One can check that if Player 1 plays $s_1 = \big(0.9, 0.1\big)$, then the strategy that maximizes Player 2's expected utility is $s_2' = \big(0, 1\big)$.

In other words, $s_2' = \big(0, 1\big)$ is Player 2's *best response* to $s_1 = \big(0.9, 0.1\big)$.

So is $\boldsymbol{s} = \big(s_1, s_2'\big)$ a Nash equilibrium?

No! If Player 2 plays $s_2' = \big(0, 1\big)$, Player 1 wants to deviate to $s_1' = \big(1, 0\big)$:

$$\begin{aligned}\mathbb{E}\Big[s_1 \mid s_2'\Big] &= \mathbb{E}\Big[\text{Heads} \mid s_2'\Big] \cdot 0.9 + \mathbb{E}\Big[\text{Tails} \mid s_2'\Big] \cdot 0.1 \\ &= (-1) \cdot 0.9 + 1 \cdot 0.1 \\ &= -0.8\end{aligned}$$