

**EECE 503K:** Game Programming

Fall 2024-2025

Dr. Hussein Bakri

**Lab Assignment 3**

Elias El Khoury

Table of Contents

[Sources for Assignment 3 3](#_Toc179303340)

[Using ChatGPT 3](#_Toc179303341)

[Research Notes 4](#_Toc179303342)

[FreeSound 4](#_Toc179303343)

[Google Fonts 5](#_Toc179303344)

[Unity Asset Store 5](#_Toc179303345)

[Kenney Asset Store 6](#_Toc179303346)

[Poly Haven 6](#_Toc179303347)

[Youtube 6](#_Toc179303348)

[Some Main Features 7](#_Toc179303349)

[History – Abandoned Ideas 8](#_Toc179303350)

[Plans 9](#_Toc179303351)

Sources for Assignment 3

# Using ChatGPT

1. How to use DOTween library
   1. DOTween.To(() => getter, x => setter = x, endValue, duration);
      1. getter: A lambda expression that retrieves the current value of the property you’re tweening.
      2. setter: A lambda expression that sets the value of the property as the tween progresses.
      3. endValue: The value the tween will animate towards.
      4. duration: How long the tween lasts (in seconds).
2. *HeadBobnFootStepSystemEditor* C# code to create drag-and-drop feature for all sound files of the sound array simultaneously
3. Fix playing the collectible sound while the collectible is getting destroyed instead of waiting for the collectible’s collection sound to finish (~5 sec) before destroying it: create temporary sound holder gameObject
4. Creating audio components inside C# *SystemCollectibles*
5. Make score system for collectibles accessible globally using *static*
6. Fix some rendering issue with the mesh of the windmill blades
7. TMP font asset adaptation
8. TMP position: press *Option* key to set anchor and pivot point
9. Collectibles C# Script modifications to update UI TMP score
10. Fix lighting generation problems when switching to new scene: *Generate Lighting* button in *Lighting* window
11. Implement fade out of sounds when exiting triggers using coroutines + fixed issue where volume resets to max when entering and exiting trigger

## Research Notes

A **coroutine** is a method that can “pause” its execution and resume at a later time, allowing you to perform tasks gradually. In Unity, coroutines are often used for tasks that you want to spread out over multiple frames, such as:

• Waiting for a certain duration.

• Performing gradual changes (e.g., fading audio, moving an object smoothly).

• Waiting until a specific condition is met.

**What is IEnumerator?**

An IEnumerator is the type that coroutines use to allow Unity to track their progress. The IEnumerator type allows a method to be “paused” at certain points (using yield return) and resumed on the next frame or when a condition is met.

# FreeSound

1. heavy-breathing: <https://freesound.org/people/BehanSean/sounds/422342/>
2. collect collectibles: <https://freesound.org/people/axilirate/sounds/592346/>
3. portal electricity noise: <https://freesound.org/people/sophiehall3535/sounds/245942/>
4. nature noise: <https://freesound.org/people/ItsTheGoodstuff/sounds/656124/>
5. windmill noise: <https://freesound.org/people/zepqueen/sounds/207328/>
6. thunder strike: <https://freesound.org/people/Spennnyyy/sounds/350506/>
7. city hum: <https://freesound.org/people/Tomlija/sounds/96952/>
8. police chatter: <https://freesound.org/people/Iam_calderon/sounds/435383/>
9. dog bark: <https://freesound.org/people/delphidebrain/sounds/236092/>
10. church bells: <https://freesound.org/people/InspectorJ/sounds/412918/>
11. amusement park: <https://freesound.org/people/imagefilm.berlin/sounds/747490/>
12. pizza order: <https://freesound.org/people/ricratio/sounds/437579/>
13. crickets: <https://freesound.org/people/le_abbaye_Noirlac/sounds/129337/>

# Google Fonts

1. Permanent Marker: <https://fonts.google.com/specimen/Permanent+Marker>

# Unity Asset Store

1. DOTween (HOTween v2): <https://assetstore.unity.com/packages/tools/animation/dotween-hotween-v2-27676> used for smooth movement animation transition between walking and sprinting
2. FootStep(Snow and Grass): <https://assetstore.unity.com/packages/audio/sound-fx/footstep-snow-and-grass-90678#content> used for grass sound effects array
3. Village buildings: <https://assetstore.unity.com/packages/3d/environments/urban/village-buildings-77486>
4. Conifers trees: <https://assetstore.unity.com/packages/3d/vegetation/trees/conifers-botd-142076>
5. Vegetation: <https://assetstore.unity.com/packages/2d/textures-materials/nature/grass-flowers-pack-free-138810>
6. Ground textures: <https://assetstore.unity.com/packages/2d/textures-materials/floors/outdoor-ground-textures-12555>
7. Terrain extra tools and assets: <https://assetstore.unity.com/packages/3d/environments/landscapes/terrain-sample-asset-pack-145808#content>
8. LowPoly nature: <https://assetstore.unity.com/packages/vfx/shaders/low-poly-wind-182586#content>
9. LowPoly buildings: <https://assetstore.unity.com/packages/3d/props/exterior/low-poly-houses-free-pack-243926>

