Exercise: Independence of two events - I

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1/1 point (graded)

We have a peculiar coin. When tossed twice, the first toss results in Heads with probability $1/2$. However, the second toss always yields the same result as the first toss. Thus, the only possible outcomes for a sequence of 2 tosses are HH and TT, and both have equal probabilities. Are the two events $A = \{\text{Heads in the first toss}\}$ and $B = \{\text{Heads in the second toss}\}$ independent?

No, they are dependent ✔ **Answer:** No, they are dependent

Answer:
Intuitively, the occurrence of event A gives us information on whether event B will occur, and therefore the two events are dependent.

Mathematically, $\mathbf{P}(A) = \mathbf{P}(B) = \mathbf{P}(A \cap B) = 1/2$, so that $\mathbf{P}(A \cap B) \neq \mathbf{P}(A)\mathbf{P}(B)$.

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✔ Correct (1/1 point)