Sri Lanka Institute of Information Technology

Lab Submission

Lab sheet No:06

IT24103838

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Probability And Statistics | IT2120

B.Sc. (Hons) in Information Technology

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?

```
> setwd("/Users/thimira/Desktop/IT24103669")
>
> ##Question 1
> #Part 1
> #Binomial Distribution
> #Here, 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?

```
> #Part 2
> 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?

```
> ##Question 2
> #Part 1
> #Number of calls in 1 hour
```

    ii. What is the distribution of X?

```
> #Part 2
>  #Poisson distribution
> #Here, random variable X has poisson distribution with lambda=12
>
```

    iii. What is the probability that exactly 15 calls are received in an hour?

```
> #Part 3
> dpois(15, 12)
[1] 0.07239112
>
```