Probability and Random Variable Assignment-1

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Introduction

Question:

The coin is tossed 2 times. Find the probability of getting atmost one head.

solution

The probability of getting HT or TH is the sum of the probabilities of each outcome, which can be calculated using the binomial distribution formula:

$P(X \leq 1) = P(X = 0) + P(X = 1)$

where X is the number of heads obtained, and

$$p(x) = {}^{n}C_{x} p^{x} (1-p)^{n-x}$$

Now,the probability of getting a head on any single toss is 0.5.

$P(X = 0) = {}^{2}C_{0} 0.5^{0} (1 - 0.5)^{2} = 0.25$

$P(X = 1) = {}^{2}C_{1} 0.5^{1} (1 - 0.5)^{1} = 0.5$

$P(X \leq 1) = 0.25 + 0.5 = 0.75$

Therefore, the probability of getting at most one head is 0.75.