# Sri Lanka Institute of Information Technology


## Lab Submission
## Lab Sheet 10

**IT24101387**

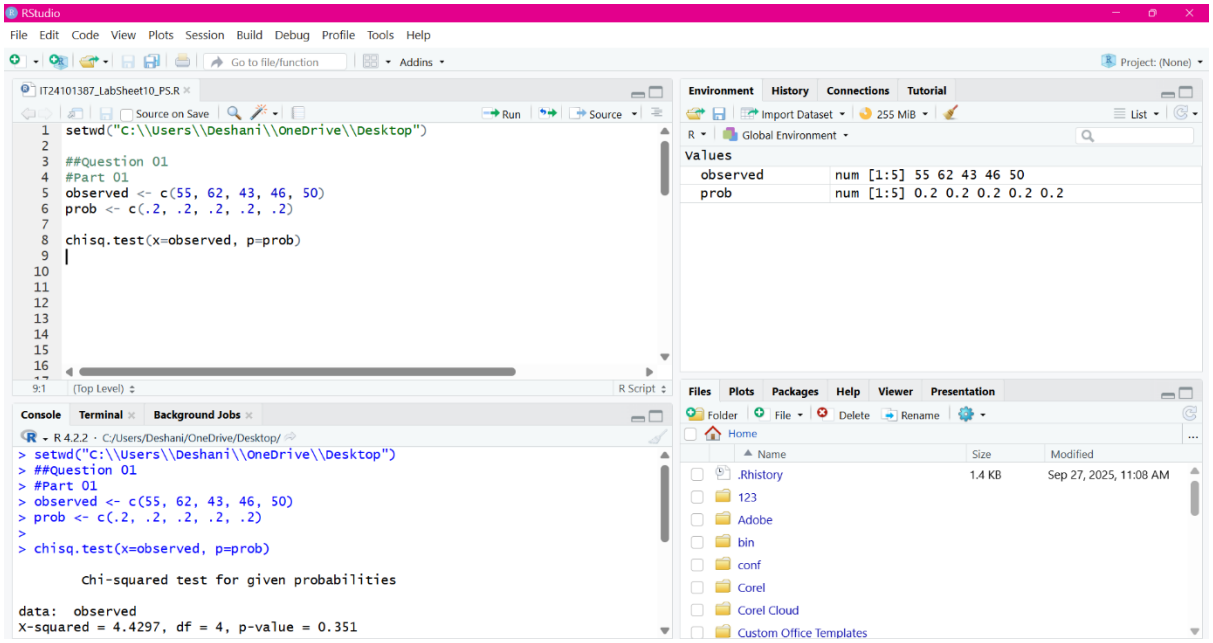
**Deshani B.A.M**

**Probability and Statistics | IT2120**

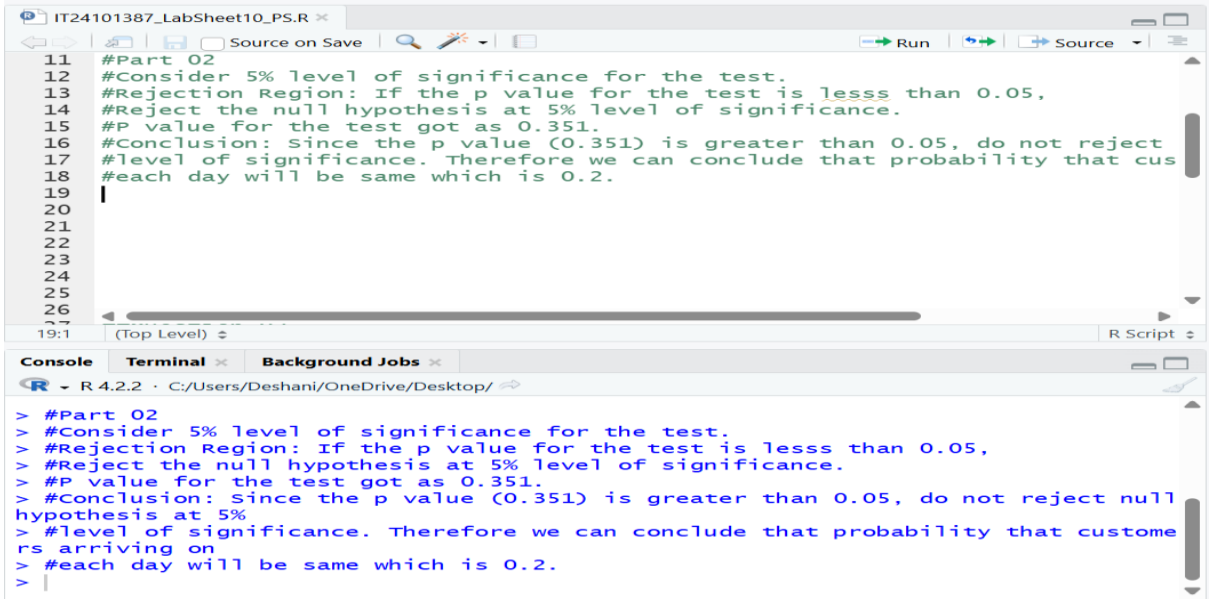
