Topic: Double-Dimensional Arrays

Activity Guidelines

Group Size: 3

Method of Assigning Students: Count the number of students in the class, divide by 3, count off from 1 to the quotient, and group identical numbers.

Materials:

✓ Handout (one copy per group) with questions to be answered at the end of the session

Roles:

Coordinator/Leader: Clarifies goals and objectives, allocates roles for each team member and divides the tasks within the group.

Monitor/Evaluator: Person designed to evaluate the different ideas to approach the problem and make an accurate judgment of the most beneficial option.

Implementer: Person in charge to transform discussions and ideas into a technical solution for the given problem.

Individual Accountability: Each team member gets assigned a specific role in order to ensure every student within a team participates and contributes to reach a solution for each problem presented in the activity.

Activity Summary

1) Every team is required to implement 4 different methods to:
   a. Initialize a new double-dimensional array.
   b. Print a given double-dimensional array.
   c. Identify whether if the given double-dimensional array is ragged or not.
   d. Obtain and return the index of the row which contains the largest sum within the double-dimensional array.
ELEMENTARY DATA STRUCTURES
PEER SESSION

Double-Dimensional Arrays

1) Write a method named initializeArray that will assign random values to a double-dimensional array.

Answer:

```java
public static void initializeArray(int[][] array) {
    int value;
    for (int row = 0; row < array.length; row++) {
        for (int column = 0; column < array[row].length; column++) {
            value = (int)(Math.random() * 5) + 1;
            array[row][column] = value;
        }
    }
}
```

2) Write a method named printArray that will print the values of the double-dimensional array.

Answer:

```java
public static void printArray(int[][] array) {
    for (int row = 0; row < array.length; row++) {
        for (int column = 0; column < array[row].length; column++) {
            System.out.println("Values:" + array[row][column]);
        }
    }
}
```

3) Write a method named isRagged that determines whether a double-dimensional array is a ragged array. Remember, a ragged array is one where all the rows do not have the same length.

Answer:

```java
public static boolean isRagged(int[][] array) {
    int length = array[0].length;
    for (int i = 0; i < array.length; i++) {
        if (length != array[i].length)
            return false;
    }
    return true;
}
```
4) Write a method named largestSum that returns the index of the row with the largest sum in the double-dimensional array.

Answer:

public static int indexOfRowWithLargestSum(int[][] array) {
    int index = -1;
    int max = Integer.MIN_VALUE;
    int sum = 0;
    for (int row = 0; row < array.length; row++) {
        sum = 0;
        for (int column = 0; column < array.length; column++) {
            sum += array[row][column];
        }
        if (sum >= max) {
            max = sum;
            index = row;
        }
    }
    return index;
}