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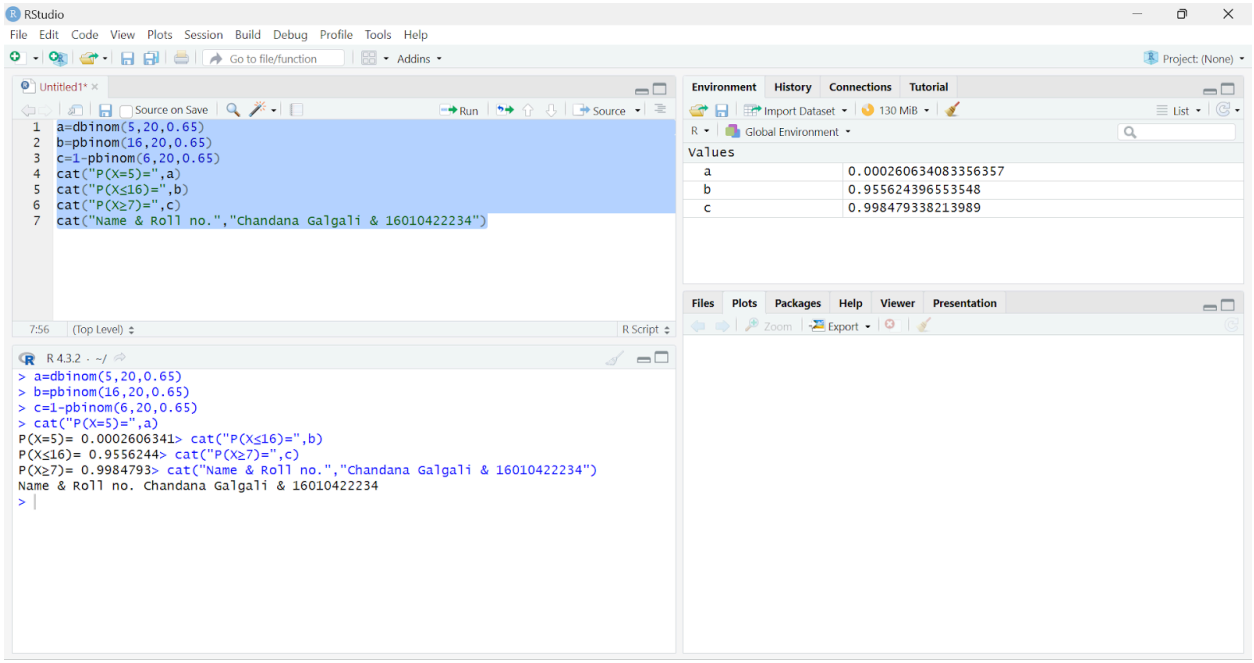
Batch: B-4 Roll no: 16010422234 Tutorial: 5 - Probability Distribution Using R
Date: 04 March 2024

Q.1 If X is Binomial Distribution B(n,p) where n=20 p=0.65
Write R-program to evaluate and print (i) P(X=5) (ii) P(X≤16) (iii) P(X≥7)

Code on Rstudio

```
a=dbinom(5,20,0.65)
b=pbinom(16,20,0.65)
c=1-pbinom(6,20,0.65)
cat("P(X=5)=",a)
cat("P(X≤16)=",b)
cat("P(X≥7)=",c)
cat("Name & Roll no.","Chandana Galgali & 16010422234")
```

