Platform-based Programming

#6 Interface - Comparator

2019년 2학기

Program Output

- Make a Java program that runs as follows:

```
School Name: PNU
0, Name0,  0.47
1, Name1,  0.39
2, Name2,  0.32
3, Name0,  0.84
4, Name1,  0.27
5, Name2,  0.22
6, Name0,  0.62
7, Name1,  0.65
8, Name2,  0.44
9, Name0,  0.38

[Sorted by GPA]
School Name: PNU
5, Name2,  0.22
4, Name1,  0.27
2, Name2,  0.32
1, Name1,  0.39
9, Name0,  0.38
8, Name2,  0.44
0, Name0,  0.47
6, Name0,  0.62
7, Name1,  0.65
3, Name0,  0.84

[Sorted by ID]
School Name: PNU
0, Name0,  0.47
1, Name1,  0.39
2, Name2,  0.32
3, Name0,  0.84
4, Name1,  0.27
5, Name2,  0.22
6, Name0,  0.62
7, Name1,  0.65
8, Name2,  0.44
9, Name0,  0.38

[Sorted by Name]
School Name: PNU
0, Name0,  0.47
3, Name0,  0.84
6, Name0,  0.62
9, Name0,  0.38
1, Name1,  0.39
4, Name1,  0.27
7, Name1,  0.65
2, Name2,  0.32
5, Name2,  0.22
8, Name2,  0.44

[Sorted by Name and GPA]
School Name: PNU
9, Name0,  0.38
0, Name0,  0.47
6, Name0,  0.62
3, Name0,  0.84
4, Name1,  0.27
1, Name1,  0.39
7, Name1,  0.65
5, Name2,  0.22
2, Name2,  0.32
8, Name2,  0.44
```

Program Skeleton

```
public class ComparatorTest {
    public static void main(String[] args) {

        final School pnu = new School("PNU", 10);
        for ( int i=0; i < pnu.getCapacity(); i ++ ) {
            final Student newStudent = new Student(i, "Name" + (i % 3), Math.random());
            pnu.add(newStudent);
        }
        System.out.println(pnu);

        System.out.println("[Sorted by GPA]");
         pnu.sortByGPA();
         System.out.println(pnu);

         System.out.println("[Sorted by ID]");
         pnu.sortById();
         System.out.println(pnu);

         System.out.println("[Sorted by Name]");
         pnu.sortByName();
         System.out.println(pnu);

         System.out.println("[Sorted by Name and GPA]");
         pnu.sortByNameGPA();
         System.out.println(pnu);
    }
}
```

```
public class Student {
   private final int id;
   private String name;
   private double gpa;
```

```
public class School {
   private final String name;
   private List<Student> students;
   private int capacity;


   …
   public void sortById() {
      Collections.sort(students, Student.IdComparator);
   }
   public void sortByGPA() {
      Collections.sort(students, Student.GpaComparator);
   }
   public void sortByName() {
      Collections.sort(students, Student.NameComparator);
   }
   public void sortByNameGPA() {
      Collections.sort(students, Student.NameGpaComparator);
   }
}
```