Sound Labyrinth

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The main idea of our project is to create a game that provides the same experience for sighted and visually impaired players. We are planning to create a labyrinth based game, where the player will navigate using audio or visual input. The minimal viable product is a having a simple maze that the user will navigate with a sighted user being able to see the whole map . Possible stretch goals and extensions include:

- Limit visual input so that the play experience is the same
- Move game window in response to characters actions
- Randomly generated maze
- Enemies
- Obstacles
- Items

We plan to implement this game using pygame, and will use minecraft audio files combined with simple line drawings for audio and visual feedback. We will structure our code using the Model-View-Controller set-up. The game will be played using keyboard inputs, and the view will be split up into an audio processor and a visual processor which handle returning audio and visual information to the user respectively.. Within the model we plan to have classes for entities(which will include the player and possibly enemies) and objects(will include walls and possibly obstacles and items) that will interact with each other.

We plan to organize our collective efforts by splitting tasks, completing them independently and then setting up a time to meet and integrate. We will going to pair program during the integration process, but probably work independently to create the classes needed to run the program. We will organize meeting times by using When2Meet and choosing the best time that fits to all three of us. This should minimize any unforeseen teaming difficulties when working on the project, however there are still some risks which need to be considered for this project.

The user design of achieving the same user experience between both sensory devices is likely to be the largest challenge. This is because we have had experience with designing visual interfaces and we are comfortable with testing visual designs. We will mitigate this by making the audio experience a priority from the start and by performing testing both visually and blindfolded to assure that we are getting the same experience. Across all modes of input.

When we are designing this we need to consider the ethical implications of our creations. If we discuss the project as an accessible game, however it is not accessible to everyone, (such as someone who has no visual or audio input) that could raise concerns with unintentional exclusion. If put into production this could be minimized by adding tactile information and

working to make the game equally accessible across all senses however that is out of scope of the project time frame we are given. In practice we will have to explicitly say that we have designed the game for blind/low vision users as well as sighted users.

Individual Learning Goals:
Tim: I want to learn more about how to design accessible tools and so I want to work on user experience design and how to convey the same information visually and audibly so the user experience is the same using either sense. I would also like to work on website development as that is a tool that I don't feel I have very well developed.

SeungU: Be efficient in structuring the whole program (like choosing correct classes and implementing existing libraries), and be able to create programs on demand of other users.

Kyle: I want to learn about how to create accessible technology, specifically a game, and explore how to effectively design for a user experience that is fully developed and enjoyable. I also want to have a well structured code outline/ system architecture.

Project Schedule:

T - 11/5 -> **Project Proposal**

F - 11/8 -> **First Architecture Review**, Exploration of sound implementation, maze and character created

T - 11/12 -> Character that moves and pings in a maze

F - 11/15 -> Exploration of continuous stereo sound, limited view on screen

T - 11/19 -> Character with stereo sound, limited view and 1 additional feature(object, obstacle or enemy)

F - 11/22 -> **Project Website Initial Draft**

T - 11/26 - THANKSGIVING

F - 11/ 29 - THANKSGIVING

T - 12/3 -> **Final Project Website**

F - 12/6 -> Polish existing features, add one additional features

T - 12/10 -> **Demo Session Video and Poster,** Final Code Polished+Finished

W - 12/11 -> **Code Submission and Final Demo**

Helpful topics to cover in class:

How to implement Stereo audio/adding audio to an experience.

Quickly sorting data and presenting it to the user.