

CSCI-101 Programming 1

Lab 10, Part a - Week of Nov 7

INSTRUCTIONS

Inside the labs directory create a file named **Lab10a.java**.

Inside your **CharacterArrayList.java** file modify the following methods:

1. **char get(int index)** - rather than returning the null character when the index is out of bounds, throw an `IndexOutOfBoundsException`.
2. **char set(int index, char c)** - rather than returning the null character when the index is out of bounds, throw an `IndexOutOfBoundsException`.

Inside your **CharacterArrayList.java** file add the following:

3. A method named **isEmpty**. The method returns true if there are no elements in the list; otherwise the method returns false.
4. A method named **clear** that removes all of the elements from this list by setting the elements in the list to the null character. The list will be empty after this call returns.
5. A method named **lastIndexOf**. The method takes a character as an argument and returns the index of the last occurrence of the specified character in this list, or -1 if this list does not contain the element.

In the **main** method in **Lab10a.java** do the following.

- a. Create an instance of the **CharacterArrayList** class that can hold 10 elements.
- b. Add the characters 'h', 'e', 'l', 'l', and 'o' at the indices 0,2,4,6, and 8, respectively.
- c. Print the contents of the list by calling the list's **toString** method. Verify it is correct.
- d. Call **isEmpty** and store the value returned by the method in a variable named **empty**. Print to the screen the value in the variable named **empty**. Verify it is correct.
- e. Determine the index of the last occurrence of the character 'l' in the list using the method named **lastIndexOf** and store the index in a variable named **index**. Print the value in the variable named **index** to the screen. Verify it is correct.
- f. Ask the user to enter an integer. Read the integer into a variable named **input**.
- g. Attempt to get the character at the index stored in **input** using the **get** method. If successful, print the character to the screen. If unsuccessful, allow your program to terminate abruptly.
- h. Ask the user to enter a second integer. Read the integer into the variable named **input**.
- i. Attempt to set the character, at the index entered by the user, to the character 'Z' using the **set** method. If successful, print the character returned by set. If unsuccessful, allow the program to terminate abruptly.