Sri Lanka Institute of Information Technology

Lab Submission
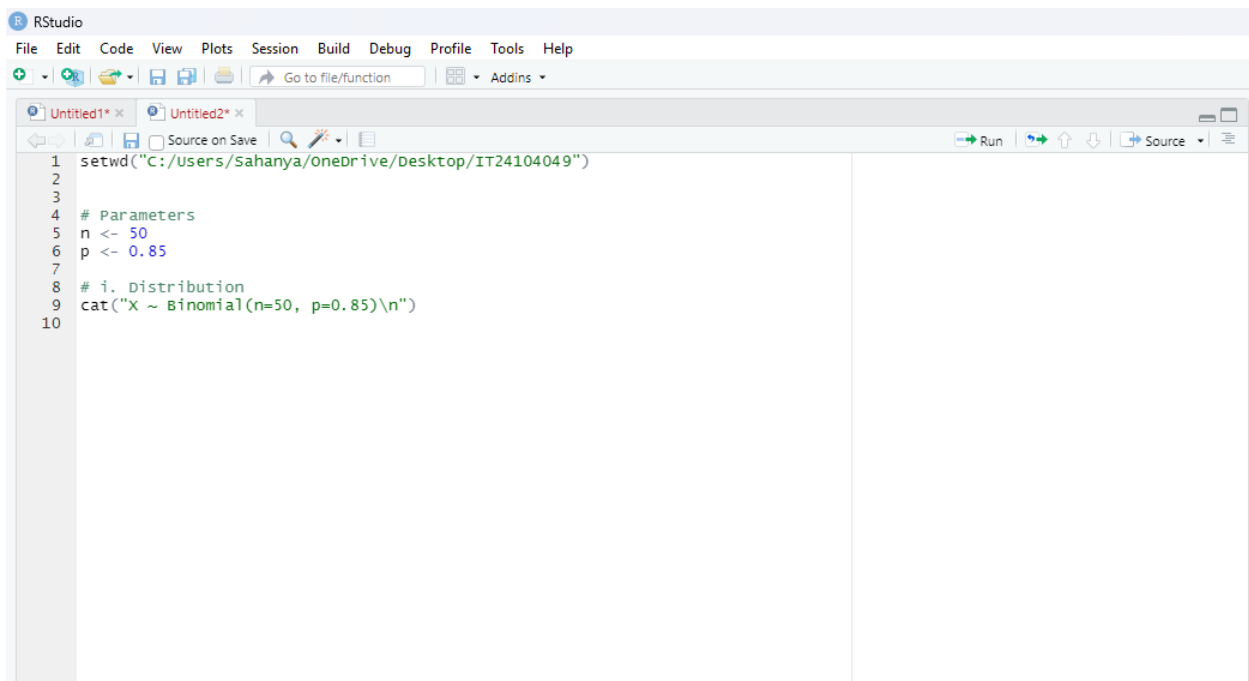# <Lab Sheet 6>

<IT24104049>

<Hewa V S S >

Probability and Statistics - IT2120

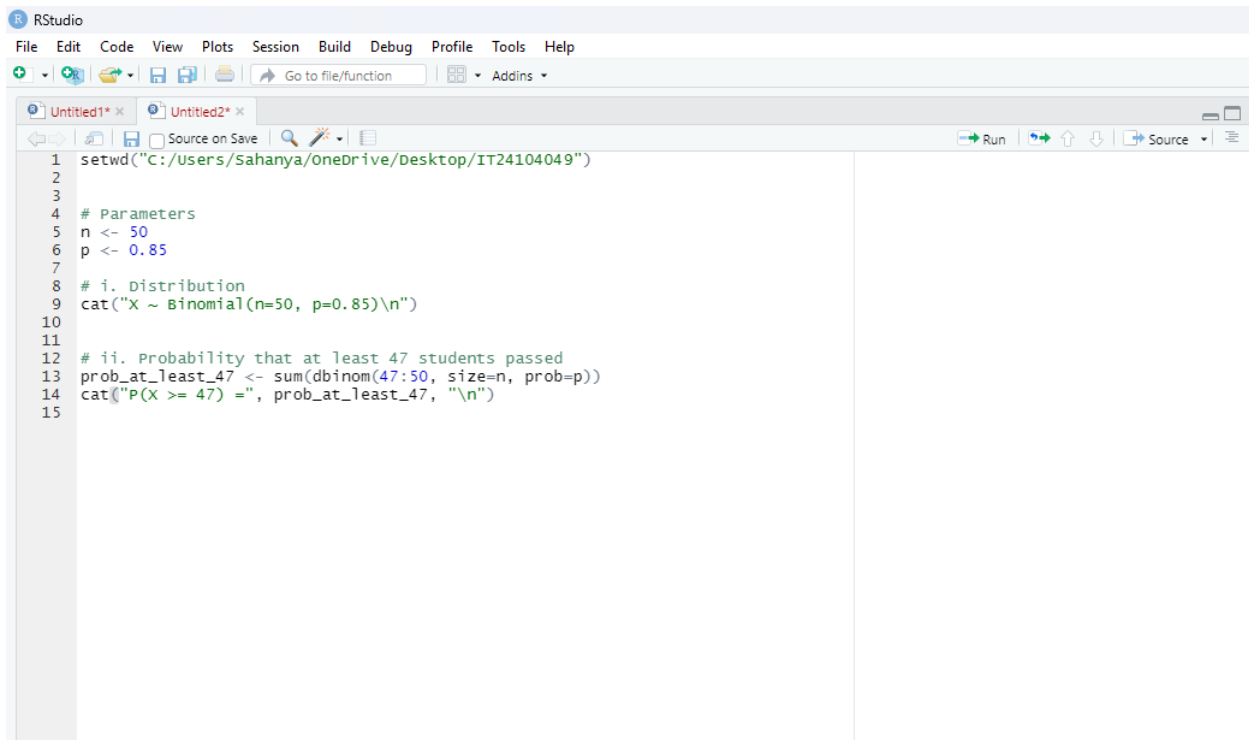B.Sc. (Hons) in Information Technology

Exercise

1)

(i)


```
1  setwd("C:/Users/Sahanya/OneDrive/Desktop/IT24104049")
2
3
4  # Parameters
5  n <- 50
6  p <- 0.85
7
8  # i. Distribution
9  cat("X ~ Binomial(n=50, p=0.85)\n")
10
```



```
> setwd("C:/Users/Sahanya/OneDrive/Desktop/IT24104049")
>
>
> # Parameters
> n <- 50
> p <- 0.85
>
> # i. Distribution
> cat("X ~ Binomial(n=50, p=0.85)\n")
X ~ Binomial(n=50, p=0.85)
> |
```

(ii)

