Project 2 Design Document

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Game Overview

Peachtree Tower is designed to be a multiplayer isometric puzzle adventure game in which both players must cooperate in order to solve a murder. Both players start the game at the base of a tower with an encoded message in hopes of solving the case. Each floor of the tower will be a level where the two must work together in order to reach the next level. As the two climb higher and higher, they'll become ever closer to solving the mystery.

This game will be a co-op game with no single player mode. Each tower level will consist of a puzzle that the two players will have to navigate and escape in order to progress through the game and plot. A level can consist of several different mechanisms tied together to create a large puzzle. An example might be *Portal 2* but without the portals. And a lot more simple. The main mechanisms we envision are switches, pressure plates, and movable boxes. The two players will move through a level in separate areas of the map, although they may share common spaces at points, moving boxes and triggering mechanisms in order to allow them and their partner to advance.

The players will be able to primarily interact with the switching mechanisms. These will consist of both switches triggered by an action key, and pressure plates that are activated either by a player, a box, or either. Activating these switches will open a door or operate some other form of device to change the game world in some way. Some triggers will require tandem operation from both players, an example being both players having to press a switch in their section within 5 seconds of the other. There will also be boxes that can be pushed around along the major axes to open up passages or otherwise manipulate the game world. Another mechanism will be conveyors that can be switched on or off that will move boxes sitting upon them.

At the minimum, there will be graphics defined for the parts of the map involved in gameplay, the mechanisms, players, walls, boxes, and so on. The different pressure plate types will be represented at least with different colors, possibly with different graphics as well. If time permits, we'd like to decorate the levels with a scattering of items to make it feel more natural and less of a contrived game environment.

A person playing the game will interact primarily with the keyboard, using it to move the character around the map and to perform actions with mechanisms. The player will be attempting to solve puzzles in tandem with their partner. This will require communication outside of the game to be effective. We envision players simply playing near each other, as the game is only designed for LAN play.

Puzzle games, if executed well, are typically interesting due to the cognitive challenge present in solving the puzzle and the reward coming from solving increasingly challenging puzzles and progressing. A well developed plot would also provide another source of interest, although it's unlikely we'll get past the most rudimentary of excuses for the player to be trying to move up the tower.

Development Strategy

Due to this game being unlike any of the games our team worked on as individuals for Project 1, it will not contain any pre existing code. Instead we will need to develop new code that will cover networking, interactable objects, and level development. The most challenging part of this project will most likely be in developing the networking. Creating interactable mechanisms for the player to use will take some creativity and difficulty will depend on the complexity of the objects. Level development is probably the easiest part to implement but creating intuitive and intriguing levels will take some thought. All three of these aspects will take some time to develop and will most likely consume the majority of the time spent on this project.

The first milestone that will need to be completed is the making of a functional game. All we need to start with is an isometric world where the player can walk around. Once we have this, we should be able to start adding mechanisms, networking and start designing levels. Since this portion doesn't need to be overly complex to start developing portions of the game, it can always be built upon later. Ideally we would like to have this done by the 21st of November.

The next milestone will be the group status report on December 3rd. By now we would like to have networking to the point where the two players can interact between one another. If networking is coming along slower than anticipated we should at least have some of the mechanisms implemented and tested locally on a single machine. The main focus of this milestone is to have something visual to represent our progress and to see if we are moving at a reasonable pace.

The design and implementation of networking will be performed by Jason, while Joel and Steven work on UI and level design respectively. Upon completion of these tasks, the highest priority tasks will be assigned out as needed. The implementation of mechanisms and mapping will be the first additional components to be addressed.

Technical Showpiece

The main complexity involved in developing this game will be in designing and implementing networked gameplay. The goal is to have two clients be able to connect to each other and exchange movement and actions. We will be making the assumption it will only support LAN based play, and thus will not account for high latency or for NAT/firewalls.

Another complex feature that would interest people who are not interested in games would be the implementation of the mechanisms. We will have to find a way to efficiently define the

mechanisms in the map file, along with the relationships and conditions among them. Then, they have to be implemented in the game. This will entail some system to relate several mechanisms together, define a condition(s) for a activator mechanism to be triggered, and then test for that condition to be met and actually activate the target.

High Bar

- More mechanisms
- More levels
- Better plot line
- More map decoration
- “Stacked” levels, so that you can see parts of the level below the level you’re on through openings
- Selectable player style/color

We believe these items are not necessary to make the game playable, but rather serve to make the game more fun, longer, and more polished in presentation. They are also primarily not coding related, but rather design and content oriented, so they should be able to be easily implemented given the time investment to build the content.

Low Bar Checklist

- ❏ States
    - ❏ Menu
    - ❏ Game
    - ❏ Pause
    - ❏ Finish
- ❏ Networked co-op play
- ❏ Mechanisms
    - ❏ Switches
    - ❏ Pressure plates
        - ❏ Player triggered
        - ❏ Box triggered
        - ❏ Either triggered
    - ❏ Conveyors
    - ❏ Doors
- ❏ Isometric graphics
- ❏ Maps
    - ❏ Several maps defined
    - ❏ Transition between them