COMP2007 - Game Development
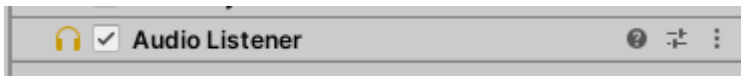
Week 7 - Code session

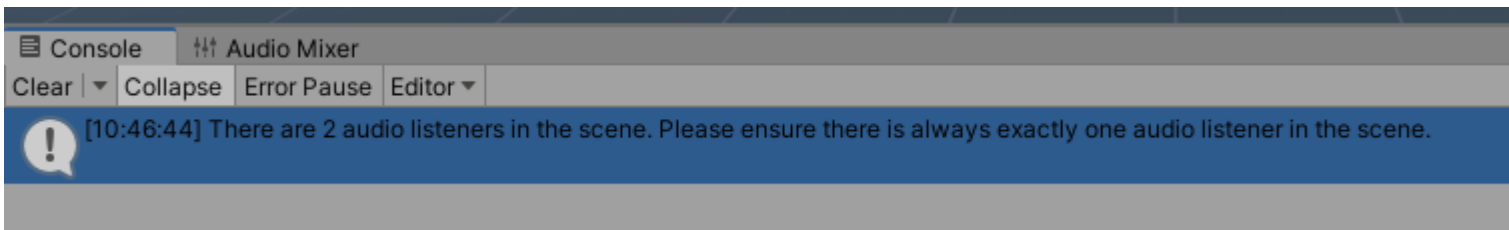### Audio - Listeners and sources

To receive sound, Unity requires there to be <u>EXACTLY ONE</u> **AudioListener** component in the scene
Use an **AudioSource** component to play sounds in a scene

AudioListener

- Has no controls
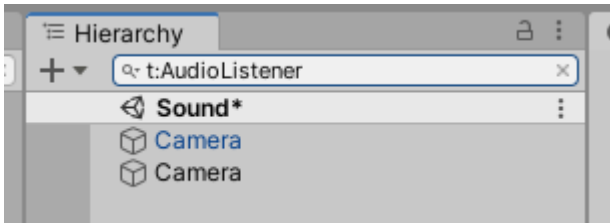- Added when you add a Camera to a scene

If you have more than one AudioListener you will see this message in the console
Simply remove the extra components

TIP!
To quickly search a scene for particular components use the Hierarchy search bar

Type in "t:" and then the component name you wish to search for
NOTE: the search is not case sensitive

AudioSource

- Plays a sound file - known as a **Clip** or **AudioClip**
- Sets volume/muting directly
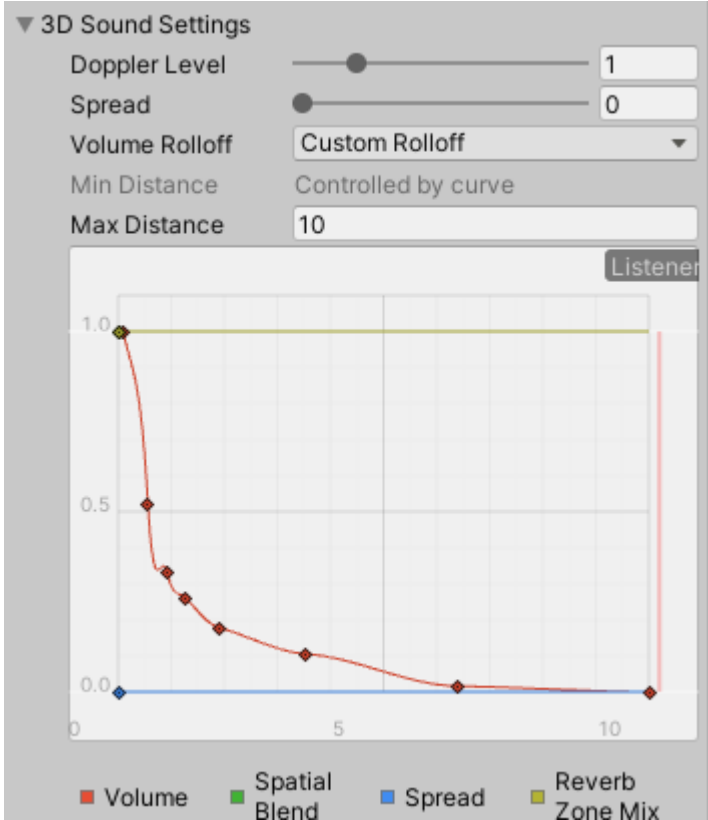- Clip looping/play on awake
- Set audio mixer

