Assignment 1

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Download all python codes from

https://github.com/diya−goyal−29/AI1103/tree/main/Assignement\%201/Code

and latex - tikz codes from

https://github.com/diya−goyal−29/AI1103/blob/main/Assignment%201/Assignment%201.tex

Question 1.19 :
Harpreet tosses two different coins simultaneously (say, one is of rupee 1 and other of rupees 2). What is the probability that she gets at least one head?
Solution :
Total number of coins = $n = 2$
The total no. of outcomes = 4
{HH, HT, TH, TT}
Let p = probability of head = $\frac{1}{2}$
q = probability of tail = $\frac{1}{2}$
X = number of heads

Probability of at least one head

$$\begin{aligned} &= P(X = 1) + P(X = 2) \\ &= {}^2C_1(\frac{1}{2})(\frac{1}{2}) + {}^2C_2(\frac{1}{2})^2 \\ &= 2 \times \frac{1}{4} + \frac{1}{4} \\ &= \frac{3}{4} \\ &= 0.75 \end{aligned}$$