ECAP615

Programming in Java

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Learning Outcomes

After this lecture, you will be able to

- learn the basic concept of Comparable and Comparator interface
- understand the basics of Collection Class
- differentiate between Comparable and Comparator Interface

Comparable Interface

- Java provides two interfaces to sort objects using data members of the class:
    - ✓Comparable
    - ✓Comparator

Comparable Interface

- Java Comparable interface is used to order the objects of the user-defined class.
- This interface is found in java.lang package and contains only one method named compareTo(Object).
- It provides a single sorting sequence only.

Comparable Interface

- A comparable object is capable of comparing itself with another object.
- The class itself must implement the java.lang.Comparable interface to compare its instances.

compareTo(Object obj) method

- public int compareTo(Object obj): It is used to compare the current object with the specified object.

  It returns

  ✓positive integer

  ✓negative integer

  ✓Zero

Collections class

- The Collections class provides static methods for sorting the elements of collections.
- If collection elements are of Set or Map, we can use TreeSet or TreeMap.
- The Collections class provides methods for sorting the elements of list type elements.
- public void sort (List list): It is used to sort the elements of a list.

Comparator Interface

- Unlike Comparable, Comparator is external to the element type we are comparing.
- It’s a separate class.
- Collections class has a second sort() method and it takes Comparator.
- The sort() method invokes the compare() to sort objects.

Comparator Interface

- A comparator object is capable of comparing two objects of two different classes.

Syntax:

```
public int compare(Object obj1, Object obj2):
```

Difference Between Comparable and Comparator Interface

Comparable	Comparator
Comparable provides a single sorting sequence.	The Comparator provides multiple sorting sequences.
Comparable affects the original class.	Comparator doesn't affect the original class.
Comparable provides compareTo() method to sort elements.	Comparator provides compare() method to sort elements.
Comparable is present in java.lang package.	A Comparator is present in the java.util package.

Difference Between Comparable and Comparator Interface

Comparable	Comparator
Comparable is meant for objects with natural ordering which means the object itself must know how it is to be ordered.	Comparator interface sorting is done through a separate class.
We can sort the list elements of Comparable type by Collections.sort(List) method.	We can sort the list elements of Comparator type by Collections.sort(List,Comparator)method.

That’s all for now…