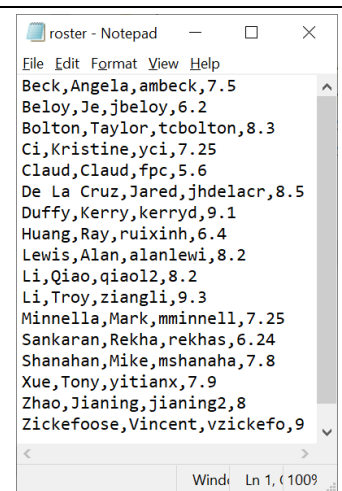


In this lab you will learn using ArrayLists, Comparable, and Comparator

Problem statement: You are given **roster.CSV** file that has data about students attending this Java course. It has 4 fields: **Last name, First name, Andrew ID, and a fictitious game score**. You need to read this data into an array list of Student objects, and then print the roster in three different sorted orders: by last name (**ascending**), by first name (**ascending**), and by game score (**descending**), as shown in Fig.3 (next page).

Solution design: As shown in Fig. 2, there are two classes – **Student** and **StudentRoster**. Student implements Comparable interface for natural ordering based on lastName. StudentRoster has two inner classes **FirstNameComparator** and **ScoreComparator** that implement the Comparator interface. The two comparators, as their names suggest, should be used to sort Student objects on firstName and score.



```

Beck,Angela,ambeck,7.5
Beloy,Je,jbeloy,6.2
Bolton,Taylor,tcbolton,8.3
Ci,Kristine,yci,7.25
Claud,Claud,fpc,5.6
De La Cruz,Jared,jhdelacr,8.5
Duffy,Kerry,kerryd,9.1
Huang,Ray,ruixinh,6.4
Lewis,Alan,alanlewi,8.2
Li,Qiao,qiaol2,8.2
Li,Troy,ziangli,9.3
Minnella,Mark,mminnell,7.25
Sankaran,Rekha,rekhas,6.24
Shanahan,Mike,mshanaha,7.8
Xue,Tony,yitianx,7.9
Zhao,Jianing,jianing2,8
Zickefoose,Vincent,vzickefo,9
  
