

Ps lab sheet 09

IT24103512

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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.

```
> getwd()
[1] "C:/Users/Chamath/OneDrive/Desktop/IT24103512/Lab 09"
> setwd("C:\\Users\\Chamath\\OneDrive\\Desktop\\IT24103512\\Lab 09")
>
>
> # Exercise 1
> # Part i
> baking_times <- rnorm(25, mean = 45, sd = 2)
> print(baking_times)
[1] 41.89384 47.06413 40.42006 45.09636 46.50274 43.84674 43.62082
[8] 46.32852 45.84438 44.99265 40.81645 47.08066 41.51027 47.42125
[15] 44.38804 49.27281 46.63285 44.15913 42.86115 49.32243 47.04157
[22] 44.66312 47.25745 44.85833 40.88271
```

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

```
> test_result <- t.test(baking_times, mu = 46, alternative = "less")
>
> print(test_result)
```

One Sample t-test

```
data: baking_times
t = -2.0684, df = 24, p-value = 0.02477
alternative hypothesis: true mean is less than 46
95 percent confidence interval:
 -Inf 45.81872
sample estimates:
mean of x
 44.95114
```