Output

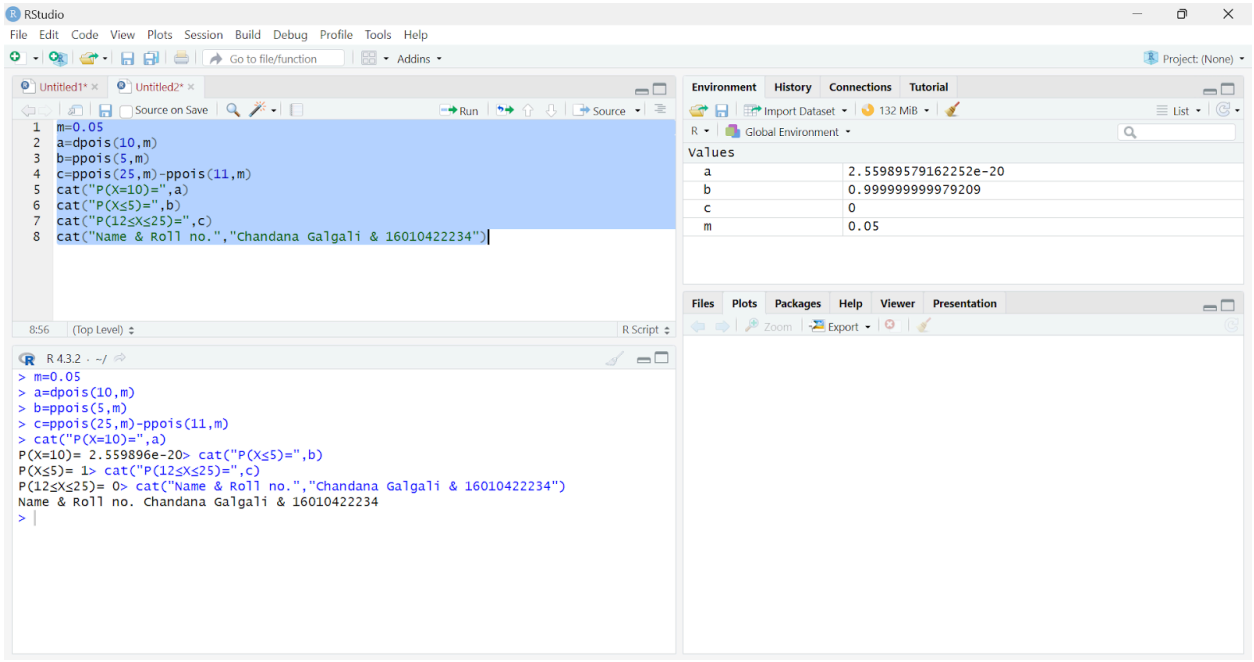


Q.2 If X is Poisson Distribution with mean 0.05
Write R-program to evaluate and print (i) P(X=10) (ii) P(X≤5) (iii) P(12≤X≤25)

Code on Rstudio

```
m=0.05
a=dpois(10,m)
b=ppois(5,m)
c=ppois(25,m)-ppois(11,m)
cat("P(X=10)=",a)
cat("P(X≤5)=",b)
cat("P(12≤X≤25)=",c)
cat("Name & Roll no.","Chandana Galgali & 16010422234")
```

Output

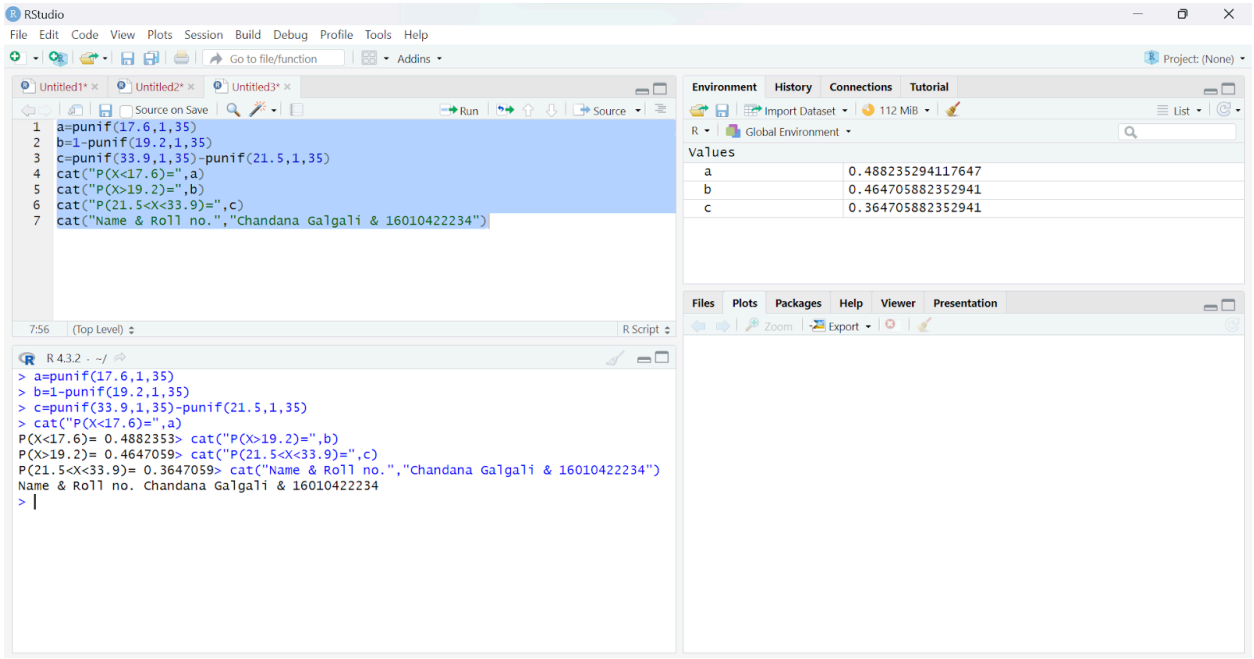


Q.3 If X is Uniform Distribution over the range (1,35).
Write R-program to evaluate and print (i) P(X<17.6) (ii) P(X>19.2) (iii) P(21.5< X<33.9)

