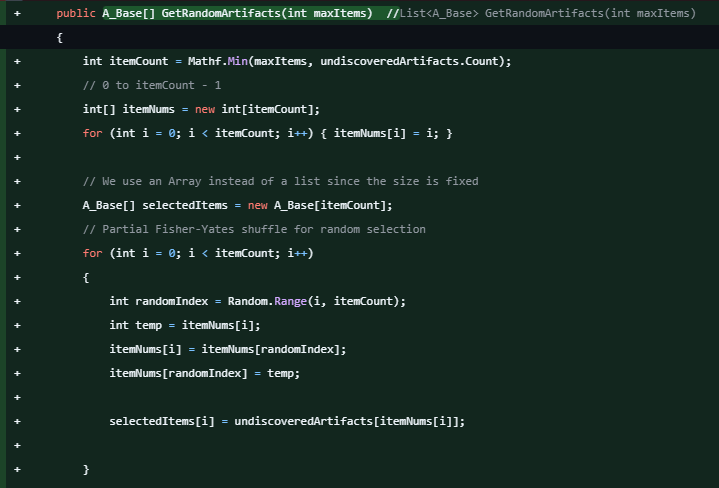
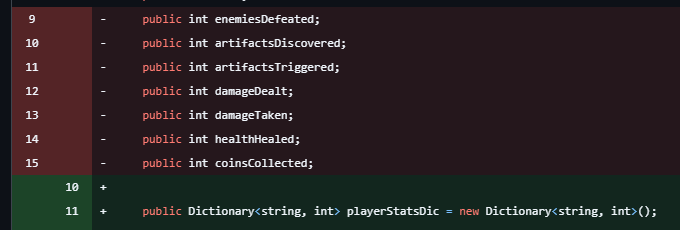
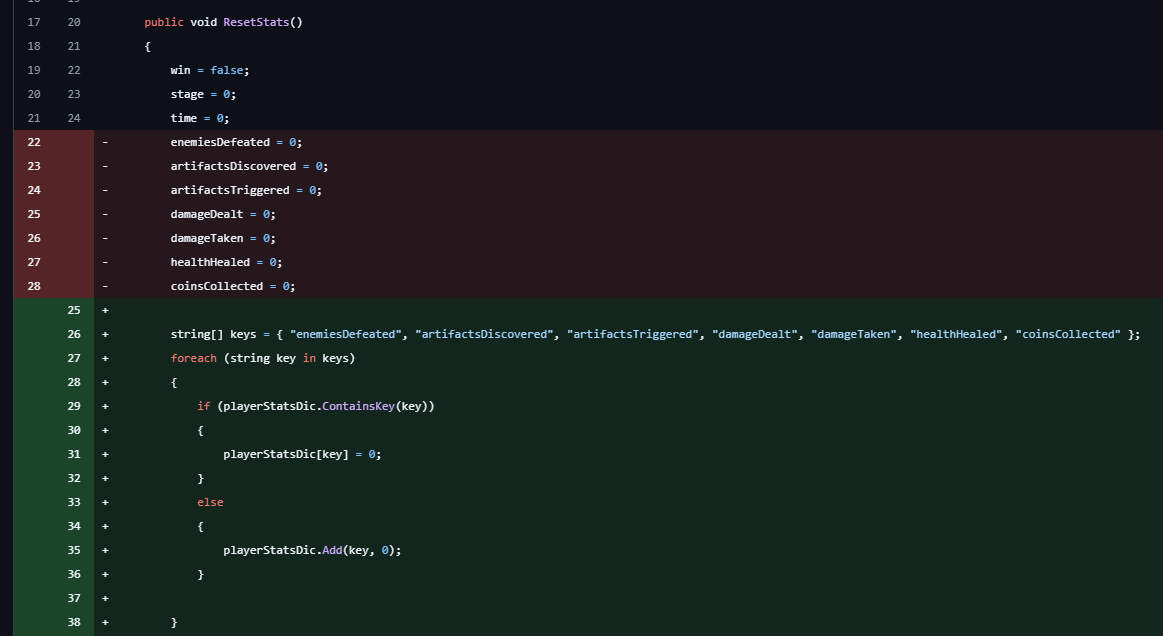
**Data Structures Final Project Reflection Report**

**By Stephen Zoccoli.**

Tier 1:

