Lab – Java – Generics - Basic Collections

Overview

Write an application that uses generic collections.

Create Console Application

Create a new Java console application.

Create a Collection Instance in Main

Create an instance of a generic Collection of String in main. It should contain data read from a file. You must create the file from the sample data given at the end of this document. For NetBeans, make sure to put the file in the root directory of the project (right-click the project node when creating the file).

Print All Items – Enhanced for-loop

Write a method that takes a Collection interface as a parameter. Print all items in the collection using an enhanced for-loop. Make sure to call the method from main.

Note: All methods created for this lab will need to be defined as static.

Print All Items – Iterator

Write a method that takes a Collection interface as a parameter. Print all items using an Iterator interface reference. Make sure to call the method from main.

Remove Item – Iterator

Write a method that takes two parameters: generic collection, target item to remove. Use a generic Collection iterator to remove the target item from the collection. Print all items after removing the item.

Note: When testing if this method works you must check edge case removals (first and last elements) and removing something in the middle.

Create a List Instance in Main

Create an instance of a generic List of String from the original collection. All items should be copied (do not just copy the collection reference itself). You do NOT need a loop to do this. Hint: One of the ArrayList constructors takes a Collection as a parameter.

Sort the List

Sort the list using the Collections sort method. Print the sorted list on screen.

Add to Middle Using Iterator

Write a method that takes three parameters: generic List, data, position. Use a generic List iterator to add the data to the collection at the given position. For example, if 2 is passed in as the position then the data should be added as the second item in the collection.

Note: Make sure to test edge and middle cases.

Print All Items in Reverse- Iterator

Write a method that takes a generic List interface as a parameter. It should print all items in reverse using a generic List iterator. The iterator should start at the end of the list and go to the beginning of the list. Call this method in main.

Create Array from List

In main, create a normal Java array from the generic List. Use a method on the List class to do this (do not loop and copy the elements). Print all elements of the new array on screen using an enhanced forloop.

Sample Data

Mateo Kenji Rose Gwen Emmanuel Asad Seiko Keisha Lucia Mikhail Oksana Gabriela