AI1103: Assignment 4

Chitneedi Geetha Sowmya
CS20BTECH11011

Download all latex codes from

https://github.com/Geetha495/Assignment4/blob/main/Assignment4.tex

Download all python codes from

https://github.com/Geetha495/Assignment4/blob/main/Assignment4.py

1 Problem

The probability that a given positive integer lying between 1 and 100 (both inclusive) and is NOT divisible by 2 or 3 or 5 is _____

2 Solution

Let A, B, C are events where a positive integer between 1 and 100 (both inclusive) is divisible by 2, 3, 5 respectively.

$$\Pr(A) = \frac{1}{2}$$
$$\Pr(B) = \frac{33}{100}$$
$$\Pr(C) = \frac{1}{5}$$
$$\Pr(AB) = \frac{16}{100}$$
$$\Pr(BC) = \frac{6}{100}$$
$$\Pr(AC) = \frac{1}{10}$$
$$\Pr(ABC) = \frac{3}{100}$$

Required probability : $\Pr(A + B + C)'$

$$\begin{aligned}\Pr(A + B + C)' &= 1 - \Pr(A + B + C)\\ &= 1 - \Pr(A) - \Pr(B) - \Pr(C) + \Pr(AB)\\ &\quad + \Pr(BC) + \Pr(AC) - \Pr(ABC)\\ &= 0.26\end{aligned}$$