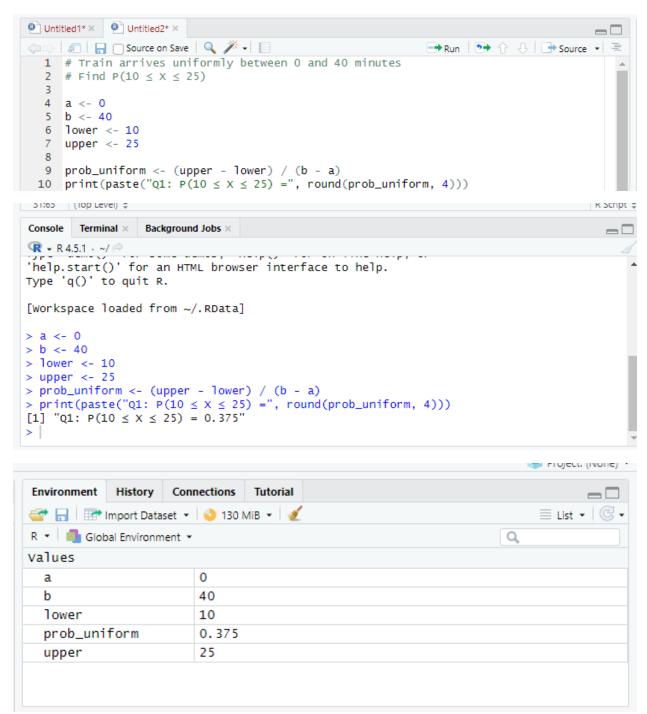
IT24104177 PS LAB 7

1.



```
Q2.
```

```
11
   12 ### Question 2: Exponential Distribution
   13 # \lambda = 1/3 \rightarrow mean = 3 hours
   14 # Find P(X \leq 2)
   15
   16 lambda <- 1/3
   17 prob_exp <- pexp(2, rate = lambda)</pre>
  18 print(paste("Q2: P(X \le 2) =", round(prob_exp, 4)))
> lambda <- 1/3
 > prob_exp <- pexp(2, rate = lambda)
 > print(paste("Q2: P(X ≤ 2) =", round(prob_exp, 4)))
 [1] "Q2: P(X \le 2) = 0.4866"
| > |
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                                                                     Q
values
  lambda
                         0.333333333333333
   prob_exp
                         0.486582880967408
```

Q3

```
### Question 3: Normal Distribution

# Mean = 100, SD = 15

# i. P(X > 130)

# mean_iq <- 100

# mean_iq <- 15

# prob_above_130 <- 1 - pnorm(130, mean = mean_iq, sd = sd_iq)

### print(paste("Q3.i: P(IQ > 130) =", round(prob_above_130, 4)))

### print(paste("Q3.i: P(IQ > 130) =", round(prob_above_130, 4)))

### Question 3: Normal Distribution

### Question 3: Normal Distributio
```

```
> # i. P(X > 130)
> mean_iq <- 100
> sd_iq <- 15
> prob_above_130 <- 1 - pnorm(130, mean = mean_iq, sd = sd_iq)
> print(paste("Q3.i: P(IQ > 130) =", round(prob_above_130, 4)))
[1] "Q3.i: P(IQ > 130) = 0.0228"
> # ii. 95th percentile
> iq_95th <- qnorm(0.95, mean = mean_iq, sd = sd_iq)
> # ii. 95th percentile
> iq_95th <- qnorm(0.95, mean = mean_iq, sd = sd_iq)
> print(paste("Q3.ii: 95th Percentile IQ =", round(iq_95th, 2)))
[1] "Q3.ii: 95th Percentile IQ = 124.67"
```

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	124.67	72804404272	
	100		
<u>_</u> 130	0.0227	7501319481792	
	15		
	Environm	124.6 100 2_130 0.022	124.672804404272 100 2_130 0.0227501319481792