

```
public class Ex1
{
    public static void main( String args[] )
    {
        FileInput in = new FileInput( "students.txt" );
        String firstName, lastName, id;
        double gpa;
        Student[] students = new Student[6]; // only 6 students
        try
        {
            for( int k = 0; k < students.length; k++ )
            {
                firstName = in.readWord();
                lastName = in.readWord();
                id = in.readWord();
                gpa = in.readDouble();
                students[k] = new Student( firstName, lastName, id, gpa );
            }
        } catch( Exception e ){}
        in.close();

        System.out.print( "The original list is:" + "\n" );
        for( Student n: students )
        {
            System.out.println( n.getName() + "\t" + n.getId() +
                               "\t" + n.getGpa() );
        }

        Sort.alphabetizeArray( students );
        FileOutput out = new FileOutput( "students.txt", true );

        out.writeEndOfLine();
        out.writeEndOfLine();
        out.writeString( "The alphabetized list is:" );
        out.writeEndOfLine();
        System.out.print( "\n\n" + "The alphabetized list is:" + "\n" );
        for( Student n: students )
        {
            System.out.println( n.getName() + "\t" + n.getId() +
                               "\t" + n.getGpa() );
            out.writeString( n.getName() + "\t" + n.getId() + "\t" );
            out.writeDouble( n.getGpa() );
            out.writeEndOfLine();
        }
        out.close();
    }
}
```

```

public class Student
{
    private String firstName;
    private String lastName;
    private String fullName;
    private String iD;
    private double gPA;

    public Student()
    {}

    public Student( String fn, String ln, String i, double g )
    {
        firstName = fn;
        lastName = ln;
        fullName = lastName + ", " + firstName;
        iD = i;
        gPA = g;
    }

    public String getName()
    { return fullName; }

    public String getId()
    { return iD; }

    public double getGpa()
    { return gPA; }
}

//this class implements the insertion-sort algorithm
public class Sort
{
    public static void alphabetizeArray( Student[] objects ) //insertionSort
    {
        for( int index = 1; index < objects.length; index++)
        {
            String key = objects[index].getName();
            Student temp = objects[index];
            int position = index;
            while( position > 0 && (objects[ position-1 ].getName()).compareTo( key ) > 0 )
            {
                objects[position] = objects[position-1];
                position--;
            }
            objects[position] = temp;
        }
    }
}

```

“students.txt” (before execution)

Salty Cracker	45762	3.2
Ray Blue	20389	2.5
Pedro Rosa	41864	3.8
Steve Tyler	67942	2.8
Bon Jovi	04152	3.7
Jackie Chan	33859	4.1

“students.txt” (after execution)

Salty Cracker	45762	3.2
Ray Blue	20389	2.5
Pedro Rosa	41864	3.8
Steve Tyler	67942	2.8
Bon Jovi	04152	3.7
Jackie Chan	33859	4.1

The alphabetized list is:

Blue, Ray	20389	2.5
Chan, Jackie	33859	4.1
Cracker, Salty	45762	3.2
Jovi, Bon	04152	3.7
Rosa, Pedro	41864	3.8
Tyler, Steve	67942	2.8