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JAVA

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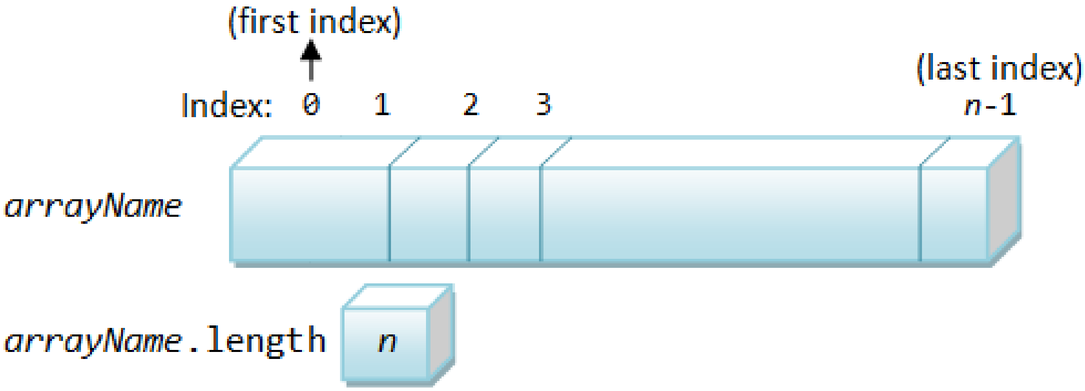
Session 4 – Arrays, Oops –Encapsulation, Abstraction, String, StringBuffer & StringBuilder

Agenda – Arrays, Oops –Encapsulation, Abstraction, String, StringBuffer & StringBuilder

1. Introduction to Arrays
2. One Dimensional Array
3. Two Dimensional Array
4. Encapsulation & Abstraction
5. Encapsulation with Example
6. String, StringBuffer, StringBuilder

Introduction to Arrays

- A Java array is an ordered collection of homogeneous values i.e. all elements of an array must be of the same type.
- Each variable is referenced by array name and its index. Arrays may have one or more dimensions.



One Dimensional Array

Syntax for declaring an array variable:

```
dataType[] arrayRefVar; // preferred way. or
dataType arrayRefVar[]; // works but its not a preferred way.
```

Creating Arrays:

- You can create an array by using the new operator with the following syntax:

```
arrayRefVar = new dataType[arraySize];
// once array size in allotted it can’t be modified. Its fixed
```

Two Dimensional Array

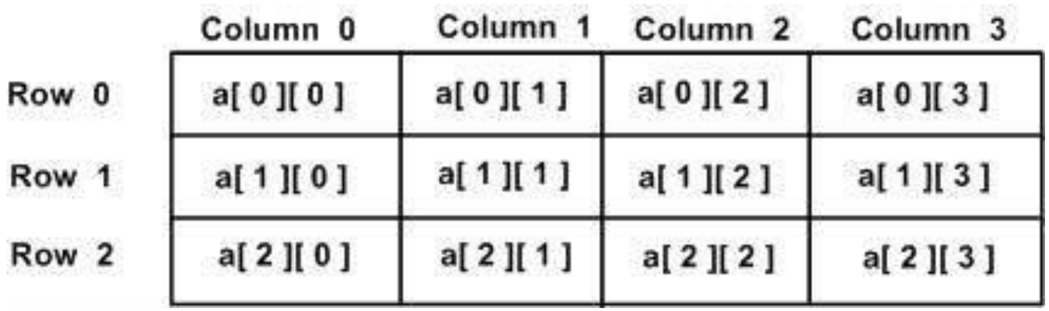
Syntax for declaring an array variable:

```
dataType[][] arrayRefVar; // preferred way. or
dataType arrayRefVar[][]; // works but its not a preferred way.
```

Creating Arrays:

- You can create an array by using the new operator with the following syntax:

```
arrayRefVar = new dataType[arraySize_row][arraySize_Col];
// once array size in allotted it can’t be modified. Its fixed
```



	Column 0	Column 1	Column 2	Column 3
Row 0	a[0][0]	a[0][1]	a[0][2]	a[0][3]
Row 1	a[1][0]	a[1][1]	a[1][2]	a[1][3]
Row 2	a[2][0]	a[2][1]	a[2][2]	a[2][3]

Encapsulation & Abstraction

- **Abstraction -** mechanism to show only relevant data to the user using public methods.
- **Encapsulation -** the process of hiding irrelevant data from the user using private keyword.

Encapsulation with Example

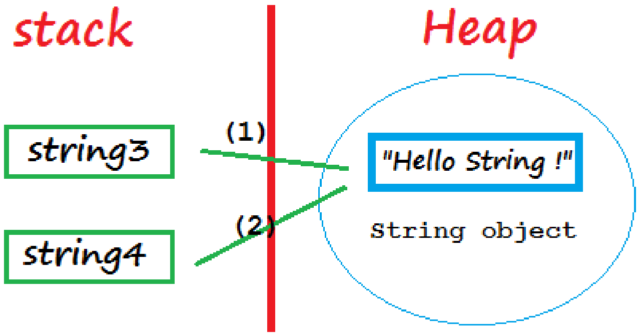
- **Encapsulation** is a process of binding or wrapping the data and the codes that operates on the data into a single entity.
- This keeps the data safe from outside class and misuse.

```
public class EncapTest{

//Private Fields
private String name;
private String idNum;

//Public methods  getters
public String getName(){
return name;    }

public String getIdNum(){
return idNum;   }

//Public methods setters
public void setName(String name){
this.name = name;  }

public void setIdNum( String newId){
idNum = newId;  }
}
```

this - Points to the current class object reference

String, StringBuffer, StringBuilder

- **String** is a class and data type. String is immutable (once created can not be changed)object.
- The object created as a String is stored in the **Constant String Pool**.



- **StringBuffer** and **StringBuilder** are mutable i.e. one can change the value of the object .
- The object created is stored in the heap .

Note : Each **method in StringBuffer is synchronized** i.e. **thread safe whereas StringBuilder is not thread safe.**

Lets Discuss Assignments

Assignment

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