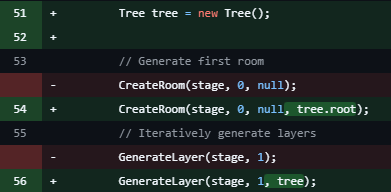
* ShopManager.cs used to use a List<> of Artifacts for the shop. The list was fixed to size 6, or the maximum number of undiscovered artifacts remaining (whichever is less). Since the size is fixed and pre-determined, I switched to a fixed size Array.
* The old algorithm shuffled all undiscovered artifacts, and took the first 6 of the shuffle (Fisher Yates). I changed to do a partial Fisher Yates shuffle, only up to the first 6 items.
* (Insert algorithm into PDF. Insert Array change).
* 
* The change in ShopManager.cs required a small change in ArtifactManager.cs, now getting an Array from the respective function instead of a List.

Tier 2:

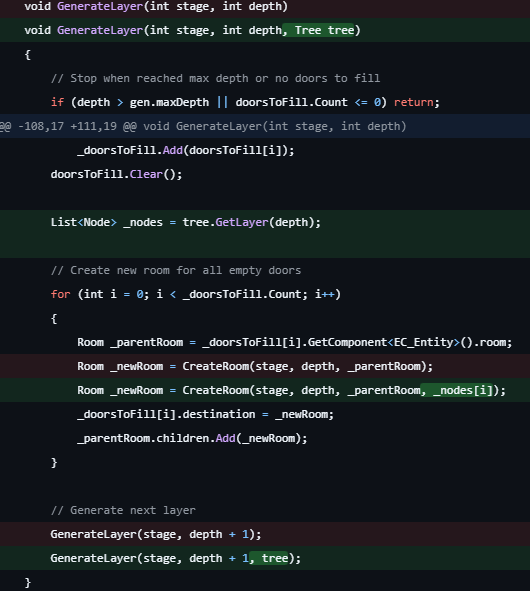
* PlayerStats.cs had several separate variables for the “# enemies defeated”, “artifacts discovered”, “damage dealt”, “health remaining”, etc. Instead, I used a hash table (dictionary) called “playerStatDict” for all of these.
* 
* All variables were initialized to 0. Instead of doing it manually for each variable, now with a dictionary, I can for-loop “foreach key” and set all to 0. (include code).
* 
* This change propagated to several other files that used these variables. That took some time to find everything.

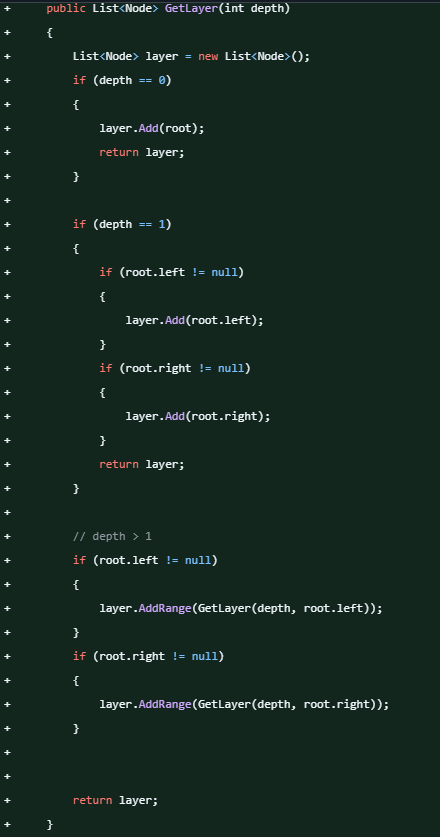
Tier 3:

DungeonManager.cs randomly generated the dungeon as a tree. This is done layer by layer up to a max tree depth. I pre-defined a tree structure, then made the dungeon follow the pre-defined tree.



To get this to work with the current tree building algorithm, I needed to write a getLayer function for the tree, to integrate into the current dungeon build.





In all cases, the end result is the same, but the code should work faster, i.e., optimized.

Within my experience, my biggest difficulty with this project was actually finding a working game that didn’t have any technical problems, and that was also not in Godot since I am really not good with Godot. I started with a puzzle game which had problems running, and then I tried this mail sorting game which had problems loading. Which lead to me picking this game where all my actually changes ended up working and running.

Game:

<https://github.com/Darkmatter-64/UDCgame/tree/main/Game> - Untitled Dungeon Crawler.exe