Assignment 4 (NCERT Class 9 Probability)

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***Abstract*—This document contains the solution to Example 1 of Chapter 15 (Probability) in the NCERT Class 9 Exemplar.**

Problem 1 (Example 1)**.** *A coin is tossed 1000 times with the following frequencies:*

Head: 455, Tail: 545.

Compute the probability for each event.

Solution: Denote the outcome of the experiment by a random variable $X \in \{0, 1\}$, where $X = 0$ denotes occurrence of heads and $X = 1$ denotes occurrence of tails. Then,

$$\Pr(X = 0) = \frac{455}{1000} = 0.455 \tag{1}$$

$$\Pr(X = 1) = \frac{545}{1000} = 0.545 \tag{2}$$

One can also verify that since these events are mutually exclusive and exhaustive, we get $\Pr(X = 0) + \Pr(X = 1) = 0.455 + 0.545 = 1$. The Python code `./codes/4_1.py` simulates the given experiment, comparing the practical probabilities to the theoretical probabilities.