Probability and Statistics - IT2120

Lab sheet 07

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Exercise:

1)

```
# Part 01)
# Uniform Distribution with a=0 and b=40

#P(10<X<25) = P(X<=25) - P(X<=10)
punif(25,min = 0, max = 40, lower.tail = TRUE) - punif(10,min = 0, max = 40, lower.tail = TRUE)
```

Output

```
> punif(25,min = 0, max = 40, lower.tail = TRUE) - punif(10,min = 0, max = 40, lower.tail = TRUE)
[1] 0.375
```

2)

```
# Part 02)
# Exponential Distribution with lambda=0.33

#P(X<=2)
pexp(2, rate = 0.33, lower.tail = TRUE)
```

Output

```
> pexp(2, rate = 0.33, lower.tail = TRUE)
[1] 0.4831487
```

3)

i)

```
16  # Part 03)
17  # i)
18  # Normal Distribution with mean=100 and standard deviation=15
19
20  #P(X>130)
21  pnorm(130, mean = 100, sd=15, lower.tail = FALSE)
```

Output

```
> pnorm(130, mean = 100, sd=15, lower.tail = FALSE)
[1] 0.02275013
```

ii)

```
25  # ii)
26  # 95th percentile = P(X=b) = 95% = 0.95
27  qnorm(0.95, mean = 100, sd=15)
```

Output

```
> qnorm(0.95, mean = 100, sd=15)
[1] 124.6728
```