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IGME 671

Interactive & Game Audio

**Game Audio Design Documentation**

**Game Overview:**

Descendate is a mixture of the rpg and visual novel/dating sim genres that takes place in a fantasy world with magic and orcs. Players control a traveler who arrives in a town that thrives around a mysterious dungeon that’s been around for as long as anyone can remember. They come for the prospect of riches that could be found inside the dungeon, despite dangerous creatures also dwelling inside, and take up residence at the local inn. Throughout this game, players will forge relationships with the townsfolk in efforts to recruit them into their adventuring party, or possibly to romance them. However, just as you can get these npcs to love you, you can also get them to hate you, so your every dialog choice matters.

**Requirements Analysis:**

* Players are walking around in a 2D environment on various surfaces, so there was a need for walking sound effects for at least dirt, gravel, and wood. On top of this, jumping and door sound effects were needed for jumping and opening doors, respectively.
* Since the player spends a majority of their time interacting with NPCs through dialog trees it seemed fitting to give at least a few of these characters some voices. While full lines of dialog reading was out of scope, we figured some vocal barks corresponding to certain actions would suffice for our purposes.
* Currently we have menus for inventory & party management, as well as some built-in noises that accompany our dialog tree system. These all could use some extra interface sounds for when the players interact with them in specific ways, such as opening and closing the menus and adding/removing stuff from them.
* Each major area planned out for our game has had a song made for it by one of our more musically talented friends, so implementing them effectively is all that’s left to be done.
* To accompany each of these major areas and their music tracks there will be ambient noises as well. There’s our riverside overworld, a tavern, an inn, a blacksmith, and possibly a battle scene in the dungeon that will need noises associated with them.

**Sound Assets:**

* Walking: Got these all from Freesound. The dirt walk was probably the one that needed the most work done on it, as originally it was just a guy kicking some dirt sporadically. Speeding up the noises and raising the middle bands in ReaEQ did the trick well enough. The gravel steps I found needed no modification at all, just had to split them up so they could be sent off as individual steps. The steps on wood also weren’t too much work, just had to raise the low shelf more to they had more impact.
* Door: Straightforward effects found ready to use from Freesound.
* Jumping: Straightforward effects found ready to use from Freesound.
* Dialog: A teammate and I did multiple takes for greetings, exclamations, and goodbyes in various tones to reflect the NPCs attitudes toward the player and mood of the day. These were compiled and singular takes were chosen to be used in FMOD.
* PlayerInventory: Most of these were straightforward “bag” sound effects found ready to use from Freesound, but the bag removal sound caused me some issues due to a slightly metallic buzzing that permeated in its background. Otherwise it was perfect though, and after some fiddling in ReaEQ I managed to buff out that noise to a satisfactory degree.
* PartyManager: This one took me the longest to sort out because it has the least connection to any realy noises. For a while I thought using the character barks for each character’s UI counterpart could work but I just couldn’t figure out a straightforward way of implementing that in the game, so I settled on some more unconventional noises. In particular, I used some whooshing sounds for opening and closing the menu, and for adding/removing NPCs from the party I actually used the popping and clasping of a plastic container to fill those shoes. These all needed some modifications to sound less like plain noises and fit more into the fantasy setting they were being dropped into, but after some ReaEQ and speed adjustments they were satisfactory for my needs
* RelationshipStatusChange: Since the dialog textboxes have little flowers that bloom or wilt based on the good or bad decisions made with them, I wanted to get some noises that would reflect that imagery. The harp adjacent bell sounds were an obvious choice for a positive change, but the negative change was a little harder to pin down. Eventually I settled on the bass drums as they sounded like they conveyed what I was trying to get across while not feeling too out of place.
* Music: Like I mentioned above, these tracks were already put together by a friend of ours, so really I just needed to adjust their volumes so they’d be in line with the LUFS level I was aiming for.
* Ambiance: These were the most fun to look for as they covered a wide range of real world noises. The overworld needed a running river, the smithy needed some metal smacking and fire burning, the tavern needed some casual chatter, the inn needed some creaking wood, the caves needed some crumbling rocks, and all of these needed to have the option of having some quiet or loud chatter, just in case. Out of these, the rock crumbling needed the most modification in Reaper to work as it was simply much too overbearing in its original form. The smithy fire also needed some work to actually remove the chatter in the background of it, as I didn’t want it to compete with the separate idle chat files I was prepping to incorporate with it and my other ambient tracks.

