Sri Lanka Institute of Information Technology



Lab Submission Lab sheet No 09

IT24103975

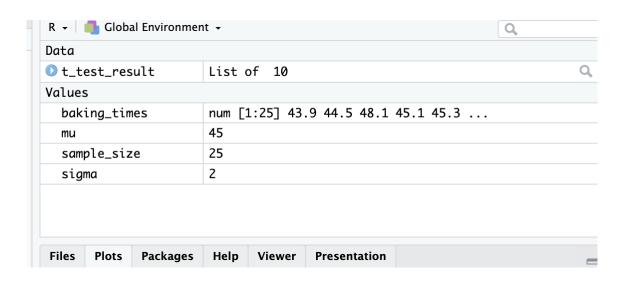
Theertha.H.A.S

IT2120 - Probability and Statistics

B.Sc. (Hons) in Information Technology

Exercise

```
☐ → Addins →
 1 getwd()
   2 setwd("//Users//shanu2000//Desktop//IT24103975_Lab_09")
   3
   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
  baking_times <- rnorm(sample_size, mean = mu, sd = sigma)</pre>
  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")</pre>
  19 print(t_test_result)
  20
```



```
> getwd()
[1] "/Users/shanu2000/Desktop/IT24103975_Lab_09"
> setwd("//Users//shanu2000//Desktop//IT24103975_Lab_09")
> # Set seed for reproducibility
> set.seed(123)
> # Part (i) Generate random sample
> sample_size <- 25</pre>
> mu <- 45
> sigma <- 2
> baking_times <- rnorm(sample_size, mean = mu, sd = sigma)</pre>
> 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")</pre>
> 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
```