CMPINF0401 Recitation

TUESDAYS 11:00-12:50

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Overview

- ArrayLists
- Lab7

Main Differences Between Arrays and ArrayLists

- ArrayLists are built off off arrays. Unlike arrays, you do not have to worry about size constraints since they automatically take care of sizing.
  - As a result, in terms of runtime, it's better to use an ArrayList for a dynamic set of data
- Other key differences include:
  - All operations on ArrayLists are specified as method calls
    - Get the number of elements by using arrayListName.size()
    - Get a value from an index using arrayListName.get(index)
    - Set a value from an index using arrayListName.set(index, value)
  - Let's check out some other methods:
    - https://docs.oracle.com/en/java/javase/17/docs/api/java.base/java/util/ArrayList.html

A Note on Defining ArrayLists

- ArrayLists are initialized using the following syntax:
    - ArrayList<Type> varName = new ArrayList<Type>();
- Let's break this down:
    - ArrayList<Type>: Need to make sure your Type is Capitalized.
        - i.e., ArrayList<int> is not valid → Needs to be ArrayList<Integer>
        - This is because you can make an ArrayList of any Generic Type. Generics haven't been covered yet, but you'll see this later. As a result, by saying ArrayList<Integer> java converts an int to it's "generic" counterpart.
    - new ArrayList<Type>();
        - Because everything with ArrayLists is done using method calls, the () calls the method to create a new ArrayList of the Type you're passing.

Lab 7

- Due 3/21
  - https://canvas.pitt.edu/courses/127916/files/8050402?module_item_id=2735308

Lab 7

- Main Method:
  - Start by creating a new ArrayList of Integers to hold your values
  - Set 2 Scanners, one for the keyboard and one for the file being read.
  - Iterate through the integers in the file (Hint: .nextInt() will be your friend here) and add them to the ArrayList
  - Then, make a call to printArrayList, passing in the list you created
  - Then, print out the size (reference the methods for ArrayLists) of the list to the user
  - Prompt them to type the value that they want to return, and then find that value in the list (again, reference the methods for ArrayLists, check out .indexOf()) and remove it.
  - Finish by printing the new ArrayList and it's size.

Lab 7

- printArrayList method:
  - In this method, simply create an enhanced for loop to loop through the values in the ArrayList and print them out.