

Assignment 1

DIYA GOYAL

Roll no. CS20BTECH11014

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 obtained

Probability of at least one head

$$= P(X = 1) + P(X = 2)$$

$$= {}^2C_1 \left(\frac{1}{2}\right) \left(\frac{1}{2}\right) + {}^2C_2 \left(\frac{1}{2}\right)^2$$

$$= 2 \times \frac{1}{4} + \frac{1}{4}$$

$$= \frac{3}{4}$$

$$= 0.75$$