Name: Siddhesh Dilip Khairnar		
Class: SY	Division: B	Roll No: 272028
Semester: IV	Academic Year: 2022-2023	
Subject Name & Code: Probability and Statistics: ES22201AD		
Title of Assignment: Binomial Distribution		
Date of Performance: 06-02-2023	Date of Submission: 13-02-2023	

PAS Experiment No. – 3

Background information:

The binomial distribution is a probability distribution that describes the number of successes in a fixed number of independent trials, each with the same probability of success.

The binomial distribution has two parameters:
1. The number of trials, denoted by "n"
2. The probability of success on each trial, denoted by "p"

The probability of getting exactly "k" successes in "n" independent trials with probability of success "p" is given by the following formula:
$P (X = k) = (n \text{ choose } k) * p^k * (1 - p)^{(n - k)}$
where "n choose k" is the binomial coefficient, which can be calculated as:
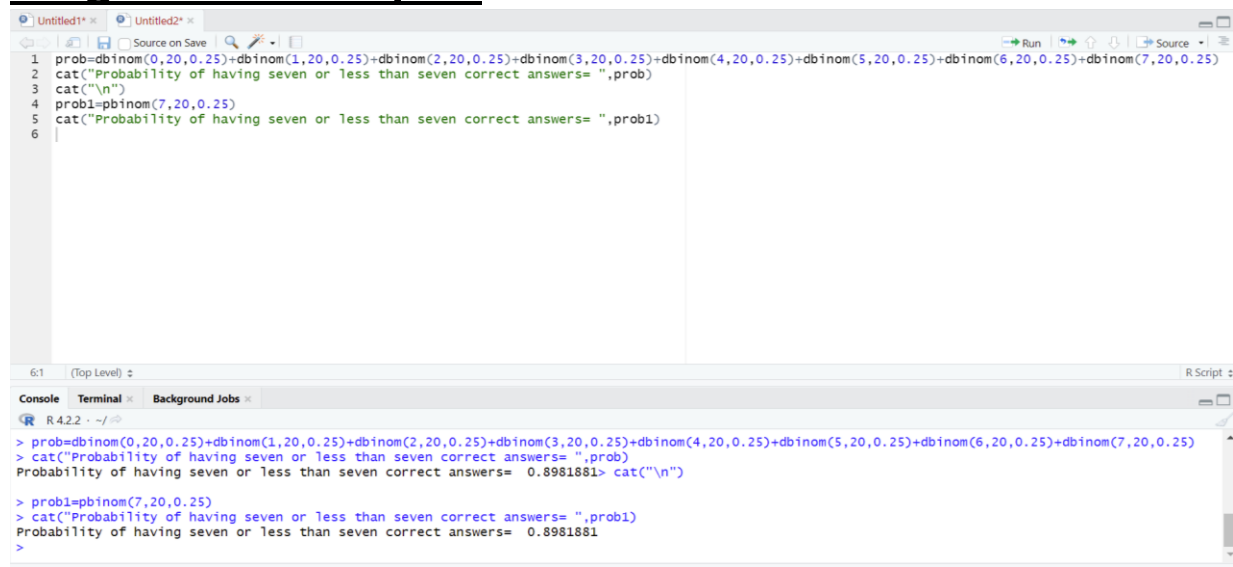$(n \text{ choose } k) = n! / (k! * (n - k)!)$
where "!" denotes the factorial function.

In R, you can use the dbinom() function to calculate probabilities from the binomial distribution. The function takes three arguments:
1. The number of successes, denoted by "x"
2. The number of trials, denoted by "n"
3. The probability of success on each trial, denoted by "p"

Program and Output:

```
1  prob=dbinom(0,20,0.25)+dbinom(1,20,0.25)+dbinom(2,20,0.25)+dbinom(3,20,0.25)+dbinom(4,20,0.25)+dbinom(5,20,0.25)+dbinom(6,20,0.25)+dbinom(7,20,0.25)
2  cat("Probability of having seven or less than seven correct answers= ",prob)
3  cat("\n")
4  prob1=pbinom(7,20,0.25)
5  cat("Probability of having seven or less than seven correct answers= ",prob1)
6
```

```
> prob=dbinom(0,20,0.25)+dbinom(1,20,0.25)+dbinom(2,20,0.25)+dbinom(3,20,0.25)+dbinom(4,20,0.25)+dbinom(5,20,0.25)+dbinom(6,20,0.25)+dbinom(7,20,0.25)
> cat("Probability of having seven or less than seven correct answers= ",prob)
Probability of having seven or less than seven correct answers=  0.8981881> cat("\n")

> prob1=pbinom(7,20,0.25)
> cat("Probability of having seven or less than seven correct answers= ",prob1)
Probability of having seven or less than seven correct answers=  0.8981881
>
```

Conclusion: We successfully solve different problems regarding Binomial and Poisson Distribution on paper and in R studio also