Faculty of Computing

Year 2 Semester 1 (2025)

IT2120 - Probability and Statistics   Lab Sheet 07

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Q1

```r
setwd("C:\\Users\\Yeshan Gimnada\\Desktop\\IT24610829\\Lab 7")

#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)
```

```
>
> #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

```
 9
10  #Question 02
11
12  #Random variable x has exponential distribution with lambda=0.34
13
14  #Probabilty that an update will take at most 2 hours :
15  pexp(2,rate = 0.334,lower.tail = TRUE)
16
17  #Question 03
18
19  #Random variable x has normal distribution with mean=100 and standard deviation=15
20
21  #i.Probability that a randomly selected person has an IQ above 130 :
22  1-pnorm(130,mean = 100, sd=15, lower.tail = TRUE)
23
24  #ii.IQ Score represents the 95th percentile :
25  qnorm(0.95,mean = 100, sd=15,lower.tail = TRUE)
26
27
28
```

16:1   (Top Level) ⬍   R Script ⬍

Console   Terminal ×   Jobs ×

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

```
> #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

```
17  #Question 03
18
19  #Random variable x has normal distribution with mean=100 and standard deviation=15
20
21  #i.Probability that a randomly selected person has an IQ above 130 :
22  1-pnorm(130,mean = 100, sd=15, lower.tail = TRUE)
23
24  #ii.IQ Score represents the 95th percentile :
25  qnorm(0.95,mean = 100, sd=15,lower.tail = TRUE)
26
27
28
```

17:1   (Top Level) ⬍   R Script ⬍

Console   Terminal ×   Jobs ×

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

```
> #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
```