IT2120- Probability and Statistics

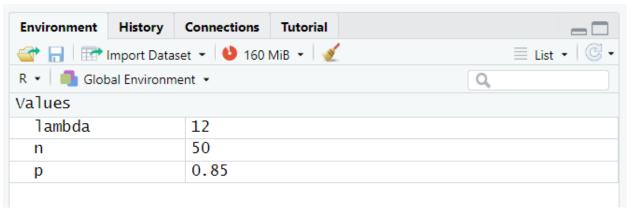
Lab Sheet 07

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## **Exercise**

- 1. An IT company claims that their newly developed learning platform improves stu dent 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?
- 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?



```
> setwd("C:\\Users\\sesal\\OneDrive\\Desktop\\IT24102543_06")
> getwd()
[1] "C:/Users/sesal/OneDrive/Desktop/IT24102543_06"
> #Question 1
> #Part 1
> #Binomial Distribution
> n < -50
> p < -0.85
> #Part 2
> \#P(X >= 47) = 1-P(X <= 46)
> 1 - pbinom(46, n, p, lower.tail = TRUE)
[1] 0.04604658
> #pbinom(46, n, p, lower.tail = FALSE)
> #Question 2
> #Part 1
> #Number of calls a call center recieves per hour
> #Part 2
> #Poisson Distribution
> #Lambda = 12
> #Part 3
> lambda <- 12
> dpois(15,lambda)
[1] 0.07239112
> |
```