# Day -10 evening assessment

import numpy as np  
  
# 1. Array of integers from 10 to 50  
arr1 = np.arange(10, 51)  
print("1.", arr1)  
  
# 2. 3x3 array of all True  
arr2 = np.full((3, 3), True)  
print("2.", arr2)  
  
# 3. 5x5 identity matrix  
arr3 = np.eye(5)  
print("3.", arr3)  
  
# 4. Array of 10 random floats between 0 and 1  
arr4 = np.random.rand(10)  
print("4.", arr4)  
  
# 5. 1D array of 15 numbers equally spaced between 0 and 5  
arr5 = np.linspace(0, 5, 15)  
print("5.", arr5)  
  
# 6. Reshape array of 12 elements into 3x4  
arr6 = np.arange(12).reshape(3, 4)  
print("6.", arr6)  
  
# 7. Replace even numbers with -1  
arr7 = np.array([1, 2, 3, 4, 5, 6])  
arr7[arr7 % 2 == 0] = -1  
print("7.", arr7)  
  
# 8. Extract all odd numbers from 0 to 20  
arr8 = np.arange(0, 21)  
odd\_numbers = arr8[arr8 % 2 == 1]  
print("8.", odd\_numbers)  
  
# 9. 2D array of shape (4,5), sum of each column  
arr9 = np.random.randint(1, 10, size=(4, 5))  
col\_sum = np.sum(arr9, axis=0)  
print("9. Array:\n", arr9)  
print("Column-wise Sum:", col\_sum)  
  
# 10. Element-wise multiplication of two 3x3 arrays  
arr10a = np.random.randint(1, 5, (3, 3))  
arr10b = np.random.randint(1, 5, (3, 3))  
product = arr10a \* arr10b  
print("10. Product:\n", product)  
  
# 11. Count numbers divisible by both 3 and 5 from 1 to 100  
arr11 = np.arange(1, 101)  
count\_div\_3\_5 = np.sum((arr11 % 3 == 0) & (arr11 % 5 == 0))  
print("11. Count:", count\_div\_3\_5)  
  
# 12. Normalize array: (x - mean) / std  
arr12 = np.random.randint(1, 100, 10)  
normalized = (arr12 - np.mean(arr12)) / np.std(arr12)  
print("12. Normalized:", normalized)