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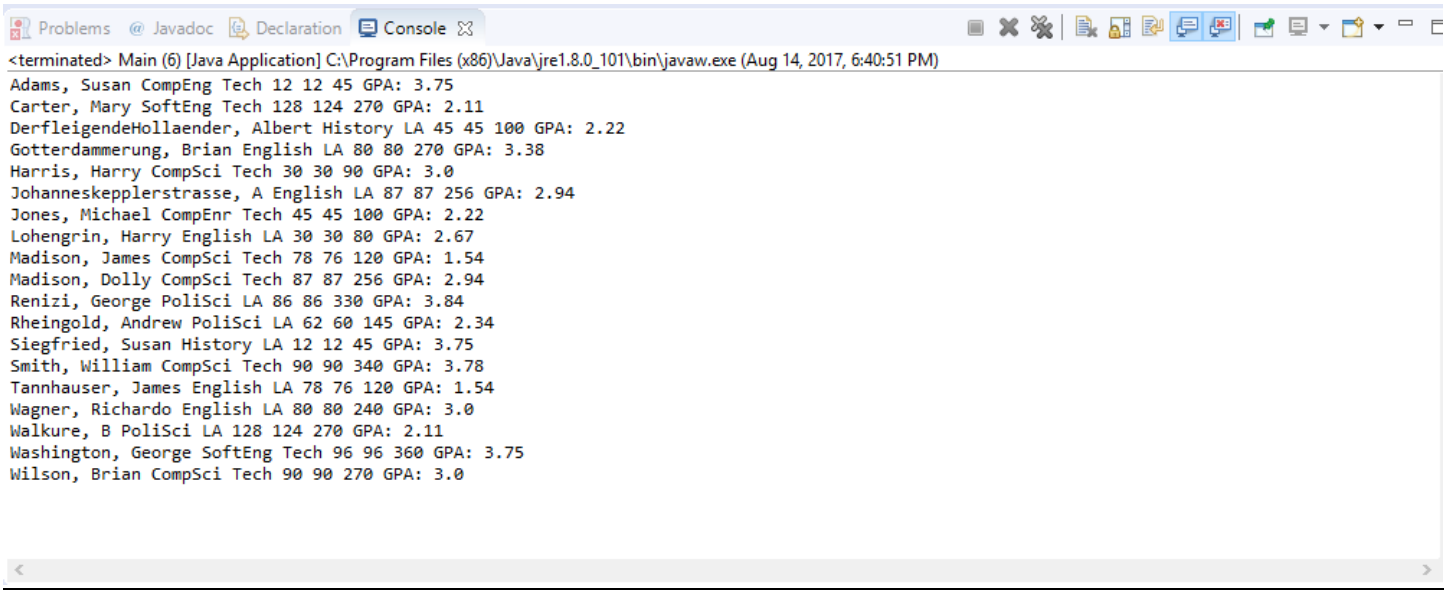
OOAD_Assignment5(Iterator)

Output:



Code:

// 1. Main

```
package ooad_assign5;


import java.util.ArrayList;

import java.util.Arrays;

import java.util.Collections;


public class Main {


        public static void main(String args[]){

        LAStudents la_students = new LAStudents();

        TechStudents tech_students = new TechStudents();


        //add tech_students data


        tech_students.addStudent("Smith", "William", "CompSci", "Tech",90 ,90 ,340 );
```

```
tech_students.addStudent("Jones", "Michael", "CompEnr", "Tech",45,45,100);
tech_students.addStudent("Carter", "Mary", "SoftEng", "Tech",128,124,270 );
tech_students.addStudent("Harris", "Harry", "CompSci", "Tech",30 ,30 ,90 );
tech_students.addStudent("Wilson", "Brian", "CompSci", "Tech",90 ,90 ,270 );
tech_students.addStudent("Adams", "Susan", "CompEng", "Tech",12 ,12 ,45 );
tech_students.addStudent("Washington", "George", "SoftEng", "Tech",96 ,96,360 );
tech_students.addStudent("Madison", "James", "CompSci", "Tech",78 ,76 ,120 );
tech_students.addStudent("Madison", "Dolly", "CompSci", "Tech",87 ,87 ,256);


//add la_students data


la_students.addStudent("Wagner","Richardo","English","LA",80,80,240);
la_students.addStudent("DerfleigendeHollaender","Albert","History","LA",45,45,100);
la_students.addStudent("Walkure","B","PoliSci","LA",128,124,270);
la_students.addStudent("Lohengrin","Harry","English","LA",30,30,80);
la_students.addStudent("Gotterdammerung","Brian","English","LA",80,80,270);
la_students.addStudent("Siegfried","Susan","History","LA",12,12,45);
la_students.addStudent("Renizi","George","PoliSci","LA",86,86,330);
la_students.addStudent("Rheingold","Andrew","PoliSci","LA",62,60,145);
la_students.addStudent("Tannhauser","James","English","LA",78,76,120);
la_students.addStudent("Johanneskepplerstrasse","A","English","LA",87,87,256);


ArrayList<StudentData> list = new ArrayList<StudentData>();
ArrayList<StudentData> list_tech = new ArrayList<StudentData>(Arrays.asList(tech_students.getStudents()));
list_tech.removeAll(Collections.singleton(null));


list.addAll(la_students.getStudents());
list.addAll(list_tech);
MyArrayIterator myIter = new MyArrayIterator(list);
```

```
        myIter.sort();
        PrintAll(myIter);
        }

  private static void PrintAll(MyIterator myIter){
    myIter.First();

    while(!myIter.IsDone()){
      System.out.println(myIter.CurrentItem());
      myIter.Next();
    }

  }
}
```

