

# Sri Lanka Institute of Information Technology



Lab Submission  
Lab sheet No: 06

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**Probability and Statistics | IT2120**

B.Sc. (Hons) in Information Technology

## **Exercise**

1. An IT company claims that their newly developed learning platform improves student performance in online tests. According to previous data, 85% of students who used the platform passed their online tests. A batch of 50 students is selected at random who have completed the course using this platform. Let  $X$  denote the number of students who passed the test out of 50 students.
  - i. What is the distribution of  $X$ ?
  - ii. What is the probability that at least 47 students passed the test?

```
> ## Binomial Distribution
>
> pbinom(46,50,0.85, lower.tail = FALSE)
[1] 0.04604658
```

2. A call center receives an average of 12 customer calls per hour.
  - i. What is the random variable ( $X$ ) for the problem?
  - ii. What is the distribution of  $X$ ?
  - iii. What is the probability that exactly 15 calls are received in an hour?

```
> ## X - Number of calls a call center receives for an hour
>
> ## Poisson Distribution
>
> dpois(15,12)
[1] 0.07239112
```