

Audio

(Feedback - Environment - Mood)

Every Sound Effect From

**SUPER
MARIO BROS.**



Sound Design: Overwatch

All sounds in the game are dynamically mixed based on their importance to the player (enemies are louder than friendly players).

Each hero has very distinct footsteps and movement sounds, so they can be recognizable only by sound.

Heroes automatically call out important gameplay information (“My shield is low”, “Teleporter under attack, etc.”)

Enemy heroes have different voice lines if they are on the opposing team (sometimes in a different language).

https://www.youtube.com/watch?v=teun_wZ8_LI

DubWars



<https://www.youtube.com/watch?v=VJFi3qI7j6w>

Music and Sound Effects Resources

You do not have to spend money on your projects! Here are some resources I've used in my own games.

Music

<https://incompetech.filmmusic.io/search/>

Sound Effects

<https://freesound.org>

SDL Mixer

“SDL_mixer is a sample multi-channel audio mixer library. It supports any number of simultaneously playing channels of 16 bit stereo audio, plus a single channel of music, mixed by the popular FLAC, MikMod MOD, Timidity MIDI, Ogg Vorbis, and SMPEG MP3 libraries.”

https://www.libsdl.org/projects/SDL_mixer/

SDL Mixer



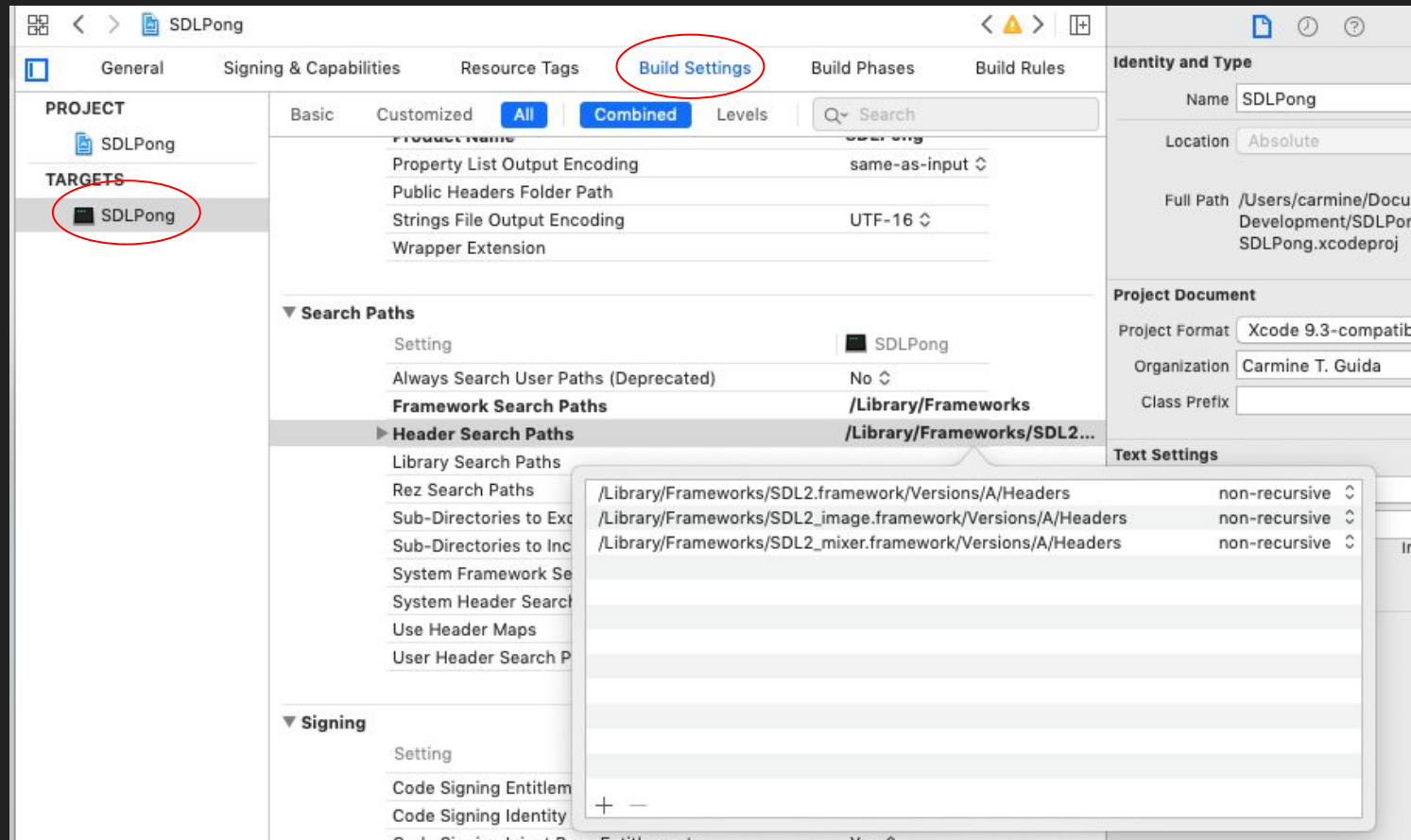
Before we start...