B.Sc. (Hons) in Information Technology

# Question - 01

## Part - 01

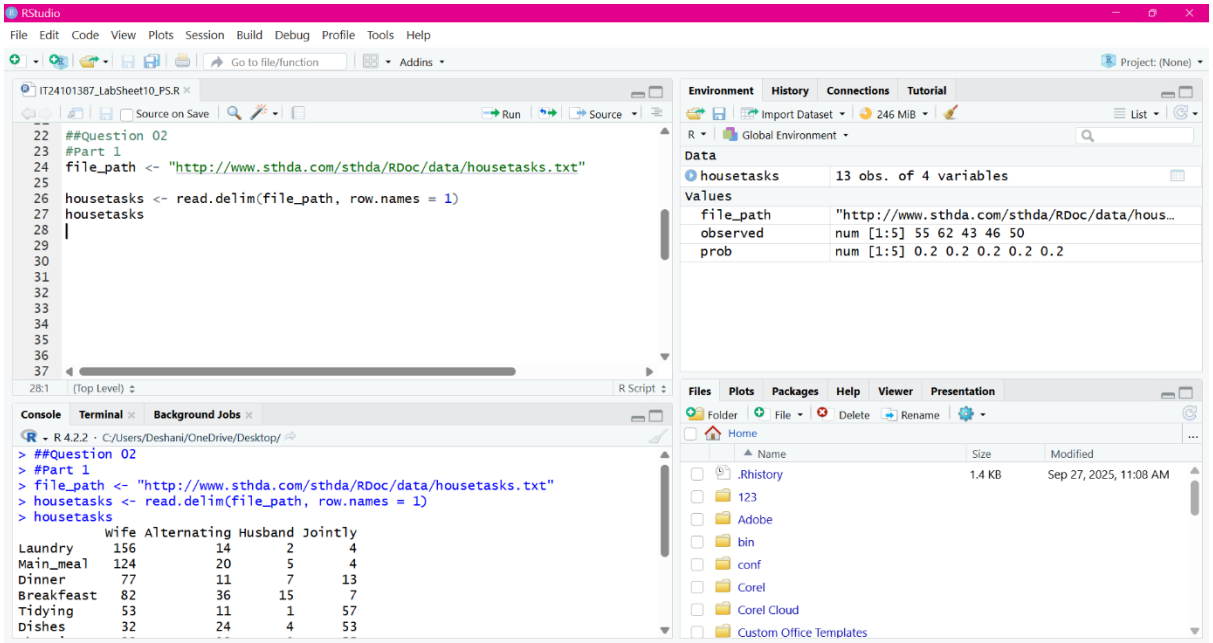


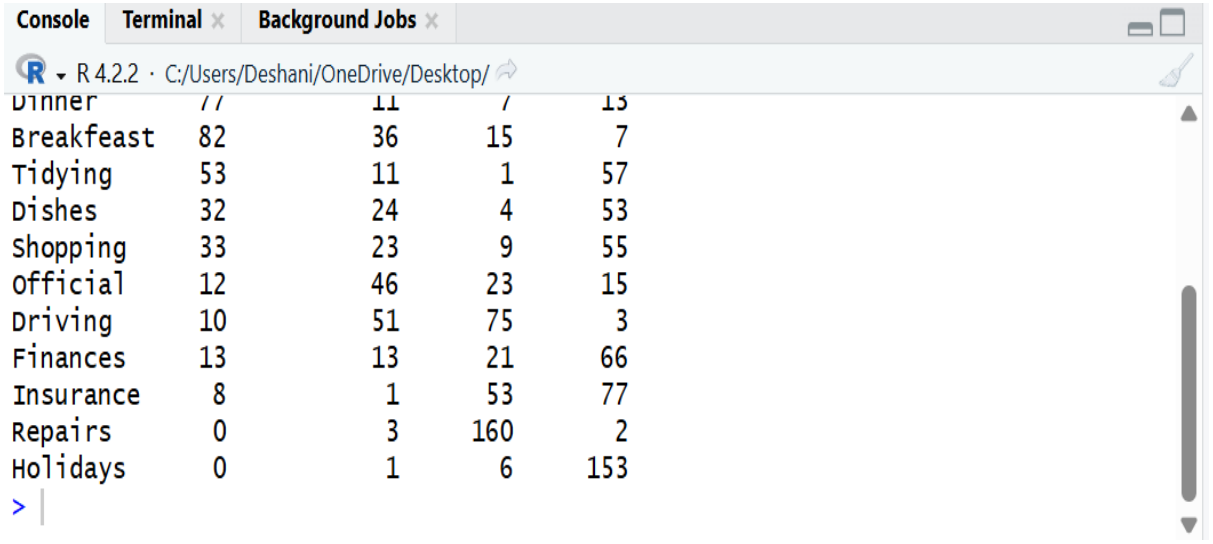

## Part – 02

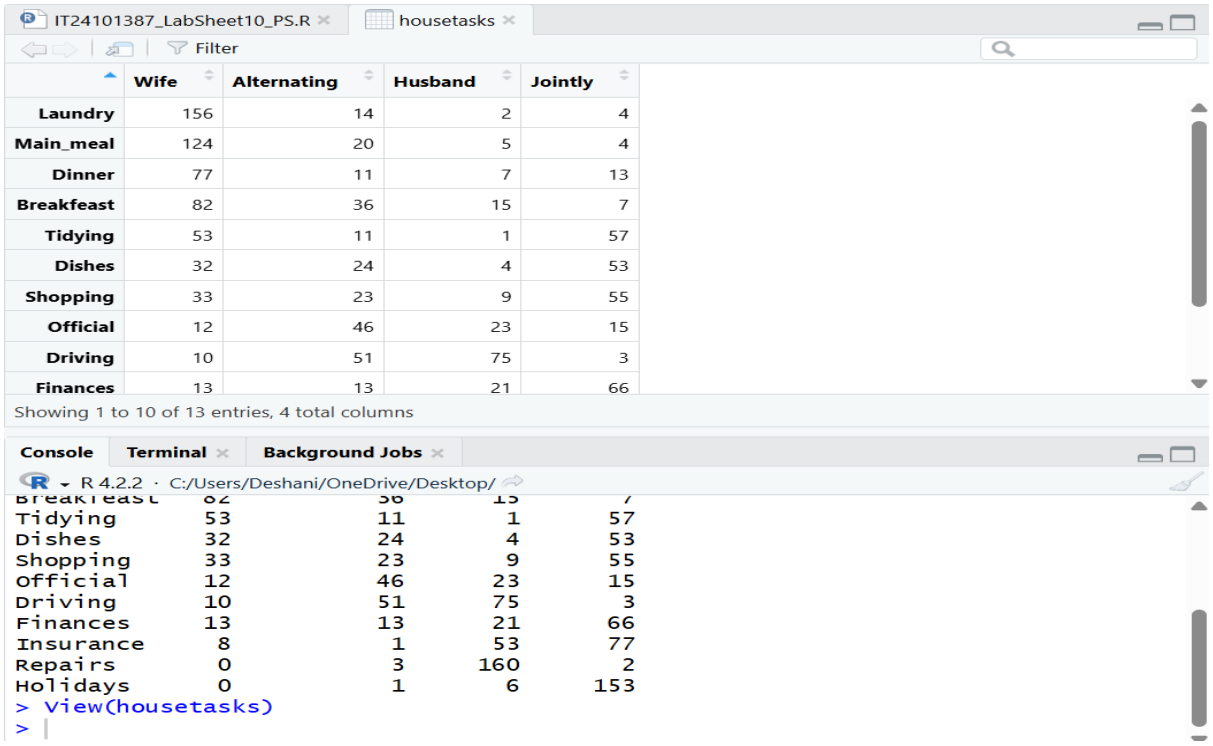


# Question – 02

## Part – 01





IT24101387_LabSheet10_PS.R | housetasks

