AI1103 ASSIGNMENT 2

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Download the python code from

https://github.com/ArunSiddardha/Assignment_2/assignment2.py.py

and latex-tikz code from

https://github.com/ArunSiddardha/Assignment_2/Assignment2.tex

1 Problem-2.16

A box contains 4 white balls and 3 red balls.In succession, two balls are randomly selected and removed from the box. Given that the first removed ball is white, the probability that the second removed ball is red is

2 Solution-2.16

Let X be a random variable taking two values 0 and 1(Bernoulli random variable).
X=1 iff first ball is white and X=0 iff first ball is red.
Let Y be another random variable taking two values 0 and 1(Bernoulli random variable).
Y=1 iff second ball is white and Y=0 iff second ball is red.
We are required to find the conditional probability of secondball being red given first ball removed is white.
The probability of taking first ball as black will be,

$$P(X = 1) = \frac{4}{7} \tag{2.0.1}$$

The probability of taking second ball as given first ball taken was white will be P(Y=0—X=1) By the definition of conditional probability,

$$P(Y = 0|X = 1) = \frac{n(Y = 1)}{6} \tag{2.0.2}$$

here n(Y=1)=3. from equations (2.0.1),(2.0.2).

$$P(Y = 0|X = 1) = \frac{3}{6} = \frac{1}{2} \tag{2.0.3}$$

Hence,the required probability is 0.5