Sri Lanka Institute of Information Technology

Lab Submission 09

IT24102218

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Probability and Statistics - IT2120

B.Sc. (Hons) in Information Technology

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\\IT24102218")

## (01)
# (i)
baking_times <- rnorm(25, mean = 45, sd = 2)
baking_times
# (ii)
t.test(baking_times, mu = 46, alternative = "less")
```

```
> setwd("C:\\Users\\User\\Desktop\\IT24102218")
> ## (01)
> # (i)
> baking_times <- rnorm(25, mean = 45, sd = 2)
> baking_times
 [1] 45.19454 44.52379 41.48449 45.27219 43.34831
 [6] 48.62634 44.41814 44.00943 43.13757 47.19691
[11] 45.73071 46.69129 46.96888 41.96535 46.21485
[16] 44.39231 46.52979 46.28558 43.91759 47.45579
[21] 41.04838 49.52082 45.94574 45.17223 49.50980
> # (ii)
> t.test(baking_times, mu = 46, alternative = "less")

        One Sample t-test

data:  baking_times
t = -1.3731, df = 24, p-value = 0.09121
alternative hypothesis: true mean is less than 46
95 percent confidence interval:
     -Inf 46.15192
sample estimates:
mean of x
 45.38243
```