Sri Lanka Institute of Information Technology

Lab Submission
Lab sheet No: 07

IT24101603

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Probability and Statistics | IT2120

B.Sc. (Hons) in Information Technology

Exercise

1. A train arrives at a station uniformly between 8:00 a.m. and 8:40 a.m. Let the random variable X represent the number of minutes the train arrives after 8:00 a.m. What is the probability that the train arrives between 8:10 a.m. and 8:25 a.m.?

```
> punif(25, min = 0, max = 40, lower.tail = TRUE) -
+   punif(10, min = 0, max = 40, lower.tail = TRUE)
[1] 0.375
```

2. The time (in hours) to complete a software update is exponentially distributed with rate $\lambda = \frac{1}{3}$. Find the probability that an update will take at most 2 hours.

```
> pexp(2,rate = 1/3,lower.tail = TRUE)
[1] 0.4865829
```

3. Suppose IQ scores are normally distributed with a mean of 100 and a standard deviation of 15.
    i. What is the probability that a randomly selected person has an IQ above 130?
    ii. What IQ score represents the 95th percentile?

```
> 1-pnorm(130, mean = 100, sd = 15, lower.tail = TRUE)
[1] 0.02275013
>
> qnorm(0.95, mean = 100, sd = 15)
[1] 124.6728
```