**FMOD Organization**

I organized my FMOD project at the highest level based on the sound categories laid out in the project instructions (sound effects, dialog, interface sounds, music, and ambiance). Within these event folders were the following events:

* BattleAmbiance: The crumbling rock sound was thrown into a scatterer instrument to randomize spawn rate, volume, and pitch, so as to emulate rocks following in various locations throughout a cavern that players are to fight in. Also, for all of the ambient noises on their main audio track I’ve applied a volume automation so the Unity developers can adjust the volume with a 0-1 slider.
* BlacksmithAmbiance: The smithy fire always plays, but on top of that there’s a scatterer for a hammering on metal sound effect that is set to spawn at a percentage rate based on the parameter value starting at 0% when its set to .5 and increasing to 100% when it’s set to 1. In addition, this and all proceeding ambiance events have an additional parameter sheet devoted to idle chatter, so Unity developers can add quiet or boisterous chatter to any scene where townsfolk may be. This used to be its own event, but I decided it would make more sense to be incorporated into the other ambient tracks instead.
* GuildhallAmbiance: Wood creaks on loop.
* OverworldAmbiance: A river flows constantly.
* TavernAmbiance: Chatter that takes place in an interior space loops.
* CharacterGreetings/Goodbyes/Exclamations: All character barks use a label parameter sheet that has labels for Neutral, Angry, Sad, and Happy tones of voice.
* PartyMenu: A PartyManipulation parameter sheet includes labels for closing, removing, adding, and opening the party menu/members in the menu.
* PlayerInventory: Similar to the PartyManipulation parameter sheet there’s an InventoryManipulation sheet with labels for closing, removing, moving, adding, and opening.
* RelationshipStatusChange: A simple label parameter sheet for positive and negative relationship changes.
* Music: All music events contain parameter sheets for what “section” of the song they’re supposed to be in and a 0 to 1 volume slider. Since these are simple loopable tracks, they’re all able to be pretty easily split up into intro, verse, chorus, and outro sections. Most tracks have a looping verse and chorus that can then jump to other sections based on what the MusicSection parameter is set to, with the battle music being the exception with a looping intro and non-looping everything else. Getting the loops aligned so they could all lead from one to any other was a real pain but I got it eventually. I also thought that the tracks looping on the verse or chorus forever while the player stood around in any particular space wasn’t great, so I made it such that the loops would only trigger half the time. This way, setting the MusicSection parameter in Unity would guarantee the section specified would play at least once, but could then have the potential to move into something else on its own whim.
* Door: Similar to RelationshipStatusChange, a label sheet with options for closing and opening door sounds is in place.
* Jumping: Same as the door, with leaping and landing noise settings in place of opening and closing.
* Walking: A single parameter sheet with multi-instruments for dirt, gravel, wood steps has been implemented.

**Mixing**

My mixing process involved a lot of trial and error listening sessions in Reaper as well as in Unity. For the most part I think after mastering the sounds in Reaper they meshed well together naturally, with the only exception being the river noise in the hub world. This was essentially white noise, and it really overpowered the music track when played together. Since I wanted to keep the LUFS levels consistent, I simply turned down the volume automation on the river ambiance in Unity so players could hear the music. At the suggestion of the professor, I also utilized the bussing system to lower the volume of everything except for interface sounds, music, and dialog barks when players were talking to NPCs or interacting with menus.

