# CPSC 462 Project

## Software Design Description

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# I. Purpose

## 1.1 Purpose

The main purpose of this document is to explain the various software components that are going into our program: Dungeon Crawler. It will also explain how the user will interact with our software through the use of UML diagrams.

## 1.2 Scope

As avid fans of video games, we desired to create a top down 2D dungeon crawler with a mix of both combat and puzzle solving to satisfy fans of old fashioned dungeon crawler/RPGs. We also wanted to use this project as a means to learn the Unity language as this was many of our first times using the Unity engine. This project would both fill the niche of learning and designing a game we could enjoy as well as exploring a new coding language.

## 1.3 Overview

For clarity's sake, the project has been divided into several sections, from which the reader may navigate to at their discretion. The sections are as follows:

1. Introduction : Discusses purpose of the document you are currently reading
2. System Overview: Description of the components of our project as well as the logic behind them
3. System Architecture and Architectural Design: Class Diagrams and UML Diagrams of our project
4. Human Interface Design: Brief Overview of the GUI of our project

### 1.4 References

A major reference for our SDD has been the SDD Sample 1.pdf that can be found under the files of the CPSC 462 Canvas page. As we were told to use this as reference, the formatting of our SDD closely resembles the sample document. The actual contents of the SDD however, are unique to our project.

### 1.5 Acronyms

SDD: Software Design Document

SRS: Software Requirements Specification

GUI: Graphical user interface

# II. System Overview

### 2.1 General Overview

Our goal was to design a top down, 2D retro game, that took elements from games we were passionate about. These games included Enter the Gungeon, Terraria, Stardew Valley, as well as several other RPG games we all enjoyed. We wanted to use software that we were unfamiliar with in order to benefit even more from this project. This software was Unity for designing the project and Github desktop for coordinating amongst one another.

### 2.2 Application Description

For a more in depth description of the game, it is recommended the reader reference the SRS documentation. This paragraph will serve to provide a brief

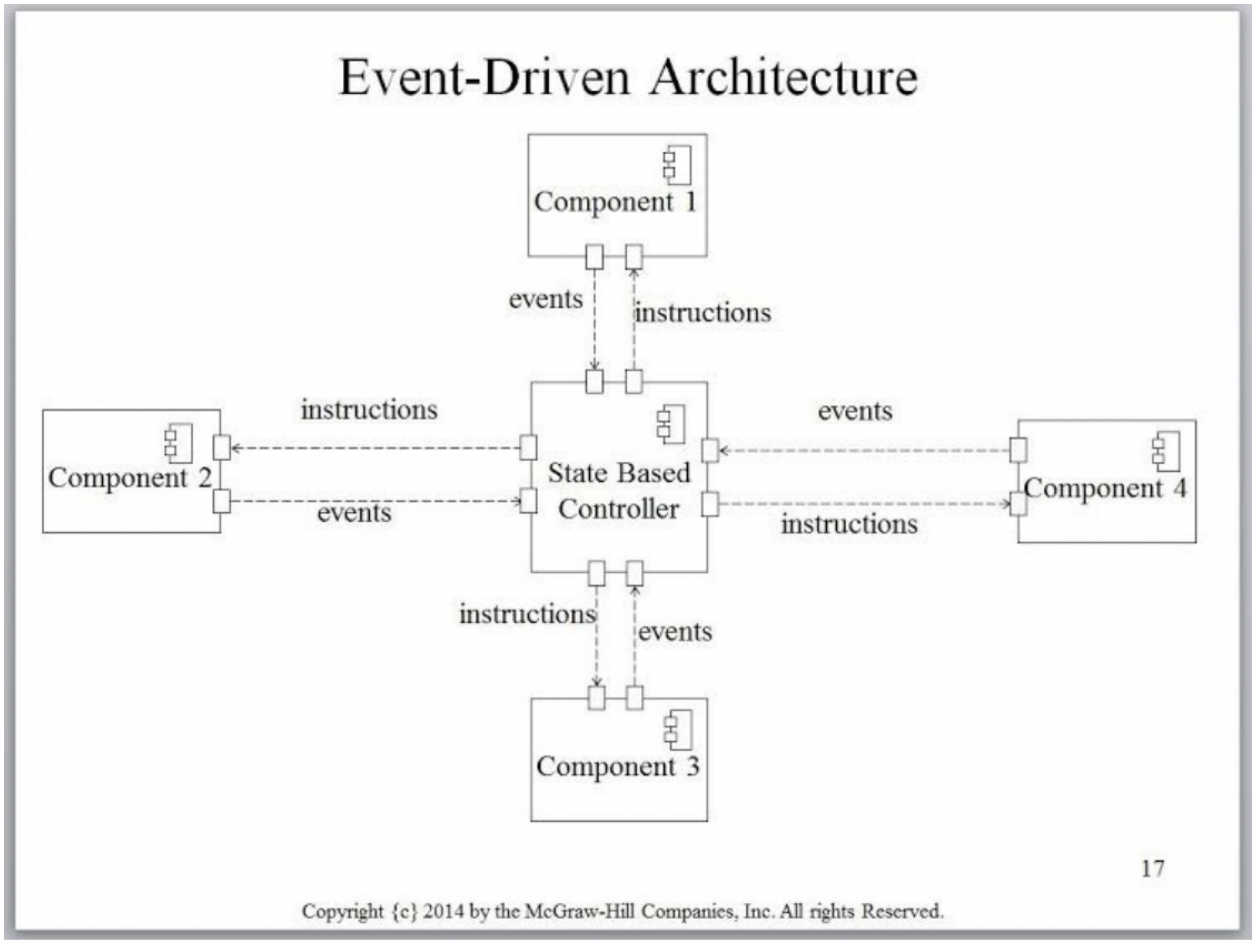
description of how our project runs from the title screen to the tutorial stage. From the title screen, the user may simply click the buttons using their left mouse button to access the plethora of options available in front of them. The continue button will have the functionality to load previous save files in future iterations. From the options menu, the user can adjust these sliders to modify the respective features of said sliders. Modify these features by simply clicking on the sliders and dragging them to the level the user desires. From the character select screen, the user may change the appearance of their character by clicking on the next and previous buttons. When they have found their desired character, they can click on the play button to begin the tutorial level. The basic mechanics of the game are as follows: W,A,S,D to move up, left, down, and right respectively. SPACE can be used to attack enemies within melee range. E will be used to open the user's inventory. F will be used to talk to NPCs.