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

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```r
1  setwd("C:/Users/Sahanya/OneDrive/Desktop/IT24104049")
2
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9  cat("X ~ Binomial(n=50, p=0.85)\n")
10
11
12 # ii. Probability that at least 47 students passed
13 prob_at_least_47 <- sum(dbinom(47:50, size=n, prob=p))
14 cat("P(X >= 47) =", prob_at_least_47, "\n")
15
```

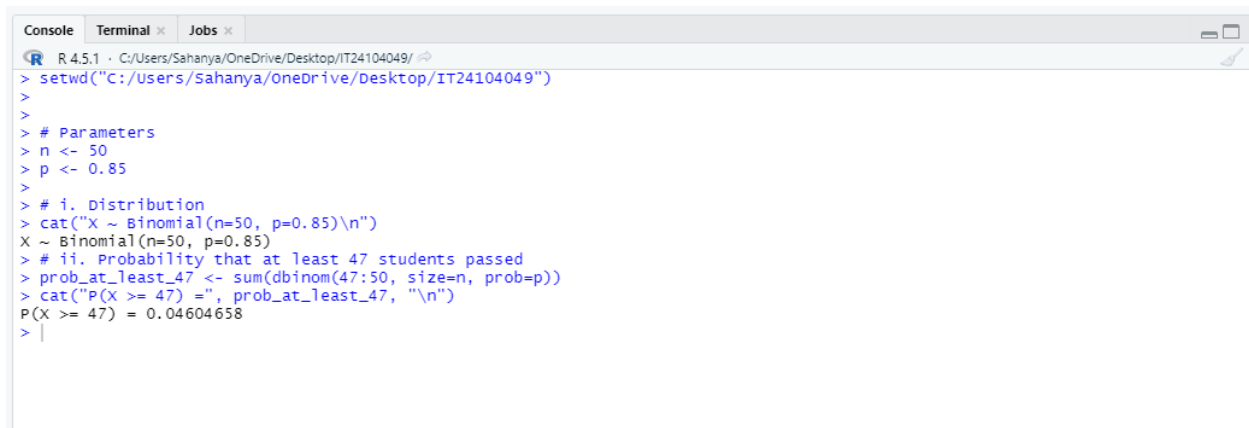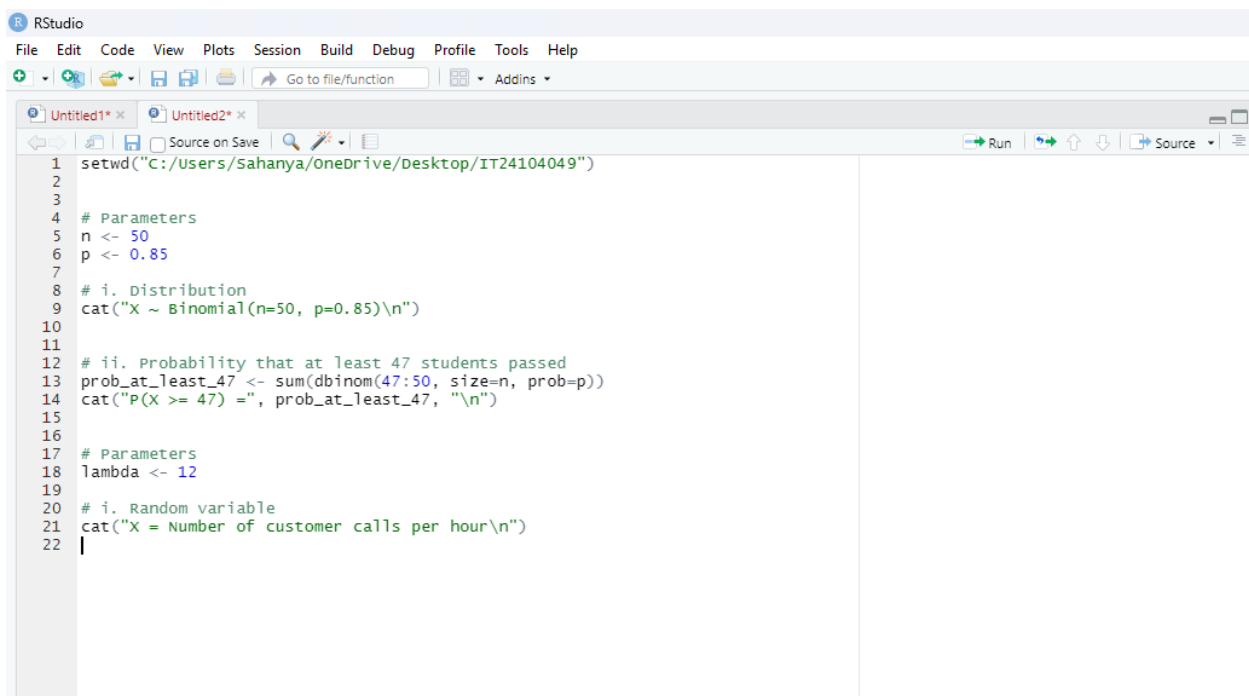Console   Terminal   Jobs

