**USE CASE**

**Simulating Random Coin-Flips and Dice-Rolls Using NumPy**

**AIM :**

To simulate random coin flips and dice rolls using NumPy for generating random outcomes

**ALGORITHM :**

Step 1: Start

Step 2: Input Choice

Ask the user to enter 'coin' for a coin flip or 'dice' for a dice roll.

Store the input in a variable choice.

Step 3: Input Number of Simulations

Ask the user to enter how many times they want to flip the coin or roll the dice.

Store the input as an integer in the variable tries.

Step 4: Simulate Based on Choice

If the user chose 'coin':

Use NumPy to randomly select 'Heads' or 'Tails' for tries times.

Display the result.

If the user chose 'dice':

Use NumPy to randomly generate numbers from 1 to 6 for tries times.

Display the result.

If the input is not 'coin' or 'dice', show an error message.

Step 5: End

**PROGRAM:**

import numpy as np

def coin\_flip(n):

# Randomly choose 'Heads' or 'Tails' n times

return np.random.choice(['Heads', 'Tails'], size=n)

def dice\_roll(n):

# Randomly choose numbers from 1 to 6, n times

return np.random.randint(1, 7, size=n)

# User selects simulation type

choice = input("Enter 'coin' to flip a coin or 'dice' to roll a die: ").lower()

# Ask how many times to run the simulation

tries = int(input("Enter the number of times to simulate: "))

# Perform the simulation

if choice == 'coin':

result = coin\_flip(tries)

print("Coin Flip Results:", result)

elif choice == 'dice':

result = dice\_roll(tries)

print("Dice Roll Results:", result)

else:

print("Invalid choice. Please enter either 'coin' or 'dice'.")

**INPUT:**

Enter 'coin' to flip a coin or 'dice' to roll a die: coin

Enter the number of times to simulate: 5

**OUTPUT:**

Coin Flip Results: ['Heads' 'Tails' 'Heads' 'Heads' 'Tails']

**RESULT:**

Thus the program for simulating coin flips or dice rolls using numpy has been executed successfully.