Assignment 4

Rahul Ramachandran (cs21btech11049)

***Abstract*—This document contains the solution for Assignment 4 (NCERT Class 10 Chapter 14 Example 4)**

15 E4 [NCERT 9] : On one page of a telephone directory, there were 200 telephone numbers. The frequency distribution of their unit place digit (for example, in the number 25828573, the unit place digit is 3) is given in the table below:

Digit	0	1	2	3	4	5	6	7	8	9
Frequency	22	26	22	22	20	10	14	28	16	20

TABLE I

Without looking at a page, the pencil is placed on one of these numbers, i.e., the number is chosen at *random*. What is the probability that the digit in its unit place is 6?

Solution:

Let the random variable X map the occurrences of the respective digits to their corresponding values in the set $\{0, 1 \ldots, 8, 9\}$ (X maps the occurence of 0 to the image 0, 1 to the image 1 etc.)

The probability of the occurrence of any digit i is given by

$$\Pr\left(X = i\right) = \frac{N_i}{N} \tag{1}$$

where N_i is the frequency of occurrence of the digit 6 and N is the sum of the frequencies of occurrences of all digits.

N_6 equals 14, and N is given by the formula

$$N = \sum_{j=0}^{9} N_j \tag{2}$$

which evaluates to 200.

Therefore,

$$\Pr\left(X = 6\right) = \frac{14}{200} = \boxed{0.07} \tag{3}$$