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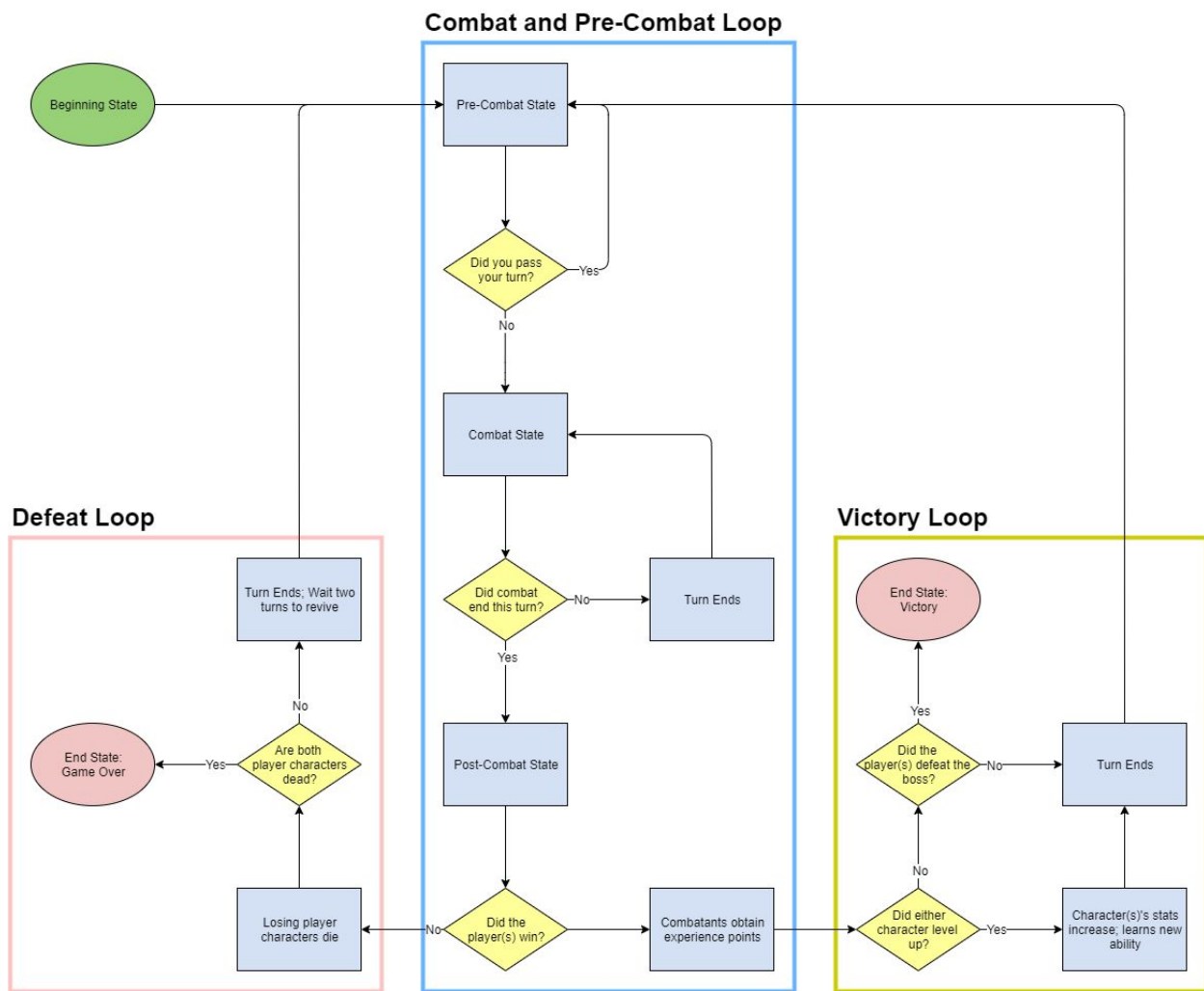
Intent Statement

The intent of *Double Down* is to create a local-multiplayer turn-based RPG in which two players must cooperate to defeat enemies, grow stronger, and eventually slay a powerful boss monster. Gameplay is divided into large global turns, where every existing character - player and enemy alike - takes a single action before moving on to the next character in line. Defeating enemies provides any participating players with experience points, which will allow them to level up, improve their stats, and learn new skills to help them achieve the final goal of destroying the boss. Because of this, *Double Down* is moderately paced, with each player's turn being fast enough that players will not grow bored waiting for their chance to act. However, even between turns, players should spend their time speaking and strategizing with one another to improve their chances of victory.

