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.

CNS#1042341

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:

```
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:

```
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:

```
  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;
         }
}
```