Sri Lanka Institute of Information Technology

Lab Submission
Lab sheet No 07

IT24102615

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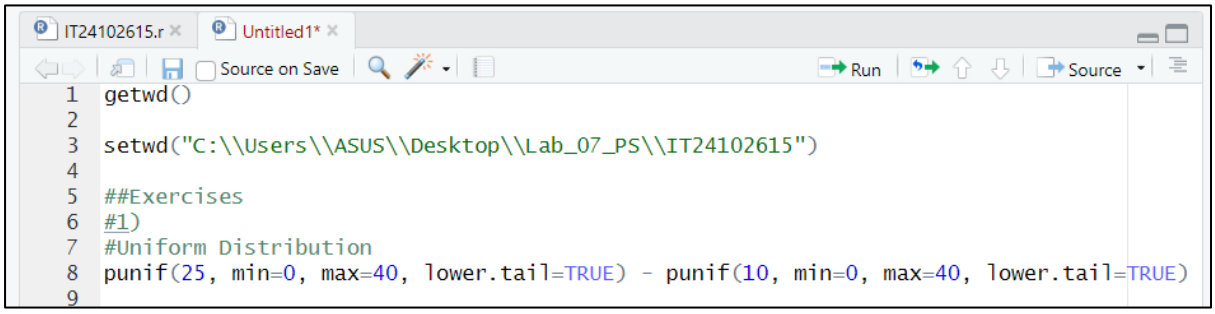
Probability and Statistics | IT2120

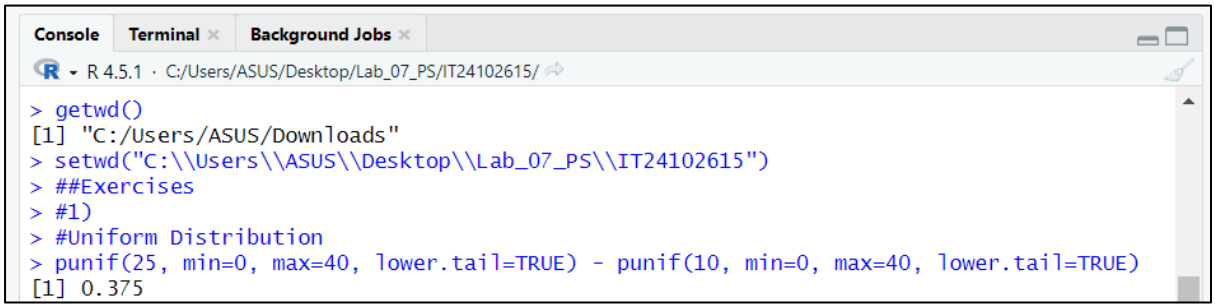
B.Sc. (Hons) in Information Technology

Exercise

Instructions: Create a folder in your desktop with your registration number (Eg: "IT. . . . . ."). You need to save the R script file and take screenshots of the command prompt with answers and save it in a word document inside the folder. Save both R script file and word document with your registration number (Eg: "IT. . . . . .."). After you finish the exercise, zip the folder and upload the zip file to the submission link.

1. A train arrives at a station uniformly between 8:00 a.m. and 8:40 a.m. Let the random variable X represent the number of minutes the train arrives after 8:00 a.m. What is the probability that the train arrives between 8:10 a.m. and 8:25 a.m.?





2. The time (in hours) to complete a software update is exponentially distributed with rate λ = 1 3 . Find the probability that an update will take at most 2 hours.

3. Suppose IQ scores are normally distributed with a mean of 100 and a standard deviation of 15.

i. What is the probability that a randomly selected person has an IQ above 130?

```
14  #3)
15  #Normal Distribution
16  #i)
17  pnorm(130, mean=100, sd=15, lower.tail=FALSE)
18
```

```
> #3)
> #Normal Distribution
> #i)
> pnorm(130, mean=100, sd=15, lower.tail=FALSE)
[1] 0.02275013
```

ii. What IQ score represents the 95th percentile?

```
18
19  #ii)
20  qnorm(0.95, mean=100, sd=15, lower.tail=TRUE)
21
21:1  (Top Level)  R Script
```

```
> #ii)
> qnorm(0.95, mean=100, sd=15, lower.tail=TRUE)
[1] 124.6728
>
```