CSE 271 – Fall, 2018 | Homework-03 | Due: 9-20-18 by 11:59 pm
M. Stahr | 40 pts

**You are to work independently but are encouraged to ask others for help if you need to but YOU need to write the code and understand it**

1. Create a Java project in Eclipse called **HW_03-SortingClasses**

2. Add a class to your project called Tester and include the main() method

3. Open the **HW-03_Data.txt** file and review the data. Your job for this homework is to write the code that will import this file into your program. You are to create the properties in your Student class that will store the data in the file. Remember, one row read in belongs to one instance of the Student class. In other words, the Student class should be able to store one row from the file.

4. Add a class called **Student** to your project. You will add the following to the Student class (***note: you can find how to do this from the 2018-09-11_Deeper-OOP class code – Section E class has the best example***)
   a. Private properties
   b. Constructors
      - Workhorse, Copy constructor
      - A "special case" constructor that accepts a String value that is one row from the file
      - A "special case" constructor that accepts a String array that contains the values of one row from the file
      - A "special case" constructor that accepts a RandomAccessFile object which is a reference to the open file.
   c. Methods
      - clone(), equals()
      - toString() (return a well formatted string, not the default, that displays some – not all – fields)
      - Getters and Setters. Note: you should check for valid year in School and manually fix any problems that exist: Freshman, Sophomore, Junior, Senior, Graduate Student, Male, Female, GPA between 0.00 and 4.00
   d. Make it so the class can be sorted by the combination of city, state, zip, university, and lastName (hint: string theses all together as one longer string and then compare)



5. In your Tester file write the code to import your file into your system by having an ArrayList that can store Student objects. Once imported, write the code that does the following:
   a. Sorts the ArrayList and Prints the first 5 records from the ArrayList
   b. Finds and prints the GPA for "**Harporn Loueila**" in the form: **Harporn Loueila 3.00**
   c. Prints the average by gender
   d. Prints the average of all years in school
   e. Extra Credit:
      - ***Prints the average by university / gender for all Universities with more than 1 student***



6. **EXTRA CREDIT (Up to 15 points – and good experience):**
   a. **Open the original file: "HW-03_Data-ExtraCredit.txt" and review. It contains odd characters you don't recognize. Read the file and determine if each byte belongs to the following list of rules and then write the acceptable byte to a new file called ExtraCredit.txt. Acceptable bytes: 9, 10, 13, 32, 33, and 35 – 127**

7. At the top of your Tester file add the following lines:

```
/**
* Homework – 03
* Due: Thursday, 9-20-18 by 11:59 pm
* @author put your name here
*/
```

8. When complete you should zip **ONLY** your .java files – NOT your project and upload to Canvas

**Rubric:**

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|---|---|
| Program works as expected: | 0-8 |
| Code is complete with all requirements: | 0-8 |
| Code is neat and organized: | 0-8 |
| Coded well: | 0-8 |
| Code is free from human input error: | 0-8 |
| Extra Credit works correctly | 0-9 |
| Extra Credit coded well | 0-6 |