IT24104248

Rathnayaka R.D.M.N.

SLIIT UNI
THE KNOWLEDGE UNIVERSITY

Faculty of Computing

Year 2 Semester 1 (2025)

IT2120 - Probability and Statistics Lab Sheet 07

Q1

```
#Question 01

#Random variable x follows a uniform distribution with a=0 and b=40

#Probability that the train arrives between 8:10 a.m. and 8:25 a.m :
punif(25,min = 0, max = 40, lower.tail = TRUE) -punif(10,min = 0, max = 40, lower.tail = TRUE)

#Question 02

#Random variable x has exponential distribution with lambda=0.34

#Probabilty that an update will take at most 2 hours :
pexp(2,rate = 0.334,lower.tail = TRUE)

#Question 03

#Random variable x has normal distribution with mean=100 and standard deviation=15

#i.Probability that a randomly selected person has an IQ above 130 :
1-pnorm(130,mean = 100, sd=15, lower.tail = TRUE)

#ii.IQ Score represents the 95th percentile :
qnorm(0.95,mean = 100, sd=15,lower.tail = TRUE)
```

3:1 (Top Level) R Script

Console Terminal Jobs

R 4.5.1 · C:/Users/Yeshan Gimnada/Downloads/

```
> #Probability that the train arrives between 8:10 a.m. and 8:25 a.m :
> punif(25,min = 0, max = 40, lower.tail = TRUE) -punif(10,min = 0, max = 40, lower.tail = TRUE)
[1] 0.375
> #Question 01
>
> #Random variable x follows a uniform distribution with a=0 and b=40
>
> #Probability that the train arrives between 8:10 a.m. and 8:25 a.m :
> punif(25,min = 0, max = 40, lower.tail = TRUE) -punif(10,min = 0, max = 40, lower.tail = TRUE)
[1] 0.375
```

Q2

```
#Question 02

#Random variable x has exponential distribution with lambda=0.34

#Probabilty that an update will take at most 2 hours :
pexp(2,rate = 0.334,lower.tail = TRUE)

#Question 03

#Random variable x has normal distribution with mean=100 and standard deviation=15

#i.Probability that a randomly selected person has an IQ above 130 :
1-pnorm(130,mean = 100, sd=15, lower.tail = TRUE)

#ii.IQ Score represents the 95th percentile :
qnorm(0.95,mean = 100, sd=15,lower.tail = TRUE)
```

```
> #Question 02
>
> #Random variable x has exponential distribution with lambda=0.34
>
> #Probabilty that an update will take at most 2 hours :
> pexp(2,rate = 0.334,lower.tail = TRUE)
[1] 0.487267
```

Q3

```
#Question 03

#Random variable x has normal distribution with mean=100 and standard deviation=15

#i.Probability that a randomly selected person has an IQ above 130 :
1-pnorm(130,mean = 100, sd=15, lower.tail = TRUE)

#ii.IQ Score represents the 95th percentile :
qnorm(0.95,mean = 100, sd=15,lower.tail = TRUE)
```

```
> #Question 03
>
> #Random variable x has normal distribution with mean=100 and standard deviation=15
>
> #i.Probability that a randomly selected person has an IQ above 130 :
> 1-pnorm(130,mean = 100, sd=15, lower.tail = TRUE)
[1] 0.02275013
>
> #ii.IQ Score represents the 95th percentile :
> qnorm(0.95,mean = 100, sd=15,lower.tail = TRUE)
[1] 124.6728
```