MTH 2401 Probability/Statistics

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PROJECT 3

Answer 1:

Min $\{ n \ge K : R_S(n,t) \ge R \}$

Eqn 3.4 contains the following:

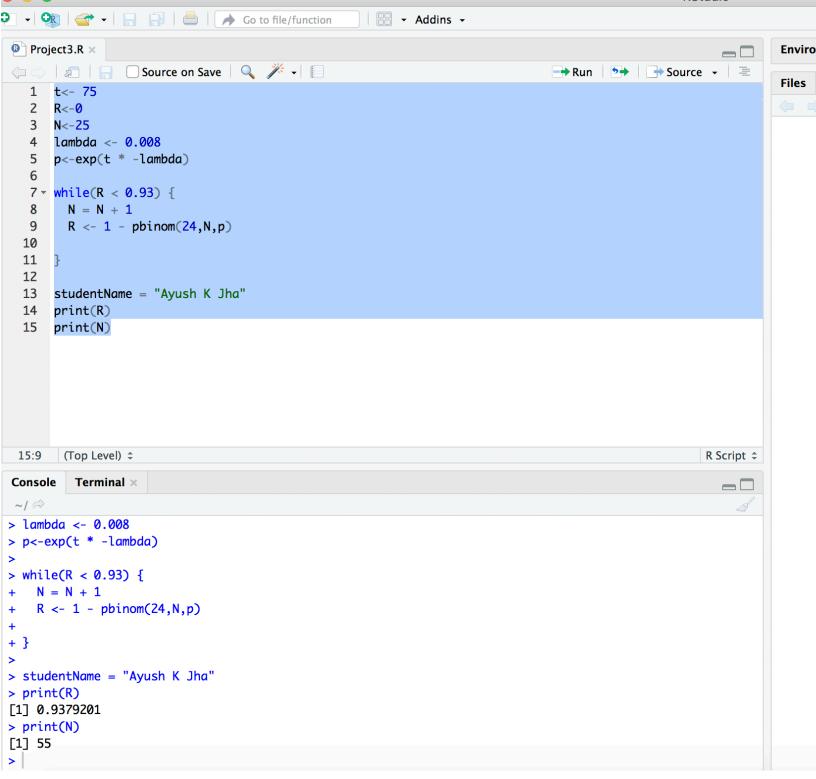
 $R_S(n, t) = \sum_{j=k}^{n} (n \text{ choose } j) e^{-\lambda t})^{n-j} >= R,$

where, $\lambda = 0.008$, R = 0.93 & t = 75 (given)

Therefore,

 $R_s(n,t) = 1 - \sum_{j=0}^{25} (n \text{ choose } j) e^{-j*(75)(0.008)} (1-e^{-(75)(0.008)})^{n-j} >= R$

The values for N and R were then found(N=55 & R = 0.9379201), and they can be seen in the screenshots of the console and the source code below



Answer 2:

$$N = Min \{ n \ge K: R_S(n,t) \ge R \}$$

Eqn 3.4 contains the following:

$$R_S(n, t) = \sum_{j=k}^{n} (n \text{ choose } j) e^{-0.5 \lambda t^2})^{n-j} >= R,$$

where,
$$\lambda = 7 \times 10^{-4}$$
, $R = 0.86 \& t = 100$

The values for N and R were then found (N=1296 & R = 0.860543), and they can be seen in the screenshots of the console and the source code below:

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