Sri Lanka Institute of Information Technology

Lab Submission
Lab sheet No - 09

IT24100577

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Probability and Statistics - IT2120

B.Sc. (Hons) in Information Technology

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.

    ```
    > # Q - 1
    > # (part i)
    > b_time <- rnorm(25, mean = 45, sd = 2)
    > print(b_time)
     [1] 48.99028 45.52922 43.42052 45.07622 45.50054 44.98147 42.53887
     [8] 47.39108 45.42923 42.44141 47.40759 46.14264 44.07214 44.85866
    [15] 42.48266 44.35947 47.17006 42.66150 46.25812 47.04257 43.98229
    [22] 44.99303 41.88858 43.54136 44.56512
    ```

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

    ```
    > # (part ii)
    > t_result <- t.test(b_time, mu = 46, alternative = "less")
    > print(t_result)

            One Sample t-test

    data:  b_time
    t = -2.9703, df = 24, p-value = 0.003329
    alternative hypothesis: true mean is less than 46
    95 percent confidence interval:
        -Inf 45.5374
    sample estimates:
    mean of x
     44.90898
    ```