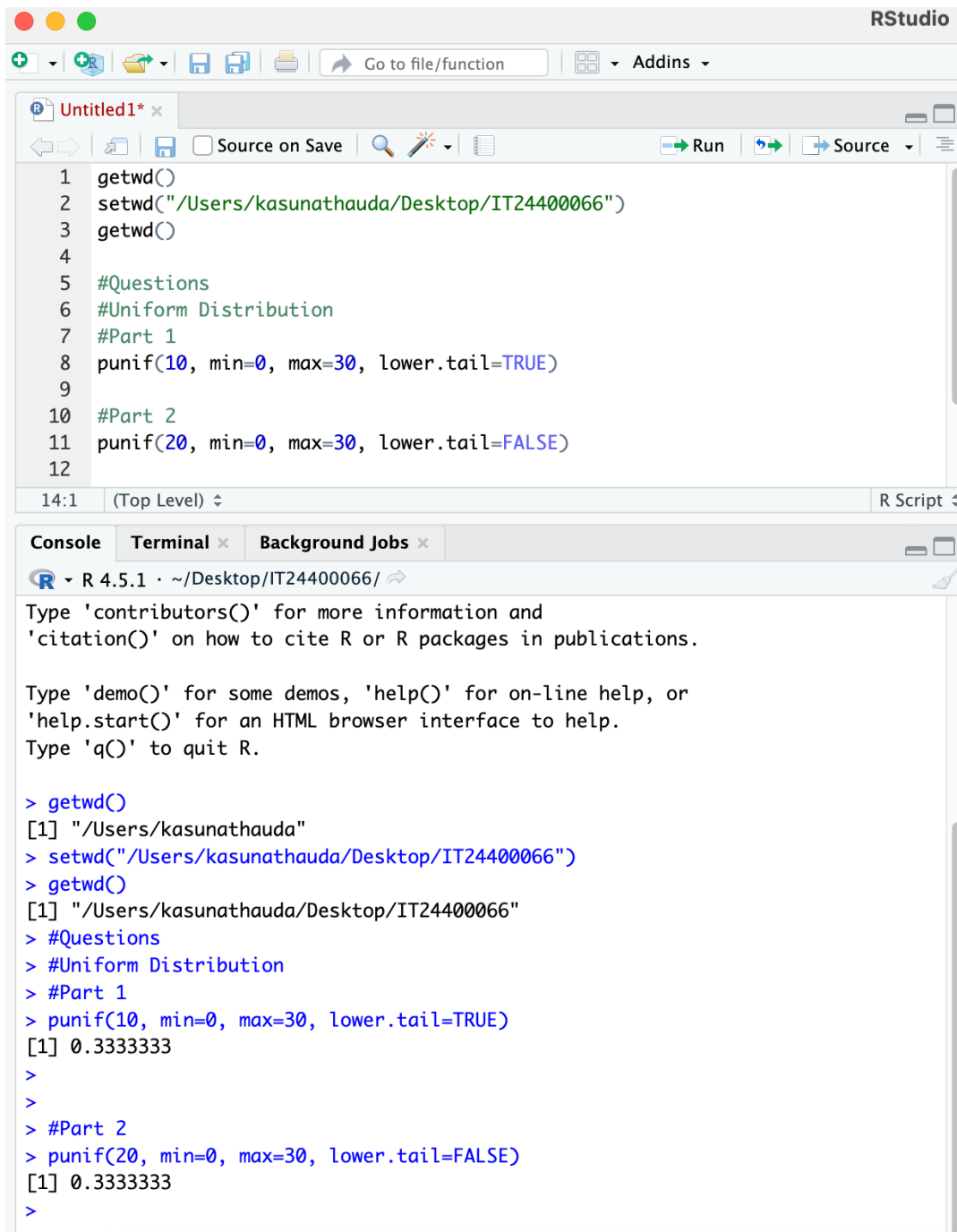


Probability and Statistics - IT2120

Lab Sheet 07

Question 01



The screenshot shows the RStudio interface. The top toolbar includes icons for file operations and a search bar. The main editor window, titled 'Untitled1*', contains the following R code:

```
1 getwd()
2 setwd("/Users/kasunathauda/Desktop/IT24400066")
3 getwd()
4
5 #Questions
6 #Uniform Distribution
7 #Part 1
8 punif(10, min=0, max=30, lower.tail=TRUE)
9
10 #Part 2
11 punif(20, min=0, max=30, lower.tail=FALSE)
12
```

The console window at the bottom shows the execution of the code:

```
R - R 4.5.1 - ~/Desktop/IT24400066/
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> getwd()
[1] "/Users/kasunathauda"
> setwd("/Users/kasunathauda/Desktop/IT24400066")
> getwd()
[1] "/Users/kasunathauda/Desktop/IT24400066"
> #Questions
> #Uniform Distribution
> #Part 1
> punif(10, min=0, max=30, lower.tail=TRUE)
[1] 0.3333333
>
>
> #Part 2
> punif(20, min=0, max=30, lower.tail=FALSE)
[1] 0.3333333
>
~
```

```
Untitled1* x
Source on Save
Run
Source

10 #Part 2
11 punif(20, min=0, max=30, lower.tail=FALSE)
12
13 #Questions 2
14 #Exponential Distribution
15 #Part 1
16 rate <- 1/2
17 pexp(3, rate=rate, lower.tail=TRUE)
18
19 #Part 2
20 pexp(4, rate=rate, lower.tail=FALSE)
21
22 #Part 3
23 pexp(4, rate=rate) - pexp(2, rate=rate, lower.tail = TRUE)
24

24:1 (Top Level) R Script

Console Terminal x Background Jobs x
R - R 4.5.1 · ~/Desktop/IT24400066/
> #Questions 2
> #Exponential Distribution
> #Part 1
> rate <- 1/2
> pexp(3, rate=rate, lower.tail=TRUE)
[1] 0.7768698
>
>
> #Part 2
> pexp(4, rate=rate, lower.tail=FALSE)
[1] 0.1353353
>
>
> #Part 3
> pexp(4, rate=rate) - pexp(2, rate=rate, lower.tail = TRUE)
[1] 0.2325442
>
```

Untitled1* x

Source on Save Run Source

```
21
22 #Part 3
23 pexp(4, rate=rate) - pexp(2, rate=rate, lower.tail = TRUE)
24
25
26 #Questions 3
27 #Normal Distribution
28 #Part 1
29 1-pnorm(37.9, mean = 36.8, sd=0.4, lower.tail = TRUE)
30
31 #Part 2
32 pnorm(36.9, mean=36.8, sd=0.4, lower.tail = TRUE) - pnorm(36.4, mean=36.8, sd=0.4, lower.tail = TRUE)
33
34 #Part 3
35 qnorm(0.012, mean=36.8, sd=0.4, lower.tail=TRUE)
36
37 #Part 4
38 qnorm(0.01, mean=36.8, sd=0.4, lower.tail=FALSE)
39
```

