# Assignment 2

## AI1110: Probability and Random Variables

## INDIAN INSTITUTE OF TECHNOLOGY, HYDERABAD

SUVEDH
CS22BTECH11016

**10.15.2.3**: A bag contains 5 red balls and some blue balls.If the probability of drawing a blue ball is double that if a red ball,determine the number of blue balls in the bag.

**Solution**:
Let's assume that there are $x$ blue balls in the bag. The probability of drawing a red ball is:

$$\frac{5}{5+x}$$

since there are 5 red balls in the bag and a total of $5 + x$ balls.

The probability of drawing a blue ball is:

$$2\left(\frac{5}{5+x}\right)$$

since the probability of drawing a blue ball is double that of drawing a red ball.

We know that the sum of the probabilities of drawing a red ball and drawing a blue ball is equal to 1:

$$\frac{5}{5+x} + 2\left(\frac{5}{5+x}\right) = 1$$

$$\frac{5}{5+x} + \frac{10}{5+x} = 1$$

$$\frac{15}{5+x} = 1$$

$$5 + x = 15$$

$$x = 10 \tag{1}$$

Therefore, there are 10 blue balls in the bag.