R 4.5.1 · C:/Users/Sahanya/OneDrive/Desktop/IT24104049/

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>
>
> # Parameters
> n <- 50
> p <- 0.85
>
> # i. Distribution
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X ~ Binomial(n=50, p=0.85)
> # ii. Probability that at least 47 students passed
> prob_at_least_47 <- sum(dbinom(47:50, size=n, prob=p))
> cat("P(X >= 47) =", prob_at_least_47, "\n")
P(X >= 47) = 0.04604658
> |
```
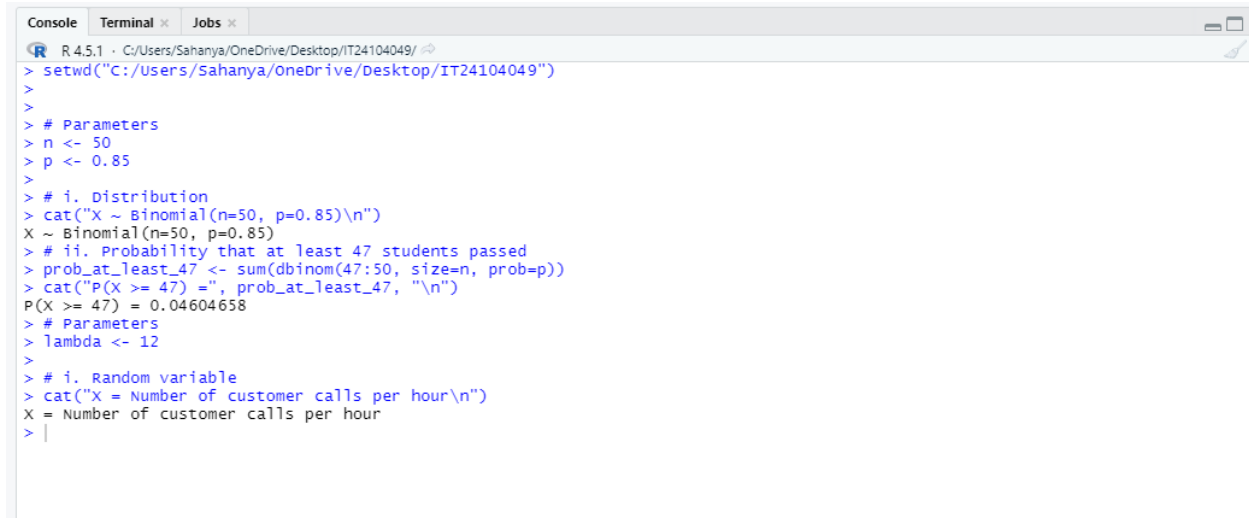
2