Gameplay States

Double Down's gameplay loop consists of a variety of states, which players rotate through individually until they achieve one of the two end states:

General Gameplay Loop:



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Beginning State: At the beginning of *Double Down*, each player selects one of two characters from a menu. Hovering over a character displays their name, role, starting stats, and starting abilities. Currently, the first player to choose their character is decided via a coin flip, but this might change in future iterations. Once both players have selected their characters, the game begins and moves to the **Pre-Combat State**.

Pre-Combat State: At the beginning of the acting player's turn – if they are not currently engaged in combat – they can wander around a small area containing the two player characters, a number of enemies, and the boss monster. On this screen, they can walk into a group of enemies to initiate combat with it (thus entering the **Combat State**), or they can choose to “pass” their turn if they do not want to fight. If they walk into an enemy the other player is currently fighting, they will join in the battle.

Combat State: When one or more players walk into an enemy group during the **Pre-Combat State**, they will receive a prompt to start fighting it on a separate screen. Combat uses the same general turn order as the rest of the game, meaning that faster enemies will move before slower characters, and vice versa. Unlike in the **Pre-Combat State**, if a character takes an action, their turn immediately ends. If neither the player characters nor the enemies are able to defeat the other before the end of the turn, their next turn begins with them still fighting one another, and they continue doing this until one side of the battlefield is empty. When this happens, the game proceeds to the **Post-Combat State**.

Post-Combat State: When all players characters or enemies die, the battle ends and displays a UI indicator:

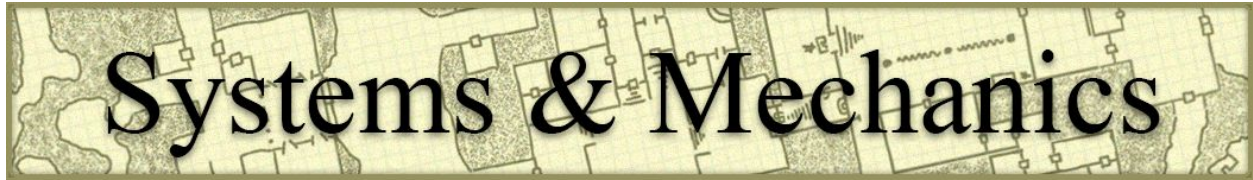
- If the player character(s) defeated the enemies, they receive an indicator informing them that they won. They also receive experience points as a
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reward for winning. If either player character receives enough experience to level up, the game also displays a pop-up explaining this, and the relevant player is brought to a menu where they can select a new skill from a predetermined list. Afterward, any involved characters return to the **Pre-Combat State**.

- If the enemies defeated the player character(s), the battle ends and all enemies revive. If both player characters are dead, the game moves ahead to the game over **End State**. Otherwise, the dead player character receives a two-turn penalty, the enemies disappear, and that player enters the **Pre-Combat State**.

End States: *Double Down* features two possible end states:

1. The players defeat the boss monster, in which case they win.
2. Both player characters die in combat within two turns of each other, in which case they lose.



This is a general list of some systems I plan to include in *Double Down*. Note that certain systems may be added or removed over the course of the semester, depending on test results or time constraints.

General Character Systems:

- **Character Selection:** At the beginning of the game, each player selects one of the two playable characters. Each character has their own strengths and weaknesses, but the two will be designed to complement one another.

 - **Stats:** Each character (whether player- or computer-controlled) has five stats:
 - **HP:** The character's health, which decreases as enemies attack them. When this number reaches zero, the character dies and must take two turns to revive. Whenever a player character wins a battle or revives from death, their HP is fully restored.
 - **TP:** The character's "tech points," which decrease whenever they use an ability. Like HP, this stat fully replenishes whenever a player character wins a battle or revives from death. Player characters can also use the "Defend" command to replenish a small amount of TP at a time.
 - **ATK:** Determines the amount of damage the character deals when attacking an enemy.
 - **DEF:** Determines the amount of damage the character takes when an enemy attacks them.
 - **SPD:** Determines the character's position in the turn order.
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- **Turns:** Gameplay in *Double Down* is divided into turns. After every character (whether a player character or an enemy) takes an action, the next turn begins.
 - **Turn Order:** At the beginning of each turn, the game determines the order each active character will move in based on their SPD stat. Players can constantly view the turn order for the current and next turn via a UI element on the bottom of the screen. Changing a character's Speed stat in the middle of a global turn will similarly affect their position in the turn order.
 - **Sliding Into the Turn Order:** When a player character enters combat, any new enemies "slide" into an appropriate position based on the current turn order. For example, if one player character has 7 Speed and the other one has 4 SPD, an enemy with 6 Speed will take position in between the two.
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Pre-Combat Systems:

