CSCI-101 Programming 2
Lab 3, Part b

INSTRUCTIONS

Inside your **lab3** directory use **vi** to create a file named **Lab3b.java**.

Inside the **ArrayList.java** file add the following methods:

1. Methods (all non-static)

   a. **public boolean contains(Object o)**

      The method returns **true** if the element **o** is in the array; otherwise returns **false**. Remember to use the equals method when comparing reference types.

   b. **public E get(int index)**

      If the value in **index** is a valid index *of an element in the array* the method returns the element at the specified index; otherwise the method throws an **IndexOutOfBoundsException**.

      Note that when you return the element (of type E) you must return an element having the parameterized type by casting the reference to a reference of type E.

   c. **public int indexOf(Object o)**

      The method returns the *index* of the *first occurrence* of **o** in the array, or -1 if the array does not contain the element.

   d. **public E set(int index, E element)**

      If the value in index is a valid index in **array**, the method replaces the element at the position specified in **index** with the value in the second parameter and returns the element previously at the specified position. If the value in **index** is not a valid index in **array**, the method throws an **IndexOutOfBoundsException**.

In the **main** method in **Lab3b.java** do the following.

a. Create an instance of the **ArrayList** class that can hold 10 Characters.
b. Use the **set** method to add the following character to the **ArrayList**: 'm', 'e', ' ', 'h', 'a', 'p ', 'p', 'y'.
c. Print the contents of the **ArrayList** using the **toString** method.
d. Use the **add** method to add the character '!' to the **ArrayList**.
e. Print the contents of the **ArrayList** using the **toString** method.
f. Print the number of elements in the **ArrayList** using the **size** method.
g. Store in a variable named **idx** the index of the first instance of the character 'p' in the **ArrayList** using **indexOf**. Print the value in **idx** to the screen. Use the **Character.valueOf** method to create an instance of the **Character** class to hold 'p' which can be passed to **indexOf**.

h. Store in a variable named **fourthChar** the character at index 3 in the **ArrayList** using the **get** method. Print the value in **fourthChar** to the screen.

i. Use the method **contains** to store in a variable named **hasH** the value **true** if the **ArrayList** contains the character 'h' or **false** if it does not. Print the value in **hasH** to the screen.

j. Use the method **contains** to store in a variable named **hasT** the value **true** if the **ArrayList** contains the character 't' or **false** if it does not. Print the value in **hasT** to the screen.