

Game Resources

- Tanks from Unity
- Unity

Integration Resources

- FMOD
- Visual Studio
- Chat GPT
- <https://danielrdehaan.notion.site/FMOD-Unity-C-Scripting-f9cd7578147342f589ba2436ef536a1e>

All Visual Studio Code comes from a Columbia College Chicago Faculty's tutorial for Unity
Dr. Daniel Dehaans Tutorial

- <https://danielrdehaan.notion.site/FMOD-Unity-C-Scripting-f9cd7578147342f589ba2436ef536a1e>

Sound Resources

- Max for Live
- FreeSound.com
- Vital Wavetable plugin
- Ableton Live 10

List of Used sounds from Free Sound

- **Desert silence at night**
- [Diegolar](#)
- **Amargosa River, Mojave Desert, California**
- [RTB45](#)
- **Explosion 3**
- [deleted_user_3544904](#)
- **Guns & Explosions Album - Metal impact 5.wav**
- [OGsoun](#)
- **8Bit Explosion**
- [Duskbreaker](#)
- **retro explosion sfx.wav**
- [stumpbutt](#)
- **G05-14_2 Engine Prop Idles.wav**
- [craigsmith](#)

- Noise zap
- [ProjectsU012](#)
- squeaky-tennis-ratchet.wav
- [alienistcog](#)
- G15-23-M-4 Tank Pass By.wav
- [craigsmith](#)
- Motorcycle Engine_0km.wav
- [Cmart94](#)
- Arcade Shoot
- [Aesterial-Arts](#)
- Guns & Explosions Album - Autocannon - Shot 1.wav
- [OGsound](#)

Stock Ableton Effects

Ableton Stock FX used

- Redux
- EQ Three
- Delay
- Overdrive
- Hi Buzz
- Compressor
- Saturator
- Utility

