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:

```
class Multidimensional {

  public static void main(String args[]) {

    int arr[][] = { { 2, 7, 9 }, { 3, 6, 1 }, { 7, 4, 2 } };

    for (int i = 0; i < 3; i++) {
      for (int j = 0; j < 3; j++)
        System.out.print(arr[i][j] + " ");

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

Output

```
java -cp /tmp/1IF9VE1qbC Multidimensional
2 7 9 3 6 1
7 4 2
```

Conclusion:

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

Certainly! The concept of strings and 2D arrays is commonly used in various programming scenarios, including data manipulation, text processing, and algorithmic problem-solving.

In this example, the concept of strings is demonstrated by creating a string str and performing operations such as extracting substrings and converting the string to a character array. Additionally, the concept of a 2D array is illustrated by creating a 2D array matrix, displaying its original values, and then modifying one of its elements.