Sri Lanka Institute of Information Technology

Lab Submission

Lab sheet No 09

IT24103975

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IT2120 - Probability and Statistics

B.Sc. (Hons) in Information Technology

Exercise

IT24103975_09.R

```r
getwd()
setwd("//Users//shanu2000//Desktop//IT24103975_Lab_09")



# 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)
# 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)

```

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

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```
> 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
> 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
```