**Mastering**

For the purpose of mastering all my assets before moving them into FMOD I used the Youlean Loudness Meter to compare my audio against some other popular dating sim & visual novel games, specifically Monster Prom & The Letter. Below are my findings for those games:

* The Letter: -26 LUFS for background music, -16 LUFS for sound effects
* Monster Prom: -23 LUFS for background music, -22 LUFS for sound effects

Based on these, I settled on having -24 LUFS for all my music, and then -21 LUFS for everything else. I don’t personally think The Letter should’ve had its sound effects as loud as they were, which is why I’m leaning more towards Monster Prom’s levels for those.

**Unity Integration**

Our game's been in a rough spot in regards to programming because most of the team is design-oriented, so while there's a lot of art assets and writing completed for it we've only really had one consistent programmer to implement all of that since I shifted focus to sound design. I've been working to provide content for all of the planned scenes but many of them simply haven't come to fruition, meaning those sounds are stuck being unimplemented as of now. Specifically, the battle, blacksmith, and tavern music/ambiance could not be reasonably implemented without the environments that were meant to accompany them, as well as some of the inventory and party manager sounds since the actions they were associated with are not implemented either. In a similar vein, while the music is set up to be changed via a parameter sheet, there weren’t any opportunities to implement that in code with the limited time remaining, so for now the music that does exist loops in the preset regions with random chances to break out of those loops so that the regions are at least being used in some manner. The river that is supposed to flow alongside the path the player walks along in the overworld also does not exist at the moment, but the overworld ambiance of the running water is supposed to go with that. With the content that is available though I've been able to craft enough code to generally suit all needs in regards to integrating with the Fungus dialog tree system and so on. My goal was to make it so whatever code was needed for what is currently available could be reused easily for any new scenes that get added down the line and in that regard I think I was successful.

**Sources**

* “Foot Drags Dirt 2” - worthahep88, <https://freesound.org/people/worthahep88/sounds/319210/>
* “Walking\_Wood” – taure, <https://freesound.org/people/taure/sounds/362777/>
* “A Walk with stop” – straget, <https://freesound.org/people/straget/sounds/414921/>
* “Door, Front, Closing, A” – InspectorJ, <https://freesound.org/people/InspectorJ/sounds/431118/>
* “Door, Front, Opening, A” – InspectorJ, <https://freesound.org/people/InspectorJ/sounds/431117/>
* “Jump Hop” – felixyadomi, <https://freesound.org/people/felixyadomi/sounds/456375/>
* “Thump” – Macif, <https://freesound.org/people/Macif/sounds/207824/>
* “Bag Pack” – TriqyStudio, <https://freesound.org/people/TriqyStudio/sounds/467604/>
* Unknown – Tristan\_Lohengrin, <https://freesound.org/people/Tristan_Lohengrin/sounds/233441/> (user deleted account and the sound along with it)
* “slide-click” – Qat, <https://freesound.org/people/Qat/sounds/108335/>
* “Container Plastic Open Close” – timgormly, <https://freesound.org/people/timgormly/sounds/145384/>
* “Intro 01” – rhodesmas, <https://freesound.org/people/rhodesmas/sounds/353206/>
* “Failure Drum Sound Effect 3” – FunWithSound, <https://freesound.org/people/FunWithSound/sounds/456964/>
* “Bow river” – lwdickens, <https://freesound.org/people/lwdickens/sounds/260631/>
* “Tavern\_Ambience\_Inside\_Laughter” – ivolipa, <https://freesound.org/people/ivolipa/sounds/326313/>
* “Wood\_Creak\_02” – dheming, <https://freesound.org/people/dheming/sounds/177779/>
* “Rocks” – adamgryu, <https://freesound.org/people/adamgryu/sounds/336023/>
* “Blacksmith hammering, people talking in the background” – Emmaproductions, <https://freesound.org/people/Emmaproductions/sounds/254371/>
* “WALLA friendly chatter” – thorvandahl, <https://freesound.org/people/thorvandahl/sounds/77019/>
* “SPORTS9” – thorvandahl, <https://freesound.org/people/thorvandahl/sounds/383905/>