2)

(i)


```
RStudio
File  Edit  Code  View  Plots  Session  Build  Debug  Profile  Tools  Help

  Untitled1*       Untitled2*

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14  cat("P(X >= 47) =", prob_at_least_47, "\n")
15
16
17  # Parameters
18  lambda <- 12
19
20  # i. Random variable
21  cat("X = Number of customer calls per hour\n")
22  |
```
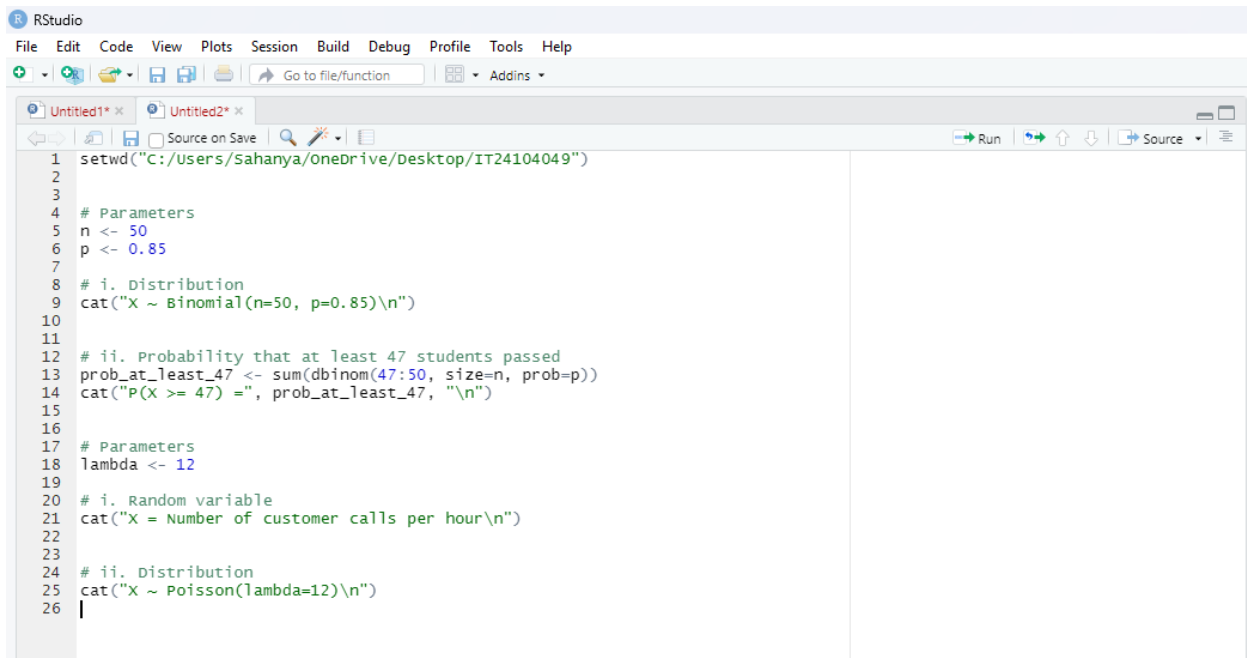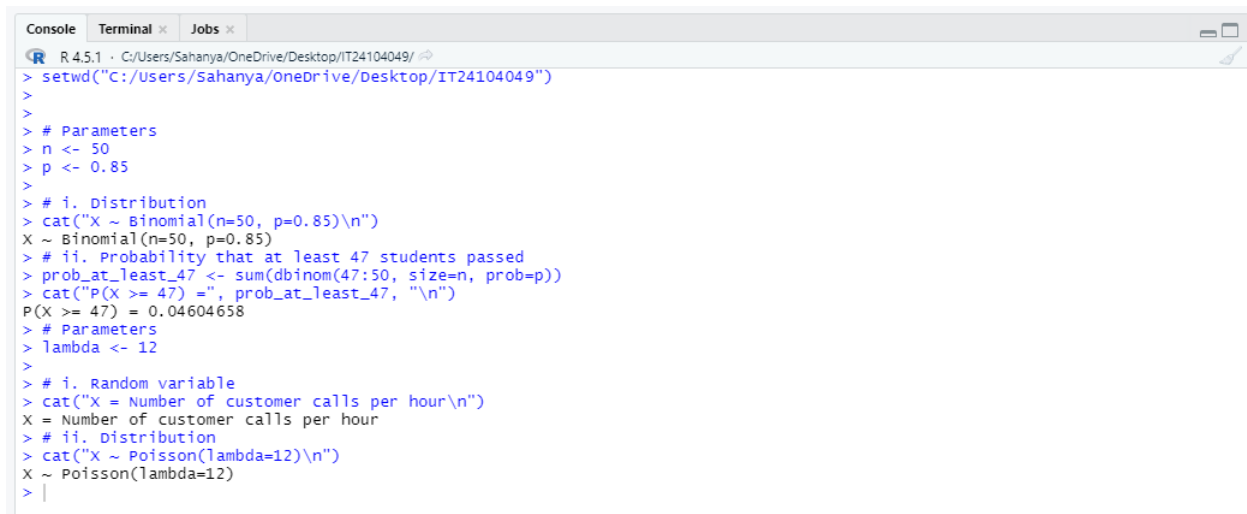
```
Console   Terminal   Jobs
R  R 4.5.1 · C:/Users/Sahanya/OneDrive/Desktop/IT24104049/
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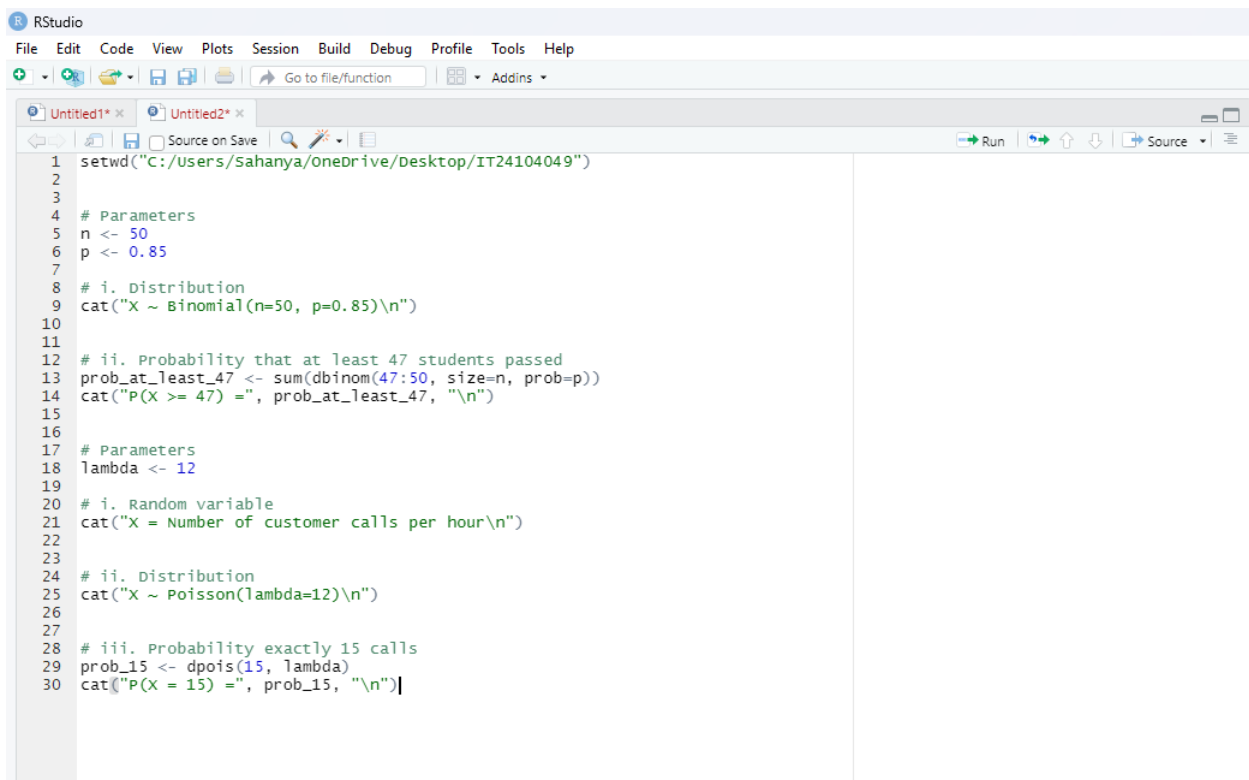
3

(ii)