Plugins

Third Party Plugins Used

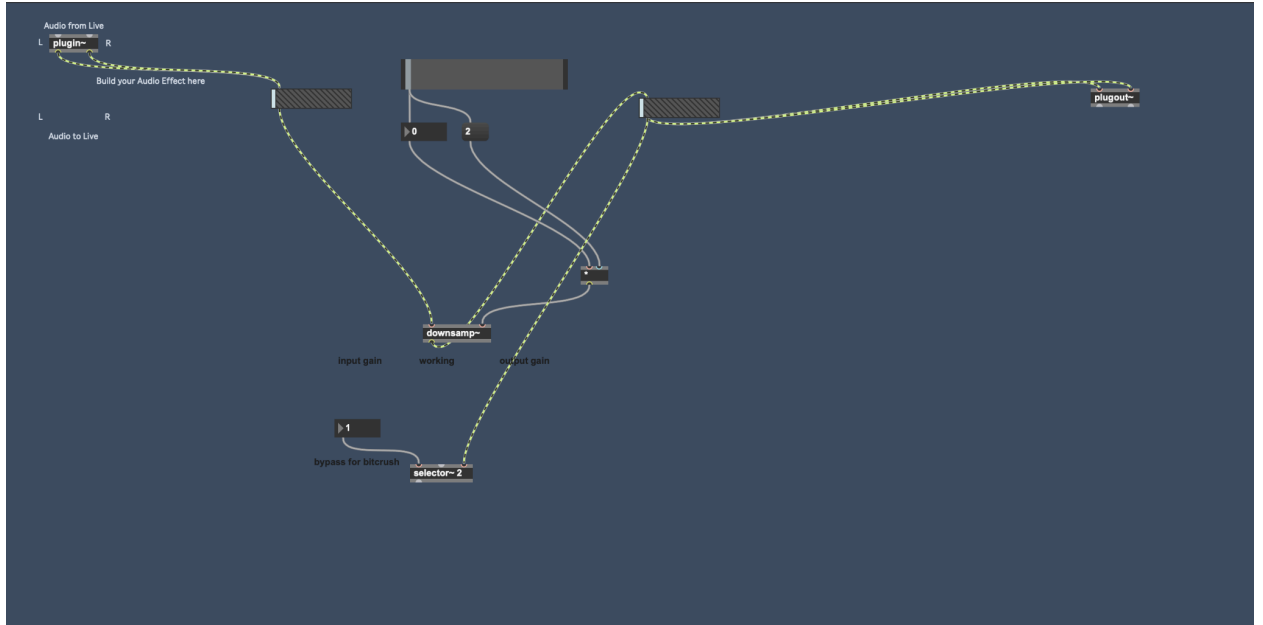
- Vital Wavetable

Max for Live

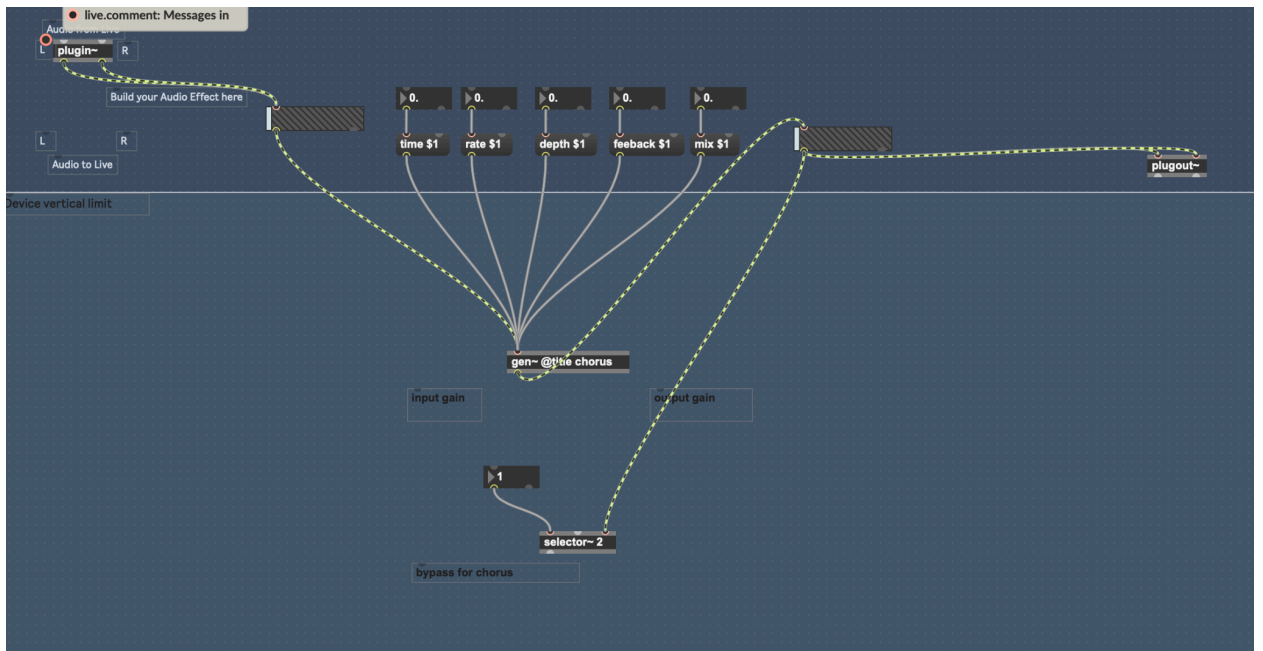
Max For Live Effects Used

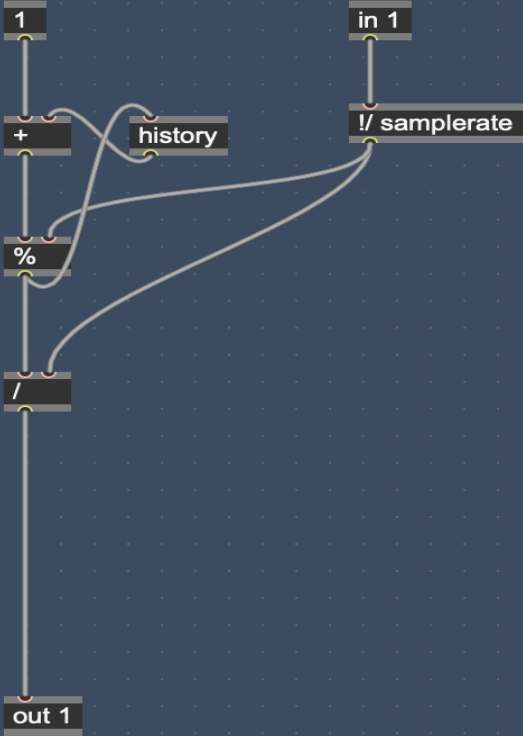
All Max For Live code from Digital Audio Effects Programming Assignments and Lecture

