

Assignment 4

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Download all python codes from

<https://github.com/srikanan-p/AI1103/tree/main/Assignment4/codes>

and latex codes from

<https://github.com/srikanan-p/AI1103/tree/main/Assignment4>

PROBLEM

(GATE-CS 2013 Q62) Out of all the 2-digit integers between 1 and 100, a 2-digit number has to be selected at random. What is the probability that the selected number is not divisible by 7?

- (A) $\frac{13}{90}$
- (B) $\frac{12}{90}$
- (C) $\frac{78}{90}$
- (D) $\frac{77}{90}$

SOLUTION

Let X be a random variable which holds 2-digit integers. Here, $\lfloor x \rfloor$ rounds off x to the greatest integer less than x .

$$\Pr(X \bmod 7 \neq 0) = 1 - \frac{n(X \bmod 7 = 0)}{n(X)} \quad (0.0.1)$$

$$\Pr(X \bmod 7 \neq 0) = 1 - \frac{\left\lfloor \frac{100}{7} \right\rfloor - \left\lfloor \frac{10}{7} \right\rfloor}{90} \quad (0.0.2)$$

$$\Pr(X \bmod 7 \neq 0) = 1 - \frac{13}{90} \quad (0.0.3)$$

$$\Pr(X \bmod 7 \neq 0) = \frac{77}{90} \quad (0.0.4)$$

So, the correct option is (D).

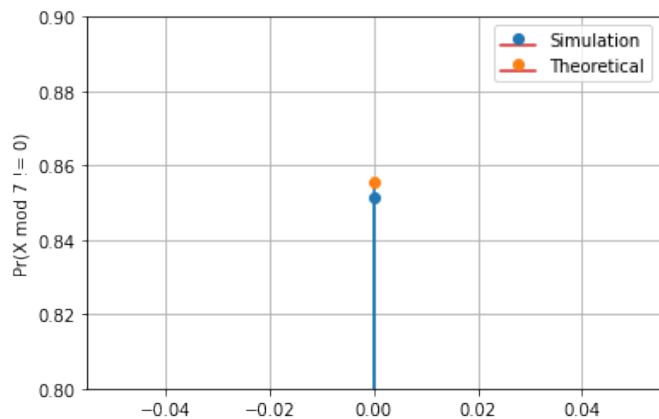


Fig. 4: Plot for Simulation v/s Theoretical