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Homework #2

In this homework, you will create a similar program to the one in homework #1, except that now, a student a has 3 exams instead of 1. Instead of parallel array indices, a student will be represented as an object. The outline for the Student class is below:

```
public class Student {

    private String first;
    private String last;
    int[ ] examGrades;

    public Student(String first, String last, int exam1, int exam2, int exam3)
    {
        examGrades = new int[3];

        ...

    }

    public String getFirst() {



    }
```

```
public String getLast() {



}

// examNo represents which exam grade the client wants
public int getExam(int examNo) throws Exception {




}

//examNo is which exam needs a grade adjusted, change is the number of points
public void addPoints(int examNo, int change) throws Exception {




}
//examNo is which exam needs a grade adjusted
public double calculateAverage(int examNo)  throws Exception {



}

//Creates a String representation for a Student
public String toString() {
```

```
    }

    //Determines whether or not "obj" has equivalent data to "this".
    public boolean equals(Object obj) {



    }


}
```

The main program, which will be a separate class in the same folder, will need to calculate the following:

1. read in student data from a file into an array of Students. Each line in the file will contain a first name, last name, and 3 grades.
2. Print out the data for all students: first name, last name, exam grades, and average.
3. find the student who got the highest grade on exam 1.
4. repeat for exam 2 and exam 3.
5. find the average grade for exam1, exam2, and exam3.
6. find the standard deviation for exam 1, exam 2, and exam 3.

Please submit the code for both classes, and the input file.

Extra Credit: In addition to a Student class, you can also make the second part of the homework object-oriented; namely, turning the calculations for the course into its own class.

```
public class Course {

    private Student[ ] students;
    private int numStudents;



    public Course() {
        students = new Student[100];
        numStudents = 0;
    }
    //Opens up a file with path "path" and loads the students array with Student objects constructed from the data file.
    public void readData(String path) {



    }

    //returns the index within the array of Students that holds the student with the highest grade on exam "examNo." If more than one student tied for the highest grade, just return one of them.
    public int indexOfHighest(int examNo) throws Exception {



    }
```

```
//returns a reference to the Student at index “index”
public Student getByIndex(int index) throws Exception {



}
public double findAverageGrade(int examNo) throws Exception{




}



public double findStandardDev(int examNo)  throw Exception{



}
```

//returns whether the array of Students held by “obj” is the same array as the one held by “this,” in the same order. If “obj” isn’t a Course object, return false.

```
public boolean equals(Object obj) {


}


public String toString() {


        String result = "";


        for(int i=0; i<numStudents; i++)
                result+= students[i] + "\n";
```

```
            return result;
        }
    }
```