SOMAIYA VIDYAVIHAR UNIVERSITY
K J Somaiya College of Engineering

K. J. Somaiya College of Engineering, Mumbai-77

(A Constituent College of Somaiya Vidyavihar University)

Department of Computer Engineering

Batch No.B2	**Roll No. 16010121110**
Experiment / Assignment/ Tutorial No. 3	
Grade : AA/AB/BB/BC/CC/CD/DD	
Signature of the Staff In-charge with date	

TITLE : Multi-dimensional Arrays (Jagged Array)

AIM: Write a program which stores information about n players in a two dimensional array. The array should contain the number of rows equal to the number of players. Each row will have a number of columns equal to the number of matches played by that player which may vary from player to player. The program should display player number (index +1), runs scored in all matches and its batting average as output. (It is expected to assign columns to each row dynamically after getting value from the user).

Expected OUTCOME of Experiment:

CO2: Explore arrays, vectors, classes and objects in C++ and Java.

Books/ Journals/ Websites referred:

1. E. Balagurusamy , "Programming with Java" McGraw-Hill.

2. Sachin Malhotra, Saurabh Choudhary, "Programming in Java", Oxford Publications.

Pre Lab/ Prior Concepts:

Arrays

Multi-Dimensional Array:

10 12 43 11 22
20 45 56 1 33
30 67 32 14 44
40 12 87 14 55
50 86 66 13 66
60 53 44 12 11

A multi-dimensional array is one that can hold all the values above. You set them up like this:

int[ ][ ] numbers = new int[6**][**5**];**

The first set of square brackets is for the rows and the second set of square brackets is for the columns. In the above line of code, we're telling Java to set up an array with 6 rows and 5 columns.

aryNumbers[0][0] = 10;
aryNumbers[0][1] = 12;
aryNumbers[0][2] = 43;
aryNumbers[0][3] = 11;
aryNumbers[0][4] = 22;

So the first row is row 0. The columns then go from 0 to 4, which is 5 items.

Class Diagram:

No class except main class.

Algorithm:

Create a jagged array.

1) Take input of length outer array.
2) Take input for length of inner array.
3) Take inputs for every length of inner array and put in inner array.
4) Repeat for length of outer tray.

Implementation details:

```
/*********************************************************************************

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should contain the number of rows equal to the number of players. Each row will have a number of
columns equal to the number of matches played by that player which may vary from player to player.
The program should display player number (index +1), runs scored in all matches and its batting
average as output. (It is expected to assign columns to each row dynamically after getting value from
the user).

*********************************************************************************/

import java.util.*;

public class Main

{

        public static void main(String[] args) {

                Scanner sc = new Scanner(System.in);

                System.out.println("Enter number of players. ");

                int n=sc.nextInt();

                int array[][] = new int[n][];

                for (int i=0;i<n;i++){
```

```
                System.out.println("Enter number of matches played by player "+(i+1));
                int temp =sc.nextInt();
            array[i]=new int[temp];
                    for (int j=0;j<temp;j++){
                        System.out.println("Enter number of runs scored by played by player "+
(i+1)+" in match "+(j+1));
                        array[i][j]=sc.nextInt();
            }
            }
        for ( int i=0;i<n;i++){
          int sum=0;
            for ( int k=0;k<array[i].length;k++){
              sum=sum+array[i][k];
            }
            System.out.println("Total runs score by player "+(i+1)+" are "+sum);
            System.out.println("Average runs score by player "+(i+1)+" are "+ (((double) sum)/
array[i].length));
        }
```

```
        }
}
```

Output:

Enter number of players.

2

Enter number of matches played by player 1

2

Enter number of runs scored by played by player 1 in match 1

3

Enter number of runs scored by played by player 1 in match 2

4

Enter number of matches played by player 2

1

Enter number of runs scored by played by player 2 in match 1

2

Total runs score by player 1 are 7

Average runs score by player 1 are 3.5

Total runs score by player 2 are 2

Average runs score by player 2 are 2.0

Conclusion:

Thus we have understood the concept of jagged arrays. We made jagged arrays by taking input from the users and made arrays accordingly. We used the new constuctor for making the arrays. The syntax for making arrays is int array[][] = new int[][] in java. Arrays are treated like objects in java.

Date: 22 sept 22 **Signature of faculty in-charge**

Post Lab Descriptive Questions

Q.1 Create a jagged array of integers. This array should consist of two 2-D arrays. First 2-D array should contain 3 rows having length of 4,3,and 2 respectively. Second 2-D array should contain 2 rows with length 3 and 4 respectively.

```
/**********************************************************************
Create a jagged array of integers.
This array should consist of two 2-D arrays.
First 2-D array should contain 3 rows having length of 4,3,and 2 respectively.
Second 2-D array should contain 2 rows with length 3 and 4 respectively.

**********************************************************************/
public class Main
{
                    public static void main(String[] args) {
                    int a[][][]=new int [2][][];
                    a[0]=new int[3][];
                    a[0][0]=new int [4];
```

```
                    a[0][1]=new int [3];
                    a[0][2]=new int [2];
                    a[1]=new int[2][];
                    a[0][0]=new int [2];
                    a[0][1]=new int [4];

                    }
}
```

Q.2 Consider the following code

int number[] = new int[5];

After execution of this statement, which of the following are true?

(A) number[0] is undefined

(B) number[5] is undefined

(C) number[4] is null

(D) number[2] is 0

(E) number.length() is 5

(i) (C) & (E)

(ii) (A) & (E)

(iii) (E)

(iv) (B), (D) & (E)

Ans:

(iv)

Q.3 Write a program to create an array where i^{th} row has i columns.

```
/*********************************************************************************
Write a program to create an array where ith row has i columns.
*********************************************************************************/
public class Main
{
        public static void main(String[] args) {
                int len=3;
           int a[][]=new int [len][];
```

```
        for (int i=0;i<len;i++){
           a[i]= new int[i];
        }
        }
}
```