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Final Documentation

The game that I worked on for my final project is based off of the 2D Roguelike Unity tutorial. Other than the basic tutorial I included a health mechanic for the enemies, a start menu, and a proximity mechanic that fires off a sound whenever the enemy is within a certain range of the player. The game is a fairly simple roguelike. You start off with 100 food and you lose 2 food every time you move and 10-20 food every time an enemy hits you. Once you run out of food you die and lose the game. You can replenish your food by picking up soda and food that appear randomly on each level and they give 20 and 10 food respectively. Each level is formed on a 7x7 grid that the play can move around on. On this grid can be walls, food, and enemies all of which are procedurally generated. There is also an exit in the top right corner of each map that the player has to reach to progress to the next level and the goal of the game is to get to as many levels as you can.

When looking at the game there didn’t seem to be many areas to implement sounds hence why the above three mechanics were added. In total I added in 14 different sound effects ranging from the enemies walking to when the player enters the exit to progress, 3 separate music tracks, one for the main menu, one for the game over screen, and an ambient track that plays while the main game loop is running, an interface sound for when the player licks the start button on the main menu, and 2 different adaptive tracks for when the player’s health is low as well as how close the enemy is to the player.

SFX:

1. Level Switch

In Reaper - For the Level Switch sound I took a tone sound from Freesound and pitched it differently to create four unique sounds. I put three to four differently pitched notes next to each other to create the 4 separate sounds. One of these sounds is also an easter egg to one of your favorite games

In FMOD - I create a multi instrument that has each of the four variations at different play percentages. The easter egg only has a play percentage of 5% while the others are at 32%.

2. Player Move

In Reaper - I found a basic footstep sound on freesound and put a ReaPitch filter on it to shift it down.

In FMOD - I put a random modulator on the pitch to give it some variation. I also lowered the overall volume.

3. Zombie Move

In Reaper - I took the same base sound from the Player Move sound and pitched it up instead of down using the ReaPitch filter.

In FMOD - I also put a random modulator to add some variation. I also lowered the sound quite a bit volume wise.

4. Zombie Attack

In Reaper - I took a groggy waking up sound from freesound and added a few things to it. I added a ReaPitch, ReaVerb, and ReaEQ filter to the sound. I pitched it down quite a bit while cutting out a lot of the top end with the EQ. I also added a decent amount of reverb which gives it a sort of trail off effect which is really nice. The long fade out I also put on the track also adds to that effect.

In FMOD - Similar to the previous two I didn’t do too much to this sound except for adding a random modulator to the pitch and turning the volume of the overall sound down.

5. Food Crunch

In Reaper - For this sound I found a crunching sound on freesound and I really only added an EQ to it. This mostly just lowered the low end and boosted the middle of the frequency.

In FMOD - Again just a random pitch modulator and lowering the volume.

6. Soda Drink

In Reaper - Here I used a drinking sound that I found on freesound. I just added a ReaPitch filter and pitched it down.

In FMOD - Like most of the SFX I added a random modulator to the pitch and lowered the volume a bit.

7. Hit Wall

In Reaper - I used two different sounds to create this sound. The first one is a hitting sound that I found of which I added on a lower thud sound which rounded it out nicely. I added an EQ and a pitch shift down to the hitting sound. For the EQ I cut out most of the high end and the pitch was only shifted down by a small amount.

In FMOD - Here I cut off some of the beginning and lowered the volume but other than that I didn’t do much to it.

8. Player Damaged

In Reaper - I found a pretty nice grunt noise on freesound that I added and EQ to. I pretty much just cut off the low end, lowered the high end and boosted the 600Hz to 1500Hz range because speaking voices are in that area.

In FMOD - if you guessed that I pretty much only added a random modulator to the pitch and lowered the volume you would be right.

9. Player Break

In Reaper - Since the player is only breaking the tree-wall-things that are placed in the level I went for a sound of a stick striking a bush. I really only added an EQ that cut out the high end to make it a more solid sound.

