# Assignment 9:

**Write a program implement the comparable interface and compare to methods display the results.**

**Source Code:** *(Black colour in background is due to dark mode of IDE)*

1) Comparable Interface

```
import java.util.ArrayList;
import java.util.Collections;
public class ComparatorSort implements Comparable<ComparatorSort>{

    String name;
    int rollNo;
    public ComparatorSort(int rollNo, String name) {
        this.rollNo = rollNo;
        this.name = name;
    }
    public int compareTo(ComparatorSort o){
        if(this.name.compareTo(o.name) > 0)
            return 1;
        else if(this.name.compareTo(o.name) ==  0)
            return 0;
        else
            return -1;
    }
    public static void main(String[] args) {
        ArrayList<ComparatorSort> students = new ArrayList<>();
        students.add(new ComparatorSort(001, "Montek"));
        students.add(new ComparatorSort(002, "Kamal"));
        students.add(new ComparatorSort(003, "Akshit"));
        students.add(new ComparatorSort(004, "Amisha"));
        students.add(new ComparatorSort(005, "Bhupinder"));
        students.add(new ComparatorSort(006, "Manpreet"));

        // Sorting ArrayList using Comparator
        Collections.sort(students);

        System.out.println("Sorted ArrayList using Comparator according to their Names");
        for(ComparatorSort student : students){
            System.out.println(student.rollNo + " " + student.name);
        }
    }
}
```

**Output:**

```
3 Akshit
4 Amisha
5 Bhupinder
2 Kamal
6 Manpreet
1 Montek
```

2) Comparator Interface

```java
import java.util.*;
public class Compare implements Comparator<Compare> {
    String name;
    String city;

    public Compare() {}
    public Compare(String name, String city) {
        this.name = name;
        this.city = city;
    }
    public int compare(Compare a, Compare b){
        if(a.city.compareTo(b.city) >= 0)
            return 1;
        return -1;
    }
    public static void main(String[] args) {

        ArrayList<Compare> arr = new ArrayList<>();
        arr.add( new Compare("Akshit", "Bathinda"));
        arr.add( new Compare("Monty", "Ludhiana"));
        arr.add( new Compare("Amisha", "Jaunpur"));
        arr.add( new Compare("Kamal", "Malout"));
        arr.add( new Compare("Bhupinder", "Goniana"));
        arr.add( new Compare("Manpreet", "Giddarbaha"));

        System.out.println("---- BEFORE SORTING ----");
        for(Compare a : arr)
            System.out.println(a.name + " - " + a.city);
        Compare obj = new Compare();
        arr.sort(obj);

        System.out.println("---- AFTER SORTING BY THEIR CITY NAMES ----");
        for(Compare student : arr){
            System.out.println(student.name + " - " + student.city);
        }
    }
}
```

**Output:**

```
---- BEFORE SORTING ----
Akshit - Bathinda
Monty - Ludhiana
Amisha - Jaunpur
Kamal - Malout
Bhupinder - Goniana
Manpreet - Giddarbaha
---- AFTER SORTING BY THEIR CITY NAMES ----
Akshit - Bathinda
Manpreet - Giddarbaha
Bhupinder - Goniana
Amisha - Jaunpur
Monty - Ludhiana
Kamal - Malout
```