# III. System Architecture and Architectural Design

## 3.1 Overview

As with any piece of software, we are well aware that the architecture of our software has a heavy impact on the performance of the user's system and being that we wrote a game, performance is very important, especially since our game is made to run on any machine. Luckily, since we used Unity as our engine most of the architectural design was set up to be efficient, this coupled with the efficient code we wrote in C# ensured our project will run smoothly on any machine regardless of hardware.

## 3.2 Decomposition Description




In our game the State Based Controller represents the screen that is presented to the player when they first open the game. That being a start menu which greets the user with three separate components. Note: While the diagram represents a program with four components, our project consists of three.

**Component 1**

Component 1 in our start menu represents the option to start a New Game. This is the default option and upon choosing this option, the player is greeted with a character creation screen where the player is given the ability to, as it is implied, customize their character. Upon finalizing their character the player is then placed into the tutorial level. From here the player is free to play the game as they please.

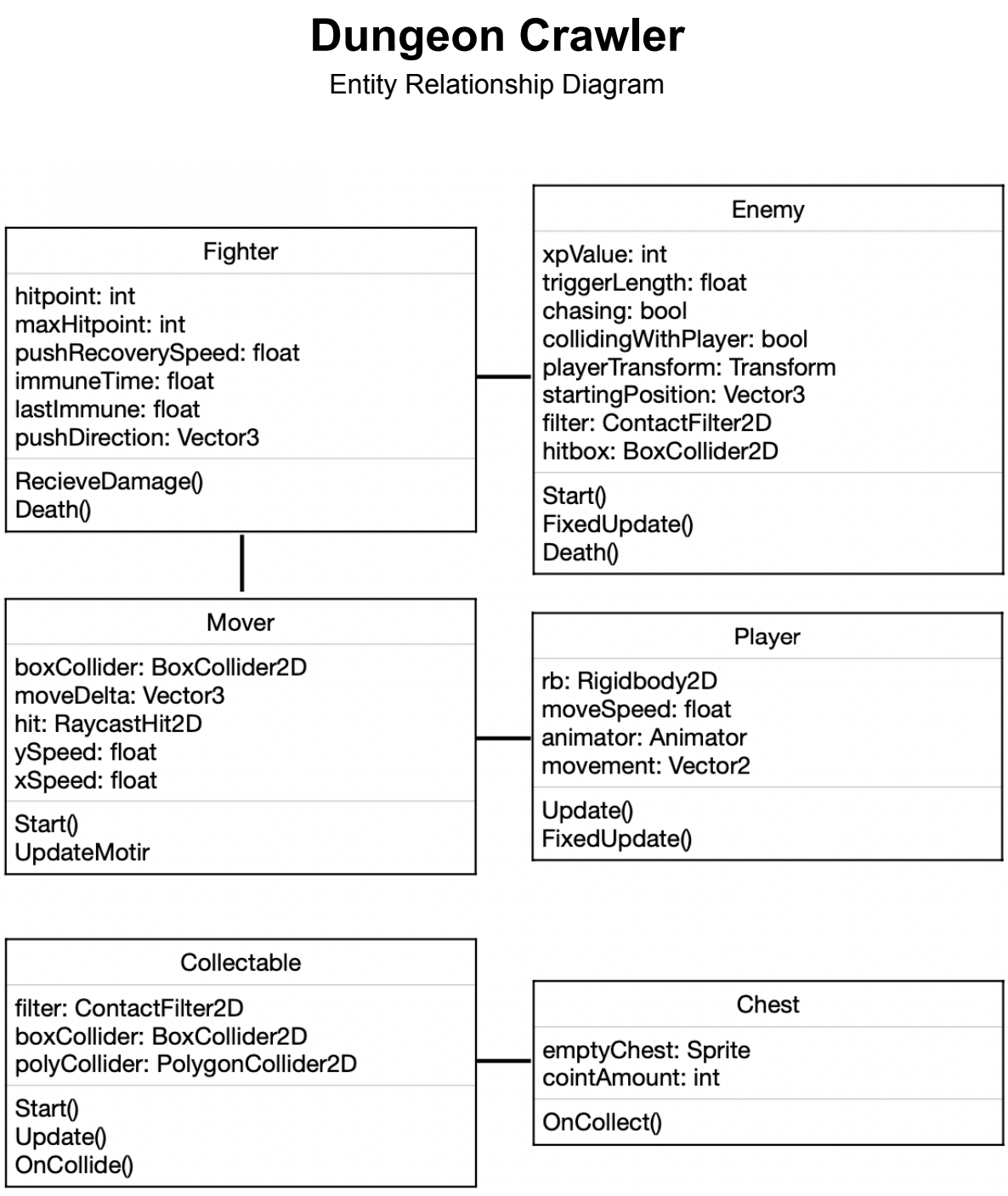
