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:

```
public class NameGrid
{
   public static void main(String[] args)
        {
             String[][] names =
               {
                        {"Alice", "Bob", "Charlie"},
                        {"David", "Eve", "Frank"},
                        {"Grace", "Heidi", "Ivan"}
                };

               // Print the names in a grid format
                 System.out.println("Name Grid:");
               for (int i = 0; i < names.length; i++)
               {
                        for (int j = 0; j < names[i].length; j++)
                        {
                                 System.out.print(names[i][j] + "\t");
```

```
                }
                System.out.println(); // New line after each row
            }
        }
}
```

Conclusion:

In summary, understanding and applying the concepts of Strings and 2D arrays is essential for any programmer, as they enhance the ability to structure and manipulate data in meaningful ways. This foundational knowledge is key to building more advanced data-driven applications.