

IT24102779

Hettiarachchige D.S.

Probability and Statistics

Lab 7

Exercise 1

```
setwd("C:\\Users\\damse\\Desktop\\IT24102779")

#Exercise 1
ex1 <- punif(25, min = 0, max = 40, lower.tail = TRUE) -
punif(10, min = 0, max = 40, lower.tail = TRUE)
print(paste("Exercise 1: Probability train arrives between 8:10-8:25:", round(ex1, 4)))

> setwd("C:\\Users\\damse\\Desktop\\IT24102779")
> #Exercise 1
> ex1 <- punif(25, min = 0, max = 40, lower.tail = TRUE) -
+ punif(10, min = 0, max = 40, lower.tail = TRUE)
> print(paste("Exercise 1: Probability train arrives between 8:10-8:25:", round(ex1, 4)))
[1] "Exercise 1: Probability train arrives between 8:10-8:25: 0.375"
```

Exercise 2

```
#Exercise 2
ex2 <- pexp(2, rate = 1/3, lower.tail = TRUE)
print(paste("Exercise 2: Probability update takes at most 2 hours:", round(ex2, 4)))

> #Exercise 2
> ex2 <- pexp(2, rate = 1/3, lower.tail = TRUE)
> print(paste("Exercise 2: Probability update takes at most 2 hours:", round(ex2, 4)))
[1] "Exercise 2: Probability update takes at most 2 hours: 0.4866"
```

Exercise 3

1.

```
#Exercise 3
#i
ex3_i <- pnorm(130, mean = 100, sd = 15, lower.tail = FALSE)
print(paste("Exercise 3(i): Probability IQ above 130:", round(ex3_i, 4)))

> #Exercise 3
> #i
> ex3_i <- pnorm(130, mean = 100, sd = 15, lower.tail = FALSE)
> print(paste("Exercise 3(i): Probability IQ above 130:", round(ex3_i, 4)))
[1] "Exercise 3(i): Probability IQ above 130: 0.0228"
```

2.

```
#ii
ex3_ii <- qnorm(0.95, mean = 100, sd = 15, lower.tail = TRUE)
print(paste("Exercise 3(ii): 95th percentile IQ score:", round(ex3_ii, 2)))
```

```
> #ii
> ex3_ii <- qnorm(0.95, mean = 100, sd = 15, lower.tail = TRUE)
> print(paste("Exercise 3(ii): 95th percentile IQ score:", round(ex3_ii, 2)))
[1] "Exercise 3(ii): 95th percentile IQ score: 124.67"
```