Assignment 8

Due time: 04/17/2022, 11:59pm

Total credits: 100, 2 questions

Submission guide:

1. Create a folder and name it with the format FirstName_LastName_Aassigment8 for example Chunyu_Yuan_Assignment8

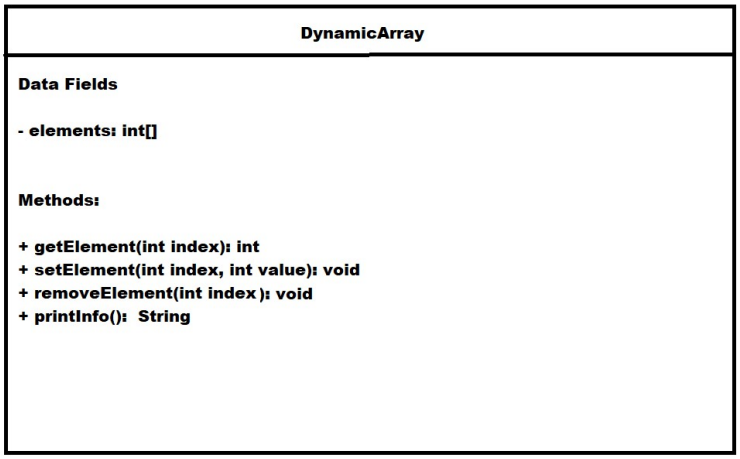
2. Inside the folder, you should have 2 java files

3. compress your file to .zip format and submit it to the blackboard,

4. if you have any question, please send email to cyuan1@gradcenter.cuny.edu

1. DynamicArray (50 credits)

In this assignment, you need to design a int dynamicarray which is similar to arraylist. Below is the UML figure.



The data field is one int array with beginning size 1. All the default elements are minimum int value.

Methods:

setElement: your method needs to set the value by index(>=0). You have to use exception arrayindexoutofboundsexception and arithmeticexception to handle some issues. The set value cannot be the minimum int value. If the value is the minimum int value , use the arithmeticexception to handle and print out information "You cannot set the value to the minimum int value ". If the index is out of bounds, use arrayindexoutofboundsexception to handle this issue, create a new elements array with size(index +1), to copy original elements to the new elements array. Then assign the index's value. Please note that all the default elements are the minimum int value. Below is one example:

I did three operations:

setElement(0,1), setElement(2,100), setElement(4,10), setElement(5,11). Then the elements array is as the below figure shown.

1	MINIMUM Integer	100	MINIMUM Integer	10	11

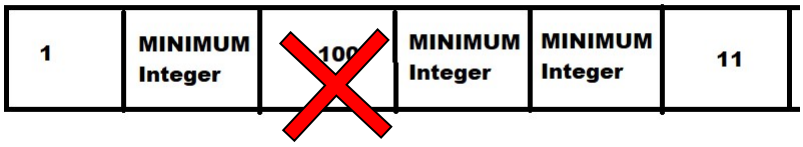
Please do not compare the index with the elements array's size to check if out of bound. Otherwise, you will not get points

getElement, your method needs to return the value by the index(>=0). You have to use exception arrayindexoutofboundsexception and arithmeticexception to handle issues. DO NOT compare the index with the array's size. Even although it works, you will not get points. If the index is out of bounds, print put specific information(anything you like), then return the minimum int value. If the index is inside the bounds but the value is the minimum int value, throw a arithmeticexception and use arithmeticexception to handle to print the value is not existing, then return the minimum int value. If the index and value are both fine, print out like the example "Index : 0, value : 1", then return value;

removeElement, your method needs to remove the value by the index(>=0). You have to use exception arrayindexoutofboundsexception and arithmeticexception to handle issues. DO NOT compare the index with the array's size. Even although it works, you will not get points. If the index is out of bounds, print put specific information(anything you like). If the index is inside the bounds but the value is the minimum int value, throw an arithmeticexception and use arithmeticexception to handle to print the value cannot be removed because it doesn't exist.

If the index and value are both fine, for example:

removeElement(2),



Just make that element to the minimum int value.

printInfo:

1	MINIMUM Integer	100	MINIMUM Integer	MINIMUM Integer	11

If the value is not minimum int value, add its index and value to string . Finally return the String like"Index 0 => Value 1, Index 2 = > Value 100, Index 5=>Value 11". If there is no available value, return "No elements"

2 TestClass (50 points)

Designing a menu that can let users unlimited operate your DynamicArray until the user chooses to exit. Your final program should be the same as my example like the below operation log.

PS E:\CISC3115> java TestClass

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

1

type index:

2

type value:

3

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

4

Index : 2=> Value 3

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

1

type index:

3

type value:

5

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

4

Index : 2=> Value 3 Index : 3=> Value 5

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

1

type index:

6

type value:

-2147483648

Cannot SET MINI_VALUE

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

4

Index : 2=> Value 3 Index : 3=> Value 5

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

3

type index:

3

Index 3 =>Value 5 removed

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

4

Index : 2=> Value 3

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

3

type index:

2

Index 2 =>Value 3 removed

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

4

No elements

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

2

type index:

2

No exist element

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

1

type index:

7

type value:

3

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

3

type index:

7

Index 7 =>Value 3 removed

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

4

No elements

------Menu------

1. add number

2. get number

3. remove number

4. print DynamicArray

5. exit

type below number:

5

exit

PS E:\CISC3115 >