

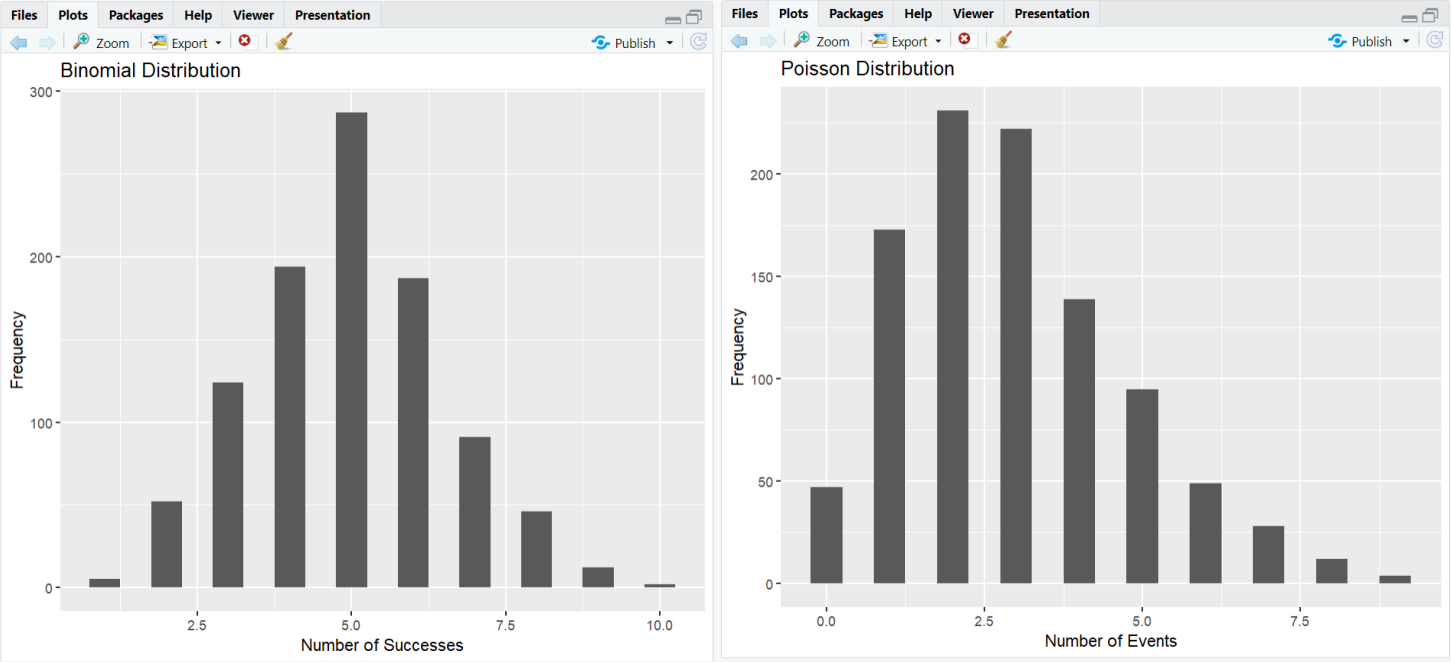
Exp-2.2:

Code:

```
RStudio
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Go to file/function Addins
Untitled1* x
Source on Save
Run
1 # Load necessary libraries
2 library(ggplot2)
3
4 #20BCS4885_Sandeep Kumar
5 # Simulate Bernoulli distribution
6 bernoulli_data <- rbinom(n = 1000, size = 1, prob = 0.3)
7
8 # Simulate Binomial distribution
9 binomial_data <- rbinom(n = 1000, size = 10, prob = 0.5)
10
11 # Simulate Poisson distribution
12 poisson_data <- rpois(n = 1000, lambda = 3)
13
14 # Plot probability mass functions (PMFs)
15 ggplot(data.frame(x = bernoulli_data), aes(x = x)) +
16   geom_bar(stat = "count", width = 0.5) +
17   labs(title = "Bernoulli Distribution", x = "Outcome (Success/Failure)", y = "Frequency")
18
19 ggplot(data.frame(x = binomial_data), aes(x = x)) +
20   geom_bar(stat = "count", width = 0.5) +
21   labs(title = "Binomial Distribution", x = "Number of Successes", y = "Frequency")
22
23 ggplot(data.frame(x = poisson_data), aes(x = x)) +
24   geom_bar(stat = "count", width = 0.5) +
25   labs(title = "Poisson Distribution", x = "Number of Events", y = "Frequency")
26
27 25:1 (Top Level) R Script
```

```
R 4.3.2 ~ /
+   labs(title = "Binomial Distribution", x = "Number of Successes", y = "Frequency")
>
> #ggplot(data.frame(x = poisson_data), aes(x = x)) +
> #   geom_bar(stat = "count", width = 0.5) +
> #   labs(title = "Poisson Distribution", x = "Number of Events", y = "Frequency")
>
```

Output:



## Exp-2.3:

### Code:

RStudio

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Go to file/function Addins

```
1 # Load necessary libraries
2 library(ggplot2)
3
4 #20BCS4885_Sandeep Kumar
5 # Simulate Uniform distribution
6 uniform_data <- runif(1000, min = 0, max = 1)
7
8 # Simulate Exponential distribution
9 exponential_data <- rexp(1000, rate = 0.5)
10
11 # Simulate Normal distribution
12 normal_data <- rnorm(1000, mean = 0, sd = 1)
13
14 # Plot density plots
15 ggplot(data.frame(x = uniform_data), aes(x = x)) +
16   geom_density(fill = "blue", alpha = 0.5) +
17   labs(title = "Uniform Distribution", x = "Value", y = "Density")
18
19 ggplot(data.frame(x = exponential_data), aes(x = x)) +
20   geom_density(fill = "green", alpha = 0.5) +
21   labs(title = "Exponential Distribution", x = "Value", y = "Density")
22
23 ggplot(data.frame(x = normal_data), aes(x = x)) +
24   geom_density(fill = "orange", alpha = 0.5) +
25   labs(title = "Normal Distribution", x = "Value", y = "Density")
26
27 13:1 (Top Level) R Script
```

```
R 4.3.2 ~ /
> # geom_density(fill = "green", alpha = 0.5) +
> # labs(title = "Exponential Distribution", x = "Value", y = "Density")
>
> ggplot(data.frame(x = normal_data), aes(x = x)) +
+   geom_density(fill = "orange", alpha = 0.5) +
+   labs(title = "Normal Distribution", x = "Value", y = "Density")
>
```

### Output:

