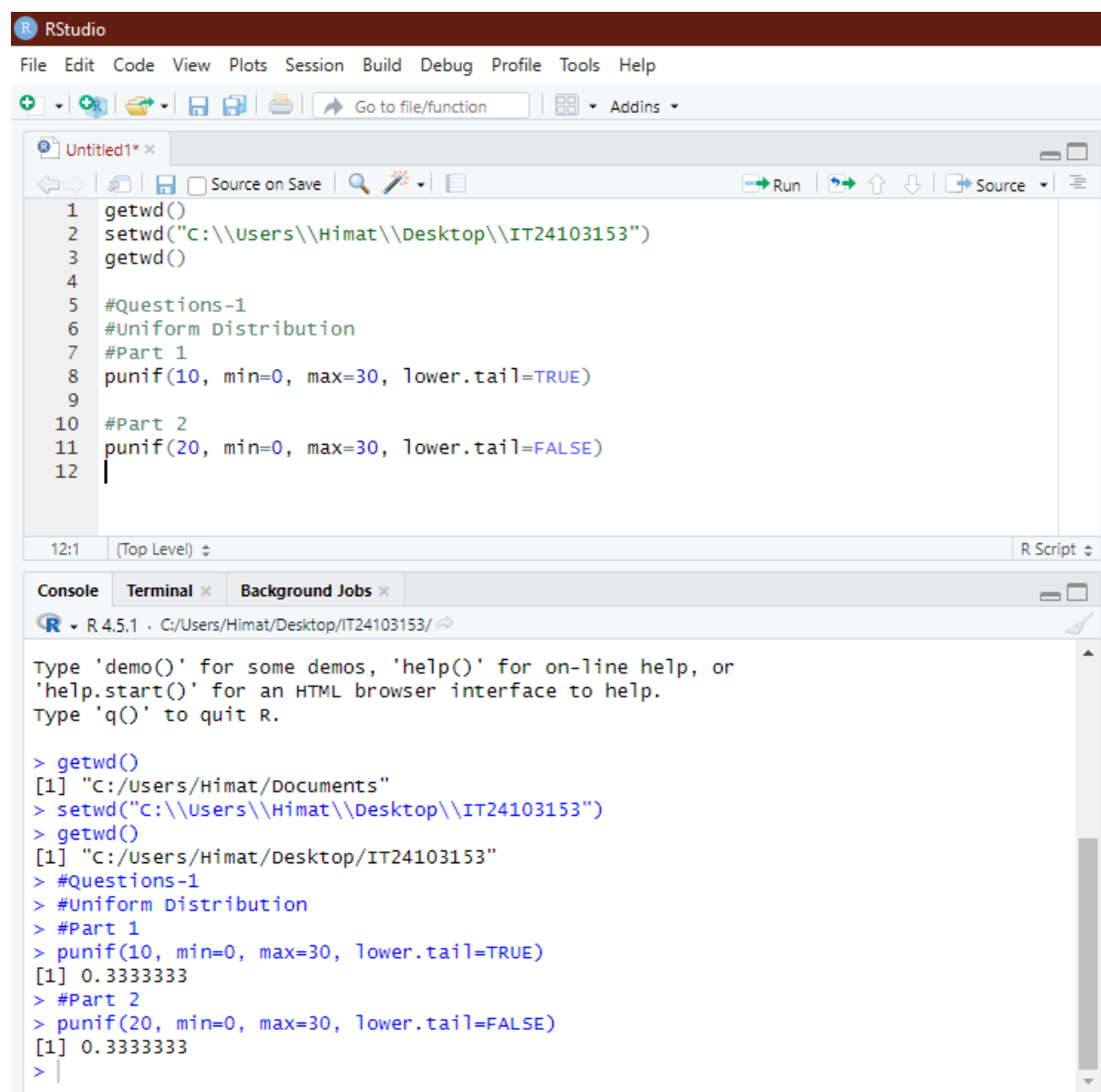


IT2120 - Probability and Statistics

Lab Sheet-07

IT24103153

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The screenshot displays the RStudio interface. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, and Help. Below the menu is a toolbar with icons for file operations and a search bar labeled 'Go to file/function'. The main editor window, titled 'Untitled1*', contains the following R code:

```
1 getwd()
2 setwd("C:\\Users\\Himat\\Desktop\\IT24103153")
3 getwd()
4
5 #Questions-1
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 status bar at the bottom of the editor shows '12:1 (Top Level)' and 'R Script'. Below the editor is a console window with the following output:

```
R - R 4.5.1 - C:/Users/Himat/Desktop/IT24103153/
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] "C:/Users/Himat/Documents"
> setwd("C:\\Users\\Himat\\Desktop\\IT24103153")
> getwd()
[1] "C:/Users/Himat/Desktop/IT24103153"
> #Questions-1
> #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
> |
```

RStudio interface showing code for exponential distribution questions. The code is in a script editor, and the console shows the results of running the code.

```

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
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

```

Console output:

```

> punif(20, min=0, max=30, lower.tail=FALSE)
[1] 0.3333333
> #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
>

```

RStudio interface showing code for normal distribution questions. The code is in a script editor, and the console shows the results of running the code.

```

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

```

Console output:

```

> #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
>

```

Exercise

The screenshot displays the RStudio environment with the following components:

- Source Editor:** Contains R code for an exercise. The code defines variables for different parts of a question, using functions like `punif`, `pexp`, `pnorm`, and `qnorm`.
- Console:** Shows the output of the executed code, including numerical results for each part of the exercise.
- Environment:** Displays the current environment, showing the `Global Environment` with a variable `rate` set to `0.5`.
- Files:** A file explorer showing the current directory structure, including folders like `Arduino`, `Custom Office Templates`, `desktop.ini`, `My Music`, `My Pictures`, `My Videos`, `Rainmeter`, `Soda PDF Files`, `SQL Server Management Studio`, `SQL Server Management Studio 21`, `Visual Studio 2017`, and `Zoom`.

```
#Exercise
#Question
# Part 1
punif(25, min=0, max=40, lower.tail = TRUE) - punif(10, min=0, max=40, lower.tail = TRUE)
# Part 2
pexp(2, rate=1/3, lower.tail=TRUE)
#Part 3
#i
pnorm(130, mean=100, sd=15, lower.tail=FALSE)
#ii
qnorm(0.95, mean=100, sd=15)
```

```
> #Exercise
> #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
> #i
> pnorm(130, mean=100, sd=15, lower.tail=FALSE)
[1] 0.02275013
> #ii
> qnorm(0.95, mean=100, sd=15)
[1] 124.6728
>
```

Name	Size	Modified
Arduino		
Custom Office Templates		
desktop.ini	402 B	Dec 11, 2024, 9:53 PM
My Music		
My Pictures		
My Videos		
Rainmeter		
Soda PDF Files		
SQL Server Management Studio		
SQL Server Management Studio 21		
Visual Studio 2017		
Zoom		