**CS150 – Program #1 – Spring 2019**

Deadline, Friday, February 1st, 11:59 PM

**Overview:**

A text file called “satellites.txt” contains data for groups of satellites. Each group has a name, a number of satellites in the group, and a set of coordinates (x, y) for each satellite. You are to read the data from this file and output a report on each group.

**Input Data:**

“satellites.txt” contains an unknown number of groups of satellites. Each group is stored in the file in the following format: a one-word name, then the number of satellites, and finally the coordinates (x, y) of each satellite.

**Output Reports:**

Your program must generate a text file report for each group of satellites. Each report file must be named “groupname.txt” where “groupname” is the name of the group as read from the file.

Each report file must have the following:

* The name of the group.
* The number of satellites in the group.
* A chart showing each satellite’s x and y position in the order they are read from the file.
* A grid showing the distances between each of the satellites.
* A grid showing the angle between each of the satellites. The angles must be in degrees and must be non-negative (0..360).
* The closest (distance-wise to each other) pair of satellites and how far apart they are.
* The farthest (distance-wise to each other) pair of satellites and how far apart they are.

Note: all distances and angles must be displayed to three digits of precision.

**A few simplifying assumptions:**

* You may assume that no group has more than 999 satellites.
* Coordinates will be stored as whole numbers.
* You may assume that no x nor y coordinate is greater than 9999.
* You may assume that there will never be invalid data in the files. All values will be in range and will be numbers, none will be missing, no extras or anything like that.

**What you need:**

The text file “satellites.txt”. Three example output files are posted to Moodle just so you can see what an output file should look like.

**What to turn in:**

Any .java files you create for this assignment. Do not submit project or package files. No data files either. I will use my own data files that might be different from the ones provided.

**Commenting rules:**

Every file you turn in should have a comment header at the top with your name, section number, the assignment name, and the due date.