Final Game Sound Project: Audio Game

Getting Closer to Retirement Studios:

Anita Lim – 100754729

Treyton Cowell – 100745472

Alexander Chow – 100749034

James Pham – 100741773

Frederic Lai – 100748388

Our audiogame is called Listen Your Way Out. There are four specific audio cues and the goal of our game is to listen and identify which of the four will lead the player out of the maze.

As we made our game, one of our inspirations and what we tried to focus on the most comes from a topic in the first lecture on how *Sound is an Essential Part of any Immersive Environment*. We formatted our game around this particular topic so that it helps the player to become immersed into the game with having to pay close attention to the sounds being played. Audio games alone are already quite immersive but with also having to listen to specific volume changes, the rate at which the player becomes and stays immersed is increasingly high.

When it came to deciding how we wanted the sounds to be outputted, we referenced the topic of *Stereo or Mono Recording?* from our textbook called *Studying Sound: A Theory and Practice of Sound Design*. We had the idea that having 3D sounds would make our game way more interesting. When it comes to stereo, "Many people believe "more is better" in most aspects of their lives" (Collins, Pg 90) which we believed too. Stereo really depends on the project and we later realized that it would do the opposite effect for our game and make it too easy/boring so we kept our sound output as mono. "Stereo is not always better than mono" (Collins, Pg 90).

Spoilers if you want to know where the level exits are. There are three levels that will increase in difficulty. As the game/level starts, the player will start off at a set location on the map. In each of the mazes, there are rooms with hitboxes that play a series of sounds that tell the player which direction they may travel, there is a hitbox for each possible room you can enter. The sounds for each hitbox were taken from the internet and post-processed in the application Audacity. There is a simple compass at the right side of the screen of each level so players who are not visually imparied will be reminded of which direction is north. Listen Your Way Out was created in Unity with C# scripts.

The red 'Vision Shield' starts above the maze in the final versions of each level, this is to prevent people seeing the levels when they open the game if they are not visually impared. The shield can be moved up and down with Q and E if you get stuck/ give up and you want to see how the maze is supposed to be solved.

As for player movement we settled on the Arrow Keys, we thought they would be easier to distinguish than WASD for the visually impaired because the arrow keys are more distanced from other keys on the keyboard.
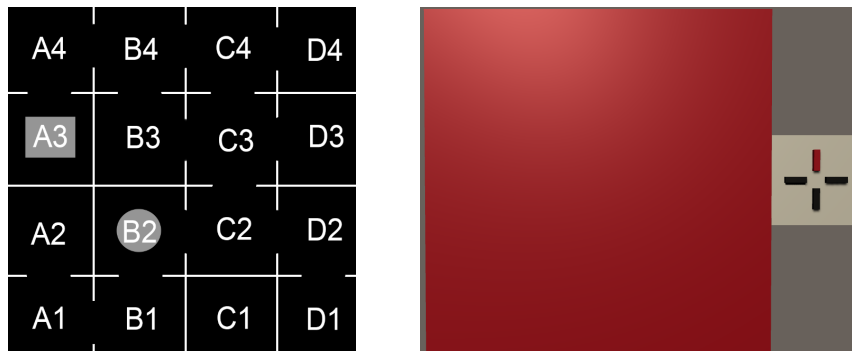
Each map was designed in photoshop based off of a chess grid system (letters A-D right to left, and numbers 1-4 from the bottom up. The grid system helped us come up with an easy way to make the sounds and assign them a location, it is easier to figure out what sounds the room A1 should make. We first started with the 2x2 map and the goal of this first level was to act as a tutorial to show how the game will feel.

