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

```r
setwd("C:\\Users\\User\\Desktop\\IT24101571")
getwd()
# Generate a random sample of size 25 for the baking time
set.seed(123)
baking_time <- rnorm(25, mean = 45, sd = 2)
baking_time

# One-sample t-test to test if the mean baking time is less than 46 minutes
t_test_result <- t.test(baking_time, mu = 46, alternative = "less", conf.level = 0.95)

t_test_result

```

11:1 (Top Level) R Script

Console Terminal Background Jobs

R 4.5.1 · C:/Users/User/Desktop/IT24101571/

```
> setwd("C:\\Users\\User\\Desktop\\IT24101571")
> getwd()
[1] "C:/Users/User/Desktop/IT24101571"
> # Generate a random sample of size 25 for the baking time
> set.seed(123)
> baking_time <- rnorm(25, mean = 45, sd = 2)
> baking_time
 [1] 43.87905 44.53965 48.11742 45.14102 45.25858 48.43013 45.92183 42.46988 43.62629 44.10868 47.44816
45.71963 45.80154 45.22137 43.88832 48.57383 45.99570 41.06677
[19] 46.40271 44.05442 42.86435 44.56405 42.94799 43.54222 43.74992
> # One-sample t-test to test if the mean baking time is less than 46 minutes
> t_test_result <- t.test(baking_time, mu = 46, alternative = "less", conf.level = 0.95)
> t_test_result

        One Sample t-test

data:  baking_time
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

>
```