Filter

| | Wife | Alternating | Husband | Jointly |
|---|---|---|---|---|
| Laundry | 156 | 14 | 2 | 4 |
| Main_meal | 124 | 20 | 5 | 4 |
| Dinner | 77 | 11 | 7 | 13 |
| Breakfeast | 82 | 36 | 15 | 7 |
| Tidying | 53 | 11 | 1 | 57 |
| Dishes | 32 | 24 | 4 | 53 |
| Shopping | 33 | 23 | 9 | 55 |
| Official | 12 | 46 | 23 | 15 |
| Driving | 10 | 51 | 75 | 3 |
| Finances | 13 | 13 | 21 | 66 |

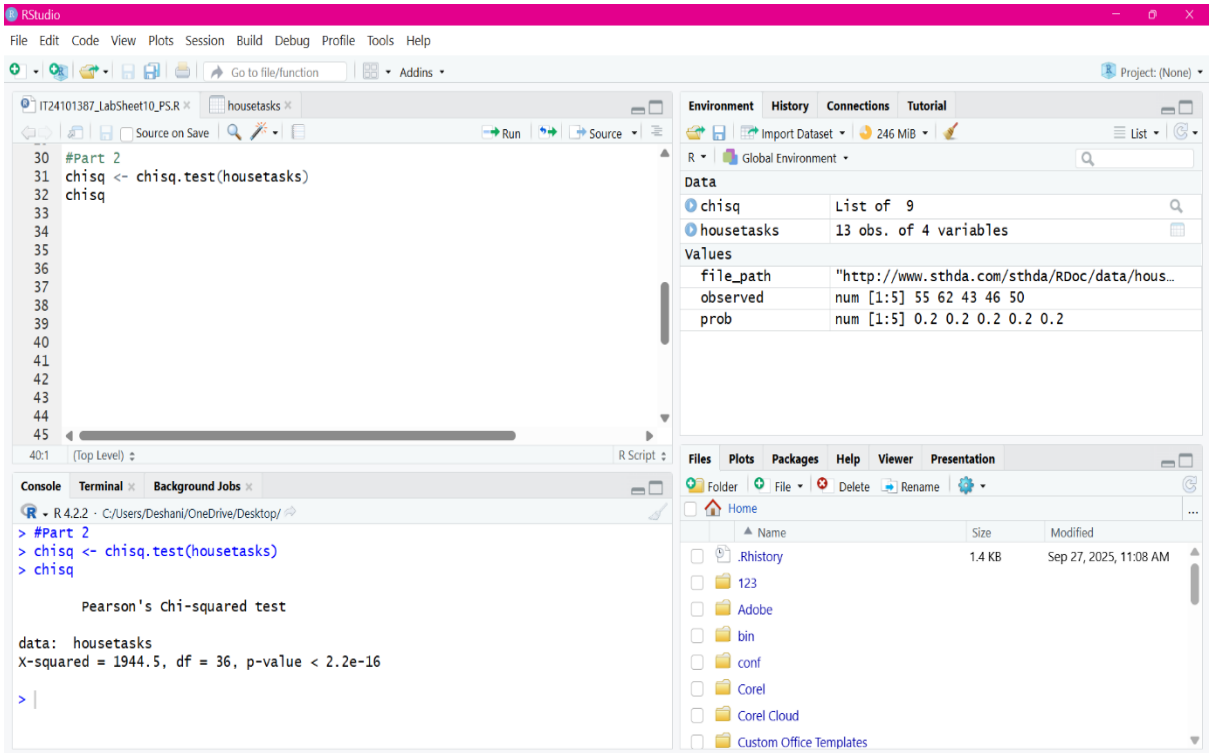
Showing 1 to 10 of 13 entries, 4 total columns