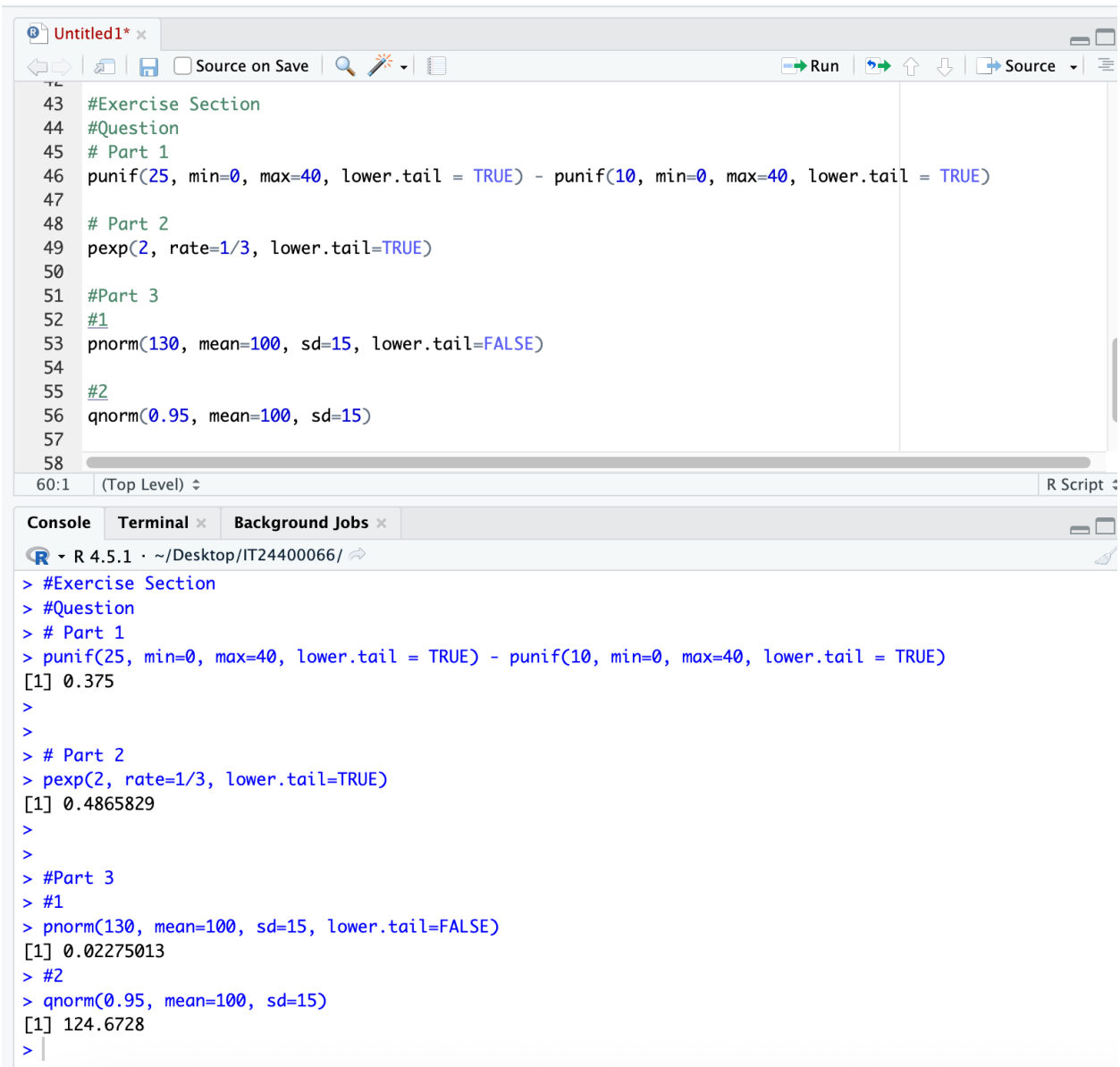
38:49 (Top Level) R Script

Console Terminal Background Jobs

R 4.5.1 · ~/Desktop/IT24400066/

```
> #Questions 3
> #Normal Distribution
> #Part 1
> 1-pnorm(37.9, mean = 36.8, sd=0.4, lower.tail = TRUE)
[1] 0.002979763
>
> #Part 2
> pnorm(36.9, mean=36.8, sd=0.4, lower.tail = TRUE) - pnorm(36.4, mean=36.8, sd=0.4, lower.tail = TRUE)
[1] 0.4400511
>
> #Part 3
> qnorm(0.012, mean=36.8, sd=0.4, lower.tail=TRUE)
[1] 35.89715
>
> #Part 4
> qnorm(0.01, mean=36.8, sd=0.4, lower.tail=FALSE)
[1] 37.73054
>
```

Question 2



The screenshot displays the RStudio environment. The top pane shows a script file named 'Untitled1*' with the following R code:

```
43 #Exercise Section
44 #Question
45 # Part 1
46 punif(25, min=0, max=40, lower.tail = TRUE) - punif(10, min=0, max=40, lower.tail = TRUE)
47
48 # Part 2
49 pexp(2, rate=1/3, lower.tail=TRUE)
50
51 #Part 3
52 #1
53 pnorm(130, mean=100, sd=15, lower.tail=FALSE)
54
55 #2
56 qnorm(0.95, mean=100, sd=15)
57
58
```

The bottom pane shows the console output for the executed code:

```
> #Exercise Section
> #Question
> # Part 1
> punif(25, min=0, max=40, lower.tail = TRUE) - punif(10, min=0, max=40, lower.tail = TRUE)
[1] 0.375
>
>
> # Part 2
> pexp(2, rate=1/3, lower.tail=TRUE)
[1] 0.4865829
>
>
> #Part 3
> #1
> pnorm(130, mean=100, sd=15, lower.tail=FALSE)
[1] 0.02275013
> #2
> qnorm(0.95, mean=100, sd=15)
[1] 124.6728
>
```