**2021 Question 4: (9 points)**

| Total Scored out of 9 |  |
| --- | --- |

Part(a) isNonZero

+1 Compares an item from array2D with 0

Responses will not earn the point if they fail to attempt the comparison, even if they access an item from array2D

+1 Accesses every item from row r of 2D array(no bounds errors)

Responses can still earn the point even if they return early from an otherwise correctly-bounded loop

+1 Returns true if and only if row contains no zeros

Responses can still earn the point even if they process a column of the 2D array rather than a row

Responses will not earn the point if they fail to return a value in some cases

Part(b) resize

+1 Calls numNonZeroRows and isNonZeroRow

Responses can still earn the point even if they fail to use or store the return value

Responses will not earn the point if they

• include incorrect number or type of parameters

• call methods on an object or class other than ArrayResizer

+1 Identifies rows with no zeros (in the context of an if)

Responses can still earn the point even if they call isNonZeroRow incorrectly, if the row being tested is clearly identified (index or reference)

+1 Declares and creates a new 2D array of the correct size

Response will not earn the point if they transpose the dimensions of the created array

+1 Maintains an index in the new array

Responses will not earn the point if they

• fail to declare, initialize, and update a different index

• maintain the index in a way that overwrites, skips, or duplicates rows

+1 Traverses all necessary elements of array2D (no bounds errors)

Responses can still earn the point even if they

• cause a bounds error by declaring and creating a new 2D array of an incorrect size

• fail to maintain an index in the new array correctly, resulting in a bounds error

• fail to access individual elements in a nested loop, if they access each row as an entire row

Responses will not earn the point if they transpose coordinates, leading to a bounds error and/or copying columns

+1 Copies all and only rows identified as having no zero elements into the new array

Responses can still earn the point even if they

• copy a reference

• identify rows incorrectly, if the logical sense can be determined and is correct

• copy columns instead of rows, consistent with the dimensions of the created 2D array

Responses will not earn the point if they

• remove or overwrite data from array2D (instead of or in addition to copying it to the new array)

• reverse the logical sense of which rows to copy