Assignment

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Question: Four cards are successively drawn without from a deck of 52 playing cards. What is the probability that all the four cards are kings?

Solution:

So we have to find the probability that all four cards are kings,

RV	Value	Description
	1	first card is king
	2	second card is king
X_i	3	third card is king
	4	fourth card is king

TABLE 0

RV DESCRIPTION TABLE

$$\Pr(\text{all four cards are kings}) = \Pr(X_1 X_2 X_3 X_4) \tag{1}$$

$$= \Pr(X_1) \times \Pr(X_2 | X_1) \times \Pr(X_3 | X_1 X_2) \times \Pr(X_4 | X_1 X_2 X_3) \tag{2}$$

$$= \frac{4}{52} \times \frac{3}{51} \times \frac{2}{50} \times \frac{1}{49} \tag{3}$$

$$= \frac{1}{270725} \tag{4}$$