The 2x2 map teaches you the mechanics of our game, and is really easy to hear your way through because at most there are two paths you could take, meaning you will eventually get to the exit even if you barely listen. The next map we designed was the 4x4 third level. This was designed to be the most difficult level in our game and had the most options for path direction (a room with all four directions the player could travel).
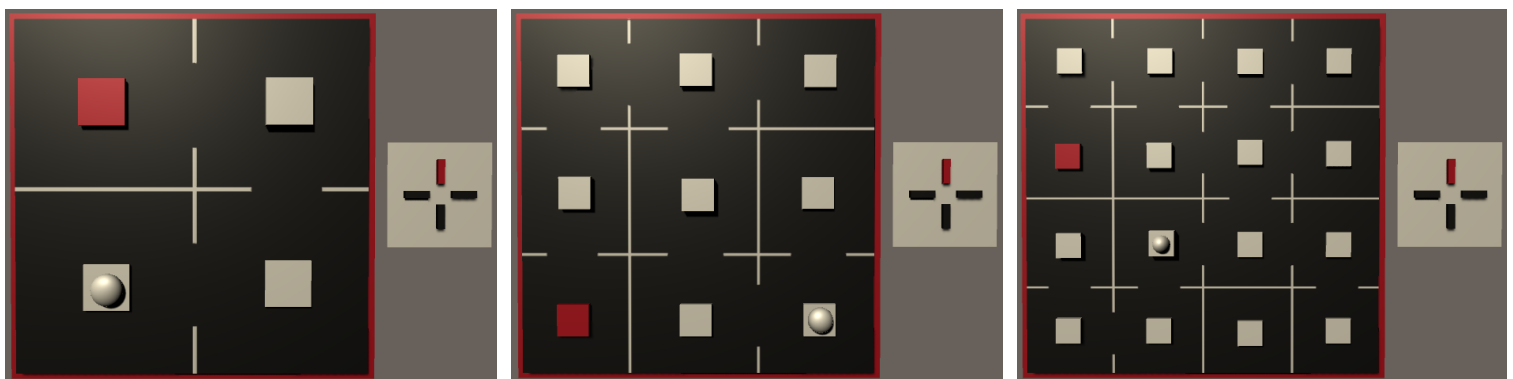
Level One   **Level Two**   **Level Three**

The game will output four sounds in clockwise order of the compass, starting from North(1st), East(2nd), South(3rd) and West(4th). The sounds spawn and every time they enter a new room. The game will be controlled with the arrow keys (↑UP=North), (→RIGHT=East), (↓DOWN=South), (←LEFT=West).

A Thud means there is a wall in that direction you are trying to move and you cannot go there, and a Tone means you can travel in that direction to the next room where the process repeats. For example {Tone, Thud, Tone, Tone} would tell you that you can travel North(1), South(3) and/or West(4) because the Thud was played second (aka East(2) is a wall).

Below is the chart we created after making the maps in Photoshop. For each map we put the coordinates, the map number, and associated sound effects with each coordinate.

The naming scheme is Coordinate. MapNumber: { North, East, South, West } This is so that we could put all of the six sounds in our game into Audacity and put the correct sounds in the correct order. The map number is helpful to differentiate because there are three different A1 coordinates, so we split them into A1.1, A1.2, and A1.3.

Map: 2x2

A1.1: { Thud, Tone 2, Thud, Thud }
A2.1: { Thud, Tone 2, Thud, Thud } { WIN SOUND }

B1.1: { Tone 1, Thud, Thud, Tone 4 }
B2.1: { Thud, Thud, Tone 3, Tone 4 }

Map: 3x3

A1.2: { Tone 1, Thud, Thud, Thud } { WIN SOUND }
A2.2: { Tone 1, Thud, Tone 3, Thud }
A3.2: { Thud, Tone 2, Tone 3, Thud }

B1.2: { Tone 1, Tone 2, Thud, Thud }
B2.2: { Tone 1, Thud, Tone 3, Thud }
B3.2: { Thud, Tone 2, Tone 3, Tone 4 }

C1.2: { Tone 1, Thud, Thud, Tone 4 }
C2.2: { Thud, Thud, Tone 3, Thud }
C3.2: { Thud, Thud, Thud, Tone 4 }

Map: 4x4

A1.3: { Tone 1, Tone 2, Thud, Thud }
A2.3: { Thud, Thud, Tone 3, Thud }
A3.3: { Tone 1, Thud, Thud, Thud } { WIN SOUND }
A4.3: { Thud, Tone 2, Tone 3, Thud }

B1.3: { Tone 1, Thud, Thud, Tone 4 }
B2.3: { Thud, Tone 2, Tone 3, Thud }
B3.3: { Tone 1, Thud, Thud, Thud }
B4.3: { Thud, Tone 2, Tone 3, Tone 4 }

