

CSCI-101 Programming 1

Lab 9, Part a - Week of October 31

INSTRUCTIONS

Log into cs.bridgewater.edu.

Change your working directory to your **labs** directory in your repository.

Inside the labs directory use **vi** to create a file named **Lab9a.java** and a file named **CharacterArrayList.java**.

Inside the **CharacterArrayList.java** file create a class that contains the following:

1. Fields
 - a. A private field named **array** that holds an array of characters and is initialized to **null**.
 - b. A private field named **size** that holds an integer and is initialized to **0**. This field holds the number of elements that are in the array *AND* indicates where to add the next element.
2. Constructors
 - a. A public constructor that has an integer parameter named **length**. The constructor sets the field named **array** equal to an array of characters that has a length equal to the value in the parameter named **length**.
3. Methods (all non-static)
 - a. A public method named **toString** that overrides the **Object** class' **toString** method. The method returns a string containing a "[", followed by a comma separated list of the non-null elements in the array, followed by "]".
 - b. A public method named **size** that returns the number of elements in the array.
 - c. A public method named **add** which has a single character parameter named **c**. If there is room in the array, the method adds the character in **c** at the smallest index possible.

In the **main** method in **Lab9a.java** do the following.

- a. Create an instance of the **CharacterArrayList** class that can hold 10 elements.
- b. Print the contents of the **CharacterArrayList** by calling **toString**.
- c. Print the number of elements currently in the **CharacterArrayList** using the **size** method.
- d. Ask the user to enter 5 characters.
- e. Read the characters from the keyboard and add them to the **CharacterArrayList** using the **add** method.
- f. Print the number of elements currently in the **CharacterArrayList** using the **size** method.
- g. Print the contents of the **CharacterArrayList** by calling **toString**.