IT24103549 - PS Lab 9

Exercise

1)

I.

```
set.seed(123)
sample_data <- rnorm(25, mean = 45, sd = 2)
print(sample_data)
```

```
> set.seed(123)
> sample_data <- rnorm(25, mean = 45, sd = 2)
> print(sample_data)
 [1] 43.87905 44.53965 48.11742 45.14102 45.25858 48.43013
 [7] 45.92183 42.46988 43.62629 44.10868 47.44816 45.71963
[13] 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
[25] 43.74992
```

II.

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

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

```
t_value <- t_test_result$statistic
p_value <- t_test_result$p.value
conf_interval <- t_test_result$conf.int
```

```
> t_value <- t_test_result$statistic
> p_value <- t_test_result$p.value
> conf_interval <- t_test_result$conf.int
```

```
cat("Test statistic (t):", t_value, "\n")
cat("P-value:", p_value, "\n")
cat("Confidence Interval:", conf_interval, "\n")
```

```
> cat("Test statistic (t):", t_value, "\n")
Test statistic (t): -2.81669
> cat("P-value:", p_value, "\n")
P-value: 0.004775633
> cat("Confidence Interval:", conf_interval, "\n")
Confidence Interval: -Inf 45.58124
```