Probability Assignment -III

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Question: Let X represent the difference between the number of heads and the number of tails obtained when a coin is tossed 6 times. What are possible values of X?

Solution:

Let, H represent no of head and T represent no of tails then X can be

$$(H = 0, T = 6) \Rightarrow X = |0 - 6| = 6 \quad (1)$$
$$(H = 1, T = 5) \Rightarrow X = |1 - 5| = 4 \quad (2)$$
$$(H = 2, T = 4) \Rightarrow X = |2 - 4| = 2 \quad (3)$$
$$(H = 3, T = 3) \Rightarrow X = |3 - 3| = 0 \quad (4)$$
$$(H = 4, T = 2) \Rightarrow X = |4 - 2| = 2 \quad (5)$$
$$(H = 5, T = 1) \Rightarrow X = |5 - 1| = 4 \quad (6)$$
$$(H = 6, T = 1) \Rightarrow X = |6 - 0| = 6 \quad (7)$$

$\therefore$ X is a random variable which can take the values 0,2,4 or 6