COMP112 Final Project - Snakes and Routers

A distributed game of Snake
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Introduction:

Snake is a classic single player game in which the player controls a snake that traverses a 2D space, eating fruits and growing in length. The object of the game is eat as many fruits without crashing into its growing body, at which point the game ends. Snake has been incredibly successful throughout its history, and was the most ubiquitous mobile game in the early 2000s. Unfortunately, with the rise of more powerful computers and phones, Snake has been overtaken by more modern games. Our project seeks to revitalize the classic game by adding a distributed component, allowing multiple users to play at once from different devices.

While we considered a high level game-making service that already offers networking support such as PlayCanvas (a web service for making online games), we ultimately decided to go a lower-level, peer-to-peer implementation. The ultimate result would be a portable executable, which would connect to other peers on a local network. Ideally, we would like to implement support for games over the Internet, though this would require an external server, which could be hosted on a service like Heroku.

Milestones:

1. Design architecture (Both)
2. Implement single-player snake (Peter)
   a. Display game space
   b. Modules for characters (snakes and fruit)
   c. Respond to input
   d. In-place display update
   e. Score keeping
   f. Game start and end
   g. (Optional) high score system
3. Implement peer-to-peer support (Charles)
   a. Create and maintain a game lobby
   b. Ability to search for game lobbies
   c. Ability to add to or remove from lobbies
   d. Communicate game states
4. Implement multiplayer snake (build on top of game engine and network module) (Both)
   a. Synchronized display update based on peer state changes (Charles)
   b. Introduce multiple snakes (Peter)
   c. Alter screen size and fruits based on number of peers (Peter)
   d. Unified game start and end (Charles)
5. (Optional)Implement external server for Internet games (Undecided)
   a. Add capability to use peer-to-peer or client-server to game
   b. Create server, host on Heroku or other 3rd party service