**Securin Assessment Solution**

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Please find the github repository link of the assessment solution : [Link](https://github.com/mohdwarish483/Securin_Assessment_Dice_Challenge)

**Logic and Approach to the problem:-**

**Part-A:**

**1. Total Combinations:**

The total number of combinations is a fundamental calculation that involves multiplying the number of sides on each die. This calculation is encapsulated in the **calculateTotalCombinations()** function to provide a modular and reusable solution.

**2. Distribution of Combinations:**

To visualize and understand the distribution of combinations, a 6x6 matrix is created using a nested loop. This matrix represents all possible sums obtained by rolling Dice A and Dice B together. The **calculateCombinationDistribution()** function efficiently generates and displays this matrix.

**3. Probability of Sums:**

The probability of each sum is crucial in understanding the likelihood of obtaining a particular result. The **calculateProbabilityOfSums()** function calculates these probabilities by accumulating occurrences of each sum and dividing by the total number of combinations. This provides insights into the relative frequencies of different sums.

**Part-B:**

**Undoing Dice Transformation:**

The challenge involves reverting the dice transformation imposed by Loki while ensuring that the probability distribution remains unchanged. This task is divided into several key components:

**Generate Possible Combinations:**

Utilizing recursion, the **dieAPossibleCombinations()** and **dieBPossibleCombinations()** functions generate all possible combinations for Dice A and B, respectively. The recursive approach efficiently explores the combination space.

**Check Distribution Matches:**

The main function, **undoom\_dice()**, iterates through the generated combinations, calculating the sum distribution for each pair of Dice A and B. It then checks if this distribution matches the original distribution before the transformation. This ensures that the reattached spots do not alter the probabilities.

If a match is found, it prints the transformed dice and the corresponding probabilities.

**THANK YOU**