Assignment9

Aravind A Anil

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Q.The probability that a K-digit number does not contain the digits 0,5 or 9 is?:

a) $.3^k$ b) $.6^k$ c) $.7^k$ d) $.9^k$

Solution: Let $Z_i \in$ (0,1,2,3,4,5,6,7,8,9) represents the i^{th} position of k digit number

$$Pr(Z_i \notin 0,5,9) = \frac{7}{10}$$

If a K-digit number does not contain 0,5,9 it can be written as
$Pr(Z_1 \notin 0,5,9, Z_2 \notin 0,5,9, Z_3 \notin 0,5,9, \ldots\ldots Z_k \notin 0,5,9)$
Since getting digit in different places of a number is a independent event it can be written as

$$= Pr(Z_1 \notin 0,5,9, Z_2 \notin 0,5,9, Z_3 \notin 0,5,9 \ldots\ldots Z_k \notin 0,5,9)$$
$$= Pr(Z_1 \notin 0,5,9) \times Pr(Z_2 \notin 0,5,9) \times Pr(Z_3 \notin \times \ldots\ldots Pr(Z_k \notin 0,5,9)$$
$$= \prod_{i=1}^{k} .7$$
$$= .7^k$$

So,**Answer is option C**

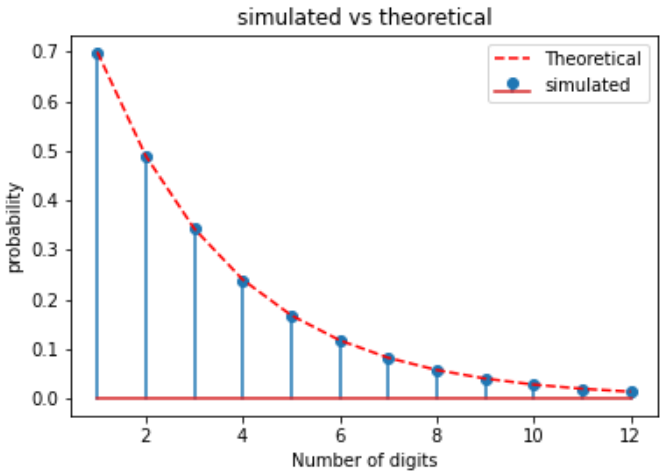

Figure 1: theoretical vs simulated