Continuation of arrays…

Let us now try to understand a 3D array

Example 3) Create an array to store the ages of students belonging to 2 schools having 3 classrooms with 5 students each.

Solution:

It is very important to know the different dimensions and order of it, here we have 3 dimensions (schools, classrooms, students).

Schools (i) → **Classrooms (j)** → **Students (k)**

Below given is the syntax of defining the 3D arrays in Java:

data_type aray_name [ ][ ][ ] = new array_name [i] [j] [k];

- Here **data_type**: data type of elements that will be stored in the array.
  array_name: name of the array
- **new**: keyword to create an object in Java
- **i, j, k**: holds the numeric values for the various dimensions.

Let's now consider 3D array,

int a[][][] = new int [2][3][5];

a.length → Number of blocks

a[i].length → Number of rows

a[i][j].length → Number of Columns

Let's try to code this


```
import java.util.Scanner;
class Demo
{
    public static void main(String[] args)
    {
        int a[][][] = new int[2][3][5];
        Scanner scan = new Scanner(System.in);
        for(int i =0;i<=a.length-1;i++)
        {
            for(int j=0;j<=a[i].length-1;j++)
            {
                for(int k=0;k<=a[i][j].length-1;k++)
                {
                    System.out.println
                        ("Enter the age of student from school"
                            +i+" classroom "+j+" student "+k);
                    a[i][j][k] = scan.nextInt();
                }

            }
        }
    }
}
```

Although we now know how to create a multi-dimensional array, do you in above case every classroom was expecting same number of students. Whereas in reality inside a classroom there can be varying number of students. To achieve this in java we have **jagged arrays**.

So let's see what exactly is jagged array..

Jagged array is array of arrays such that **member arrays can be of different sizes**, i.e., we can create a 2-D or 3-D arrays but with **variable number of columns in each row**. These type of arrays are also known as Jagged arrays.

understood

Example 4) Create an array to store the ages of students belonging to 2 classrooms where the first classroom has 2 students and second classroom has 5 students.

Solution:

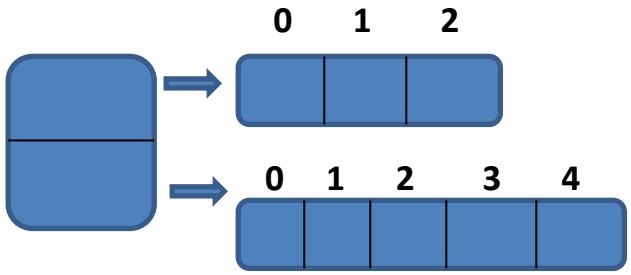
Initialisation of jagged array→

int a[ ][ ] = new int[2][ ];

When not sure how many students are in each class, just leave it blank and specify separately.

a[0] = new int[3];

a[1] = new int[5];




```
import java.util.Scanner;
class Demo
{
    public static void main(String[] args)
    {
        int a[][] = new int[2][];
        a[0] = new int [3];
        a[1] = new int [5];
        Scanner scan = new Scanner(System.in);
        for(int i =0;i<=a.length-1;i++)
        {
            for(int j=0;j<=a[i].length-1;j++)
            {
                System.out.println
                        ("Enter the age of student from classroom "
                            +i+" student "+j);
                a[i][j] = scan.nextInt();
            }
        }
    }
}
```

Similarly try doing for 3D jagged array.