AI1103: Assignment 4

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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.

$$\Pr(A) = \frac{1}{2} \tag{2.0.1}$$

$$\Pr(B) = \frac{33}{100} \tag{2.0.2}$$

$$\Pr(C) = \frac{1}{5} \tag{2.0.3}$$

$$\Pr(AB) = \frac{16}{100} \tag{2.0.4}$$

$$\Pr(BC) = \frac{6}{100} \tag{2.0.5}$$

$$\Pr(AC) = \frac{1}{10} \tag{2.0.6}$$

$$\Pr(ABC) = \frac{3}{100} \tag{2.0.7}$$

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

$$\Pr(A + B + C)' = 1 - \Pr(A + B + C) \tag{2.0.8}$$

$$= 1 - \Pr(A) - \Pr(B) - \Pr(C) + \Pr(AB) + \Pr(BC) + \Pr(AC) - \Pr(ABC) \tag{2.0.9}$$

$$= 0.26 \tag{2.0.10}$$