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Project FA24

Fundamentals of Comp Networks

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Objective

This research paper is going over a Fundamentals of Comp Networks class at Indiana University Southeast for fall of 2024. The Project this research paper is going over is a multiplayer PACMAN game that is based off the Pac-Man party royale where it could be between 2-4 players. Currently the objective of the game is to eat all of the PAC-DOTS before the other PAC-MAN player does. Right now our two players are both PAC-MAN with 4 ghosts running around trying to eat the PAC-MAN players.

The PAC-MAN game is written in python and runs with pygame in a pop up window that appears. There is not a multiplayer button option because it automatically is multiplayer. You appear on the screen and choose the start button. Once you hit the start button both PACMAN players are dropped into the game immediately going to the middle of the top of the screen against a barrier. Currently you can control both of the PAC-MAN off the same keyboard on one laptop.

We are having trouble getting the game to connect through networks. We have looked into different github repositories on different people who have attempted and achieved this. We tried to do a web browser where you connected on port 4000 or 3000. We had the computers

searching at the same time. Neither of our computers were registering that the other device was on the same port.

We are not currently adding in any of the super power pellets or power ups. Because we are having issues with the network connections. So right now we are focusing on the network aspect of the game. Here was our original idea for the game after that is the status update we had throughout the semester both of these have changed coming to now.

Original Project Proposal:

Our project proposal is to make a network game connected through two laptops. It is a multiplayer pacman game. This is based off the Pac-Man Party Royale where there could be between 2-4 players. Competition battle mode is what we would be basing on for this game so there would be the normal little pac-dots. But instead of just trying to get and eat the pac-dots before the timer runs out you are going to try and eat the other pac-man player.

Another thing we would try to implement into the game is inside the pac-man game we would not only have pac-dots but have power ups. These power-ups would make the pac-man run faster, or get bigger. The Super pellet we would try to implement you would race against the other pacman or ghost to acquire it. This powerup could be either of the two options.

Project Status Update:

- Ensure that everyone has a device player one should have a laptop, player two should have a laptop. Both people need to open a link to a browser: coming soon. One player will be a pacman the other will be a ghost. Once player one has made it into the browser

they will have the game id. It needs to be given out to who wants to play. If more than one player tries to join they will be prompted to wait because the game room isd full.

- One person will be assigned the pacman the other will be the ghost. The player being the ghost is going to chase player 2 the pacman. The pacman player will try and eat all the pacdots before he is eaten by a ghost. If pacman eats all the dots he wins. If the ghost catches him then the ghost wins.

Research

For the research of this project the main source I used and looked up to get a base design for how our pacman game would look. Came from Pacman.com it has all of their designs and games located right on the website. Battle Royale is more of their multiplayer pacman games, it is their newest release. It hosts 4 players and updates its maps all of the time so the game continues to change and be improved.

Implementing it we used some of the new features of the battle royale by having pacman be multiplayer. We also combined this with keeping how the original pacman game looked like. We kept the original black screen with the blue maze design from the original pacman. This differs from pacman battle royale where they have implemented 3D maps. An illustration down below of what our game looks like from the opening page to end of game play.

