AI1110 - Assignment1

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Question: 10.13.2.12 Sushma tosses a coin 3 times and gets tail each time. Do you think that the outcome of next toss will be a tail? Give reasons.

Solution: As the coin is tossed 3 times and gets a tail each time but it is not necessary that 4th time will be a tail. It may be either tail or head in any further toss.

As the coin in unbiased,

Probability of getting tail in first toss $= \frac{1}{2}$.

Probability of getting tail in second toss in a row $= \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$.

Probability of getting tail in third toss in a row $= \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$.

Probability of getting tail in fourth toss in a row $= \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{16}$.

Also, Probability of getting head in fourth toss in a row $= \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{16}$.

Probability of $Head = Tail = \frac{1}{2}$ in every single case.

Hence, the given statement is false.