

## Legend of Zelda Video Game



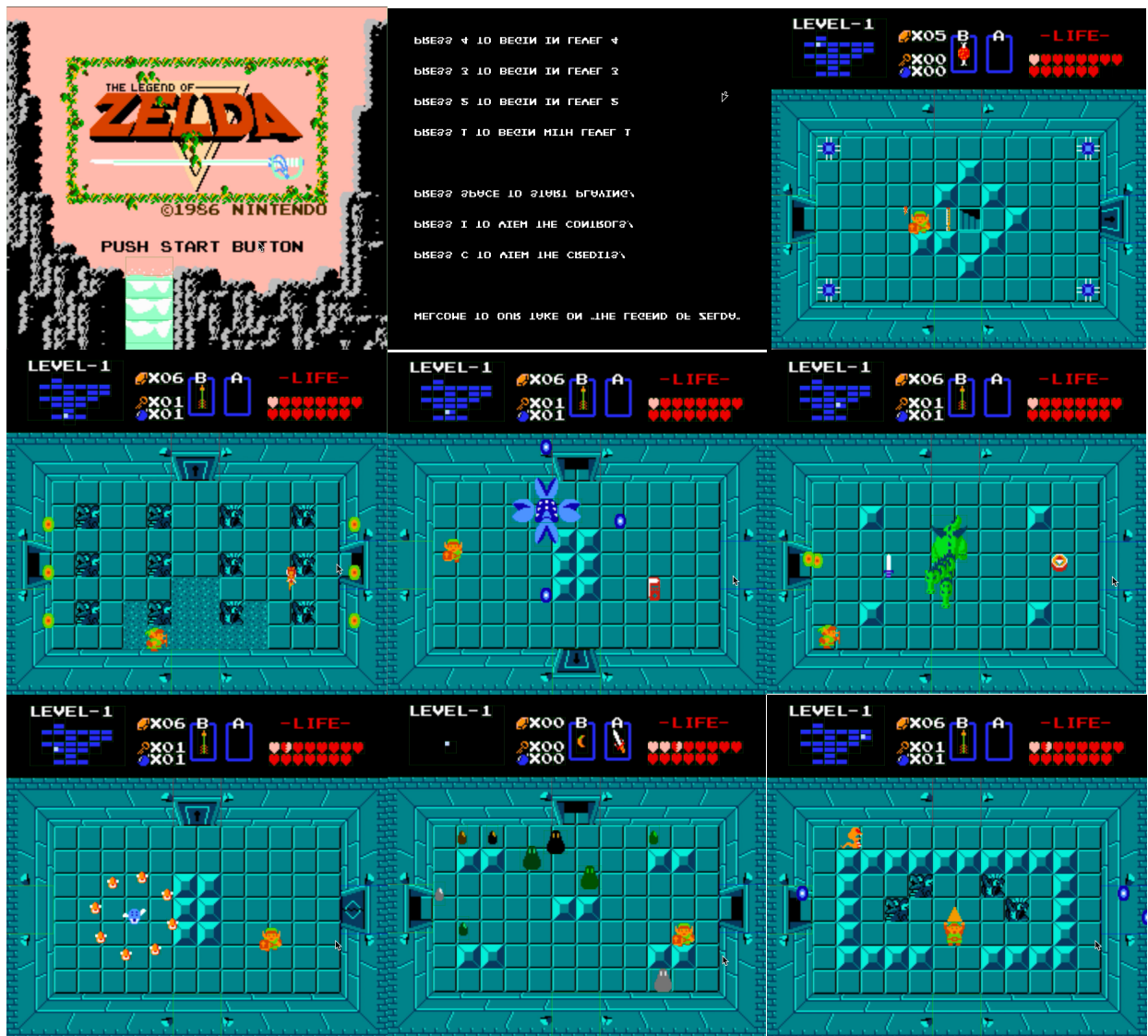
Recreated the level one dungeon from the NES Legend of Zelda video game. My team used Visual Studios and Monogame to build the game from scratch, including rooms, enemies, and controls. At the end, we embellished with a few rooms and enemies of our own design.