- Bitcrusher

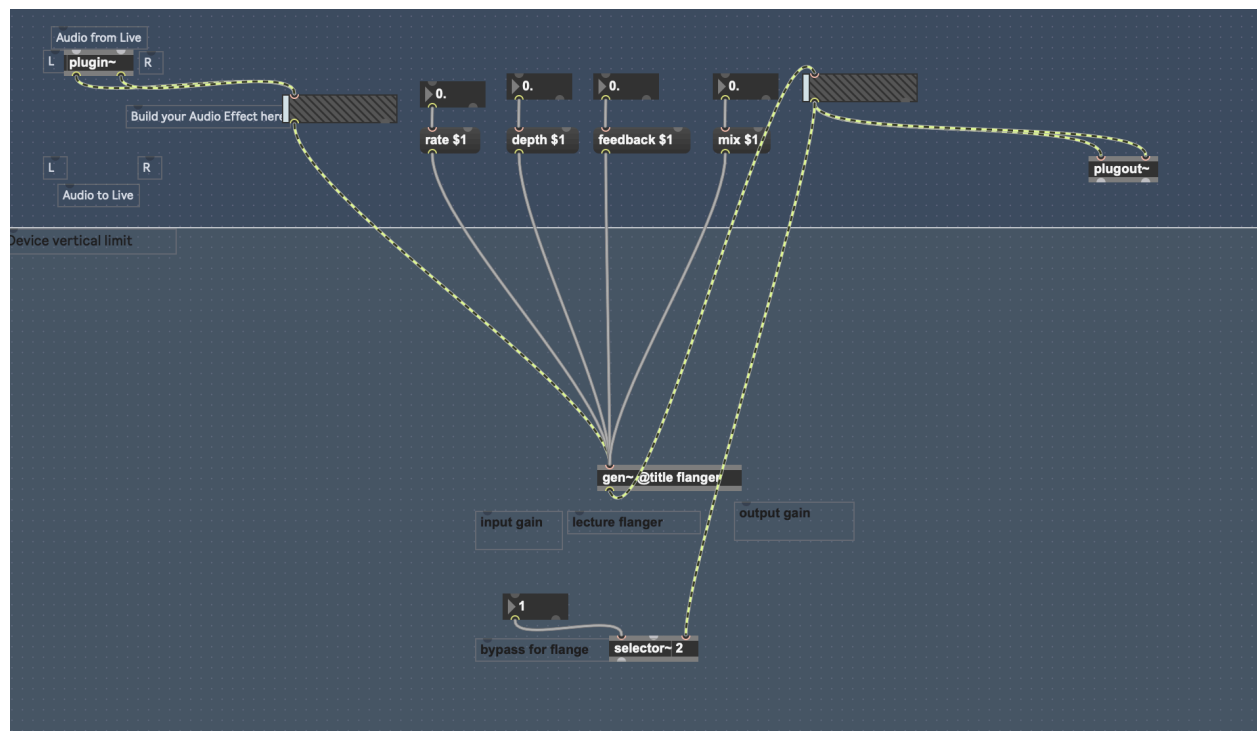


- Chorus





- Flanger



ABLETON SESSION

changes done in FMOD not Ableton.

Link Tap 120.00 4 / 4 1 Bar 10. 1. 3 1. 1. 1 303. 1. 3

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55

Dr... > I... > Shot hit > Tank Explosion > Charge shot miss > Charge shot hit

2024-04-16 15:34:39.mp4

423 423

Drop Files and Devices Here

2024-04-16 15:34:39
411774_diegolar_desert-silence-at-night (1)

0:00 0:10 0:20 0:30 0:40 0:50 1:00 1:10 1:20 1:30 1:40

Main Lane
Displays all clips that normally play through the track's mixer. Click and drag to select time, then use any available Edit menu command to edit.
[Cmd + Arrow Up/Down] Insert Clips from Previous/Next Take Lane
[Cmd + Opt + Drag] Scroll Display
[Cmd + Scroll Wheel] Zoom In/Out
[Opt + Scroll Wheel] Adjust Lane Height

Insert Mark 10.1.1 (Time: 0:18)

Charge Shot chorus chorus

Set

- S 13 S
- Charge Shot c Master 14 S
- L 15 S
- 16 Vital 16 S
- Vital 1 17 S
- 18 Vital 18 S
- bounce 19 S
- Shell Explosion Master 20 S
- H 21 S
- H 22 S
- Tank Explosion Master 23 S
- 24 Vital 24 S
- 25 Vital 25 S
- 26 Vital 26 S
- S 27 S
- Game Clip 28 S
- 29 411774_d 29 S
- 30 411774_d 30 S
- A Reverb A S Post
- B Delay B S Post
- Master 3/2 0 0

Link Tap 120.00 4 / 4 1 Bar 10. 1. 3 1. 1. 1 303. 1. 3

3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57

Dr... > I... > Shot hit > Tank Explosion > Charge shot miss > Charge shot hit

2024-04-16 15:34:39.mp4

Vital 518175 cma194 motorcycle-c
438119 craigsmth_g15-23-m
194704 allenatag_squeaky-t

4 4
Vital Vital

15 15
Vital Vital

8 8

Drop Files and Devices Here

0:10 0:20 0:30 0:40 0:50 1:00 1:10 1:20 1:30 1:40 1:50

Main Lane
Displays all clips that normally play through the track's mixer. Click and drag to select time, then use any available Edit menu command to edit.
[Cmd + Arrow Up/Down] Insert Clips from Previous/Next Take Lane
[Cmd + Opt + Drag] Scroll Display
[Cmd + Scroll Wheel] Zoom In/Out
[Opt + Scroll Wheel] Adjust Lane Height