Spatial Blend

- Play a sound in 2D or 3D
- 2D sounds play the same volume no matter the player distance
  - In game music
  - Dialogue
- 3D sounds volume depend on player distance
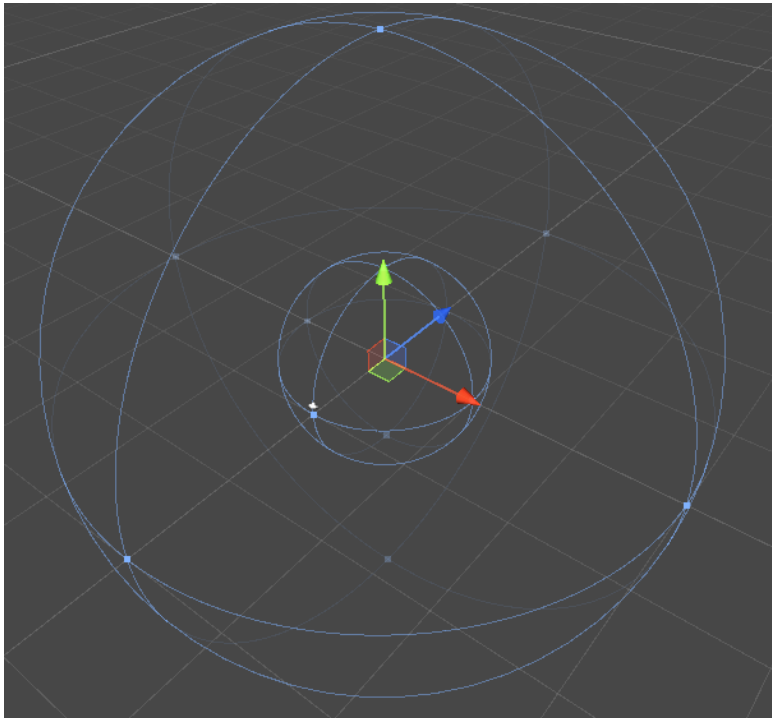 - Sound FX (footsteps, gunfire etc)
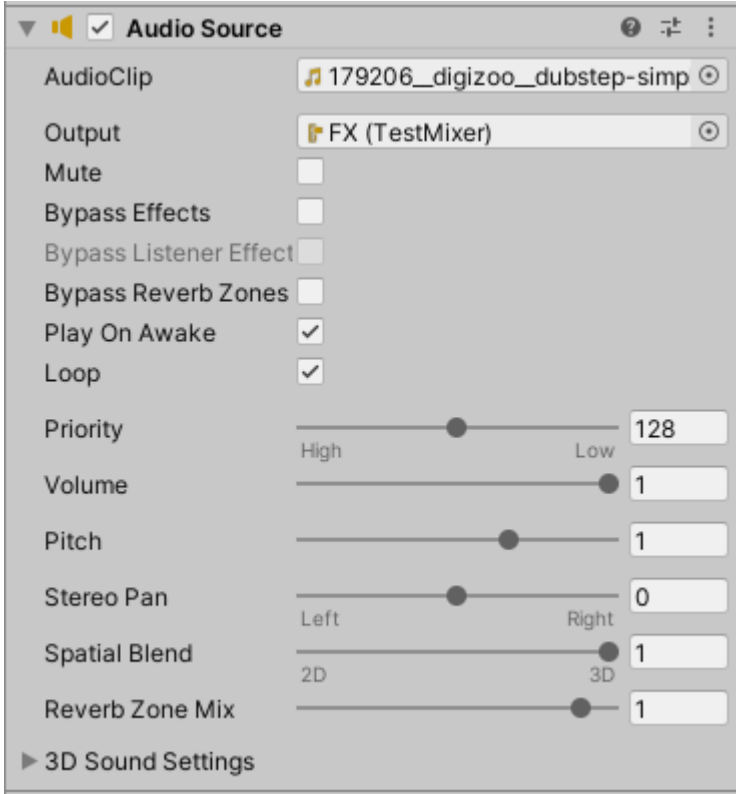
AudioSource 3D sound settings