Console | Terminal | Background Jobs

R 4.2.2 · C:/Users/Deshani/OneDrive/Desktop/

```
Breakfeast      82         36        15         7
Tidying         53         11         1        57
Dishes          32         24         4        53
Shopping        33         23         9        55
Official        12         46        23        15
Driving         10         51        75         3
Finances        13         13        21        66
Insurance        8          1        53        77
Repairs          0          3       160         2
Holidays         0          1         6       153
> View(housetasks)
>
```

# Part – 02



RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function | Addins | Project: (None)

IT24101387_LabSheet10_PS.R | housetasks

Source on Save | Run | Source

```
30 #Part 2
31 chisq <- chisq.test(housetasks)
32 chisq
```

40:1 (Top Level) | R Script

Environment | History | Connections | Tutorial

Import Dataset | 246 MiB | List

R | Global Environment

Data

| | |
|---|---|
| chisq | List of 9 |
| housetasks | 13 obs. of 4 variables |

Values

| | |
|---|---|
| file_path | "http://www.sthda.com/sthda/RDoc/data/hous… |
| observed | num [1:5] 55 62 43 46 50 |
| prob | num [1:5] 0.2 0.2 0.2 0.2 0.2 |

Console | Terminal | Background Jobs

R 4.2.2 · C:/Users/Deshani/OneDrive/Desktop/

```
> #Part 2
> chisq <- chisq.test(housetasks)
> chisq

        Pearson's Chi-squared test

data:  housetasks
X-squared = 1944.5, df = 36, p-value < 2.2e-16

>
```

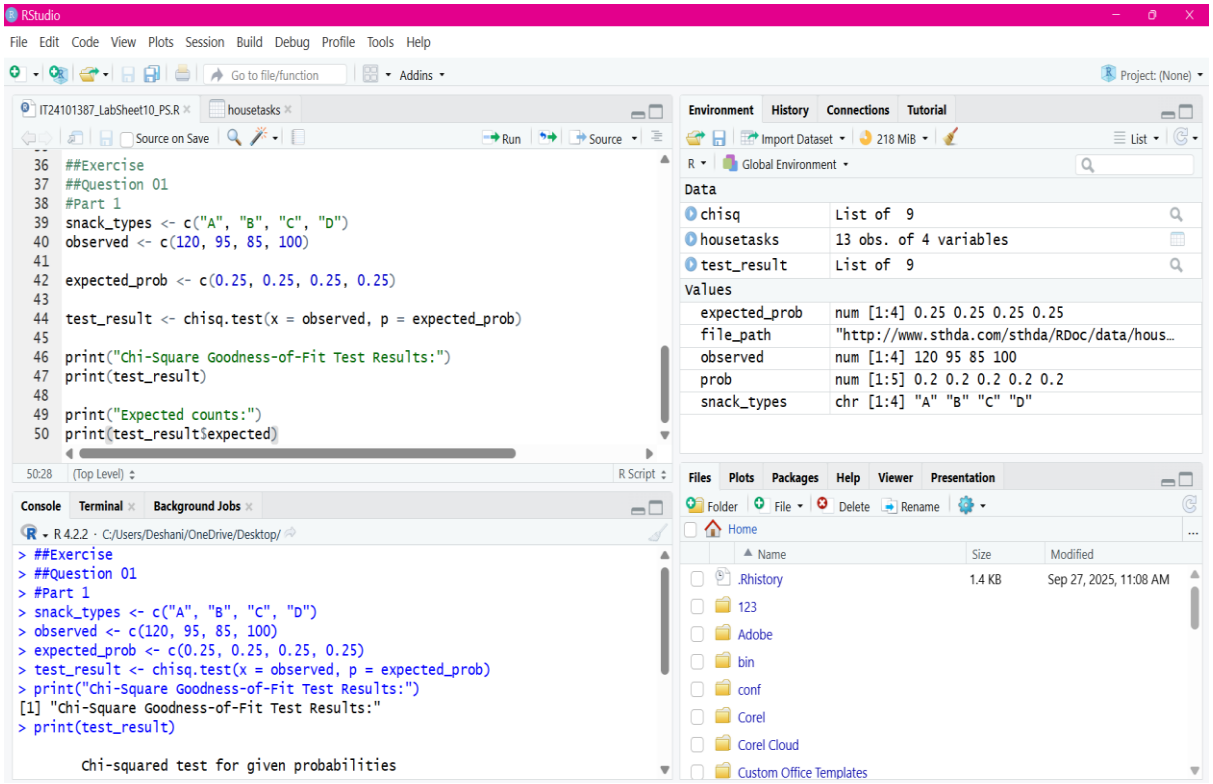
Files | Plots | Packages | Help | Viewer | Presentation

