ECE 28200 Final Project IUPUI

For the final project of this course you will develop a multiplayer game. The players need to be able to play with each other from different stations, hence you need to develop the project using socket programming. The general idea is as follows:

1. A server is up and running, waiting for incoming requests from other machines to assign a spot in the game. The server might also do some initialization (depending on the type of game.) But the major task of the server is to mediate communication between the players.
2. Two or more player clients will send a connection requests to the server. When the number of required players are met, the game starts.
3. A client process will capture key strokes from the human player, and after putting it into proper struct format, will send it to the server. Also, the client will receive incoming struct data from the server, and produce/update the corresponding visual screen.

You get to choose one of the following games to develop. Each game requires a specific **maximum** number of developers. You need to make groups and start developing the project (except for the one-person project). During all the class hours, we will hold the lab in case you need help with implementation.

A) Ping-Pong [100 pts, 1 developer]
This project is intended to be developed by one person. In this game, there are two pads on the two sides of the screen, moving vertically up and down. A ball (which can be the character 'o') will be sent back and forth between the two pads. If the ball touches either of the pads, it will bounce back. Otherwise a score will be assigned to the winning pad. The game looks like the one found in this link https://www.youtube.com/watch?v=fFA6TNr8lrg.
In this project, the server will work merely as a mediator, sending back and forth the message received from each client.

B) 2-Player Snake [300 pts, 3 developers]
This project is intended to be developed by maximum three people. The main idea can be found in https://en.wikipedia.org/wiki/Snake_(video_game_genre). Two snakes will be steered by two players, hunting randomly appearing icon(s) as trophy. Each snake is represented as a consistent sequence of characters (which can be the ascii code 178). The snake moves forward at a fixed speed. When a snake reaches a trophy, i.e eats that trophy, it will grow one character in size, and a score will be assigned to the corresponding player. If the snake runs into an obstacle (a fixed object on the screen, or into the other snake) then it dies, and shall be deleted from the screen. Location of trophy will be determined randomly by the server.

C) Multi-players Snake (more than two players) [400 pts, 4 developers]
This project is intended to be developed by maximum four people. This version is exactly same as the previous one, except that there will be more than two snakes on the screen and more that two players will be playing the game. Location of trophy will be determined randomly by the server. This project requires some technical novelty compared to the 2-player version.

D) Multi-player Pac-Man (more than two players) [400 pts, 4 developers]

This project is intended to be developed by maximum four people. The main idea can be found in https://en.wikipedia.org/wiki/Pac-Man. There is a map which will be provided to the clients by the server. On the map, there are randomly appearing trophies which are determined by the server. First player to connect to the server will the steering the Pac-Man icon. Other players will be chasing the Pac-Man. Then game finishes when the Pac-Man is caught by other players. When the Pac-Man eats a trophy, the trophy must be erased from the map and a score will be given to the Pac-Man. Movement speed for all players are fixed.

You have until Thursday April 26th to finish the project. Then you will be presenting the project on the timeslot that you choose between 11:30 - 14:30. Each group will be given a maximum of 15 minutes to present their project. The project must compile flawlessly and the program run as expected. Although you are advised to spread development of each module among members of the group, all members are required to know every bit of the project. Hence, each member of the group will be asked questions about the code and might be required to modify the code randomly.

Maximum score for each student upon successful implementation of their project is 100 points.

Have fun coding,