

Gebze Technical University
Department of Computer Engineering
CSE 241/505
Object Oriented Programming
Fall 2019
Homework # 8
Inheritance and Generics in Java
Due date
Jan 15th 2020

In this homework, you will write a **generic** Java class hierarchy for a simple container class hierarchy.

The class **GTUContainer** is an **abstract** class with the following **abstract** methods.

| | |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <u>empty</u> | Test whether container is empty |
| <u>size</u> | Return container size |
| <u>max_size</u> | Return maximum size |
| <u>insert</u> | Insert element, throws exception <code>java.lang.IllegalArgumentException</code> if there is a problem with insertion |
| <u>erase</u> | Erase element |
| <u>clear</u> | Clear all content |
| <u>iterator</u> | Return iterator to beginning |
| <u>contains</u> (<u>Object</u> o) | Returns true if this collection contains the specified element. |

The class **GTUSet**<T> extends from the super class and implements all of the methods appropriately for a set class.

The class **GTUVector**<T> derives from the base class and implements all of the functions appropriately for a vector class. You may write other helper classes to make your work easier.

All classes will keep their data using Java arrays. Do not use Java collection classes.

The class **GTUIterator** implement these two iterator methods: next, hasNext as defined in <https://docs.oracle.com/javase/7/docs/api/java/util/Iterator.html>

Write your driver program to test the all the classes and all of their methods.

Notes

- Use appropriate comments for JavaDoc and submit your documentation files.
- Test each method of each class at least once by writing driver code.
- You should submit your work to the moodle page and follow all the submission rules that will be posted.