Code on Rstudio

```
a=punif(17.6,1,35)
b=1-punif(19.2,1,35)
c=punif(33.9,1,35)-punif(21.5,1,35)
cat("P(X<17.6)=",a)
cat("P(X>19.2)=",b)
cat("P(21.5<X<33.9)=",c)
cat("Name & Roll no.","Chandana Galgali & 16010422234")
```

Output

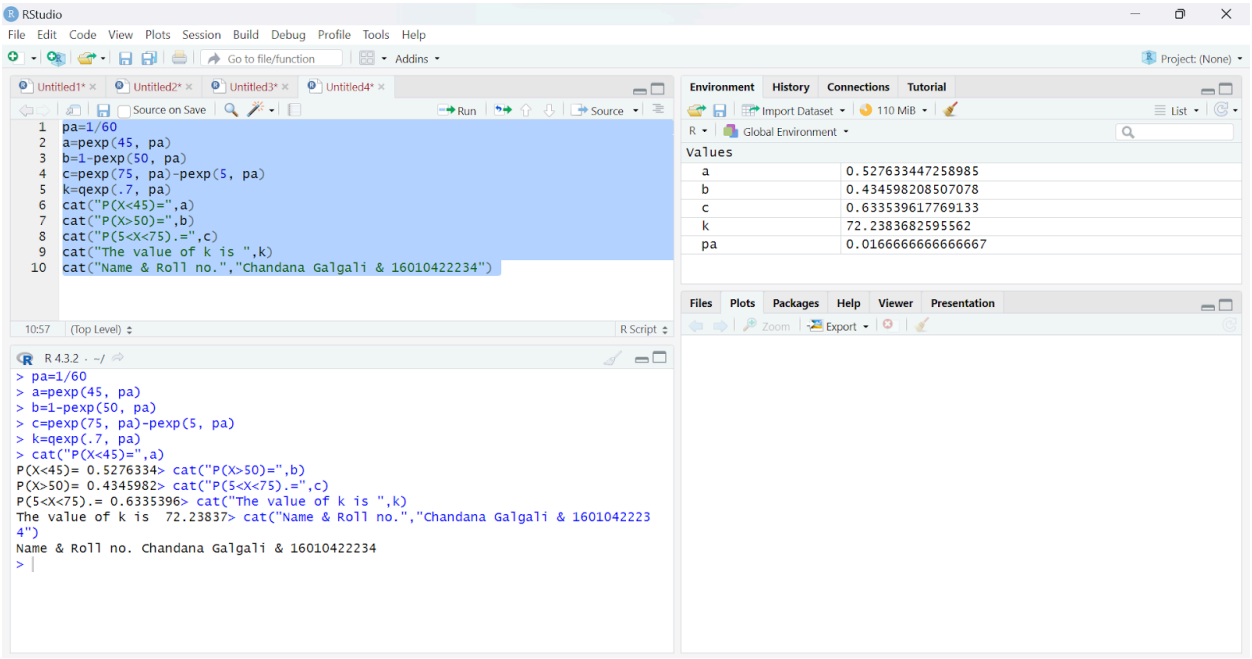


Q.4 If X is Exponential Distribution with mean 60.
Write R-program to evaluate and print (i) P(X<45) (ii) P(X>50) (iii) P(5< X<75).
Find value of k such that P(X<k) = 0.7

Code on Rstudio

```
pa=1/60
a=pexp(45, pa)
b=1-pexp(50, pa)
c=pexp(75, pa)-pexp(5, pa)
k=qexp(.7, pa)
cat("P(X<45)=",a)
cat("P(X>50)=",b)
cat("P(5<X<75).=",c)
cat("The value of k is ",k)
cat("Name & Roll no.","Chandana Galgali & 16010422234")
```

Output



Q.5 If X is Normal Distribution with mean 20 and standard deviation 5.
Write R-program to evaluate and print (i) P(X<28) (ii) P(X>15) (iii) P(10< X<35).
Find value of k1 such that P(X<k1) = 0.3. Also find k2 such that P(X>k2) = 0.04

Code on Rstudio

```
a=pnorm(28,20,5)
b=1-pnorm(15,20,5)
c=pnorm(35,20,5)-pnorm(10,20,5)
k1=qnorm(.3,20,5)
k2=qnorm(.96,20,5)
cat("P(X<28) =",a)
cat("P(X>15) =",b)
cat("P(10<X<35)=",c)
cat("value of k1 such that P(X<k1) = 0.3 is ",k1)
cat("value of k2 such that P(X>k2) = 0.04 is ",k2)
cat("Name & Roll no.","Chandana Galgali & 16010422234")
```

Output