Assignment 9

CS 135: Computer Science I
Project 1
Spring 2007

Objectives

Synthesize and combine everything you have learned so far to build a complete application.

1 Project: Pong

There are two parts to this project. The first part is due the week of April 9. The second part is due the week of April 16. **You may form groups of two** to do this project. Instructions for forming groups are at http://www.cse.unr.edu/∼gonenb.
Implement a single player version of **pong** - a classic computer game. First, download and play one of the demos at http://www.cse.unr.edu/ sushil/class/135/, choose the correct version for your operating system and run it.

Notice that the game has several basic game elements.

- A five character vertical bar that acts as a paddle (or bat)
- A one character ball
- A 24 row 80 column (24x80) playing field
- A scoring module that keeps score by recording
  1. The number of times the bat hits the ball bouncing the ball back (stops)
  2. The number of times the ball passes the column of the bat in either direction (misses)

  The score is computed as in assignment five:

$$\text{partialScore} = (\text{blocks}^2 - \text{misses}) \times 10$$

  If the number of misses is greater than or equal to the number of blocks, then the bonus is 1000 otherwise the bonus is 100. The complete score is the sum of the `partialScore` and `bonus`

$$\text{score} = \text{partialScore} + \text{bonus}$$

1.1 Rules

1. Start by displaying a Logo
2. Ask the user to input a 3 letter name (initials) before starting the game
3. The player uses the `w, s` keys to move the paddle vertically (up/down) the full height of the game board but not beyond. You may also use the arrow keys if you can figure out how (read the documentation on getch
4. The ball bounces off the paddle and four walls of the game board
5. Assume that all bounces are simple: the angle of incidence is equal to the angle of reflection.
6. The ball moves at constant speed in both the x and y directions.
7. You must keep track of `misses` and `stops`
8. You should be able to quit the game with the 'q' or 'Q' keys
9. If the current player's score is better than the top ten scores so far, then insert the current player's name and score in the game's top ten list. This list needs to be kept in a file.
10. At the end of the game display the top ten list of names and corresponding scores in order from best score to worst.

2 Design Document for Pong (Due the week of April 9, 20 Points)

Turnin a design document of your design for the game of Pong. Your design document will be structured to have the following sections:

- Summary: What are you designing? Short description of the project.
- Introduction: What are the major components of the design? How have you broken the problem into smaller pieces, what are these pieces, and how do they interact. You should use diagrams/figures to explain this design overview.
- For each component
    1. Component/function name
    2. Function Prototype
    3. A description of each formal parameter including any restrictions on their values
    4. A description of what the function does and what it returns
- In what sequence are these components utilized, a diagram would help here as well.

Finally, and this may seem somewhat counter-intuitive, you will probably need to prototype (write prototype code for) some pong components before you can be sure of the validity of your design.

3 Pong (Due the week of April 16, 20 points)

Implement and Demonstrate your Pong implementation to your TA in lab.