In FMOD - Random modulator and volume lowered again.

10. Player Death

In Reaper - For this sound I found a decent death sound that I added a pitch down and an EQ that cut off the high end.

In FMOD - Since this only plays once there wasn’t much need to add any modulators to this one however I did lower the volume so it wasn’t so loud.

11. Enter Exit

In Reaper - Here I used the same base sound as the Level Switch sound since they play right after another. I just pitched the sound up using the properties like the Level Switch sounds.

In FMOD - It looks like the pause you mentioned is a coding issue. Since this is also a one off I didn’t see the need to add a modulator to it. And the volume was pretty good as it is.

12. Enemy Death

In Reaper - Here I found a nice groan sound that I added an EQ and pitch shift to. I shifted the pitch by almost an octave down and the EQ cuts off some of the low end while boosting the middle vocal range.

In FMOD - And now we’re back to the random pitch modulator and a decrease in volume

13. Player Hit Enemy

In Reaper - For this sound I actually used two different sounds. One is a wood chopping sound and another is a punching sound. While I didn’t add anything to the punch sound I did add an EQ and pitch shift to the wood shopping sound. Since the player is using a pickaxe to attack with I wanted the sound to represent that. With the EQ I cut out most of the low end and boosted the middle and with the pitch sift I lowered it a bit. I also had the wood chopping sound play slightly after the punch sound.

In FMOD - Here we have the same random pitch modulation and a lowered volume.

14. Enemy Damaged

In Reaper - Here I found a different grunt sound than the previous one in Player Damaged. To this I added and EQ which took off some of the high end. I also added a pitch shift that only shifted it down by a few semitones.

In FMOD - And last but not least, a random pitch modulation and a lowered volume.

Music:

1. Main Menu Theme

In Reaper - Since I composed the piece in a separate DAW I didn’t do much to it within Reaper.

In FMOD - I pretty much just added it in a slapped a loop region over it. I also lowered the volume by a bit.

2. Dungeon Ambient

In Reaper - Here I did include the tracks that I exported into different tracks within Reaper however I didn’t really do much to them here.

In FMOD - Here I added in three separate multi instruments that are all contained within the same loop region. Each multi instrument contains seven different tracks. The first contains the main chords that are always played. The second contains a flute track that plays some shorter one off like sounds to break up the other two instruments. The third contains some more melody inspired tracks that use the same instrument as the chords. Both the second and third instruments contain one track that is just silence so that way they aren’t playing all the time. All of the individual tracks are four measures long however there is one track in each instrument that is not. This allows for more variation within the overall track as each level progresses. I also put an AHDSR filter over the whole event.

3. Game Over

In Reaper - Similarly to the Main Menu track I didn’t really do anything to this one in Reaper.

In FMOD - Here I put a loop region over it and I also added an AHDSR filter onto it so that it wouldn’t sound so immediate when it started and stopped.

Interface:

1. Menu Interface

In Reaper - I found a really nice click sound and added an EQ to take out the high and low ends.

In FMOD - Since it only plays once when the user clicks the start button I didn’t do much to the sound other than what I did in Reaper.

Adaptive:

1. Health Low

In Reaper - I found a really cool old school hear beep that worked really well. I just pitch shifted it down a lot to get it in the range that sounded good.

In FMOD - Here I created a scatter instrument that based on a parameter increased in volume and speed. How I increased the speed was by pitching the instrument up for the speed increase and then decreasing the pitch of the actual sound to allow for it to speed up but keep the same overall pitch. This effect starts once the player hits 40 food.

2. Proximity

In Reaper - I created the sound for these in Ableton like the music tracks that I made so I didn’t really do anything to them in Reaper.

In FMOD - I added another parameter to this event so that the first sound would trigger when the zombie was within 2 blocks and another for when the zombie was within 1 block. Instead of the continuous parameter for the Health Low sound I used a discrete parameter since it was only ever going to be either a 0, a 1, or a 2 for the value.

