

# Assignment:- 1

## AI1110: Probability and Random Variables

### Indian Institute of Technology, Hyderabad

CS22BTECH11001

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**Problem:** 10.15.1.7

It is given that in a group of 3 students, the probability of 2 students not having the same birthday is 0.992. What is the probability that the 2 students have the same birthday?

**Solution:**

Let us define  $E$  as the event that no 2 students, in a group of 3 share a birthday

$$P(E) = 0.992 \quad (1)$$

We are asked to find the probability that 2 students, in a group of 3 share a birthday. This is the event  $\bar{E}$ .

We know that,

$$P(E) + P(\bar{E}) = 1 \quad (2)$$

From (1) and (2)

$$P(\bar{E}) = 1 - 0.992$$

$$P(\bar{E}) = 0.008$$