### Project Description

This project contains 4 levels of varying number of rooms that can be shuffled through using the mouse. The user is able to control Link and interact with the various enemies, items, and blocks present in each room. Link can damage enemies by stabbing with his sword, shooting sword beams (automatically launched on sword stab if Link is at full health), shooting arrows, throwing boomerangs, or planting bombs. Certain enemies are also affected by playing a short song using the music keys. Enemies may drop items after they have been killed. Link can be damaged by enemies by either colliding with them or colliding with fireballs that they shoot. Link and enemies collide with blocks and the room border, and Link can also push specific blocks. Movable blocks collide with each other and push each other. Link also loses health if he is damaged, and this loss is reflected in the heads up display. The game will end if Link loses all of his health. As he picks up items, Link's inventory (seen in the pause screen) is updated. Link can select an item to hold in his B item slot from the inventory by cycling through them and then pressing x before unpausing the game. The item counters for the rupee, bomb, and keys also increment if Link picks up keys, bombs, or rupees. Link can unlock a map of the dungeon in the Heads-Up Display by picking up a map. In the pause menu, once the map is collected, Link can see the rooms he has visited on the map. Picking up the compass will allow Link to see his position in the dungeon in the pause menu and see the location of the triforce in the pause menu as well. Using the food will heal Link by 2.5 hearts, and using either potion will bring Link back to full health. Both types of items will disappear from inventory after use. Link can use the magical key to open all locked doors. The magical key doesn't disappear from the inventory

after use. If he doesn't have a magical key, Link will use up one key to open a locked door. If Link has a fairy he does not take damage for 4 hits and if he has either of the rings the damage he takes is decreased. If Link has the magical rod he can shoot sword beams. If Link has the ladder he can walk across 1 block of water. If Link has either of the candles he has a spotlight to see in the darkroom. Using the flute in a room containing a digdogger will cause the digdogger to shrink and stop moving. Picking up a clock will freeze all enemies in the room Link is in until Link leaves the room. If Link runs into a sound block it emits a sound. Additionally, the player can also open the instructions menu while they're playing or while in the start menu. There are 0 errors and warnings.

## Visuals



## Controls

- Pressing 'q' quits the game.
- Pressing 'r' resets the game.
- Pressing wasd and the arrow keys move Link.
- Pressing 'z' and 'n' makes Link attack with his sword.
- Pressing the number keys 1, 2, 3, and 4 make Link use different items (arrow, bomb, boomerang, and fire respectively).
- Pressing 'y' while on the opening screen will take you to the start menu
- Pressing t while in the game turns on test mode(infinite items, and snap between rooms as described in the two bullet points below.)
- Left click switches rooms in the forward direction
- Right click (two fingers for mac) switches rooms in the backwards direction
- Added gamepad controls as well, but cannot be tested
- Pressing 't' toggles between test mode and play mode
- Pressing 'm' toggles the music
- Pressing 'i' opens the instructions
- Pressing ',' toggles sound effects
- Pressing '.' skips the current song
- Pressing 'c' or 'enter' starts the credits while in the start menu.
- In the start menu, the keys 1, 2, 3, and 4 select levels.
- In the start menu, pressing 'l' loads the most recently saved game.
- Pressing o while in game brings up the options menu, which has directions for changing various settings.
- In the options menu, pressing ';' saves the current game, overriding the previously saved game.
- Pressing 'e' pauses the game
- Pressing 'x' allows you to use the b item while playing
- Pressing space switches the game to play mode while in the main menu or while playing
- Pressing 'x' in the pause menu will set the b item to the currently selected item and exits the pause menu.
- Pressing 'g' and 'h' allow you to switch through the possible b items while in the pause menu
- Pressing 'f' changes the sword
- Pressing 5-9 and 0 makes Link sing a note
- The key sequence 'c' 'a' 'r' 'd' 'i' ' ' 'b' switches to Cardi B mode, so Link's ouch sound is replaced by Cardi B's ow and using a weapon (sword beam/arrow/bomb/boomerang) has the sound effect of Cardi B screaming "coronavirus!"
- The key sequence '5' '6' '6' '7' '0' '8' kills the owl
- The key sequence '8' '7' '6' '5' enlarges the fairy enemy

## Added Elements

The following is a list of elements that we implemented not in the original game.

