Sri Lanka Institute of Information Technology

Lab Submission
Lab sheet No 7

IT24101551

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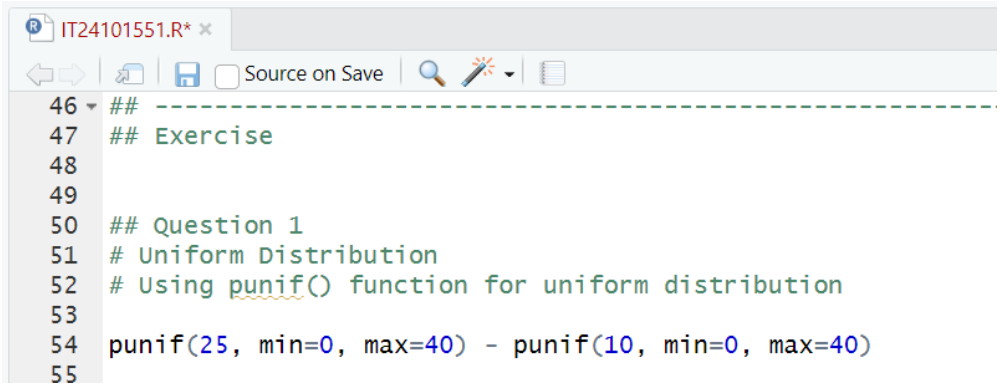
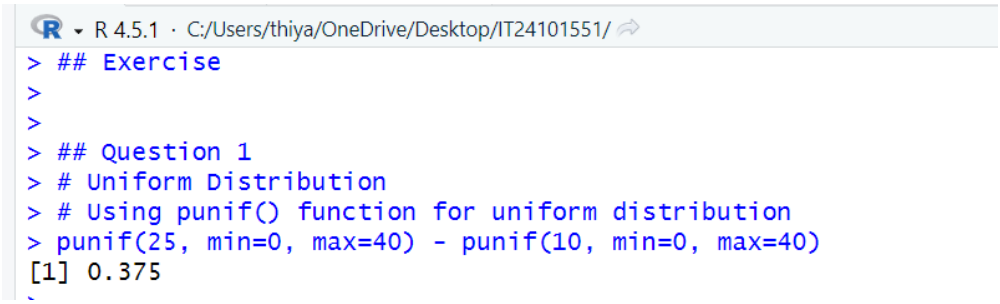
IT2120 - Probability and Statistics

B.Sc. (Hons) in Information Technology

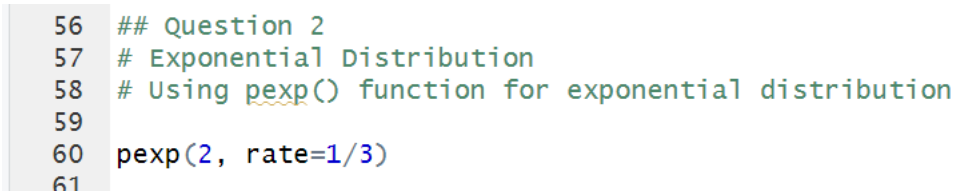
Exercise

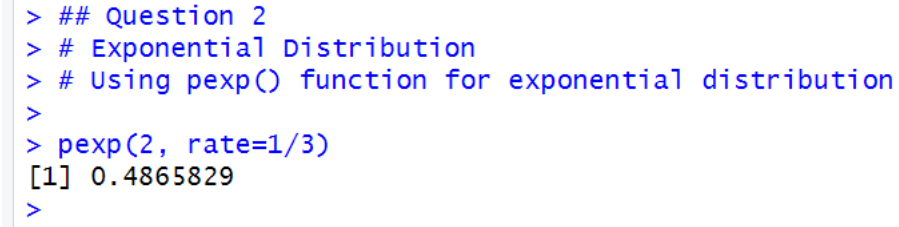
1. A train arrives at a station uniformly between 8:00 a.m. and 8:40 a.m. Let the random variable X represent the number of minutes the train arrives after 8:00 a.m. What is the probability that the train arrives between 8:10 a.m. and 8:25 a.m.?





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?

```
62  ## Question 3
63  # Normal Distribution
64  # i. Probability IQ > 130
65  1 - pnorm(130, mean=100, sd=15)
66
```

```
> ## Question 3
> # Normal Distribution
> # i. Probability IQ > 130
> 1 - pnorm(130, mean=100, sd=15)
[1] 0.02275013
>
```

   ii. What IQ score represents the 95th percentile?

```
67  # ii. 95th percentile IQ score
68  qnorm(0.95, mean=100, sd=15)
69
```

```
> # ii. 95th percentile IQ score
> qnorm(0.95, mean=100, sd=15)
[1] 124.6728
```