IT2120 - Probability and Statistics

Lab Sheet 09

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```r
setwd("C:\\Users\\ashen\\OneDrive\\Desktop\\PS Lab 9")

set.seed(123)

mu <- 45
sigma <- 2
n <- 25

sample_data <- rnorm(n, mean = mu, sd = sigma)
sample_data

t_test_result <- t.test(sample_data, mu = 46, alternative = "less")
t_test_result

if(t_test_result$p.value < 0.05){
  print("Reject H0: The average baking time is less than 46 minutes.")
} else {
  print("Fail to reject H0: Not enough evidence to say average baking time is less than 46 minutes.")
}
```

```
> setwd("C:\\Users\\ashen\\OneDrive\\Desktop\\PS Lab 9")
> set.seed(123)
>
> mu <- 45
> sigma <- 2
> n <- 25
>
> sample_data <- rnorm(n, mean = mu, sd = sigma)
> sample_data
 [1] 43.87905 44.53965 48.11742 45.14102 45.25858 48.43013 45.92183 42.46988 43.62629 44.10868
[11] 47.44816 45.71963 45.80154 45.22137 43.88832 48.57383 45.99570 41.06677 46.40271 44.05442
[21] 42.86435 44.56405 42.94799 43.54222 43.74992
>
> t_test_result <- t.test(sample_data, mu = 46, alternative = "less")
> t_test_result

        One Sample t-test

data:  sample_data
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


>
> if(t_test_result$p.value < 0.05){
+   print("Reject H0: The average baking time is less than 46 minutes.")
+ } else {
+   print("Fail to reject H0: Not enough evidence to say average baking time is less than 46 minutes.")
+ }
[1] "Reject H0: The average baking time is less than 46 minutes."
>
```