This source was used for the design aspect of our pacman game. I will have it included at the bottom of the page with a works cited page. We also were going to use these different designs and game modes to add in the power ups to our game. That unfortunately did not work out how we had intended.
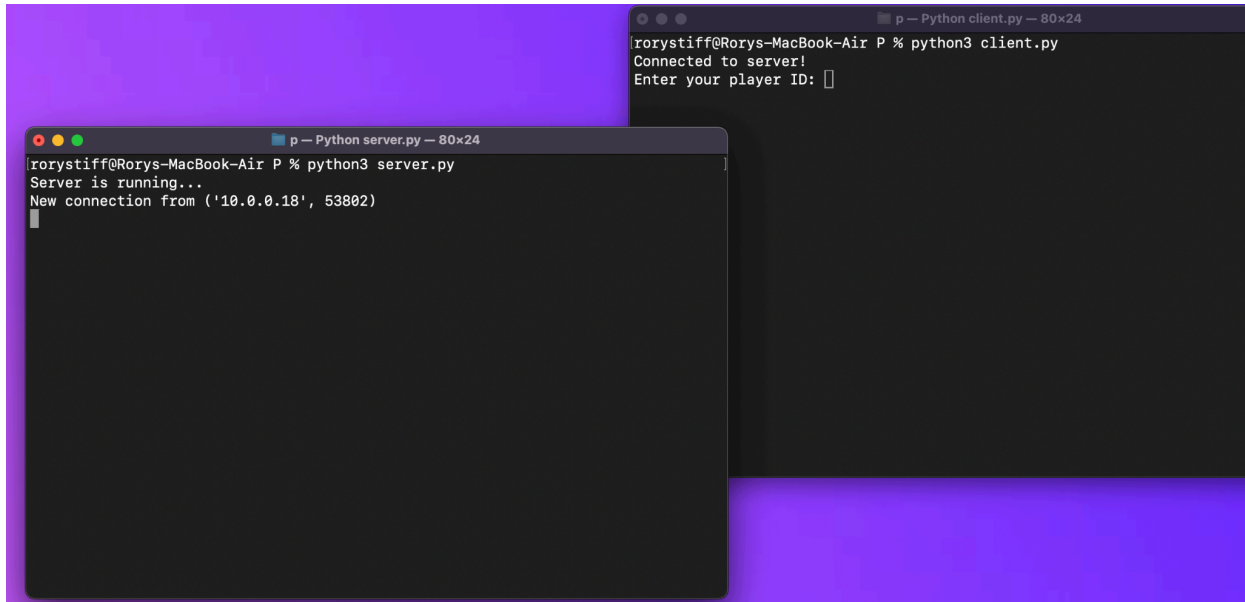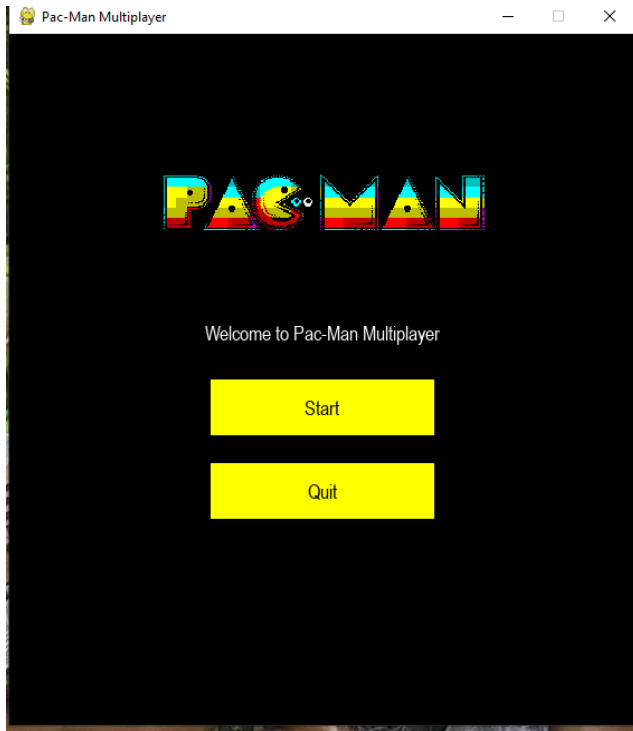
Research for our network connectivity for the game started out as looking at different github repositories. Other individuals had tried to make a pacman about 10 years ago. They were using a web browser to connect on port 3000 and 4000. We looked into doing this and we got both of our laptops running and searching on ports 3000 and 4000. The problem we ran into was that our computers were not registering each other on the ports.

When we were running into this issue we tried some trouble shooting to get through this. We made sure our firewalls were turned off for the time being incase that was affecting our connectivity on the ports. We were not detecting any other traffic on the channels as well so we don't know if the portals were blocked somehow from being able to identify that we were both on there at once. After messing with this for about a week we decided we needed to try something different as time was closing in on this project. This github repository will be linked onto the bottom of the page on a work cited page.

The next repository we looked at included using pygame with python. When we looked into this we decided we were going to code the game in python and use pygame. In the code we do have a pygame that opens and runs. It is multiplayer and runs we tried to implement using sockets. In the illustration down below we have two terminals open one is a server and one is a client. They both work together to run the game. We have both the terminals up and running.

They are not registering that the client and server connections are both open and running. So currently the game is multiplayer but running off of one laptop. Controls are on the arrows and keys of A,W,S,D for player one. Then player two controls are on the normal arrow keys.

All of our information that we found for sockets came from pythons documentation. It will be linked on the work cited page below.

Works Cited

https://www.pacman.com/en/

https://github.com/aishbuilds/multi-pacman

https://github.com/RyanAMoran/Python-Multiplayer-Pac-Man-Project/tree/master

https://pacman.com/en/games/partyroyale.php#:~:text=Challenge%20your%20friends%20in%20this,standing%20to%20win%20the%20rounds!

Making a multiplayer web game with websocket that can be scalable to millions of users | by Sapphy Frost | Medium

socket — Low-level networking interface — Python 3.13.1 documentation