Vellore Institute of Technology

SCOPE

FDA (CSE1006) - Slot – L22+L23

DA -V

1. Create a 8×8 NumPy array with random integers between 50 and 300. Perform the following operations

   i. Find the standard deviation, mean and variance of the entire array.
   ii. Compute the column sum, row sum and diagonal sum and anti-diagonal sum.
   iii. Extract a sub-matrix of size 3×3 from the center of the array.
   iv. Replace all elements in the first row with -1.
   v. Find the index position of the minimum value and maximum value in the array.

2. Generate two 4×4 NumPy arrays with random even values between 20 and 100. Perform the following

   i. Perform element-wise multiplication of both arrays.
   ii. Find the dot product of the two matrices.
   iii. Replace all values greater than 50 in the second array with 99.
   iv. Concatenate both arrays vertically and then split into equal parts.

3. Create a structured NumPy array to store employee records with attributes: Employee_ID (integer), Name (string, max length 15), Department (string, max length 10), and Salary (float).

   i. Add a new employee record to the array.
   ii. Extract all employees whose salary is above 75,000.
   iii. Sort the array based on Employee_ID in ascending order.
   iv. Increase the salary of employees in the 'IT' department by 10%.
   v. Retrieve the names of employees who have 'Manager' in their department.

Note:

- ✓ Mention your name, roll number, and assessment subject details.
- ✓ Document should be in PDF/word with your registration number.
- ✓ In program execution shot 1st display your name and reg no followed by output.

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