

# Sri Lanka Institute of Information Technology



Lab sheet No 09

**IT24104163**

**Manathunga.M.N.L.M**

**IT2120 - Probability and Statistics**

B.Sc. (Hons) in Information Technology

## Exercise

```
IT24104163_09.R x
← → | ↵ | 💾 | ☐ Source on Save | 🔍 | ✨ | 📝

1 getwd()
2 setwd("//Users//shanu2000//Desktop//IT24104163Lab_9")
3
4
5
6 # Set seed for reproducibility
7 set.seed(123)
8 # Part (i) Generate random sample
9 sample_size <- 25
10 mu <- 45
11 sigma <- 2
12 baking_times <- rnorm(sample_size, mean = mu, sd = sigma)
13 print(baking_times)
14 # Part (ii) Hypothesis test
15 # H0: mean = 46
16 # H1: mean < 46
17
18 t_test_result <- t.test(baking_times, mu = 46, alternative = "less")
19 print(t_test_result)
20
```

```
Console | Terminal x | Background Jobs x
R ▾ R 4.5.1 · ~/Desktop/IT24104163Lab_9/ ↗
> setwd("//Users//shanu2000//Desktop//IT24104163Lab_9")
```

```

>
>
> # Set seed for reproducibility
> set.seed(123)
> # Part (i) Generate random sample
> sample_size <- 25
> mu <- 45
> sigma <- 2
> baking_times <- rnorm(sample_size, mean = mu, sd = sigma)
> print(baking_times)
[1] 43.87905 44.53965 48.11742 45.14102 45.25858 48.43013 45.92183
[8] 42.46988 43.62629 44.10868 47.44816 45.71963 45.80154 45.22137
[15] 43.88832 48.57383 45.99570 41.06677 46.40271 44.05442 42.86435
[22] 44.56405 42.94799 43.54222 43.74992
> # Part (ii) Hypothesis test
> # H0: mean = 46
> # H1: mean < 46
>
> t_test_result <- t.test(baking_times, mu = 46, alternative = "less")
> print(t_test_result)

```

### One Sample t-test

```

data:  baking_times
t = -2.8167, df = 24, p-value = 0.004776
alternative hypothesis: true mean is less than 46
95 percent confidence interval:
 -Inf 45.58124
sample estimates:
mean of x
44.93334

```

R
Global Environment

Data

t\_test\_result
List of 10

Values

baking_times	num [1:25] 43.9 44.5 48.1 45.1 45.3 ...
mu	45
sample_size	25
sigma	2

Files
Plots
Packages
Help
Viewer
Presentation