Working with Multidimensional Array

Session Goals

By the end of this session, you will be able to demonstrate how to:

- **Declare multidimensional Arrays**

- **Initialize multidimensional Arrays**

- **Access multidimensional Arrays elements**

Context Setting

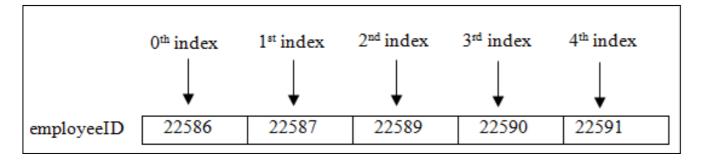|	Column 1	Column 2	Column 3	Column 4
Row 1	x[0][0]	x[0][1]	x[0][2]	x[0][3]
Row 2	x[1][0]	x[1][1]	x[1][2]	x[1][3]
Row 3	x[2][0]	x[2][1]	x[2][2]	x[2][3]

Let Us Try to Find Out

- **What is multidimensional Array?**
- **Why do we need multidimensional Arrays?**
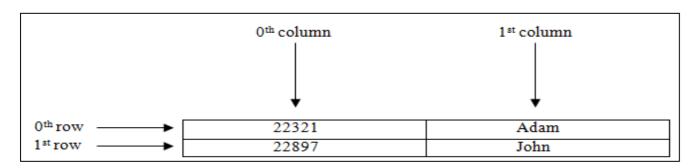- **How do we use multidimensional Array in program?**

Types of Arrays

- **Different types of Arrays**
  - **One-dimensional array:**

	0th index	1st index	2nd index	3rd index	4th index
employeeID	22586	22587	22589	22590	22591

  - **Multidimensional array**

	0th column	1st column
0th row	22321	Adam
1st row	22897	John

Creating Multidimensional Arrays

- **Syntax for creating multidimensional Arrays**

- `arraytype arrayname[][] = new arraytype[rowsize][columnsize];`

- `String[][] words = new String[4][2];`

- `String[][] jumbledWords = new String[][]`
  `{{"elapp","apple"},{"argneo","orange"},`
  `{"agrspe","grapes"}};`

Accessing Multidimensional Arrays

- **Syntax for accessing multidimensional Arrays**

```
arrayname[row][column]]

String[][] jumbledWords = new String[][]
{            {"elapp","apple"},{"argneo","orange"},
{"agrspe","grapes"}};
System.out.println("Elements stored in array are: ");
for (int i=0; i<2; i++)
{
    for (int j=0; j<2; j++)
    {
        System.out.print(jumbledWords[i][j]);
    }
}
```

Accessing Multidimensional Arrays Contd.

- **Syntax for accessing multidimensional Arrays using for loop**

```
int a[][] = {{1,2},{4,3}};

for(int i=0; i<a.length; i++)
{
    for(int j=0; j<a[i].length; j++)
        System.out.println(a[i][j]);
}
```

Accessing Multidimensional Arrays Contd.

- **Syntax for accessing multidimensional Arrays using advance for loop**

```
int a[][] = {{1,2},{4,3}};

    for(int i=0; i<a.length; i++)
    {
        for(int j=0; j<a[i].length; j++)
            System.out.println(a[i][j]);
    }
```

Creating and Accessing Multidimensional Arrays Demo

```java
public class TwodimensionalArray {
    public static void main(String[] args) {
        int[][] num = {
                {1, 2, 3},
                {4, 5, 6, 7},
                {9},
        };
    for (int i = 0; i < num.length; ++i)
    {
                for(int j = 0; j < num[i].length; ++j)
      {
                    System.out.println(num[i][j]);
                }
            }
        }
    }
```

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Creating and Accessing Multiple Dimension Arrays Demo

```java
public class TwodimensionalArray {
    public static void main(String[] args)
{

        int[][] mynum = {
            {1, -2, 3},
            {-4, -5, 6, 9},
            {7},
        };

         for (int[] innerArray: mynum) {
            for(int mydata: innerArray) {
                System.out.println(mydata);
            }
        }
    }
}
```

Key TakeAways

At the end of this session, you should be able to demonstrate how to:

- **Declare multidimensional Arrays**

- **Initialize multidimensional Arrays**

- **Access multidimensional Arrays elements**

Thank You!