COSC 445 Project 2

Option Choice and Chosen Item Due: March 8, 2018 at 4PM
Demos: in-class April 3, 2018
Program/Link and Documentation Due: April 3, 2018 at 11:59 PM

Description

There are two options for your project: 1) Visualization of an algorithm; 2) Music video of an algorithm

For both options: you need to select a search or sort algorithm that has not been covered in this class or previous classes. You should thoroughly research your selected algorithm including determining typical implementations or data structure restrictions; analysis in both time and space; and any overall issues in regards to the algorithm.

For the visualization option, you must include a GUI that graphically shows the execution or representation of your project choice. This can be done step-wise or "real-time" but must be reliant on input (as in, you may not have specific inputs that work with your application). You must do your implementation in Python, C++, or Java. If you use an external library of any kind (one that is not included by default in the language distribution) you must provide a link for installation of the library on OSX 10.10.

For the music video: the music video must be at least 3 minutes and include a description of the algorithm, your analysis (see below), as well as a visualization of how the algorithm functions. The music must be an original composition. The video must be posted to YouTube. Team balance is important in the video - every team member must appear and "sing" for at least 30 seconds.

Analysis

For the run-time analysis, you will need to do best, worst and average case run-times of your algorithm. Your analysis should include theoretical values as well as implemented run times. You will need to repeat this for a memory-space analysis as well. For the application, this will be simply included as part of your documentation (see below), but should reflect your specific implementation. For the music video, this analysis must be part of your music video.

Documentation

Both projects are required to complete a short (1 page) document. For the application, you should include appropriate help files for the program, and installation and run instructions. For both projects you will need to write a section which justifies the way you visualized the algorithm and include your analysis as above. If your implementation would be different than the standard analysis, you should state that, give the differences in the analysis, and state the reasons why the analysis is different. All sources used should be cited using AMS style. You should use at least 3 sources in the development of the program.

Due Dates

You must choose which option your group will go with, the assigned roles, and the algorithm you will be exploring by March 8th at 4PM. Note that some groups will have one additional team member - this team member should be designated as a "floating" developer/director, attached to both GUI and Algorithm development (or video and music). This must be emailed to me by the due date or your group will lose 10 points per day until it is turned in.

Team Reviews: Each member of the group should give a numeric grade (out of 100) to all other members of the group with justification. This is due via email by April 3rd at 11:59 PM. Late reviews or reviews that do not follow the instructions will result in a deduction.

Demos: Each project will be demoed during class on April 3rd.

Final Program and documentation due April 3rd at 11:59 PM via Blackboard.

Roles:

1. Coordinator
2. GUI Developer/Artistic Director
3. Algorithm Developer/Music Director
4. Documentation Writer

Rubric:

1. Team Reviews: 20%
2. Algorithm implementation: 35%
3. Representation component: 30%
4. Paper: 15%