**Component 2**

Component 2 in our start menu represents the option to Continue from the most recent game save. This option will simply place the player at their most recent game save with all items they've collected, experience, coins, etc.

**Component 3**

Component 3 in our start menu represents the option to exit the application. This option simply quits the game to the desktop, killing all processes related to the application.

### 3.3 Database Description



# IV.Human Interface

## 4.1 Overview of User Interface

The user interface will be exclusively operated by mouse and keyboard. We have no intention of releasing a mobile version of our project as that is beyond the scope of what we set out to do when making this project. As such, the UI relies on clicks and button presses from the user and will react accordingly based on the user's inputs. Game is quite simple, your bread and butter WASD movement that will react almost instantaneously since movement is placed in event functions which act every frame, or in other words 1/60 of a second. As such the user should experience no delay when clicking. For the actual flow of the User Interface, please reference the sequence diagram provided below.

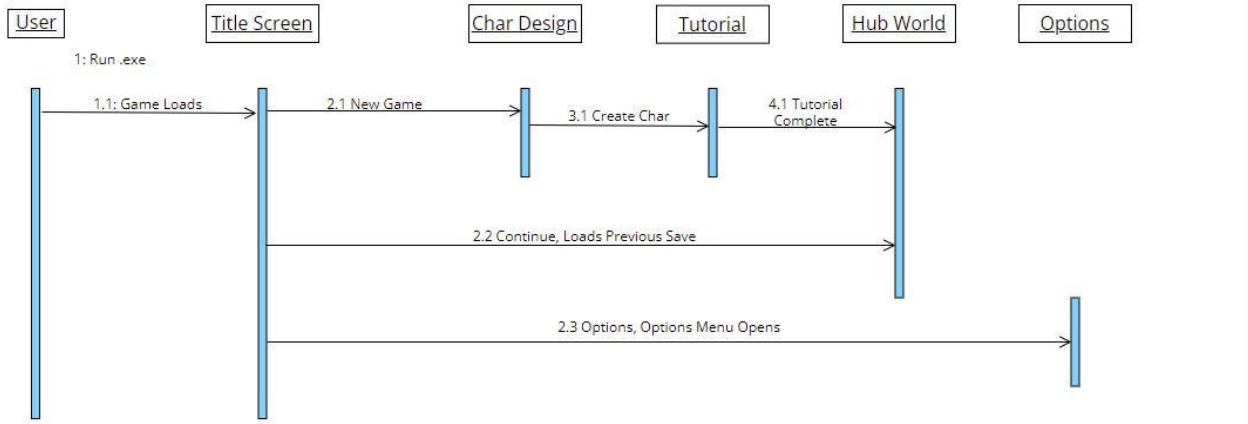



*Figure 4.1 Sequence diagram for Dungeon Crawler, from the title screen to the hub world.*

## 4.2 UI Samples

Below are some samples of UI the user will encounter during a typical run of the program.

