

UCS410: PROBABILITY AND STATISTICS

Laboratory Assignment – 5 and 6

Pre-requisite: Understand the working of binomial distribution and `rle()` function of R.

Based upon the acquired learning try to simulate the below mentioned question.

Q1) In a selection of a sample of size 250 one by one where both defective and non-defective items are equally likely. Now perform the simulation to calculate the estimated probability of getting the same type of item 16 times in a row.

- Use an R simulation to estimate this for various values of experiment count.

Q2) In sample of size eight of question 1, estimate the probability of selecting a different type of item in each selection, that is, that will never obtain get two defective items or two non-defective items in a row.

- Also compare the estimated probability result with actual value of probability

Q3) Six animals with some names are lined up together. Calculate the probability of lineup in an order of alphabetic series with a assumption that none is having the same name.

- Also compare the estimated probability result with actual value of probability

Q4) In Question 3, let suppose 3 animals are dogs and remaining are horses. Now calculate the probability all dogs come first.

- Also compare the estimated probability result with actual value of probability