- **Movement:** If a player is not currently engaged in combat on their turn, they can use the WASD or arrow keys to wander through a "hub" area.
 - **Entering Combat:** If a player moves their character into a group of enemies, they will be given a prompt to fight them. This prompt will include several details pertaining to the encounter, including the starting number of enemies and the recommended level to face them. Accepting will cause them to enter combat immediately, while declining will give them the option to return to exploring the area.
 - **Passing a Turn:** If a player moves their character to a certain area, they will be given the option to end their turn immediately.
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Combat Systems:

- **Character Actions:** When a player character's turn comes around while they are engaged in combat, they can select one option from a list using the mouse. Upon selecting an option, the acting player character's turn ends immediately.
 - **Attack:** Deal damage to one enemy.
 - **Defend:** Take half damage for one turn.
 - **Ability:** Use an active ability from a short list. Active abilities may deal increased damage to an enemy, increase the user's ATK, or heal a friendly character. All abilities cost a set amount of TP.

- **Enemy Actions:** When an enemy character's turn comes around while a player character is engaged in combat, they will perform a random action from a preset list. Enemies actions may include damaging a friendly character, healing themselves, or using a powerful charge-up ability.

- **Death:** When a character's health reaches zero, they die, disappear from the combat scene, and disappear from the turn order marker even if they were set to act this turn. When a player character dies, they become inactive and cannot do anything until they revive after two turns.
 - **Game Over:** If a player character dies before the other one has a chance to revive, both players receive a game over and must restart.

- **Ending Combat:** Combat ends when all characters on either side of the battlefield disappear.
 - If the last character to die is an enemy, any player characters receive experience points (see: **Obtaining Experience**) before returning to the hub.
 - If the last character to die is a player character, the combat scene ends immediately, and any enemies from that scene disappear from the turn order.

Reward and Progression Systems:

- **Obtaining Experience:** Defeating enemies rewards any participants with a set amount of experience points (EXP). Experience points are divided evenly between participants. For example, if both players work together to defeat an enemy that gives 100 EXP, each of them will receive 50 EXP, or $(100 / 2)$.
- **Leveling Up:** When a character earns a certain amount of EXP, they level up. Leveling up increases all of a character's stats by a set amount and gives them one skill point, which they can use to unlock a new ability.
- **Unlocking Abilities:** Whenever a character acquires a skill point, the game will prompt their player to unlock a new ability from a list. Each character has four unlockable abilities:
 - Two passive abilities that provide a permanent stat increase
 - One "upgrade" that permanently improves the character's starting ability
 - One new active ability that the player can use in combat



Iteration 1 (February 23, 2020):

Following a testing session in the Champlain College Game Labs on February 22, 2020, I have decided to make the following changes to *Double Down*'s design. Note that these iterations also include feedback from Professor Brenton Woodrow on *Double Down*'s original project plan document.

Immediate Changes:

- **Weakening the Boss:** During testing, most testers had a difficult time defeating the boss monster due to its high HP and damage output. To mitigate this issue, I have reduced the boss' maximum HP from 3300 to 1800, and I reduced its ATK from 14 to 13.
- **Bug-Fixing:** Players found two major, game-breaking bugs during testing. First, clicking the mouse at any point caused the currently highlighted button to deselect, softlocking the game. Second, if both player characters reached 0 HP at the same time, only one of them would disappear, and the players would not lose until an extra turn had passed. I have fixed both of these issues, along with a visual bug involving the level-up screen's UI.
- **Fixing the "Bar" UI Elements:** Due to the UI elements for enemies' and player characters' health bars and the level-up bars being rounded instead of square, they often cut off at either end. This made it difficult for testers to visualize how much HP enemies had left, causing them to grow even more frustrated when they could not kill the boss. I recently replaced the current UI with rectangular images, which has removed this problem.