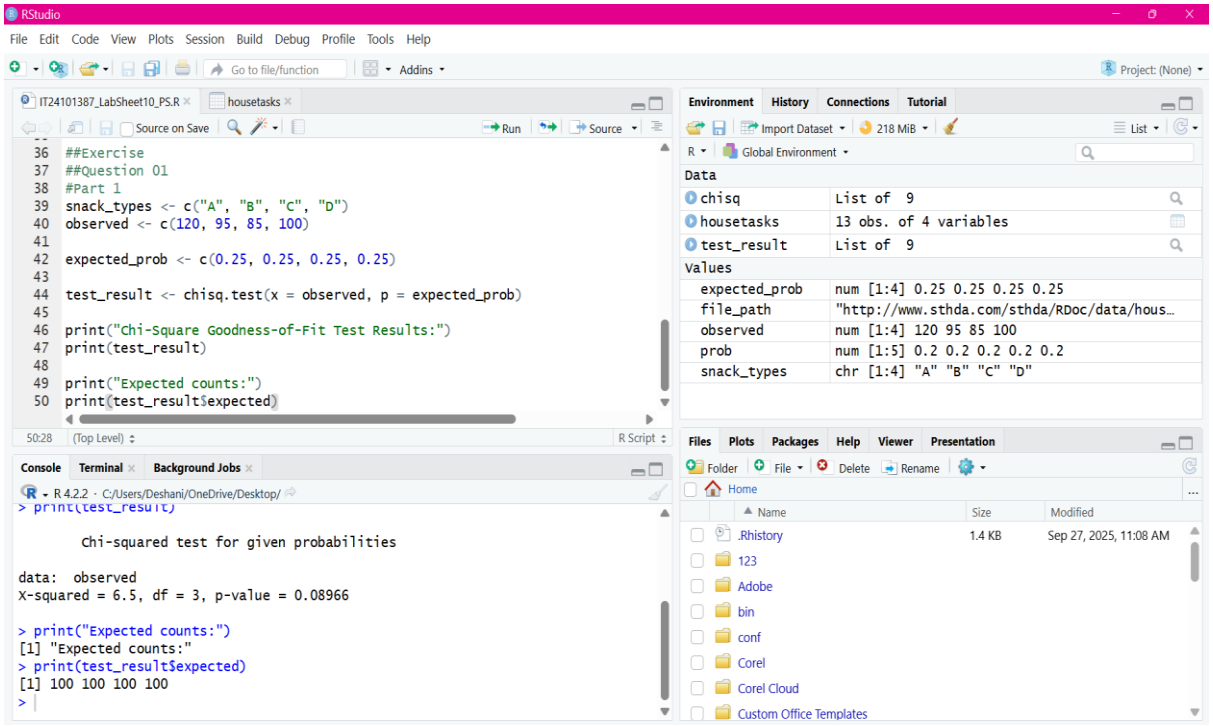
Folder | File | Delete | Rename

Home

| Name | Size | Modified |
|---|---|---|
| .Rhistory | 1.4 KB | Sep 27, 2025, 11:08 AM |
| 123 | | |
| Adobe | | |
| bin | | |
| conf | | |
| Corel | | |
| Corel Cloud | | |
| Custom Office Templates | | |