# Kenney Asset Store

1. Mini Characters: <https://kenney.nl/assets/mini-characters-1> used as collectibles in WindPeak
2. City Kit (Commercial): <https://kenney.nl/assets/city-kit-commercial>
3. Modular Buildings: <https://kenney.nl/assets/modular-buildings>

# Poly Haven

1. 4K EXR HDRIs Kloppenheim 02: <https://polyhaven.com/a/kloppenheim_02>
2. 4K EXR HDRIs Moonless Gold: <https://polyhaven.com/a/moonless_golf>

# Youtube

1. *Gamedev Inspire* tutorials for FPS movements:
   * movement system: <https://youtu.be/vi2gyl3yU9k?si=tU4pUpKl8rujE4dc> (using DOTween)
   * head bob system: <https://youtu.be/2ysd9uWmUfo?si=pqhLhTBmojECHeNS>
2. Smoke particles for house chimneys: <https://youtu.be/M786pnsfhoY?si=xxBqN7ys9oHWFOPs>
3. Terrain tools guide: <https://youtu.be/ddy12WHqt-M?si=WdAU-As4j8YziKRw>
4. Skybox: <https://youtu.be/ckgfQdaEdwk?si=rC9DaJI_5W7_0oxv>
5. Portal to new map: <https://youtu.be/gtpXc_9MR6g?si=MRfxqjrafNu7VgEp>
6. Score UI: <https://youtu.be/YUcvy9PHeXs?si=PbcB2FTYFMEU3M0y>

Some Main Features

* Movement:
  + Walk
  + Sprint
  + Crouch
  + Head-bob
  + Jump
  + Rotation
  + FootStep sounds
  + Heavy Breathing sound
* Windmill fans rotating
* Detailed terrain mapping of WindPeak
* Collectibles system: mini characters from next scene, sound effect after collection, score system
* Added world borders to avoid falling out of the map
* SpikeTraps when the player falls on mountain spikes (output a console message for now)
* Particles: chimney smoke, portal effects, fog on mountain peak, fireflies, flies on trash can
* Triggers for various sounds in different parts of WindPeak and KenneyKingdom
* Terrain decorations: trees, different types of grass and textures
* Modified skyboxes for each scene
* Added fog effect
* Added wind effect to trees and used meshed grass
* Portal activation once all collectibles are collected, declared by a thunder strike
* Added WindPeak mountain sign
* UI for collectibles
* Lighting changes and night time map

History – Abandoned Ideas

* FootStep Surface Reader (FSR)
  + Unity Asset Store: <https://assetstore.unity.com/packages/tools/audio/fsr-footstep-surface-reader-143435>
  + Youtube: <https://www.youtube.com/watch?v=VA5PnTfCzlo>
* Tried to implement Character *Doozy* following a tutorial, did not work for some reason
  + Youtube: <https://youtu.be/McGPPscRIZE?si=i1Yd5nR-xcm9K0_X>
  + Mixamo (crouched walking Doozy): <https://www.mixamo.com/#/?page=1&query=walk&type=Motion%2CMotionPack>
* Can import terrain using heightmap: <https://youtu.be/eD2Ojp98UK4?si=dD_JWp2WvOOQPPEF>
* Unity Asset Store: LowPoly park: <https://assetstore.unity.com/packages/3d/environments/low-poly-environment-park-242702>
* Kenney Asset Store: City Kit (Roads): <https://kenney.nl/assets/city-kit-roads> & Car Kit: <https://kenney.nl/assets/car-kit>
* ChatGPT was extremely used to make animation of characters work, but in vein

Plans

* Implement water in ponds or rivers with reflectivity
* Implement two main bosses in *WindPeak* with enemies: Witch who summons zombies & Bird boss who summons hatchlings, as well as a health system
* Implement animals (pig, sheep, etc.)
* Implement additional UI elements: menu to replay, death screen when falling in spike traps, information boxes at the beginning of the game, health bar, timer and save best completed time for *WindPeak*
* Implement an attack and weaponry system (inventory, ammo, etc.)
* Implement mini game of shooting range
* Implement characters and their animations