

4. This question involves manipulating a two-dimensional array of integers. You will write two static methods of the `ArrayResizer` class, which is shown below.

```
public class ArrayResizer
{
    /** Returns true if and only if every value in row r of array2D is non-zero.
     * Precondition: r is a valid row index in array2D.
     * Postcondition: array2D is unchanged.
     */
    public static boolean isNonZeroRow(int[][] array2D, int r)
    { /* to be implemented in part (a) */ }

    /** Returns the number of rows in array2D that contain all non-zero values.
     * Postcondition: array2D is unchanged.
     */
    public static int numNonZeroRows(int[][] array2D)
    { /* implementation not shown */ }

    /** Returns a new, possibly smaller, two-dimensional array that contains only rows
     * from array2D with no zeros, as described in part (b).
     * Precondition: array2D contains at least one column and at least one row with no zeros.
     * Postcondition: array2D is unchanged.
     */
    public static int[][] resize(int[][] array2D)
    { /* to be implemented in part (b) */ }
}
```

```
a) public static boolean isNonZeroRow(int[][] array2D, int r) {
    for (int i = 0; i < array2D[0].length; i++) {
        if (array2D[r][i] == 0) {
            return false;
        }
    }
    return true;
}
```

```
b) public static int numNonZeroRows(int[][] array2D) {
    int count = 0;
    for (int i = 0; i < array2D.length; i++) {
        if (isNonZeroRow(array2D, i)) {
            count++;
        }
    }
    return count;
}
```

```
public static int[][] resize(int[][] array2D) {
    int L[] = listSized new String[numNonZeroRows(array2D)][array2D[0].length]
    int row = 0;
    for (int i = 0; i < array2D.length; i++) {
        if (isNonZeroRow(array2D, i)) {
            listSized [row] = array2D[i];
            row++;
        }
    }
    return listSized;
}
```