# Exercise


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
IT24101387_LabSheet10_PS.R
housetasks
Source on Save
Run
Source
36 ##Exercise
37 ##Question 01
38 #Part 1
39 snack_types <- c("A", "B", "C", "D")
40 observed <- c(120, 95, 85, 100)
41
42 expected_prob <- c(0.25, 0.25, 0.25, 0.25)
43
44 test_result <- chisq.test(x = observed, p = expected_prob)
45
46 print("Chi-Square Goodness-of-Fit Test Results:")
47 print(test_result)
48
49 print("Expected counts:")
50 print(test_result$expected)
50:28 (Top Level) R Script
Console Terminal Background Jobs
R 4.2.2 · C:/Users/Deshani/OneDrive/Desktop/
> ##Exercise
> ##Question 01
> #Part 1
> snack_types <- c("A", "B", "C", "D")
> observed <- c(120, 95, 85, 100)
> expected_prob <- c(0.25, 0.25, 0.25, 0.25)
> test_result <- chisq.test(x = observed, p = expected_prob)
> print("Chi-Square Goodness-of-Fit Test Results:")
[1] "Chi-Square Goodness-of-Fit Test Results:"
> print(test_result)
Chi-squared test for given probabilities
Environment History Connections Tutorial
Import Dataset 218 MiB List
R Global Environment
Data
chisq List of 9
housetasks 13 obs. of 4 variables
test_result List of 9
Values
expected_prob num [1:4] 0.25 0.25 0.25 0.25
file_path "http://www.sthda.com/sthda/RDoc/data/hous…
observed num [1:4] 120 95 85 100
prob num [1:5] 0.2 0.2 0.2 0.2 0.2
snack_types chr [1:4] "A" "B" "C" "D"
Files Plots Packages Help Viewer Presentation
Folder File Delete Rename
Home
Name Size Modified
.Rhistory 1.4 KB Sep 27, 2025, 11:08 AM
123
Adobe
bin
conf
Corel
Corel Cloud
Custom Office Templates