### Title Screen

The UI of the title screen the user will encounter. From the title screen, the user may simply click the buttons using their left mouse button to access the plethora of options available in front of them. The continue button will have the functionality to load previous save files in future iterations.


*Figure 4.2: The Title Screen of Dungeon Crawler*

**Options Menu**

From the options menu, the user can adjust these sliders to modify the respective features of said sliders. Modify these features by simply clicking on the sliders and dragging them to the level the user desires.


*Figure 4.3: The Options Menu of Dungeon Crawler*

**Character Selection Screen**

From the character select screen, the user may change the appearance of their character by clicking on the next and previous buttons. When they have found their desired character, they can click on the play button to begin the tutorial level.


*Figure 4.4: The Character Select Screen of Dungeon Crawler*

**Controls of the Game**

The basic mechanics of the game are as follows: W,A,S,D to move up, left, down, and right respectively. SPACE can be used to attack enemies within melee range. E will be used to open the user's inventory. F will be used to talk to NPCs.

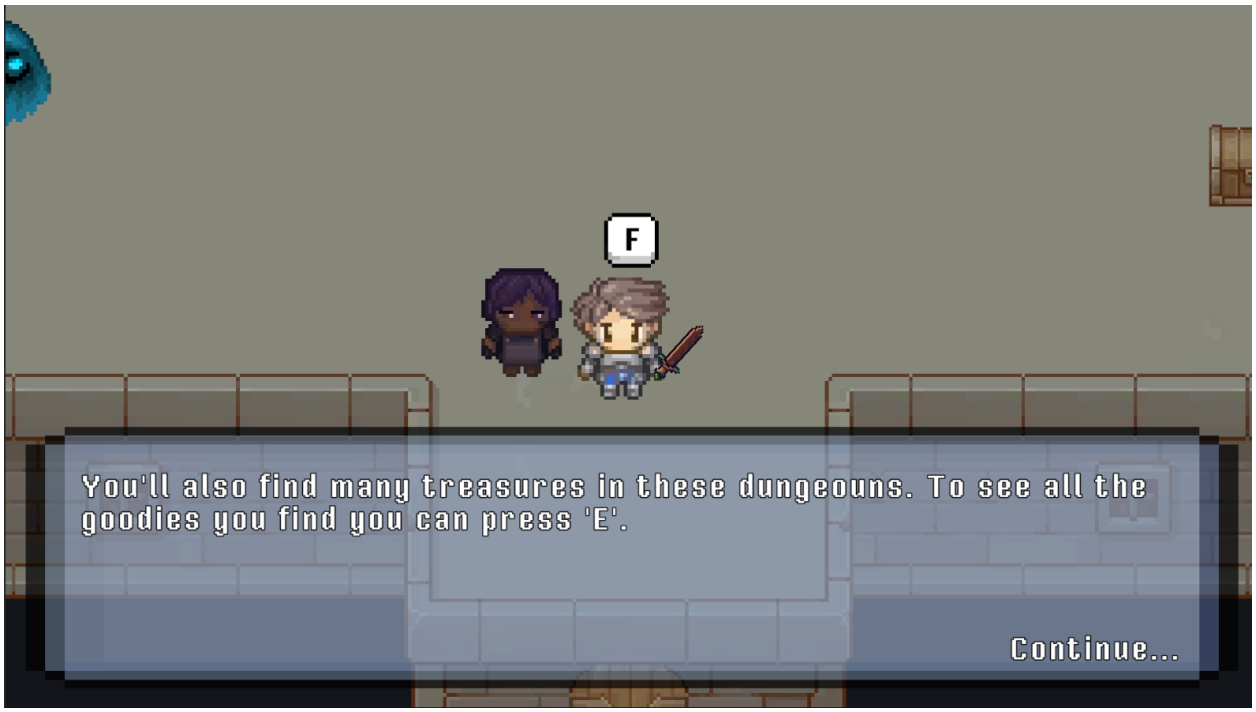



*Figure 4.5: The Dialogue System/ General UI of Dungeon Crawler*

**Blacksmith Menu**

From the blacksmith menu, the player may obtain more powerful weapons by using gold they have obtained from various levels. By clicking on the button you can purchase the weapon of your liking assuming you have the appropriate amount of gold.


*Figure 4.6: The Blacksmith Shop of Dungeon Crawler*

**Potion Shop**

From the Potion menu, the player may obtain potions which provide the player with powerful boons by using gold they have obtained from various levels. By clicking on the button you can purchase the portion of your liking assuming you have the appropriate amount of gold.


*Figure 4.7: The Potion Shop of Dungeon Crawler*