CptS 122 – Data Structures

Programming Assignment 9: A Graphical Game or Application

Assigned: Wednesd[illegible]
Due: Wednesday, A[illegible]idnight

I. Learner Objecti[illegible]

At the conclusion o[illegible] assignment, participants should be able to:

- Design, impl[illegible]sses in C++
- Apply game o[illegible]n principles
- Implement and apply inheritance and polymorphism
- Apply graphics to a solution

II. Prerequisites:

Before starting this programming assignment, participants should be able to:

- Analyze a basic set of requirements for a problem
- Compose basic C++ language programs
- Describe what is *inheritance*
- Create basic test cases for a program
- Apply arrays, strings, and pointers
- Declare and define *constructors*
- Declare and define *destructors*
- Compare and contrast *public* and *private* access specifiers in C++
- Describe what is an *attribute* or data member of a class
- Describe what is a *method* of a class
- Apply and implement *overloaded* functions
- Distinguish between *pass-by-value* and *pass-by-reference*
- Discuss *classes* versus *objects*

III. Overview & Requirements:

NOTE: I will be grading your assignment! **Please be sure to clearly identify your team members and corresponding lab sections in a readme.txt file that is added to your "Resource Files" folder in your project. Also, be sure to add the link to your video demo in the readme.txt file.** Only ***one*** of your team members will be required to submit a solution!!! Since some of your solutions may exceed the upload limits accepted by Canvas, you will need to transfer your solution to an online repository like GitLab, Google Drive, Microsoft OneDrive, etc.

For this final assignment, you are required to create a solution, as a **team** (you may have a team of up to 4 members), to a game or graphical application of your choice! If you do not work in a team, you will **not** earn any credit for the assignment.

Some game possibilities are listed below:

- Chess
- Texas Hold 'em
- Battleship
- Checke
- Others?

However, you a solution to the game of Snake, Pong, or Flappy Bird!!! heritance and polymorphism in your solution. You are also r a test class and implement 5 test cases for your application. W with your application, you will need to create a 1 – 2 minute video discussing the features of the application along with any particularly interesting design decisions that you made.

Your goal for the assignment is build a complete graphical, and possibly networked, game or application. As a team you must ultimately decide how you will implement graphics. You have many tools and library options available to implement the graphics portion of the assignment. Some include the Unreal Engine, SFML, Qt, SDL, Allegro, DirectX, OpenGL, etc. Please be sure to also add some directions of how to play the game or use your application.

Aside from the requirements listed in the above paragraph, you are free to complete this assignment as you see fit.

Have fun with this assignment!

IV. Submitting Assignments:

1. Using Canvas https://canvas.wsu.edu/, please submit your solution to the correct "Programming Assignments" (PA) folder. Your solution should be zipped into a .zip file with the name `<your last name>_PA9.zip` and uploaded. To upload your solution, please navigate to your correct Canvas ***lab*** course space. Select the "Assignments" link in the main left menu bar. Navigate to the correct PA submission folder. Click the "Start Assignment" button. Click the "Upload File" button. Choose the appropriate .zip file with your solution. Finally, click the "Submit Assignment" button.
2. Your .zip file should contain a project workspace. Your project folder must have at least two header files (.h files), three C++ source files (which must be .cpp files), and project workspace. Delete the debug folder before you zip your project folders.
3. Your project must build properly. The most points an assignment can receive if it does not build properly is 200 out of 300.
4. If you do not work in a team, then you will receive 0 out of 300.

V. Grading Guidelines:

This assignment is worth 300 points. Your assignment will be evaluated based on a successful compilation and adherence to the program requirements. We will grade according to the following criteria:

- 25 pts – Appl…le, and commenting according to class standards
- 75 pts – Desi…tion of main game play or application (along with user di…play). **You must apply inheritance and polymorphis…**
- 100 pts – Imp…aphics
- 25 pts - Crea…ty in implementation of the game/application
- 25 pts – 5 test cases
- 50 pts – Video demonstration (via YouTube, etc.)
- 50 pts BONUS - Implementation of network communication via sockets
- **NOTE: If you do not work in a team, you will not earn any credit for the assignment!**