// 2. MyIterator.java

```
package ooad_assign5;

public interface MyIterator {
      public void First();
    public void Next();
    public Object CurrentItem();
    public boolean IsDone();

}
```

// 3. MyArrayIterator.java

```
package ooad_assign5;

import java.text.DecimalFormat;
import java.util.ArrayList;
import java.util.Collections;

public class MyArrayIterator implements MyIterator {

      ArrayList<StudentData> list;
      int current,last;

      public MyArrayIterator(ArrayList<StudentData> list){
            this.list=list;
            current = 0;
```

```
			last=list.size();
		}

		@Override
		public void First() {
			// TODO Auto-generated method stub
			current=0;
		}

		@Override
		public void Next() {
			// TODO Auto-generated method stub
			current++;
		}

		@Override
		public Object CurrentItem() {
			// TODO Auto-generated method stub
			DecimalFormat df = new DecimalFormat("#.##");
			return list.get(current).GetName()+" "+list.get(current).GetMajor()+"
"+list.get(current).GetCollege()+" "+list.get(current).GetCreditHoursAttempted()+"
"+list.get(current).GetCreditHoursEarned()+" "+list.get(current).GetQualityPoints()+" GPA: "+
Double.valueOf(df.format((double)list.get(current).GetQualityPoints()/list.get(current).GetCreditH
oursAttempted()));
		}


		@Override
		public boolean IsDone() {
			// TODO Auto-generated method stub
			return current==last;
		}

		public void sort() {
			// TODO Auto-generated method stub
			Collections.sort(list);
		}
}
```

// 4. StudentData.java

```
package ooad_assign5;

public class StudentData implements Comparable<StudentData> {
	private String LastName, FirstName;
	private String Major;
	private String College;
	private int CreditHoursAttempted;
	private int CreditHoursEarned;
	private int QualityPoints;

	public StudentData(String ln, String fn, String mj, String col,
			int cha, int che, int qp)
	{
		LastName = ln;
		FirstName = fn;
```

```
		Major = mj;
		College = col;
		CreditHoursAttempted = cha;
		CreditHoursEarned = che;
		QualityPoints = qp;
	}

	public String GetName()
	{
		return LastName + ", " + FirstName;
	}
	public String GetCollege()
	{
		return College;
	}
	public String GetMajor()
	{
		return Major;
	}
	public int GetCreditHoursAttempted()
	{
		return CreditHoursAttempted;
	}
	public int GetCreditHoursEarned()
	{
		return CreditHoursEarned;
	}
	public int GetQualityPoints()
	{
		return QualityPoints;
	}
	@Override
	public int compareTo(StudentData s) {
		// TODO Auto-generated method stub
		return this.LastName.compareTo(s.LastName);
	}

}
```

// 5. LAStudents.java

```
package ooad_assign5;

import java.util.ArrayList;

public class LAStudents {
	ArrayList<StudentData> Students;
	public LAStudents()
	{
		Students = new ArrayList<StudentData>();
	}
	public void addStudent(String l, String f, String m, String c,
				int cha, int che, int qp)
	{
		Students.add(new StudentData(l,f,m,c,cha,che,qp));
	}
```

```
	public ArrayList<StudentData> getStudents() {
		return Students;
	}
}
```

// 6. TechStudents.java

```
package ooad_assign5;

public class TechStudents {

	static final int NumUTS = 1000;
	StudentData[] TechStudentData;//sized to NumUTS
	public int count =0;

	public TechStudents()
	{
		TechStudentData = new StudentData[NumUTS];
	}
	public void addStudent(String l, String f, String m, String c,
				int cha, int che, int qp)
	{
		TechStudentData[count]=new StudentData(l,f,m,c,cha,che,qp);
		count++;
	}

	public StudentData[] getStudents() {
		return TechStudentData;
	}
}
```