

Sri Lanka Institute of Information Technology



Lab Submission
Lab sheet No.09

IT24102009

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Probability and Statistics | IT2120

B.Sc. (Hons) in Information Technology

Exercise

Instructions: Create a folder in your desktop with your registration number (Eg: " IT....."). You need to save the R script file and take screenshots of the command prompt with answers and save it in a word document inside the folder. Save both R script file and word document with your registration number (Eg: " IT....."). After you finish the exercise, zip the folder and upload the zip file to the submission link.

1. Assume that the time taken to bake a batch of cookies is normally distributed with mean 45 minutes and standard deviation 2 minutes.
 - i. Generate a random sample of size 25 for the baking time.

```
> setwd('C:\\Users\\adees\\Desktop\\IT24102009')
> getwd()
[1] "C:/Users/adees/Desktop/IT24102009"
> # Question 01
> # i)
> baking_times <- rnorm(25, mean = 45, sd = 2)
> print("Generated baking times:")
[1] "Generated baking times:"
> print(baking_times)
[1] 46.42177 43.88860 44.54138 41.37866 45.90872 45.82257 45.69862 45.19887 49.00193
[10] 42.86037 44.98682 45.85625 45.81922 44.61001 46.19188 43.99615 45.03049 46.37518
[19] 45.21245 44.69483 48.62078 46.56839 44.24204 44.35692 44.30133
```

- ii. Test whether the average baking time is less than 46 minutes at a 5% level of significance.

```
> # ii)
> test_result <- t.test(baking_times, mu = 46, alternative = "less")
> print(test_result)

One Sample t-test

data:  baking_times
t = -2.3192, df = 24, p-value = 0.01461
alternative hypothesis: true mean is less than 46
95 percent confidence interval:
 -Inf 45.80679
sample estimates:
mean of x
 45.26337

> print("Conclusion: Since p value < 0.05, Reject H0 at 5% level of significance. There
for we can conclude that the average baking time is less than 46 minutes.")
[1] "Conclusion: Since p value < 0.05, Reject H0 at 5% level of significance. There for
we can conclude that the average baking time is less than 46 minutes."
```