha\\Desktop\\PS_Lab_10")

# (i)
# Null Hypothesis (H0): Customer choose all four snack types equally
# (pA = pB = pC = pD = 0.25).
# Alternative Hypothesis (H1): At least one snack type has a different
# probability of being chosen.

# (ii)
# Observed frequencies for snack types (A,B,C,D)
observed <- c(120, 95, 85, 100)

# Expected probabilities (equal preference for each type)
prob <- c(0.25, 0.25, 0.25, 0.25)

# Perform Chi-squared test
chisq_test <- chisq.test(x=observed, p=prob)

# Display the test results
chisq_test

# (iii)
# At 5% level of significance:
# Since p-value = 0.094 > 0.05, we fail to reject the null hypothesis (H0)
# Therefore, there is no significant evidence that customers prefer one snack type o
# Their choices appear to be equally likely.
```

```
Data
chisq_test   List of 9
values
  observed   num [1:4] 120 95 85 100
  prob       num [1:4] 0.25 0.25 0.25 0.25
```

Files | Plots | Packages | Help | Viewer | Presentation

New Folder | New File | Delete | Rename | More

C: > Users > Tharusha > Downloads

| Name | Size | Modified |
|---|---|---|
| .. | | |
| (2025-Y2-S1-MLB-B1G2-08) PG18_Activity.pdf | 462.6 KB | Sep 5, 2025, 1:01 PM |
| (2025-Y2-S1-MLB-B1G2-08) PG18_Assignment01_Part02.... | 1.6 MB | Oct 15, 2025, 1:45 PM |
| (2025-Y2-S1-MLB-B1G2-08) PG18_Scrum.pdf | 268.5 KB | Aug 16, 2025, 5:00 PM |
| (2025-Y2-S1-MLB-B1G2-08) PG18_Testcases.pdf | 281.5 KB | Oct 15, 2025, 1:49 PM |
| (2025-Y2-S1-MLB-B1G2-08) PG18_UseCase.pdf | 549 KB | Aug 23, 2025, 5:43 PM |
| [Start].ini | 361 B | Sep 1, 2025, 11:45 AM |

R 4.5.1 · C:/Users/Tharusha/Desktop/PS_Lab_10/

```
> setwd("C:\\Users\\Tharusha\\Desktop\\PS_Lab_10")
> # (i)
> # Null Hypothesis (H0): Customer choose all four snack types equally
> # (pA = pB = pC = pD = 0.25).
> # Alternative Hypothesis (H1): At least one snack type has a different
> # probability of being chosen.
> # (ii)
> # Observed frequencies for snack types (A,B,C,D)
> observed <- c(120, 95, 85, 100)
> # Expected probabilities (equal preference for each type)
> prob <- c(0.25, 0.25, 0.25, 0.25)
> # Perform Chi-squared test
> chisq_test <- chisq.test(x=observed, p=prob)
> # Display the test results
> chisq_test

        Chi-squared test for given probabilities

data:  observed
X-squared = 6.5, df = 3, p-value = 0.08966

> # (iii)
> # At 5% level of significance:
> # Since p-value = 0.094 > 0.05, we fail to reject the null hypothesis (H0)
> # Therefore, there is no significant evidence that customers prefer one snack type ov
er another.
> # Their choices appear to be equally likely
>
```