

Sri Lanka Institute of Information Technology



Lab Submission 09

IT24100710

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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("D:\\SLIIT\\Semester\\Y2S1\\PS\\Lab Submission\\Lab 09\\Lab 9")
```

```
bake <- rnorm(25, mean = 45, sd = 2)
bake
```

```
> setwd("D:\\SLIIT\\Semester\\Y2S1\\PS\\Lab Submission\\Lab 09\\Lab 9")
> bake <- rnorm(25, mean = 45, sd = 2)
> bake
[1] 44.17544 44.06215 48.38247 44.54626 44.28603 45.07439 43.11935 45.54449 46.58594 43.75846
[11] 42.86419 41.98090 43.20401 45.31486 44.54696 43.60799 48.11808 46.14269 48.29365 46.99566
[21] 43.63519 46.67528 46.39477 46.37973 47.92154
```

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

```
t.test(bake, mu = 46, alternative = "less")
```

```
> t.test(bake, mu = 46, alternative = "less")
```

One sample t-test

```
data:  bake
t = -1.9907, df = 24, p-value = 0.02901
alternative hypothesis: true mean is less than 46
95 percent confidence interval:
 -Inf 45.8966
sample estimates:
mean of x
 45.26442
```