Faculty of Computing

Year 2 Semester 1 (2025)

IT2120 - Probability and Statistics   Lab Sheet 06

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?

   `i.Binomial Distribution: n=50 and p=0.85`

   ii. What is the probability that at least 47 students passed the test?

   ```
   cat("ii.Probability that at least 47 Students passed: ",
         1- pbinom(46, 50, 0.85,lower.tail = TRUE), "\n")
   ```

   `ii.Probability that at least 47 Students passed:  0.04604658`

2. A call center receives an average of 12 customer calls per hour.

   `i.Random variable(X): Number of customer calls recieve in one hour`

   `ii.Poisson Distribution: lambda=12`

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

   ```
   cat("iii.Probability that exactly 15 calls are received in an hour: ",
       dpois(15,12),"\n")
   ```

   `iii.Probability that exactly 15 calls are received in an hour:  0.07239112`