Future Changes:

- **Emphasizing the Social Elements:** While testers seemed to enjoy *Double Down*'s cooperative gameplay, many of them also stated that it still felt like a standard turn-based RPG, with the only notable distinction being that they passed the controller back-and-forth. This is an issue I expected going into testing, and it is one that I imagine I will be working to fix throughout development. To do so, I would like to begin working on the following features:
 - **Implementing the Hub Area:** I believe that the hub area is one of the most important aspects of *Double Down*'s design, at least in terms of player interaction. Forcing players to explore the area separately during their turns - and allowing them to either fight different enemy groups or to work together - should help to justify the multiplayer elements. The hub also comes with the benefit of being more visually interesting than a simple menu. Additionally, I believe that giving players the option to face enemy groups as they desire will increase the potential for in-game social interactions. For example, one pair of players may go after larger, more dangerous groups of enemies in the hopes of leveling up more quickly; while another pair may instead prefer to face smaller groups of enemies to avoid losing early on. This system comes with the obvious risk of players being able to join in low-threat battles to deprive their ally of experience points, but I can avoid this issue by letting players reject help if they feel they can complete the battle on their own. Other situations may also emerge, such as one player jumping into an ongoing battle to save their friend at a critical moment; or choosing to challenge the boss monster early to perform reconnaissance before the "real" battle later on. None of these things can occur if the battles are arranged linearly, which is why I believe having a less linear series of fights is necessary to create a strong cooperative element.

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- **Increasing Player Character Interactions:** During the test session on February 22, 2020, I realized that the player characters have fairly limited interactions with each other even during battle. Notably, the physical attacker and tank has no way to directly interact with the healer at all. To fix this, I would like to remake some of the player characters' abilities to focus more on direct interactions. In doing this, I believe that I will greatly improve the game's multiplayer elements. My current ideas include replacing the tank's "Provoke" ability (which draws enemy attacks) with one that lets them protect their ally from all damage; and replacing the healer's "Injection" ability (which increases an ally's ATK stat) with one that lets them sacrifice their life to raise an ally's stats and to restore their HP and TP. That said, these ideas are still in-progress, and I may discover during future test sessions that the character's current abilities are more interactive than I expected.

 - **Redesigning Player Characters' Abilities:** As mentioned just above, I wish to redesign some of the player characters' abilities to make them more interesting or desirable. While the active abilities may remain the same in the future depending on how future tests go, I fully intend to change the characters' passive abilities. Currently, their only purpose is to permanently raise a single stat by 25%. These increases range from nearly useless to blatantly overpowered, with the most obvious example of the latter (the attacker's "ATK +25%") being the only one that saw any notable use during the last test session. This may be a result of these passives not looking particularly worthwhile, especially when compared to the characters' active abilities. As such, I would like to remake most of them to make them look flashier, more exciting, and more worth the initial investment. Additionally, due to "ATK +25%" being so strong, I may have to re-evaluate the current damage formula to make gaining a single stat less impactful.

Iteration 2 (March 23, 2020):

Following some feedback from my peers and from Professor Brenton Woodrow, I have decided to make the following changes to *Double Down*'s design.

Immediate Changes:

- **Implementing and Maintaining the Hub:** I implemented the hub, which I described in-depth above, to help improve player interaction in *Double Down* and to make the game feel less like a standard RPG. This included creating the hub area, linking it to the combat system, implementing the death mechanic, and fixing any and all bugs I could find with these systems. Note that this process took up most of my time during the last major stretch of development.
- **Improving Enemy Readability:** Due to the game currently lacking battle animations, enemy abilities do not stay on-screen for very long. This made it difficult for players to read the enemies' abilities and to understand which enemy was currently acting. To combat this, I did two things. First, I added a small animation where an enemy flashes twice before it performs an action. This should hopefully make the acting enemy more obvious, while also adding a bit of extra time where their ability's name stays on screen. Second, I changed some of the wordier abilities - including the boss' threshold and charge abilities - to stay on screen longer, which should make them easier to read. In the future, I hope to add animations to these abilities, as well, which should further improve readability.
- **Improving Player Readability:** Originally, it was difficult for players to easily view their character's stats, since this information was only made available if they won a battle and their character leveled up. To combat this issue, I added a menu to the hub that players can open during their turn. The menu includes information on the character's level, EXP, stats, and abilities, along with a description of how each stat affects gameplay.

Future Changes:

- Redesign the player characters' abilities
 - Redevelop passive abilities for both characters
 - Redevelop the Healer's secondary ability to one that is more interactive
- Further balance enemies and player characters
- Create art for:
 - Player characters
 - Enemies
 - Environments
 - Ability animations
- Add music for:
 - The hub area
 - Combat against normal enemies
 - Combat against the boss monster

Iteration 3 (April 5, 2020):

Following some feedback from my peers and from Professor Brenton Woodrow, I have decided to make the following changes to *Double Down*'s design.

