PRACTICAL - 6

Practical: Estimating the Probability of Rolling a Sum of 3 with Two Dice & Plotting the Graph Using SciLab

Aim:

To estimate the probability of rolling a sum of 3 with two dice and plotting their graph using SciLab.

Materials Required:

- SciLab software for simulating dice rolls and plotting results.
- Basic understanding of probability theory and discrete probability distributions.

Theory (In Detail):

Probability is the measure of the likelihood that an event will occur. In this experiment, we roll two fair six-sided dice and calculate the probability of obtaining a sum of 3. Since each die has six faces numbered from 1 to 6, the total number of possible outcomes when rolling two dice is $6 \times 6 = 36$.

1. **Favorable Outcomes:** We need to find all possible pairs (x, y) such that the sum $x + y = 3$. The possible pairs are: (1,2) and (2,1). Thus, there are 2 favorable outcomes.

2. **Total Outcomes:** Since each die has 6 faces, the total number of possible outcomes when rolling two dice is $6 \times 6 = 36$.

3. **Probability Calculation:** The probability of rolling a sum of 3 is calculated as:

P(Sum = 3) = (Number of Favorable Outcomes) / (Total Possible Outcomes)

P(Sum = 3) = 2 / 36 = 1 / 18 ≈ 0.0556

Applications:

- Understanding fundamental probability concepts in games and gambling.
- Applying probability in risk assessment and statistical modeling.
- Using SciLab for simulations to visualize and analyze probability distributions.

Result:

The probability of rolling a sum of 3 with two dice was estimated as 1/18 (approximately 0.0556). A graphical representation was plotted using SciLab to visualize the probability distribution of different sums.