

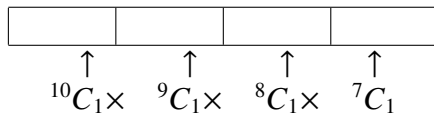
Assignment 1

AI1110: Probability and Random Variables
Indian Institute of Technology Hyderabad

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AI22BTECH11013

Question[11.16.4.10]: The number lock of a suitcase has 4 wheels, each labelled with ten digits i.e., from 0 to 9. The lock opens with a sequence of four digits with no repeats. What is the probability of a person getting the right sequence to open the suitcase?

Solution: Let X be the random variable representing the total number of possible sequences that can be entered in the lock.



Total no of possible sequences with no repetition of numbers

$$= {}^{10}C_1 \times {}^9C_1 \times {}^8C_1 \times {}^7C_1 \quad (1)$$

$$= 10 \times 9 \times 8 \times 7 \quad (2)$$

$$= 5040 \quad (3)$$

let Y be the random variable representing the correct sequence.

\therefore there is only correct sequence

$$\Pr(Y = 1) = 1/X \quad (4)$$

$$= 1/5040 \quad (5)$$