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Game Tech Final Project Proposal: Team Ogre-Glider

Name of the game:

GalactiCombat

Objective of the game:

You are a spaceship, and your goal is to defeat the other spaceships, which include other players and/or pirates (AI bots). You use your energy to move and shoot the other spaceships. If you run out of energy (by moving or shooting too much), you can no longer move or shoot. To restore energy, just harvest into the minerals that are floating around the room. Be careful, though, the minerals will start zipping around, and if a mineral becomes larger than you, it will hurt you instead of providing you with energy. You lose mass whenever you get hurt (by minerals or other spaceships). Whenever you manage to hit another spaceship, as a reward, the size of your spaceship will then increase. Be the biggest spaceship in the space!

Start the game:

- To build the game:
  - ./buildit
- To make the game:
  - ./makeit
- To start a server:
  - ./GalactiCombatServer <number of players> <number of pirates>
- To run the game:
  - ./GalactiCombat

Overview:

When you start the game, you will be greeted by a game description and the option to start a single player game or a multi-player game. Both games have the exact same gameplay, but the multiplayer type allows you to compete against friends! To connect to a server, type in *<hostname,clientname>*, where the *hostname* is the name of the machine that starts a server, and *clientname* could be anything you want.

Details:

- Game Stages:
  - Welcome Screen with single/multi-player selection
    - If you select multi-player, you then need to type in connection info
  - Main Game
    - Move around the room
      - Running into minerals smaller than you increases your energy
      - Running into spaceships smaller than you increases your size and decreases theirs

- - - When minerals collide with each other, the bigger mineral gets bigger and the smaller mineral gets smaller
  - - There is a time limit of 3 minutes.
  - - End Game
    - - Displays your score (ship size)
      - - If you were online, other players' scores are also displayed
    - - If you are playing single-player game, you can either restart the game or quit the game. If you are playing multi-player game, then you are returned back to the lobby
- Controls:
  - Mouse: rotate camera
  - Left-click: Shoot
  - WASD : horizontal movement
  - Left Shift: push you down
  - Spacebar: push you up
  - Escape: bring up the main menu [music options & quit]
- GUI:
  - Timer at the top of the screen indicates how much time is left in the round
  - Energy bar at the bottom of the screen indicates how much running and gunning you can do
- Music/Sound
  - The infinitely looping background music can be turned off/on after you have started a game by opening the main menu (ESC key)

Multiplayer:
- There are two applications used to play online: ./GalactiCombatServer and ./GalactiCombat
- ./GalactiCombatServer needs to be run before you can play online, as it is responsible for creating the server instance that clients connect to (and it does nothing else)
  - It has no graphical interface
- ./GalactiCombat is the game client. If you select to play multiplayer, you must designate a server to join (there must be one running somewhere).
- Once you join, you will be placed in a lobby where a list of the other players will be displayed. The server will wait until all players click "Ready" to start the game.
  - The online game is exactly the same as the single player game, with the addition that all object positions are updated by the server
    - Essentially, the client sends input to the server, and the server responds with the state of the game.
    - The other balls in the room would include other players on the server

Additional Extensions:
- Bug tracking:

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- ○ At the end of the game, if you were playing online, the game may randomly crash with one of the following two errors:
    - Segmentation Fault
    - pthread_mutex_lock
  - ○ If a TCP_Send fails, we don't really have enough error-handling to deal with it. Either/Both server and client may have to be restarted.
- ● Enemy units: AI
  - ○ Pirates
    - They move and shoot randomly