Most of the mixing was done using the AHSDR modulators on some of the music tracks. I mostly put them on since it became pretty jarring when the Main Menu track would just cut off into the Level Switch track. I didn’t do much else as I thought that the sounds all worked together well and nothing really stood out.

I went through and did a few playthroughs of my game using the LUFS meter in FMOD. From my adjustments I got the max Integrated at around the -24 to -23 range which is what I was going for. The main two games that I looked at when mastering were Binding of Issac and A Link to the Past. While being two very different games, they do share a sort of room based system that my game also has. I wanted to see what they emphasized in their games to see what I should emphasize in mine.

Here are all of the sources to the sounds that I use:

Level Switch

<https://freesound.org/people/ani_music/sounds/165314/>

165314\_\_ani-music\_\_thick-muted-synth-bass.wav

By: Ani\_music

Player Move

<https://freesound.org/people/VKProduktion/sounds/251788/>

251788\_\_vkproduktion\_\_footstep-01 (1).wav

By: VKProduction

Zombie Move

<https://freesound.org/people/VKProduktion/sounds/251788/>

251788\_\_vkproduktion\_\_footstep-01 (1).wav

By: VKProduction

Zombie Attack

<https://freesound.org/people/Iceofdoom/sounds/371558/>

371558\_\_iceofdoom\_\_groggy-hungover-waking-sounds-male.wav

By Iceofdoom

Pickup Food

<https://freesound.org/people/longe630/sounds/178490/>

178490\_\_longe630\_\_3beeps.mp3

By: Longe630

Food Crunch

<https://freesound.org/people/andersmg/sounds/506908/>

506908\_\_andersmg\_\_crunching-food.ogg

By: Andersmg

Soda Drink

<https://freesound.org/people/Abolla/sounds/213193/>

213193\_\_abolla\_\_bottledrinking02.wav

By: Abolla

Hit Wall

<https://freesound.org/people/zimbot/sounds/122122/>

122122\_\_zimbot\_\_thud-2-dry.wav

By: Zimbot

<https://freesound.org/people/checholio/sounds/443848/>

443848\_\_checholio\_\_68-golpe-ardilla.wav

By: Chechoilo

Game Over

Track was created by me.

Player Damaged

<https://freesound.org/people/whisperbandnumber1/sounds/397276/>

397276\_\_whisperbandnumber1\_\_grunt1.wav

By: Whisperbandnumber1

Player Break

<https://freesound.org/people/giddster/sounds/437355/>

437355\_\_giddster\_\_slashing-bush-with-stick.wav

By: Giddster

Health Low

<https://freesound.org/people/gamer127/sounds/463202/>

463202\_\_gamer127\_\_one-beep.wav

By: Gamer127

Dungeon Ambient

Track was created by me.

Player Death

<https://freesound.org/people/Haramir/sounds/404014/>

404014\_\_haramir\_\_death.wav

By: Haramir

Proximity to Enemies

Track was created by me.

Enter Exit

<https://freesound.org/people/ani_music/sounds/165314/>

165314\_\_ani-music\_\_thick-muted-synth-bass.wav

By: Ani\_music

Enemy Death

<https://freesound.org/people/Ivan_Bjorkman/sounds/457449/>

457449\_\_ivan-bjorkman\_\_male-long-groan.mp3

By: Ivan\_Bjorkman

Player Hit Enemy

<https://freesound.org/people/dersuperanton/sounds/437653/>

437653\_\_dersuperanton\_\_moan-male-beat-punch.wav

By: Dersuperanton

<https://freesound.org/people/DDT197/sounds/445782/>

445782\_\_ddt197\_\_wood-chopping.wav

By: Ddt197

Menu Interface

<https://freesound.org/people/Eelke/sounds/158056/>

158056\_\_eelke\_\_mouse-clicks-2-types.wav

By: Eelke

Enemy Damaged

<https://freesound.org/people/Reitanna/sounds/344004/>

344004\_\_reitanna\_\_heavy-grunt.wav

By: Reitanna

Main Menu Theme

Track was created by me.