(you need to add some stuff to your projects)

Windows / Visual Studio

Copy these two DLLs to the directory your project is in.
They are located in: C:\SDL\SDL2_mixer\lib\x86

SDL2_mixer.dll
smpeg2.dll



Copy/Paste: /Library/Frameworks/SDL2_mixer.framework/Versions/A/Headers

Working with SDL_mixer

```
// Include required header file  
// This is not in main.cpp template yet, you need to add it.  
  
#include <SDL_mixer.h>
```

Working with SDL_mixer

```
// Initialize audio
```

```
void Initialize() {
```

```
    SDL_Init(SDL_INIT_VIDEO | SDL_INIT_AUDIO);
```

Working with SDL_mixer

This is the definition of the function to start audio.

```
int Mix_OpenAudio(int frequency, Uint16 format, int channels,  
                  int chunksize)
```

How we will use it:

```
// Start Audio  
Mix_OpenAudio(44100, MIX_DEFAULT_FORMAT, 2, 4096);
```

Music

(There is 1 channel for music)

Music

Music is similar to a texture where we load it and get a pointer to the data.

SDL Mixer has a built-in function for loading .mp3 files.

```
Mix_Music *music;
```

```
music = Mix_LoadMUS("music.mp3");
```

Music

We can play music using `Mix_PlayMusic`. The first parameter is the pointer to the mp3 we loaded and second parameter is the number of times to loop.

-1 means Loop forever

```
Mix_PlayMusic(music, -1);
```

Music

We can set the music volume using `Mix_VolumeMusic`.
The volume range is from 0 to 128 (`MIX_MAX_VOLUME`)

```
// Set the music to half volume  
Mix_VolumeMusic(MIX_MAX_VOLUME / 2);
```


Music

We can stop music playback using `Mix_HaltMusic`.

```
// Stop the music!  
Mix_HaltMusic();
```

Sound Effects

(There are multiple channels for sound effects)

Your sounds must be a 16 bit WAV file.

You can use a free program such as Audacity to get files into the proper format.

Sound Effects

Sound effects are similar to a texture where we load it and get a pointer to the data.

SDL Mixer has a built-in function for loading .wav files.

```
Mix_Chunk *bounce;
```

```
bounce = Mix_LoadWAV("bounce.wav");
```

Sound Effects

We can play a sound using `Mix_PlayChannel`.

Channel -1 means “use the first available”.

Loops is the number of times to loop.

-1 means Loop forever

0 means Play once (don't loop)

1 means Play twice (play the first time, then loop 1 time)

```
Mix_PlayChannel(-1, bounce, 0);
```

Sound Effects

We can fade in a sound using `Mix_FadeInChannel`.

```
// Fade in (from 0 to full volume) over 1 second  
Mix_FadeInChannel(-1, bounce, 0, 1000);
```

Sound Effects

We can set the volume using `Mix_Volume`.

The volume range is from 0 to 128 (`MIX_MAX_VOLUME`)

```
// Set all channels to half volume
```

```
Mix_Volume(-1, MIX_MAX_VOLUME / 2);
```

Sound Effects

We can set the volume of a sound (chunk) using `Mix_VolumeChunk`.
The volume range is from 0 to 128 (`MIX_MAX_VOLUME`)

```
// Set the volume of the bounce sound to 1/4th  
Mix_VolumeChunk(bounce, MIX_MAX_VOLUME / 4);
```

Sound Effects

We can stop playback on all channels using `Mix_HaltChannel`.

```
// Stop all sound effects  
Mix_HaltChannel(-1);
```


Cleanup

When our game exits, we need to cleanup the resources we allocated.

```
void ShutDown() {  
  
    Mix_FreeChunk(bounce);  
    Mix_FreeMusic(music);  
  
    SDL_Quit();  
}
```

Documentation

You can find more more functions for music and sound channels in the documentation:

https://www.libsdl.org/projects/SDL_mixer/docs/index.html

Let's Code!

Open your Pong assignment!