Introduction to Java

CS9053 Section I2

Fall 2024

Assignment 5

Wednesday 6:00 PM – 8:30 PM

Prof. Dean Christakos

Oct 2nd, 2024

Due: Oct 10th, 2024 11:59 PM

Part I: Abstracts

Create an abstract class Product that contains:

* Fields: String name, double price.
* An abstract method double calculateDiscountPrice() which calculates the price after discount.

Create two subclasses with appropriate getters and setters and implementing the abstract method:

* Electronics should have a warrantyPeriod field, and a discount of 10%.
* Clothing should have a size field and a discount of 15%.

Write a class Store that has a list of Product items and a method void showDiscountPrices() that displays the discounted prices of all products in the list.

* In the main method, add instances of Electronics and Clothing to the store and call showDiscountPrices()

Part II: **Lambdas**

* Create a class Person with fields String name and int age.
* Implement a ArrayList<Person> containing several Person objects.
* Use a lambda expression with the Comparator<Person> interface to sort the list by age.
* Use a lambda expression and Predicate<Person> to filter the list and create a new list containing only people over the age of 25.
* Print the sorted list and the filtered list.

Part III: Generics & Lambdas

* Create a class Pair parameterized with two values, a and b with getters and setters as a toString representation. a and b should be fields of type K,V, the parameters of the Pair class
* Create an ArrayList of Pair objects where a and b are of type Double
* Sort the ArrayList by the value of the magnitude of the Pair,