

Sri Lanka Institute of Information Technology



Lab Submission
06

IT24102798

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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 are 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 ?
 - Random Variable X has Binomial Distribution with $n = 50$ and $p = 0.85$.
 - ii. What is the probability that at least 47 students passed the test?

```
5
6 # Question 01
7
8 # (ii)
9
10 pbinom(46, 50, 0.85, lower.tail = FALSE)
11
```

```
> # Question 01
>
> # (ii)
>
> 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?
 - Number of Customer Calls on a given hour.
 - ii. What is the distribution of X?
 - Random Variable X has Poisson Distribution with $\lambda = 12$.
 - iii. What is the probability that exactly 15 calls are received in an hour?

```
12  
13 # Question 02  
14  
15 # (iii)  
16  
17 dpois(15, 12)  
18  
19
```

```
>  
> # Question 02  
>  
> # (iii)  
>  
> dpois(15, 12)  
[1] 0.07239112  
>
```