Probability and Statistics - IT2120

Lab sheet 9

IT NO: IT24102364

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Exercise

```
 1  setwd("C:\\Users\\asind\\Desktop\\IT24102364")
 2
 3  #Exercise 1
 4  #Part i
 5  #Generate a random sample of size 25 for baking time
 6  x <- rnorm(25, mean = 45, sd = 2)
 7  print(x)
 8
 9  #Part ii
10  #Hypothesis: H0: mu >= 46 vs H1: mu < 46
11  #5% level of significance
12  t.test(x, mu = 46, alternative = "less")
13  #Since p-value is less than the 0.05, we reject the H0 at 5% level of significance.
14  #Therefore we can conclude that,
15  #the average baking time is less than 46 minutes at a level of 5% level of significance.
```

```
> setwd("C:\\Users\\asind\\Desktop\\IT24102364")
>
> #Exercise 1
> #Part i
> #Generate a random sample of size 25 for baking time
> x <- rnorm(25, mean = 45, sd = 2)
> print(x)
 [1] 47.25356 42.99147 44.56873 42.95337 42.46462 44.92724 42.76751 44.84688 45.17520 43.59653
[11] 42.53358 46.71756 46.15250 45.45924 44.02877 42.42212 42.49224 45.37248 44.20568 44.35939
[21] 46.71234 46.58316 47.62462 47.99741 42.22040
>
> #Part ii
> #Hypothesis: H0: mu >= 46 vs H1: mu < 46
> #5% level of significance
> t.test(x, mu = 46, alternative = "less")

        One Sample t-test

data:  x
t = -3.7091, df = 24, p-value = 0.0005476
alternative hypothesis: true mean is less than 46
95 percent confidence interval:
     -Inf 45.27652
sample estimates:
mean of x
 44.65706

> #Since p-value is less than the 0.05, we reject the H0 at 5% level of significance.
> #Therefore we can conclude that,
> #the average baking time is less than 46 minutes at a level of 5% level of significance.
>
```