



Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

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



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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).



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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:

```
import java.util.Scanner;

public class TwoDimArray{
    public static void main(String args[]){
        int temp,n,i,j;
        Scanner s = new Scanner(System.in);
        System.out.print("Enter the size of matrix: ");
        n=s.nextInt();
        int a1[][]=new int[n][n];
        int a2[][]=new int[n][n];
        int a3[][]=new int[n][n];
        int a4[][]=new int[n][n];

        System.out.println("Enter values for first matrix :");
        for(i=0;i<n;i++)
        {
            for(j=0;j<n;j++)
```



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```
{  
    a1[i][j]=s.nextInt();  
}  
}
```

System.out.println("Enter values for second matrix :");

```
for(i=0;i<n;i++)  
{  
    for(j=0;j<n;j++)  
    {  
        a2[i][j]=s.nextInt();  
    }  
}
```

System.out.println("First Matrix :");

```
for(i=0;i<n;i++)  
{  
    for(j=0;j<n;j++)  
    {  
        System.out.print(a1[i][j]+" ");  
    }  
    System.out.print("\n");  
}
```

System.out.println("Second Matrix :");

```
for(i=0;i<n;i++)  
{  
    for(j=0;j<n;j++)  
    {  
        System.out.print(a2[i][j]+" ");  
    }  
}
```



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```
System.out.print("\n");
}
System.out.println("1. Addition +");
System.out.println("2. Subtraction -");
System.out.println("3. Exit");
System.out.println("Enter your choice : ");
int h = s.nextInt();

switch(h)
{
case 1:
{
System.out.println("Sum of Matrices :");
for(i=0;i<n;i++)
{
for(j=0;j<n;j++)
{
a3[i][j]=a1[i][j]+a2[i][j];
System.out.print(a3[i][j]+" ");
}
System.out.print("\n");
}
}
}

break;
case 2:
{
System.out.println("Difference of Matrices :");
for(i=0;i<n;i++)
{
for(j=0;j<n;j++)
```



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```
{  
    a4[i][j]=a1[i][j]-a2[i][j];  
    System.out.print(a4[i][j]+" ");  
}  
System.out.print("\n");  
}  
  
}  
break;  
default:  
    System.out.println("ERROR");  
break;  
}  
}  
}
```

Conclusion:

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



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Ans: 1. Strings:

Text Processing: I can analyze, modify, and generate textual content. This includes tasks like searching for substrings, replacing text, converting case, and splitting strings into substrings.

Data Storage*: Strings are often used to store and represent textual or character data. I can work with strings to parse structured information or format data for output.

2. 2D Arrays:

Tabular Data: 2D arrays are used to represent structured data, similar to a table with rows and columns. I can process, manipulate, and analyze tabular data, such as performing calculations, filtering rows, or sorting based on specific criteria.

Multidimensional Data: 2D arrays can also be used to represent grids, matrices, or images. I can perform operations on these arrays, such as element-wise arithmetic, filtering, and resizing.