```

Figure 1: Roster CSV file

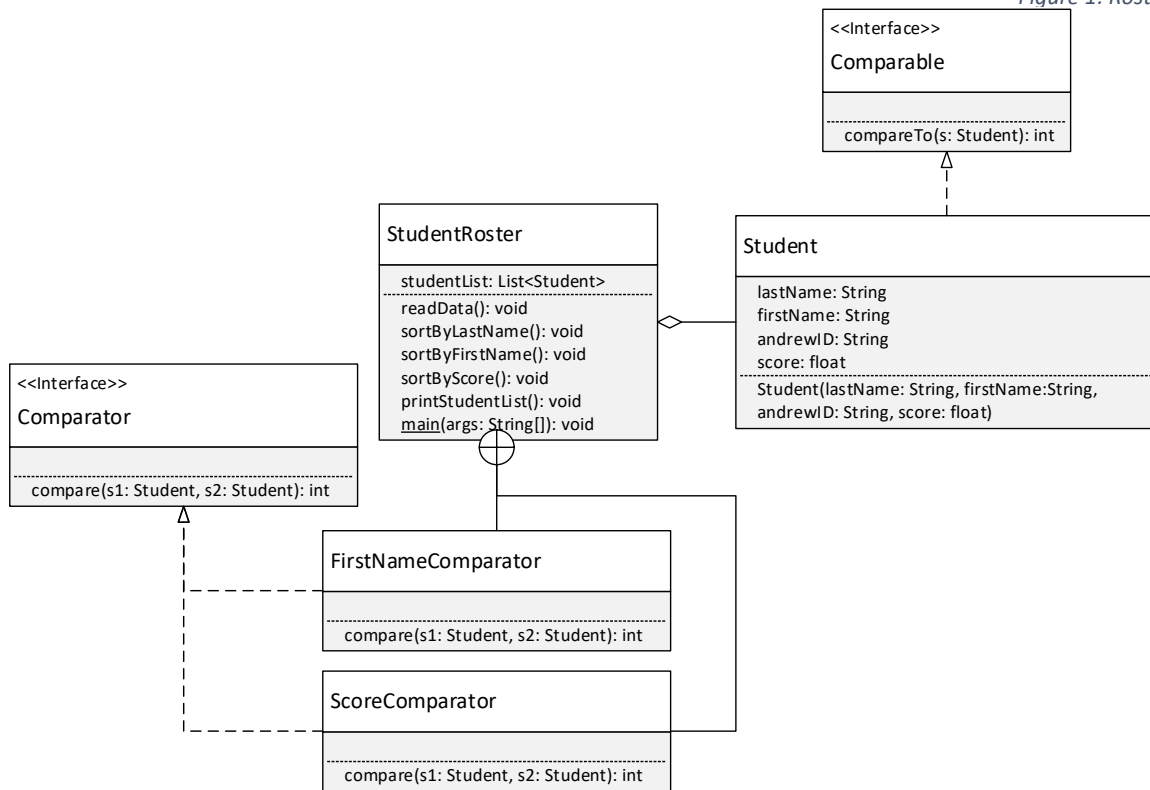


Figure 2: Class diagram

Instructions:

1. Download **Student.java, StudentRoster.java, TestStudentRoster.java, and roster.csv**.
2. Import the three .java files into a package named **lab7**, and .csv file into the Labs project.
3. Complete the code in Student.java, StudentRoster.java as required. Test your code using TestStudentRoster.java
4. Write your name and Andrew ID in both .java files. Zip them into AndrewId-lab7.zip and submit the zip file.

Rubric: 4 Test cases: 4 points (1 point each) ; Console output: 6 points (2 points for each sorted order)

***** Sorted by Last name *****				
#.	Last name	First name	Andrew ID	Score
1.	Beck	Angela	ambeck	7.50
2.	Beloy	Je	jbeloy	6.20
3.	Bolton	Taylor	tcbolton	8.30
4.	Ci	Kristine	yci	7.25
5.	Claud	Claud	fpc	5.60
6.	De La Cruz	Jared	jhdelaacr	8.50
7.	Duffy	Kerry	kerryd	9.10
8.	Huang	Ray	ruixinh	6.40
9.	Lewis	Alan	alanlewi	8.20
10.	Li	Qiao	qiaol2	8.20
11.	Li	Troy	ziangli	9.30
12.	Minnella	Mark	mminnell	7.25
13.	Sankaran	Rekha	rekhas	6.24
14.	Shanahan	Mike	mshanaha	7.80
15.	Xue	Tony	yitianx	7.90
16.	Zhao	Jianing	jianing2	8.00
17.	Zickefoose	Vincent	vzickefo	9.00
***** Sorted by First name *****				
#.	Last name	First name	Andrew ID	Score
1.	Lewis	Alan	alanlewi	8.20
2.	Beck	Angela	ambeck	7.50
3.	Claud	Claud	fpc	5.60
4.	De La Cruz	Jared	jhdelaacr	8.50
5.	Beloy	Je	jbeloy	6.20
6.	Zhao	Jianing	jianing2	8.00
7.	Duffy	Kerry	kerryd	9.10
8.	Ci	Kristine	yci	7.25
9.	Minnella	Mark	mminnell	7.25
10.	Shanahan	Mike	mshanaha	7.80
11.	Li	Qiao	qiaol2	8.20
12.	Huang	Ray	ruixinh	6.40
13.	Sankaran	Rekha	rekhas	6.24
14.	Bolton	Taylor	tcbolton	8.30
15.	Xue	Tony	yitianx	7.90
16.	Li	Troy	ziangli	9.30
17.	Zickefoose	Vincent	vzickefo	9.00
***** Sorted by Score *****				
#.	Last name	First name	Andrew ID	Score
1.	Li	Troy	ziangli	9.30
2.	Duffy	Kerry	kerryd	9.10
3.	Zickefoose	Vincent	vzickefo	9.00
4.	De La Cruz	Jared	jhdelaacr	8.50
5.	Bolton	Taylor	tcbolton	8.30
6.	Lewis	Alan	alanlewi	8.20
7.	Li	Qiao	qiaol2	8.20
8.	Zhao	Jianing	jianing2	8.00
9.	Xue	Tony	yitianx	7.90
10.	Shanahan	Mike	mshanaha	7.80
11.	Beck	Angela	ambeck	7.50
12.	Ci	Kristine	yci	7.25
13.	Minnella	Mark	mminnell	7.25
14.	Huang	Ray	ruixinh	6.40
15.	Sankaran	Rekha	rekhas	6.24
16.	Beloy	Je	jbeloy	6.20
17.	Claud	Claud	fpc	5.60

Figure 3: Output in three different sorting orders