Jagged Array in Java
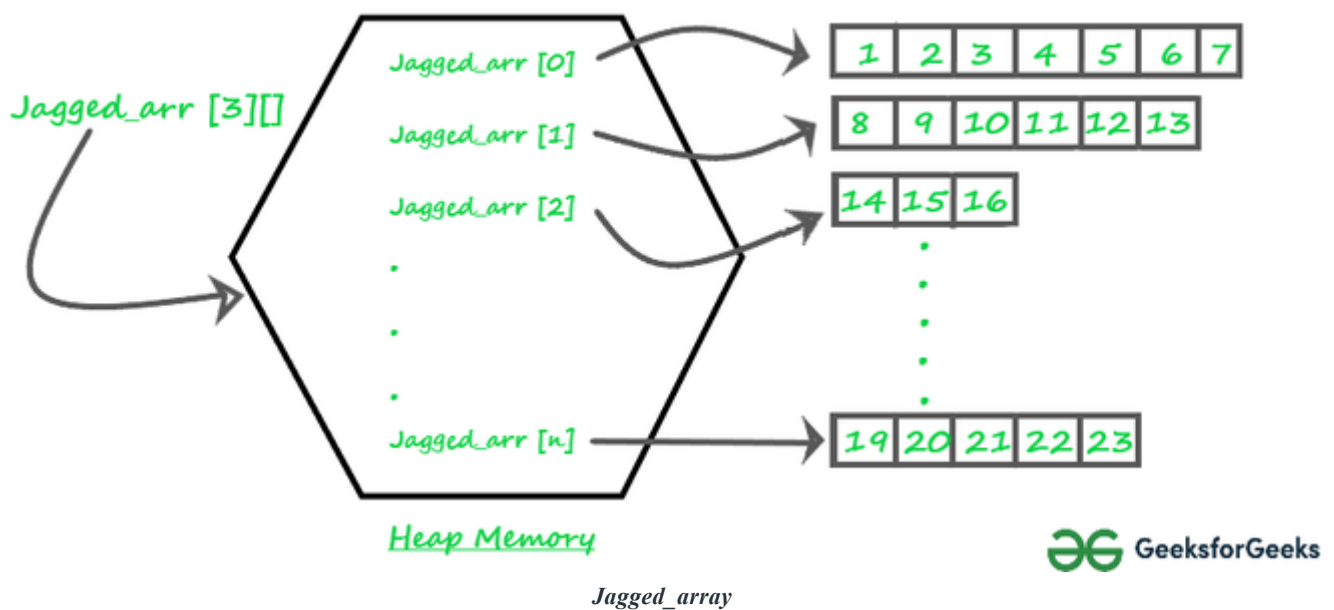
Difficulty Level : Easy   Last Updated : 15 Nov, 2021

Prerequisite: Arrays in Java

A jagged array is an array of arrays such that member arrays can be of different sizes, i.e., we can create a 2-D array but with a variable number of columns in each row. These types of arrays are also known as Jagged arrays.

Pictorial representation of Jagged array in Memory:

Jagged_array

Declaration and Initialization of Jagged array :

```
Syntax: data_type array_name[][] = new data_type[n][];  //n: no. of rows
           array_name[] = new data_type[n1] //n1= no. of columns in row-1
           array_name[] = new data_type[n2] //n2= no. of columns in row-2
           array_name[] = new data_type[n3] //n3= no. of columns in row-3
                                    .
                                    .
                                    .
           array_name[] = new data_type[nk]  //nk=no. of columns in row-n
```

Alternative, ways to Initialize a Jagged array :

```
int arr_name[][] = new int[][]  {
                new int[] {10, 20, 30 ,40},
                new int[] {50, 60, 70, 80, 90, 100},
                new int[] {110, 120}
                    };
```

OR

```
int[][] arr_name = {
        new int[] {10, 20, 30 ,40},
        new int[] {50, 60, 70, 80, 90, 100},
        new int[] {110, 120}
            };
```

OR

```
int[][] arr_name = {
        {10, 20, 30 ,40},
        {50, 60, 70, 80, 90, 100},
        {110, 120}
            };
```

Following are Java programs to demonstrate the above concept.

```java
// Program to demonstrate 2-D jagged array in Java
class Main {
    public static void main(String[] args)
    {
        // Declaring 2-D array with 2 rows
        int arr[][] = new int[2][];

        // Making the above array Jagged

        // First row has 3 columns
        arr[0] = new int[3];

        // Second row has 2 columns
        arr[1] = new int[2];
```

```java
        // Initializing array
        int count = 0;
        for (int i = 0; i < arr.length; i++)
            for (int j = 0; j < arr[i].length; j++)
                arr[i][j] = count++;

        // Displaying the values of 2D Jagged array
        System.out.println("Contents of 2D Jagged Array");
        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();
        }
    }
}
```

Output

```
Contents of 2D Jagged Array
0 1 2
3 4
```

Following is another example where i'th row has i columns, i.e., the first row has 1 element, the second row has two elements and so on.

```java
// Another Java program to demonstrate 2-D jagged
// array such that first row has 1 element, second
// row has two elements and so on.
class Main {
    public static void main(String[] args)
    {
        int r = 5;

        // Declaring 2-D array with 5 rows
        int arr[][] = new int[r][];

        // Creating a 2D array such that first row
        // has 1 element, second row has two
        // elements and so on.
        for (int i = 0; i < arr.length; i++)
            arr[i] = new int[i + 1];

        // Initializing array
```

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

            // Displaying the values of 2D Jagged array
            System.out.println("Contents of 2D Jagged Array");
            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();
            }
        }
    }
```

Output

```
Contents of 2D Jagged Array
0
1 2
3 4 5
6 7 8 9
10 11 12 13 14
```

This article is contributed by **Rahul Agrawal**. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to review-team@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above