Music-Based Video Game Design
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Abstract:
- Create a simple-to-play video game where listening and interpreting the in-game music is essential to succeeding in each scenario.

Design Principles:
- Simplicity in basic movement/gameplay
- Two-way interaction between music and the player
- Fluidity

Two-Way Interaction:
- Changing properties of the music (e.g. pitch, volume) can provide vital feedback to the player
- Actions the player performs can have direct effects on the music

Sync up Music Scenario:
- One audio source with the same beat is slightly delayed behind the other
- Shooting one enemy increases, shooting the other decreases the delay
- Player wins when the two audio sources are synced up

Locate with Frequency Scenario:
- Obscure area where enemy is travelling
- The pitch of the enemy’s source track changes linearly with the enemy’s position on the y-axis.
- Goal: Use audio feedback to locate the enemy

Audio Engine Inputs:
- Location of sound source
- Number of enemies
- Size of enemies
- Firing speed
- Player or enemy damage
- Location of sound source relative to distorting object

Sound Effects Using These Parameters:
- Pitch
- Volume
- Reverb
- Flanging
- Equalizer
- Perceived location of sound
- Track alignment with main beat
- Triggering of melodic sounds

Audio Engine Outputs:
- Strength
- Tempo
- Volume

Shoot the Distortion Scenario:
- One main enemy is the sound source
- Many smaller enemies move around it
- One of the smaller enemies causes the main enemy’s sound source to be distorted where the distortion is a function of the distance between the main enemy and the smaller enemy
- Goal: Shoot the distortion causing enemy but not the others

Conclusion:
- In-game audio can provide palpable information about the state of the game that traditionally is conveyed visually.
- The actions of the player can directly affect the music of the game in real time