

Assignment 3

Sachin karumanchi-AI20BTECH11013

Download all python codes from

https://github.com/sachinkarumanchi/probability_and_random_variables/blob/assignment1/assignment1.py

and latex-tikz codes from

https://github.com/sachinkarumanchi/probability_and_random_variables/blob/assignment1/Assignment1.tex

So, the total probability of a random 3-digit number xyz will not contain 7

$$= \Pr(x \neq 7) \times \Pr(y \neq 7) \times \Pr(z \neq 7) \quad (2.0.7)$$

$$= \frac{8}{9} \times \frac{9}{10} \times \frac{9}{10} \quad (2.0.8)$$

$$= \frac{18}{25} \quad (2.0.9)$$

The probability of a number selected at random between 100 and 999 (both inclusive) will not contain digit 7 is $\frac{18}{25}$

1 PROBLEM

The probability that a number selected at random between 100 and 999 (both inclusive) will not contain digit 7 is.

2 SOLUTION

Let's assume a random 3-digit number be xyz .

Where x, y, z are 3 random single-digit integers such that

$$x \in \{1, 2, 3, 4, 5, 6, 7, 8, 9\} \quad (2.0.1)$$

$$y \in \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\} \quad (2.0.2)$$

$$z \in \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\} \quad (2.0.3)$$

1) Probability of selecting x without including 7

$$\Pr(x \neq 7) = \frac{8}{9} \quad (2.0.4)$$

2) Probability of selecting y without including 7

$$\Pr(y \neq 7) = \frac{9}{10} \quad (2.0.5)$$

3) Probability of selecting z without including 7

$$\Pr(z \neq 7) = \frac{9}{10} \quad (2.0.6)$$