C1.3: { -------- No Access -------- }
C2.3: { Tone 1, Tone 2, Thud, Tone 4 }
C3.3: { Tone 1, Tone 2, Tone 3, Tone 4 }
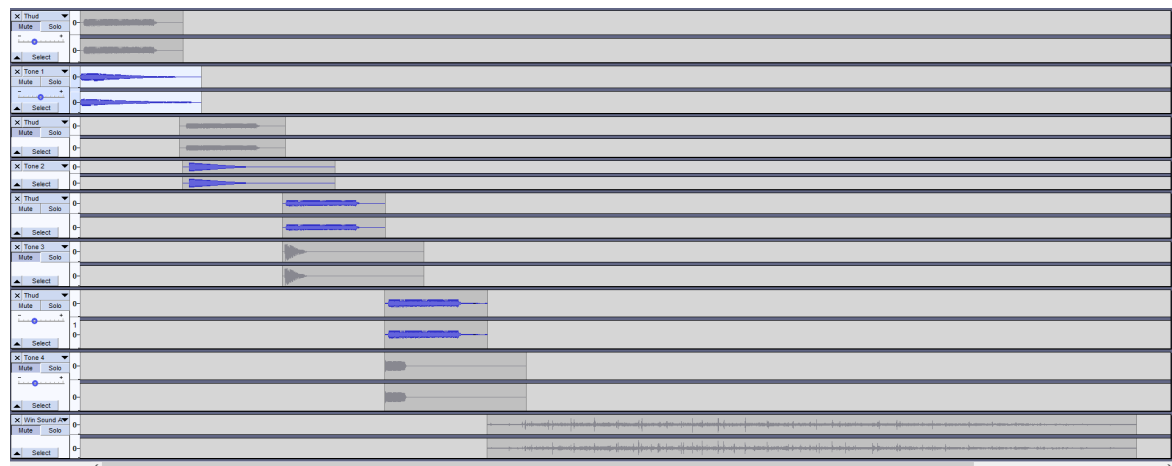C4.3: { Thud, Tone 2, Tone 3, Tone 4 }

D1.3: { Tone 1, Thud, Thud, Thud }
D2.3: { Thud, Thud, Tone 3, Tone 4 }
D3.3: { Thud, Thud, Thud, Tone 4 }
D4.3: { Thud, Thud, Thud, Tone 4 }

We used this chart to easily see what order the sounds needed to go. We put all the sounds into an Audacity file and muted the ones that were not being used

For example, in the image above the sound that would be played would be
{ Tone 1, Tone 2, Thud, Thud }.
After exporting all 28 completed room sounds (it would be 29 but C1.3 is not accessible to the player) we attached each sound to each room in Unity. When all sounds were in it was just a matter of creating the movement restrictions to force players to hit the hitboxes of each room.

In the submission I will include a recorded mp3 of the instructions this clip can be listened to before the game levels, giving the visually impaired a way to understand how the game is to be played

The Instructions Script:
Hello, Getting Closer to Retirement Studios presents,
A fully Audio based gaming experience,
Titled "Listen Your Way Out"
How to play
When you enter a room a series of 4 sounds will play
Each Note represents a direction you can or cannot travel in.
Tones, tell you you can travel in that direction, whereas Thuds, tell you you cannot go in that direction
The Tones sound like this
The North Direction - Tone 1
The East Direction -Tone 2
The South Direction -Tone 3
The West Direction -Tone 4
And the Thud sounds like this
Thud
Each room can contain any combination of Tones and Thuds, but the order will always remain
NORTH first, EAST second, SOUTH third, and West fourth
Let's do an example of something you may hear in game
{ Tone 1, Thud, Tone 3, Tone 4 }
This tells you that you can travel North, South and West, BUT NOT East
That is because the Thud came second meaning East is blocked.
You then may press either
The Up Arrow to travel to the Northern Room
The Down Arrow to travel to the Southern Room
The Left Arrow to travel to the Western Room.
Make your way through each maze until you head a thunderous applause
Good Luck!

You can run all the different scenes through Assets -> Scenes.
If you want to play the third level, I built an exe for it titled SoundGame.exe
You will have to taskbar the exe version of the game because I couldn't figure out how to stop the program in the client. The Instructions included as an mp3 to listen to before playing.

Reference

Collins, K. (2020). *Studying Sound: A Theory and Practice of Sound Design*. MIT Press.

Kapralos, B. (2021, January 13). Introduction & the Physics of Sound. Retrieved April 04, 2021, from https://learn.ontariotechu.ca/courses/10762/files/folder/Weekly%20Lectures/Week%201%20(Jan.%2013)?preview=1044102