Insert Mark 10.1.1 (Time: 0:18)

Charge Shot chorus chorus

Set

- Driving Master 1 S
- 2 Vital 2 S
- M 3 S
- H 4 S
- S 5 S
- Idle 6 S
- Shot Master 9 S
- M 10 S
- 15 Vital 15 S
- H (flange) 16 S
- S 17 S
- Charge Shot c Master 14 S
- L 15 S
- 16 Vital 16 S
- Vital 1 17 S
- 18 Vital 18 S
- bounce 19 S
- Shell Explosion Master 20 S
- A Reverb A S Post
- B Delay B S Post
- Master 3/2 0 0

FMOD SESSION

6 FMOD events were used

- Background
- Shot
- Charging
- Engine
- Tank Explosion
- Shell Explosion

Originally there was a Tank Idle and a Tank Driving but it turned out better to have one changing sound following a speed parameter instead of the tank jumping from the full speed sound to the idle sound in a choppy way.

The Charging Shot has several layers with different ADSR Envelopes where different layers of the sound come in the longer you charge the shot.

The Shot event also has a command to cut off the charge shot event when the shot event is triggered.

The Engine has an automation of pitch linked with the speed parameter of the Tank from Unity.

The Background event played from play to stop of the unity game.

Tank Explosion and Shell Explosion have no automation from LFOs or parameters

Images from the FMOD Session are down below:

Tank.fsp - Event Editor 7

Events Banks Assets

Background Music
Tank 3D
Cannon 3D
NEWShell Explosion
NEWShot Charging
NEWShot Firing
Engine 3D
Engine
NEWEngineDriving
NEWEngineIdle
NEWTankExplosion
Tank

Tags
User Properties
Notes

New Event New Folder Flatten

NEWShot Charging

TIME BEATS STOPPED
00:00.000

Actions

Concurrent

Charge

ChargeShot

Add Instrument Clear

Master Track

Fader
Volume
4.00 dB

Pan
0.00

Persistent
OFF

Doppler
OFF

Max Instances
∞

Pitch
0.00 st

Doppler Scale
100%

Stealing
-

Priority
Medium

Cooldown
0.00 ms

Min & Max Distance
1.00 10.0 100 1000

Event Macros

Live Update OFF Platform Desktop Locale

Tank.fsp - Event Editor 7

Events Banks Assets

Background Music
BackgroundMusic
Tank 3D
Cannon 3D
NEWShell Explosion
NEWShot Charging
NEWShot Firing
Engine 3D
Engine
NEWEngineDriving
NEWEngineIdle
NEWTankExplosion
Tank

Tags
User Properties
Notes

New Event New Folder Flatten

Engine

TIME BEATS STOPPED
00:00.000

tankSpeed

Actions

Consecutive

4-24-24 tankDriving

Add Instrument Clear

Master Track

Fader
Volume
0.00 dB

Pan
0.00

Persistent
OFF

Doppler
OFF

Max Instances
∞

Pitch
0.00 st

Doppler Scale
100%

Stealing
-

Priority
Medium

Cooldown
0.00 ms

Min & Max Distance
1.00 10.0 100 1000

Event Macros

Live Update OFF Platform Desktop Locale



Tank.fspro - Event Editor 7

Events Banks Assets

NEWShot Firing

TIME BEATS STOPPED 00:00.000

Actions

Shot

Stop event/Tank 3D/Cannon 3D/NEWShot Charging

Add Instrument Clear

Overview

Parameters

Tank 3D/Cannon 3D/NEWShot Firing

Tags

User Properties

Notes

New Event New Folder Flatten

Master Track

Pan 0.00

Panner In Out

Persistent OFF On Doppler OFF On Max Instances > 60

Pitch 0.00 st Doppler Scale 100% Stealing

Priority Medium Cooldown > 0.00 ms

Min & Max Distance

Event Macros

Tank.fspro - Event Editor 7

Events Banks Assets

BackgroundMusic

TIME BEATS STOPPED 00:00.000

Timeline

Logic Tracks

Audio 1 SOLO MUTE 613546_rtb-45_ama-desert-california -19 dB

Audio 2 SOLO MUTE 411774_diegnar_desert-silence-at-night(1) -3.0 dB

Master M 0.00 dB

Overview

Parameters

BackgroundMusic/BackgroundMusic

Tags

User Properties

Notes

New Event New Folder Flatten

Master Track

Pan 0.00

Panner In Out

Persistent OFF On Doppler OFF On Max Instances > 60

Pitch 0.00 st Doppler Scale 100% Stealing

Priority Medium Cooldown > 0.00 ms

Min & Max Distance

Event Macros