```
 1  setwd("C:/Users/Sahanya/OneDrive/Desktop/IT24104049")
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14  cat("P(X >= 47) =", prob_at_least_47, "\n")
15
16
17  # Parameters
18  lambda <- 12
19
20  # i. Random variable
21  cat("X = Number of customer calls per hour\n")
22
23
24  # ii. Distribution
25  cat("X ~ Poisson(lambda=12)\n")
26  |
```

```
Console   Terminal ×   Jobs ×
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> lambda <- 12
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> cat("X = Number of customer calls per hour\n")
X = Number of customer calls per hour
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> cat("X ~ Poisson(lambda=12)\n")
X ~ Poisson(lambda=12)
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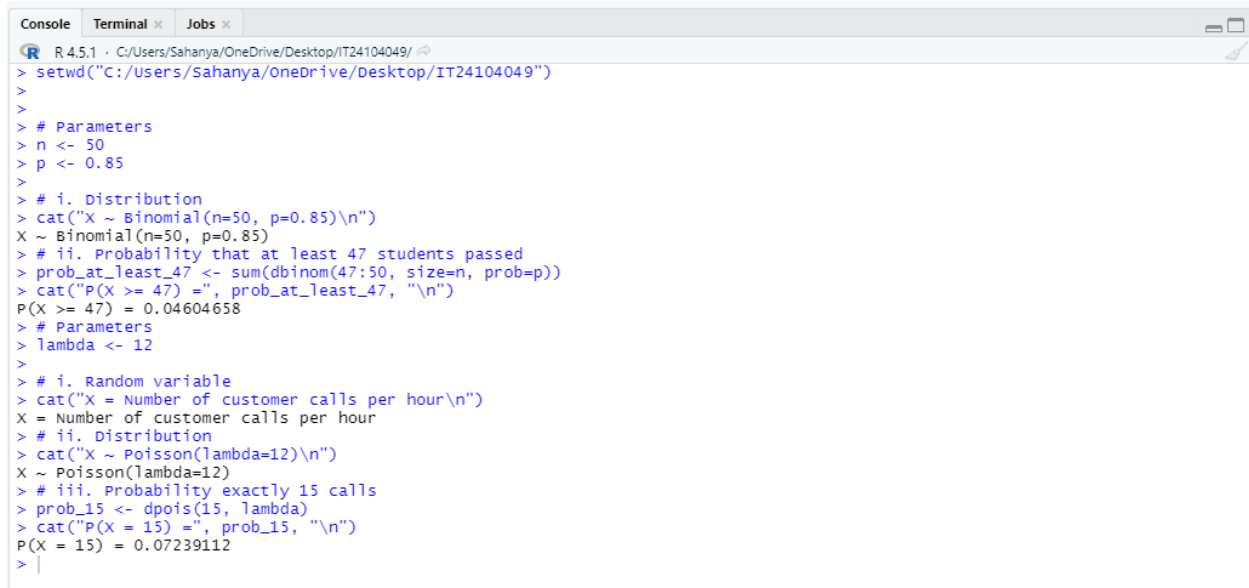
4

(iii)

File   Edit   Code   View   Plots   Session   Build   Debug   Profile   Tools   Help

Untitled1*   Untitled2*

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17  # Parameters
18  lambda <- 12
19
20  # i. Random variable
21  cat("X = Number of customer calls per hour\n")
22
23
24  # ii. Distribution
25  cat("X ~ Poisson(lambda=12)\n")
26
27
28  # iii. Probability exactly 15 calls
29  prob_15 <- dpois(15, lambda)
30  cat("P(X = 15) =", prob_15, "\n")
```

Console   Terminal   Jobs

R 4.5.1 · C:/Users/Sahanya/OneDrive/Desktop/IT24104049/

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P(X >= 47) = 0.04604658
> # Parameters
> lambda <- 12
>
> # i. Random variable
> cat("X = Number of customer calls per hour\n")
X = Number of customer calls per hour
> # ii. Distribution
> cat("X ~ Poisson(lambda=12)\n")
X ~ Poisson(lambda=12)
> # iii. Probability exactly 15 calls
> prob_15 <- dpois(15, lambda)
> cat("P(X = 15) =", prob_15, "\n")
P(X = 15) = 0.07239112
> |
```