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We have,  $A = \{(1,1) (2,2) (3,3) (4,4) (5,5) (6,6)\}$ .

$\therefore n(A) = 6$  and  $n(S) = 6 \times 6 = 36$ .

[S is the sample space]

$$P(A) = \frac{n(A)}{n(S)} = \frac{6}{36} = \frac{1}{6}$$

$B = \{(4,6) (6,4) (5,5) (6,5) (5,6) (6,6)\}$ .

$\therefore n(B) = 6$  and  $n(S) = 36$ .

$$\therefore P(B) = \frac{n(B)}{n(S)} = \frac{6}{36} = \frac{1}{6}$$

$$\Rightarrow A \cap B = \{(5,5) (6,6)\}$$

$$\textcircled{*} P(A \cap B) = \frac{2}{36} = \frac{1}{18}$$

$$P(A) \cdot P(B) = \frac{1}{6} \times \frac{1}{6} = \frac{1}{36}$$

$$P(A \cap B) \neq P(A) \cdot P(B)$$

Hence, A and B are not independent Events.