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
IT24101387_LabSheet10_PS.R
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Source on Save
Run
Source
36 ##Exercise
37 ##Question 01
38 #Part 1
39 snack_types <- c("A", "B", "C", "D")
40 observed <- c(120, 95, 85, 100)
41
42 expected_prob <- c(0.25, 0.25, 0.25, 0.25)
43
44 test_result <- chisq.test(x = observed, p = expected_prob)
45
46 print("Chi-Square Goodness-of-Fit Test Results:")
47 print(test_result)
48
49 print("Expected counts:")
50 print(test_result$expected)
50:28 (Top Level) R Script
Console Terminal Background Jobs
R 4.2.2 · C:/Users/Deshani/OneDrive/Desktop/
Chi-squared test for given probabilities
data: observed
X-squared = 6.5, df = 3, p-value = 0.08966
> print("Expected counts:")
[1] "Expected counts:"
> print(test_result$expected)
[1] 100 100 100 100
Environment History Connections Tutorial
Import Dataset 218 MiB List
R Global Environment
Data
chisq List of 9
housetasks 13 obs. of 4 variables
test_result List of 9
Values
expected_prob num [1:4] 0.25 0.25 0.25 0.25
file_path "http://www.sthda.com/sthda/RDoc/data/hous…
observed num [1:4] 120 95 85 100
prob num [1:5] 0.2 0.2 0.2 0.2 0.2
snack_types chr [1:4] "A" "B" "C" "D"
Files Plots Packages Help Viewer Presentation
Folder File Delete Rename
Home
Name Size Modified
.Rhistory 1.4 KB Sep 27, 2025, 11:08 AM
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Adobe
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Corel
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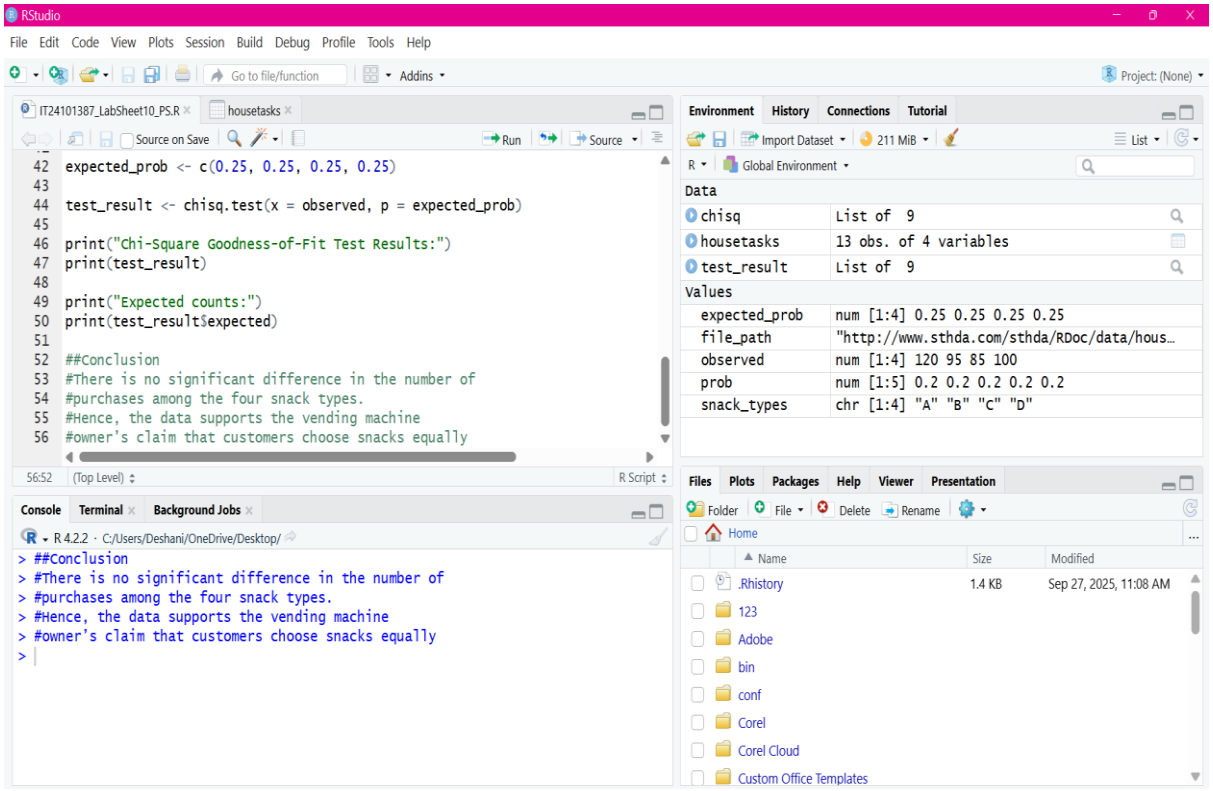
Custom Office Templates


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
IT24101387_LabSheet10_PS.R
housetasks
Source on Save
Run
Source
42 expected_prob <- c(0.25, 0.25, 0.25, 0.25)
44 test_result <- chisq.test(x = observed, p = expected_prob)
46 print("Chi-Square Goodness-of-Fit Test Results:")
47 print(test_result)
49 print("Expected counts:")
50 print(test_result$expected)
52 ##Conclusion
53 #There is no significant difference in the number of
54 #purchases among the four snack types.
55 #Hence, the data supports the vending machine
56 #owner's claim that customers choose snacks equally
56:52 (Top Level)
R Script
Console
Terminal
Background Jobs
R 4.2.2 · C:/Users/Deshani/OneDrive/Desktop/
> ##Conclusion
> #There is no significant difference in the number of
> #purchases among the four snack types.
> #Hence, the data supports the vending machine
> #owner's claim that customers choose snacks equally
Environment
History
Connections
Tutorial
Import Dataset
211 MiB
List
R
Global Environment
Data
chisq
List of 9
housetasks
13 obs. of 4 variables
test_result
List of 9
Values
expected_prob
num [1:4] 0.25 0.25 0.25 0.25
file_path
"http://www.sthda.com/sthda/RDoc/data/hous…
observed
num [1:4] 120 95 85 100
prob
num [1:5] 0.2 0.2 0.2 0.2 0.2
snack_types
chr [1:4] "A" "B" "C" "D"
Files
Plots
Packages
Help
Viewer
Presentation
Folder
File
Delete
Rename
Home
Name
Size
Modified
.Rhistory
1.4 KB
Sep 27, 2025, 11:08 AM
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Custom Office Templates