

**BITS PILANI, DUBAI CAMPUS**  
**DUBAI INTERNATIONAL ACADEMIC CITY, DUBAI**

**FIRST SEMESTER 2025 – 2026**

**COURSE:** CSF213/ECOM213/MACF212 (Object Oriented Programming)

**COMPONENT:** Lab 6

**Week: 6**

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**Aim:** To understand object-oriented programming in Java using strings, StringBuffer, and multidimensional arrays, and to develop the ability to implement real-world logic using classes and methods.

**Objective:** Use classes, objects, methods, StringTokenizer, StringBuffer, and multidimensional arrays to design and implement Java programs.

**Problem Statements:**

1. An app wants to check usernames in reverse order for encryption. Create a class Username Encryptor to accept a username. Converts the reversed username to **uppercase** for encryption. Displays both the original and encrypted username.

**Example Input and Output:**

Enter username: TechUser

Original Username: TechUser

Encrypted Username: RESUHCET

2. **Image Rotation:-** In digital image processing, an image can be represented as a 2D matrix of pixels. Rotating an image by 90° requires first transposing the pixel matrix (rows become columns and columns become rows). Write a Java program using a class ImageRotation to:
  1. Accept pixel values of an image in a 2D array.
  2. Compute the transpose of the matrix.
  3. Display the transposed matrix.

**Example Input and Output:**

Enter number of rows: 2

Enter number of columns: 3

Enter pixel values:

Row 1: 1 2 3

Row 2: 4 5 6

Transposed Image Matrix:

1 4

2 5

3 6