ASSIGNMENT 3

CS21BTECH11053

Abstract—**From NCERT Mathematics Class 9, Chapter 15**

Problem (15.11). *Eleven bags of wheat flour, each marked 5 kg, actually contained the following weights of flour (in kg): Find the probability that*

Weights	4.97	5.05	5.08	5.03	5.00
5.06	5.08	4.98	5.04	5.07	5.00

TABLE I
WEIGHTS OF BAGS

any of these bags chosen at random conatins more than 5 kg of flour.

Solution:

We will define random variable X such that $X \in 0, 1$. We will assign $X = 1$ when the weight of the bag exceeds 5 and $X = 0$ otherwise. The resulting random variables for corresponding weights is given by Table (II).

Weights	Random Variable X
4.97	0
5.05	1
5.08	1
5.03	1
5.00	0
5.06	1
5.08	1
4.98	0
5.04	1
5.07	1
5.00	0

TABLE II
RANDOM VARIABLES

We are required to find the probability when random variable $X = 1$. Note that the number of bags with $X = 1$ is given by Table (II) as

$$n(X = 1) = 7 \tag{1}$$

The sample space S consists of 11 bags. Hence

$$n(S) = 11 \tag{2}$$

Hence the probability where $X = 1$ from (1) and (2) is given by

$$P(X = 1) = \frac{n(X = 1)}{n(S)} \tag{3}$$

$$= \frac{7}{11} \tag{4}$$

$$= \boxed{0.636} \tag{5}$$

Code Output:

```
Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
=============== RESTART: C:\Users\Welcome123\Desktop\Flour\flour.py ===============
The probability that random variable X > 5 is 0.6363636363636364
>>>
```