Experiment No. 6
Implement a program on 2D array & strings functions.
Date of Performance:
Date of Submission:

Aim: To use 2D arrays and Strings for solving given problem.

Objective: To use 2D array concept and strings in java to solve real world problem

Theory:

- An array is used to store a fixed-size sequential collection of data of the same type.
- An array can be init in two ways:
  1. Initializing at the time of declaration:
     dataType[] myArray = {value0, value1, ..., valuek};
  2. Dynamic declaration:
     dataType[] myArray = new dataType[arraySize];
     myArray[index] = value;
- Two – dimensional array is the simplest form of a multidimensional array. Data of only same data type can be stored in a 2D array.Data in a 2D Array is stored in a tabular manner which can be represented as a matrix.
- A 2D Array can be declared in 2 ways:
  1. Intializing at the time of declaration:
     dataType[][] myArray = { {valueR1C1, valueR1C2...}, {valueR2C1, valueR2C2...},..}
  2. Dynamic declaration:
     dataType[][] myArray = new dataType[x][y];
     myArray[row_index][column_index] = value;

In Java, string is basically an object that represents sequence of char values. An array of characters works same as Java string. **Java String** class provides a lot of methods to perform operations on strings such as compare(), concat(), equals(), split(), length(), replace(), compareTo(), intern(), substring() etc.

1.String literal

To make Java more memory efficient (because no new objects are created if it exists already in the string constant pool).

Example:

String demoString = "GeeksforGeeks";

2. Using new keyword

- String s = new String("Welcome");
- In such a case, JVM will create a new string object in normal (non-pool) heap memory and the literal "Welcome" will be placed in the string constant pool. The variable s will refer to the object in the heap (non-pool)

Example:

String demoString = new String ("GeeksforGeeks");

Code:

2D array Example

```
public class TwoDimensionalArrayExample {
    public static void main(String[] args) {
        // Declare and initialize a 2D array
        int[][] twoDArray = {
            {1, 2, 3},
            {4, 5, 6},
            {7, 8, 9}
        };

        // Display the elements of the 2D array
        System.out.println("Elements of the 2D array:");
        for (int i = 0; i < twoDArray.length; i++) {
            for (int j = 0; j < twoDArray[i].length; j++) {
```

```
            System.out.print(twoDArray[i][j] + " ");
        }
        System.out.println();  // Move to the next row
    }

    // Access a specific element
    int element = twoDArray[1][2];
    System.out.println("Element at row 1, column 2: " + element);
  }
}
```

```
C:\Mahek Shah CSEDS>java TwoDimensionalArrayExample.java
Elements of the 2D array:
1 2 3
4 5 6
7 8 9
Element at row 1, column 2: 6
```

STRING FUNCTION EXAMPLE

Code:

```
public class Stringoperation
{
public static void main(String args[])
{
String s="Mahek Shah";
System.out.println(s.toUpperCase());
System.out.println(s.toLowerCase());
System.out.println(s.trim());
System.out.println(s.startsWith("V"));
System.out.println(s.endsWith("a"));
System.out.println(s.charAt(0));
System.out.println(s.charAt(3));
```

```
System.out.println(s.length());
}
}
```

```
C:\Mahek Shah CSEDS>javac Stringoperation.java

C:\Mahek Shah CSEDS>java Stringoperation
Mahek Shah
mahek shah
MAHEK SHAH
false
false
J
H
11
```

Conclusion:

Comment on how you have used the concept of String and 2D array.