**PYTHON: UNIT-3/Lab exercise 2**

**CODE:**

import numpy as np

# 1. Create a 5x5 identity matrix using NumPy.

identity\_matrix = np.eye(5)

print("5x5 Identity Matrix:\n", identity\_matrix)

# 2. Create a second 5x5 array filled with random floating-point numbers between 0 and 1.

random\_array = np.random.rand(5, 5)

print("Original 5x5 Random Array:\n", random\_array)

# 3. Replace all values in the second array greater than 0.5 with 1, and all values less than or equal to 0.5 with 0.

modified\_array = np.where(random\_array > 0.5, 1, 0)

print("Modified 5x5 Array:\n", modified\_array)

# 4. Find the indices of the elements that are equal to 1 in the modified array.

indices\_of\_ones = np.argwhere(modified\_array == 1)

print("Indices of elements equal to 1:\n", indices\_of\_ones)

# 5. Stack the identity matrix and the modified array horizontally.

stacked\_array = np.hstack((identity\_matrix, modified\_array))

print("Stacked Array (Identity Matrix and Modified Array):\n", stacked\_array)

**OUTPUT:**



