AI1103 : Assignment 6

Yashas Tadikamalla - AI20BTECH11027

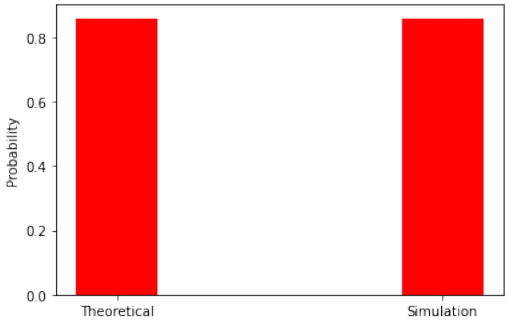
Download all python codes from

https://github.com/YashasTadikamalla/AI1103/tree/main/Assignment6/codes

and latex codes from

https://github.com/YashasTadikamalla/AI1103/blob/main/Assignment6/Assignment6.tex

Theoretical vs Simulation plot



GATE-2013-ME-Problem(61)

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)$\frac{77}{90}$

GATE-2013-ME-Solution(61)

Given, a 2-digit number between 1 to 100 has to be chosen at random. Therefore, the sample space is

$$S = \{10, 11, \ldots, 99\} \tag{61.1}$$
$$\Rightarrow n(S) = 90 \tag{61.2}$$

Let D be the event that the chosen number is divisible by 7. Then,

$$D = \{14, 21, \ldots, 98\} \tag{61.3}$$
$$\Rightarrow n(E) = 13 \tag{61.4}$$

We know, for an event E

$$Pr(E) = \frac{n(E)}{n(S)} \tag{61.5}$$

Using (61.5),

$$Pr(D) = \frac{n(D)}{n(S)} = \frac{13}{90} \tag{61.6}$$

To find : $Pr(\bar{D})$

$$\because Pr(E) + Pr(\bar{E}) = 1 \tag{61.7}$$
$$\Rightarrow Pr(\bar{D}) = 1 - Pr(D) = \frac{77}{90} \tag{61.8}$$