- Used in spatial audio
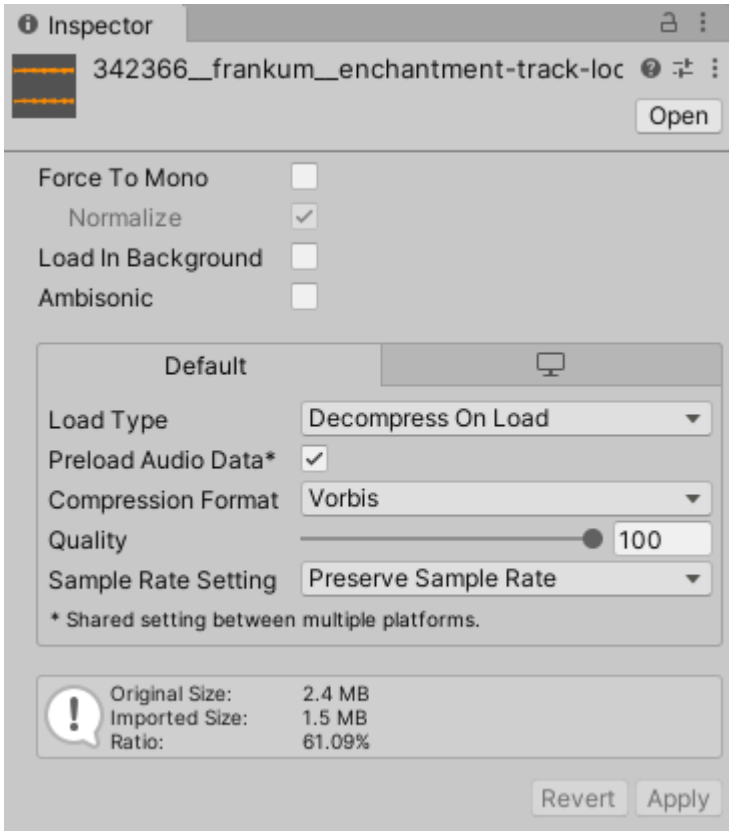 - VR experiences
  - Soundscapes

The 3D Sound Settings has a **Min Distance** (inner blue sphere) and a **Max distance** (outer blue sphere)

File types

- AIFF, WAV, MP3 and Ogg files can be imported
- All audio imported into Unity is treated as an **AudioClip asset**
- Some platforms have different compression needs for audio, you can set them in the AudioClip inspector

Tips:
- WAV
  - Best for small FX (footsteps, gun fire etc)
  - Larger files with better sound quality
- MP3
  - Works well for music or longer audio pieces in the background
  - Smaller files with lower sound quality

Audio mixer

The Unity Audio Mixer allows you to mix various audio sources, apply effects to them, and perform mastering.
The mixer has "channels" to control sets of sound inputs, for example the Music and Sound FX.

A list of audio mixers in the project

Sets of settings for a mixer

A Hierarchy of channels in mixer

Sets of channels visible in the mixer

The channels look similar to a real world audio mixer

The vertical slider is the volume in decibels

S = Solo (only this channel)
M = Mute channel
B = Bypass effects on channel

FX modules added to the channel

Mixer channels can be edited in the inspector
You can add effects using the Add Effect button in the bottom right

AudioSource

You can add a **Mixer channel** to an **AudioSource** in the **Output**

Links

Audio overview
https://docs.unity3d.com/2020.2/Documentation/Manual/AudioOverview.html

Audio files
https://docs.unity3d.com/2020.2/Documentation/Manual/AudioFiles.html

Audio mixer
https://docs.unity3d.com/2020.2/Documentation/Manual/AudioMixer.html

Audio mixer overview
https://docs.unity3d.com/2020.2/Documentation/Manual/AudioMixerOverview.html

Audio mixer specifics
https://docs.unity3d.com/2020.2/Documentation/Manual/AudioMixerSpecifics.html

Audiogroup inspector
https://docs.unity3d.com/2020.2/Documentation/Manual/AudioMixerInspectors.html

References

AudioClip
https://docs.unity3d.com/2020.2/Documentation/Manual/class-AudioClip.html

AudioListener
https://docs.unity3d.com/2020.2/Documentation/Manual/class-AudioListener.html

Audio Source
https://docs.unity3d.com/2020.2/Documentation/Manual/class-AudioSource.html

Audio Mixer
https://docs.unity3d.com/2020.2/Documentation/Manual/class-AudioMixer.html

Audio Effects
https://docs.unity3d.com/2020.2/Documentation/Manual/class-AudioEffectMixer.html

Scripting

AudioMixer
https://docs.unity3d.com/2020.2/Documentation/ScriptReference/Audio.AudioMixer.html

AudioMixer.SetFloat
https://docs.unity3d.com/2020.2/Documentation/ScriptReference/Audio.AudioMixer.SetFloat.html

AudioMixer SnapShot
https://docs.unity3d.com/2020.2/Documentation/ScriptReference/Audio.AudioMixerSnapshot.html

AudioMixersnapShot.TransitionTo
https://docs.unity3d.com/2020.2/Documentation/ScriptReference/Audio.AudioMixerSnapshot.TransitionTo.html

AudioSource
https://docs.unity3d.com/2020.2/Documentation/ScriptReference/AudioSource.html

AudioSource.GetOutputData
https://docs.unity3d.com/2020.2/Documentation/ScriptReference/AudioSource.GetOutputData.html

Other

Online tool for creating 8-bit sound FX
https://sfxr.me/

Music sample
https://www.chosic.com/free-music/all/