Exercise 1

1. The random variable

for each trial. The parameters are:

- **Number of trials (n): 50**
- **Probability of success (p): 0.85**

Therefore,

X~B (50,0.85).

2.

```
getwd
setwd("C:\\Users\\IT24100648\\Desktop\\IT24100648")
1 - pbinom(46, 50, 0.85, lower.tail = TRUE)
dpois(15, 12)
```

```
getwd
setwd("C:\\Users\\IT24100648\\Desktop\\IT24100648")
# Binomial Distribution
n <- 50
p <- 0.85

# P(X >= 47)
prob_at_least_47 <- sum(dbinom(47:50, size = n, prob = p))
print(paste("P(X >= 47):", prob_at_least_47))

# Using cumulative distribution function
prob_at_least_47 <- 1 - pbinom(46, size = n, prob = p)
print(paste("P(X >= 47):", prob_at_least_47))
# Poisson Distribution
lambda <- 12

# P(X = 15)
prob_15_calls <- dpois(15, lambda = lambda)
print(paste("P(X = 15):", prob_15_calls))
```

Exercise 2

1. The random variable

X is the number of customer calls received in an hour.

2. X follows a Poisson distribution. This is because it counts the number of events (calls) occurring in a fixed interval (one hour) at a known average rate (λ).