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2D ARRAY IN JAVA



- An array of more than one dimension is known as a multi-dimensional array
- Two of the most common examples of multi-dimensional arrays are two and three-dimensional array, known as 2D and 3D array, anything above is rare
- Two – dimensional array is the simplest form of a multidimensional array
- A two – dimensional array can be seen as an array of one – dimensional array for easier understanding



DECLARATION , INITIALIZATION

DECLARATION:

```
datatype[][] arrayname = new datatype[x][y];  
For example: int[][] arr = new int[10][20];
```

INITIALIZATION:

```
array_name[row_index][column_index] = value;  
For example: arr[0][0] = 1;
```



ACCESSING 2D ARRAY

Syntax:

```
x[rowindex][columnindex]
```

For example

```
int[][] arr = new int[10][20];  
arr[0][0] = 1;  
int[][] arr = new int[10][20];  
arr[0][0] = 1;
```



MATRIX MULTIPLICATION USING 2D ARRAY

```
class Main {  
    public static void main(String  
args[]) {  
        int m, n, p, q, sum = 0,  
c, d, k;  
        Scanner in = new  
Scanner(System.in);  
        System.out.println("Enter  
the number of rows and columns of  
first matrix");  
        m = in .nextInt();  
        n = in .nextInt();  
        int first[][] = new  
int[m][n];  
        System.out.println("Enter  
elements of first matrix");
```

```
        for (c = 0; c < m; c++)  
            for (d = 0; d < n;  
d++)  
                first[c][d] = in  
.nextInt();  
        System.out.println("Enter  
the number of rows and columns of  
second matrix");  
        p = in .nextInt();  
        q = in .nextInt();  
        if (n != p)  
  
        System.out.println("The matrices  
can't be multiplied with each  
other.");
```

MATRIX MULTIPLICATION USING 2D ARRAY

```
        else {
            int second[][] = new
int[p][q];
            int multiply[][] =
new int[m][q];

System.out.println("Enter elements
of second matrix");
            for (c = 0; c < p;
c++)
                for (d = 0; d <
q; d++)
                    second[c][d] = in.nextInt();
            for (c = 0; c < m;
c++) {
                for (d = 0; d <
q; d++)
```

```
{
            for (k = 0;
k < p; k++) {
                sum =
sum + first[c][k] * second[k][d];
            }

multiply[c][d] = sum;
            sum = 0;
        }

System.out.println("Product of the
matrices:");
    }
```


HOW TO PRINT AN ARRAY IN JAVA WITHOUT USING LOOP

- For this, we will use `toString()` method of `Arrays` class in the `util` package of Java.
This method helps us to get the `String` representation of the array
- This string can be easily printed with the help of `print()` or `println()` method



```
import java.io.*;
import java.util.*;
class Main {
    public static void main(String[] args)
    {
        // Get the array
        int arr[] = { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 };
        // Print the array
        System.out.println("Array: "+ Arrays.toString(arr));
    }
}
```



THANK YOU