- We decided to have special bomb animation that looks different so bomb has a smaller area so game is harder
- The background music is not zelda music, use ‘’ to switch songs- highly recommend as some songs are hard on the ears
  - Chug jug with you, anime power up, troll evanescence mashup w/all star and call me maybe, take on me, carnival of the animals: aquarium, claire de lune, and a surprise!
- Link can always block all projectiles using his shield
- Upon picking up a fairy, the fairy will follow Link around and protects link for 3 hits
- Link starts in an extra treasure room to pick up items before the game starts
- In the pause menu, the regular Head-Up Display is at the top of the pause menu instead of at the bottom
- New Owl enemy, fairy enemy, and fairy distractors
- The sound blocks make notes (music might need to be muted to be able to hear)
- Link can sing using 5-0 keys. If Link sings the correct sequence which can be found from interacting with sound blocks, he kills the owl. The owl is not killable by projectiles. Similarly with fairy, if the user is able to figure out the right sound sequence based on the sound blocks, they can enter a command to enlarge the fairy to make her more evident and easy to kill.
- There is a maze room where link needs to move blocks in order to collect items and get to the other side
- The ladder allows link to walk over water
- Picking up a clock freezes all enemies in the room
  - Ganon cannot be frozen with a clock (although Link will stop taking damage)
- Enemies make various cat sounds
- With special key sequence, Link makes cardi b damage sound
- Room 5 is a darkness room, and if link has a candle, he has a spotlight around him
- Digdogger becomes small if the flute item is used
- Candles shoot fire
- Options menu to change scroll speed(between rooms) and to change difficulty. “Hard” mode makes all enemies tougher than in “Easy” mode.
- Scrolling credits screen
- Scrolling instructions screen
- Rings make the damage that Link takes smaller
- Potion replenishes full health
- There are 3 additional levels. 2 of the levels are “gauntlet style” levels that are very difficult to beat even on the easiest difficulty. These rooms have many bosses and limited weapons. The third additional level is a larger level similar in flavor to the first dungeon, but with a completely original layout.

## Tools and Processes

The team uses GitHub as a repository and ZenHub as a task board. We also use Discord to communicate and have separate channels for bugs, to-do's, and status updates. We host weekly meetings on Discord to catch up on what people have done and determine what needs to be done next.

## My Contributions



This was a large 4-month long project in a team of 6 people. With over 8,000 lines of code dispersed between 361 files, it is difficult to clearly separate authorship as this was a highly collaborative effort. Everyone touched all the different sections of code in the debugging and refactoring processes. That being said, my main contributions were in creating the enemies, the room blocks, and the three additional rooms that are not in the original game.

The enemies each have their own class with initialization, a draw function, and update function, and any special behaviors. Composite enemies will have multiple classes to represent each part. There is an Enemy Sprite Factory which decouples the creation of each sprite from the room loader.

The first extra room has an owl enemy that shoots fireballs and two fairy helpers. The only way to defeat the owl is to solve the musical puzzle. The line of block in the room sings a note when Link collides with them. If Link can sing the notes back in the correct order, the owl is defeated.

The next extra room is a maze with hidden moving blocks. Link needs to figure out which blocks to move to navigate the maze to get to the door. Along the way he collects treasures and the key.

The third extra room consists of helper fairies and musical blocks. But there is a twist...one of the fairies is evil. This fairy looks the same as all the others, but shoots fireballs at Link. Link must try to determine which fairy it is and use weapons to annihilate her. If he is lucky enough to hit the evil fairy once, she will become bigger than all the others making her easier to spot.