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Lab Manual: 04

Lab Topic: String and Two-Dimensional Array Manipulations

Course Code: CSE110 (Object Oriented Programming)

Course Instructor: Tanni Mittra, Senior Lecturer, CSE

Lab Objective

1. **Apply** concepts of two dimensional arrays and String
2. **Write** and **execute** programs using these concepts in Java.

Lab Problems

01: Write a program that randomly fills in 0s and 1s into a 4-by-4 matrix, prints the matrix, and finds the first row and column with the most 1s. Here is a sample run of the program:

```
0011
0011
1101
1010
The largest row index: 2
The largest column index: 2
```

02: Write a method that checks whether a string is a valid password. Suppose the password rules are as follows:

- A password must have at least eight characters.
- A password consists of only letters and digits.
- A password must contain at least two digits.

Write a program that prompts the user to enter a password and displays Valid Password if the rules are followed or Invalid Password otherwise.

03: Suppose the weekly hours for all employees are stored in a two-dimensional array. Each row records an employee's seven-day work hours with seven columns. For example, the following array stores the work hours for eight employees. Write a program that displays employees and their total hours in decreasing order of the total hours.

	Su	M	T	W	Th	F	Sa
Employee 0	2	4	3	4	5	8	8
Employee 1	7	3	4	3	3	4	4
Employee 2	3	3	4	3	3	2	2
Employee 3	9	3	4	7	3	4	1
Employee 4	3	5	4	3	6	3	8
Employee 5	3	4	4	6	3	4	4
Employee 6	3	7	4	8	3	8	4
Employee 7	6	3	5	9	2	7	9

04: Write a java program to Sort N number of strings entered by keyboard in Lexicographical Order (Dictionary Order).

```
Enter 5 words: R programming
JavaScript
Java
C programming
C++ programming

In the lexicographical order:
C programming
C++ programming
Java
JavaScript
R programming
```

05: Write a program to sort a two-dimensional array according to the values in any given column

Input: If our 2D array is given as (Order 4X4)

```
39 27 11 42
10 93 91 90
54 78 56 89
24 64 20 65
Sorting it by values in column 3
```

Output:

```
39 27 11 42
24 64 20 65
54 78 56 89
10 93 91 90
```