IT24102561
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PS Lab Sheet 09

Exercise

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.

```
setwd("C:\\Users\\kavin\\Desktop\\IT24102561")
getwd()

## Parameters
mean_time <- 45
sd_time <- 2
sample_size <- 25

## i)
set.seed(123)
sample_data <- rnorm(sample_size, mean = mean_time, sd = sd_time)
print(sample_data)
```

```
> setwd("C:\\Users\\kavin\\Desktop\\IT24102561")
> getwd()
[1] "C:/Users/kavin/Desktop/IT24102561"
> ## Parameters
> mean_time <- 45
> sd_time <- 2
> sample_size <- 25
> ## i)
> set.seed(123)
> sample_data <- rnorm(sample_size, mean = mean_time, sd = sd_time)
> print(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
```

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

```
## ii)
t_test <- t.test(sample_data, mu = 46, alternative = "less")
print(t_test)
```

```
> ## ii)
> t_test <- t.test(sample_data, mu = 46, alternative = "less")
> print(t_test)

        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
```