**Arrays:array is collection of homogeneous type of data**

**Definition:**

Arrays are Objects in java that stores multiple values of same type. Arrays can hold either **primitive or Object references.**

Different ways of declaring array

1.arraytype[] arrayname=New arraytype[size];

2.int arrayname[];

arrayname=new int[size];

3.int array[]={val1,val2,val3,val4,val5};

(Or)

4. int array[]=new int[]{val1,val2,val3};

Examples:

1.int age[]=new int[3];

2.int[] marks=new int[4];

3.int score[];

score=new int[5];

**Note:**

1. If you are declaring array and constructing array in same line you should declare the size.
2. When array variable is declared automatically memory is created depending on size of array
3. Every memory in a array is attached with a number and it is called as ‘index’.

Index in the array starts with 0, if the size is 3 means, the indexes is 0, 1 and 2.

Program:

public class Arrays1 {

public static void main(String[] args) {

int[] arr;

arr=new int[3];// size is declared

arr[0]=10;// initializing

arr[1]=20;

arr[2]=30;

for(int i=0;i<arr.length;i++)

{

System.out.println(arr[i]);

}

String s1[]=new String[3];

s1[0]="i";

s1[1]="love";

s1[2]="java";

for(String a:s1)// enhanced for loop

{

System.out.println(a);

}

}

}

O/P:

10

20

30

i

love

java

**Note:**

Default values of array will be same as the default values of type declared

i.e., suppose

int arr2[]=new int[1];

System.out.println(arr2[0]);

Here, we are not initializing the array, and then it will print the default values of int which is 0

Different ways of initializing the Arrays

1st way:

int[] arr=new int[3];

arr[0]=10;

arr[1]=20;

arr[2]=30;

for(int i=0;i<arr.length;i++)

{

System.out.println(arr[i]);

}

Here, we are declaring int size first and later we are taking each index and assigning the values.

2nd way

int arr2[];

arr2=new int[3];

int val=10;

for(int j=0;j<arr2.length;j++)

{

System.out.println(arr2[j]=val);

val+=10;

}

Here, we are declaring the size first and later using For Loop we are assigning values to each index.

3rd way

int[] arr3={10,20,30};

for(int a:arr3)

{

System.out.println(a);

}

Here, when we are declaring the array, then and there we are assigning the values,printing the values using enchaned ForLoop

Note:

when we are trying to access elements where index is not there it will give

Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: 4

at

Ex:

int b[]={};

System.out.println(b[0]);

int a[]={10,20,30};

System.out.println(a[4]);

**TWO DIMENSIONAL ARRAY:**

We can Assign values directly

int arr[][]={{10,50,60},{40,50,60}}

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Col 0** | **Col 1** | **Col 2** |
| **Row 0** | 10 | 50 | 60 |
| **Row 1** | 40 | 50 | 60 |

OR

int arr[][]=new int[] []{{10,20,30},{40,50,60},{70,80,90}}

**int** iArr1[][] = {{10,20,30}, {40,50,60}, {70,80,90}};

System.***out***.println(iArr1.length);

**for**(**int** arr[] : iArr1) {

//1st iteration {10,20,30} = arr[]

**for**(**int** a:arr) {

System.***out***.print(a);

}

System.***out***.println();

}

//iArr = {{10,20,30}, {40,50,60}, {70,80,90}}

//1st iteration : iArr -> {10,20,30}

//arr = {10,20,30}

//a = arr[0/1/2]

//2nd iteration : iArr -> {40,50,60}

//arr = {40,50,60}

//a = arr[0/1/2]

//3rd iteration : iArr -> {70,80,90}

//arr = {70,80,90}

//a = arr[0/1/2]

**JAGGED ARRAY**

In jagged array columns will vary in each row

Ex:

|  |  |  |  |
| --- | --- | --- | --- |
| 3 | 5 | 7 | 8 |
| 4 | 5 | 7 |
| 7 | 5 |

Ex:

public class TwoArrays6 {

public static void main(String[] args) {

// TODO Auto-generated method stub

int [][] arr={{3,5,7,8},{4,8,},{5,7,8,9},{6}};

for(int i=0;i<arr.length;i++)

{

for(int j=0;j<arr[i].length;j++)

{

System.out.print(arr[i][j]+" ");

}

System.out.println();

}

System.out.println("-enhanced loop--");

for(int a[]:arr)

{

for(int i:a)

{

System.out.print(i);

}

System.out.println();

}

}

}

O/P

3 5 7 8

4 8

5 7 8 9

6

-enhanced loop--

3578

48

5789

6