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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:

```
1. import java.util.*;
 class 2d_array{
 int x = 3;
 int y = 3;
public static void main(String args[]){
Scanner sc = new Scanner(System.in);
 System.out.println("enter the elements");
int a[][] = new int[x][y];
 for(int i=1;i<=x;i++) {
for(int j=1;j<=y;j++) {
a[i][j] =sc.nextInt();
 }
 }
 for(int i=1;i<=x;i++) {
 for(int j=1;j<=y;j++) {
System.out.print(a[i][j]+" ");
 }
```

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

OUTPUT:

```
C:\Users\ketan\OneDrive\Desktop\java>javac Matrix.java

C:\Users\ketan\OneDrive\Desktop\java>java Matrix.java
Enter the number of rows in matrix
3
Enter the columns in the matrix
3
Enter first [0][0] integer
23
Enter first [0][1] integer
45
Enter first [0][2] integer
56
Enter first [1][0] integer
78
Enter first [1][1] integer
90
Enter first [1][2] integer
23
Enter first [2][0] integer
45
Enter first [2][1] integer
67
Enter first [2][2] integer
```

```
Enter first [2][2] integer
34
Enter second[0][0] integer
45
Enter second[0][1] integer
4
```

```
Enter second[1][2] integer
45
Enter second[2][0] integer
45
Enter second[2][1] integer
45
Enter second[2][2] integer
45
First Matrix:

23      45      56
78      90      23
45      67      34
```

Conclusion:

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

I've utilized the concept of strings and 2D arrays in various programming and data manipulation tasks:

Strings:
- I've employed strings to work with textual data. This includes tasks like parsing, searching, and manipulating text.
- Strings are essential in handling user input, text processing, and generating output in a readable format.
- I've used string functions to concatenate, split, and format text, enhancing the functionality of my programs.
- Working with strings has been crucial in assignments related to text analysis, data validation, and creating user-friendly interfaces.

2D Arrays:
- I've used 2D arrays to represent and process data in a tabular or grid-like format.
- 2D arrays are valuable for tasks involving matrices, tables, images, or any data organized in rows and columns.
- I've applied 2D arrays in assignments related to image processing, game development, and numerical simulations.
- They've allowed me to efficiently store and manipulate data, making complex computations more manageable.

In summary, as a student, I've harnessed the power of strings for text-related tasks and 2D arrays for structured