Immediate Changes:

- **Implementing Art and Lighting:** Over the past two weeks, I have implemented a variety of art assets into *Double Down*. These include materials for the hub and combat areas, a basic “flow” shader for the lava, and sprites for the enemies and player characters. Characters now have three basic animations apiece: hub idling (1 sprite), moving (6 sprites), and combat idling (1 sprite). Enemies also have a “flying” animation, where they move up and down while a shadow shrinks and grows according to their position. This should help make the game more visually appealing while also letting players identify their characters more easily.
- **Implementing Music:** I have added three music tracks into *Double Down*: a normal battle theme, a hub exploration theme, and a boss theme. The battle and hub themes are designed to flow into one another, while the boss theme is designed to “override” them both while the boss fight is going on. This ensures that tracks will not awkwardly cut into each other during gameplay.
- **Adding Visuals to the UI:** To help players better understand their characters' buffs and debuffs, I've added a visual indicator to the UI. This indicator instantiates a symbol whenever a character receives a buff or debuff, which includes the severity (shown via one or two arrows) and the number of turns before it disappears. Currently, the UI indicator shows changes to a character's ATK, DEF, SPD, and Aggro.
- **Updating Characters' Abilities:** I have changed the abilities of several characters - including both of the player characters and the boss - in order to

make them more interesting. The player characters now have totally different passive skills, which include the following:

- The warrior's **ATK +25%** is now **Wall of Blades**, which raises his DEF by 1 for every 5 points in ATK.
- The warrior's **HP +25%** is now **Patience**, which raises his ATK by 25% if he ends a turn without dealing damage. This effect stacks up to two times.
- The hemomancer's **SPD +25%** is now **Desperation**, which raises her ATK by 1 for every 5 points of TP she's consumed in a given fight.
- The hemomancer's **TP +25%** is now **Refresh**, which restores 15% of her TP whenever she defends.

These changed passives should open up more builds for the player characters, allowing for a more replayable experience.

- **General Balancing Work:** In addition to the above changes, I have also made some general balancing changes to *Double Down* in order to make the game slightly more difficult in the mid-to-late game. First, I reduced the amount of damage characters and enemies deal under the current formula by about 40%. Second, I significantly reduced each character's and enemy's total HP to reflect this change. Third and finally, I decreased the amount of HP each player character gains upon leveling up to help ensure enemies deal enough damage to remain threatening throughout the game.

Future Changes:

- Further balance enemies and player characters
- Create art for:
 - Ability animations
 - Additional character animations (provided I have the extra time)
- Add sound effects
- Add an intro screen so players can select their character before entering the game
- Improve the “Controls” screen to better teach players how to play the game

Iteration 4 (April 24, 2020):

Following some feedback from my peers and from Professor Brenton Woodrow, I have decided to make the following changes to *Double Down*'s design.

Immediate Changes:

- **Implementing Animations:** To help make combat more dynamic and more visually interesting, I implemented animations for each major in-battle action. Amelie, Hendrick, and the monsters all have different attack animations, along with more specialized animations to accompany each ability. I also created a new animation for when players defeat the boss monster, which should hopefully make the battle feel more engaging and climactic. Lastly, I added three major particle effects to the game to make it more transparent. These include an effect that appears whenever Hendrick sets up his delayed attack; one that appears whenever the Magpie sets up its delayed attack; and one that grows in size whenever Amelieprocs her “Desperation” passive skill, to show that it is functioning properly.
- **Implementing Sound Effects:** Over the past couple weeks, I implemented every necessary sound effect into *Double Down*. These include sound effects for in-battle animations, menu navigation, gaining EXP and leveling up, and certain screen transitions. These sound effects came from the *RPG Maker MV*, and because of this, I took special care to normalize their volumes so they would not clash with the music.
- **Updating the UI:** To make *Double Down* look a bit cleaner, I updated the game's main menus to feature new UI elements. Some of the updated screens include the hub menu and the level-up menus, among others. I also updated the title, “How to Play,” “Win,” and “Game Over” screens to feature buttons that more resemble the ones found in-game. Finally, I added new backgrounds to the title and “How to Play” screens, which I pulled from the hub area.

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- **Updating the “How to Play” Screen:** In addition to making some general visual changes to the “How to Play” screen, I also updated the page’s content to feature a fairly robust explanation of how to play *Double Down*. I divided this information into six “tabs,” which should hopefully let players find any information they need without too much trouble. This is a change I have been meaning to implement for several weeks, now - ever since one of my peers requested a way to help them learn how to play the game - and I am happy I was able to finally get it in-game.

 - **General Balancing Work:** In response to feedback from several of my peers, I decided to do some more balancing work to make certain builds more viable and to make the late-game slightly more difficult.
 - **Balancing Amelie:** First, to address concerns that Amelie’s “Blood Draw” and “Blood Draw+” abilities are too cheap, I halved both characters’ max TP. I then buffed both “Desperation” and “Refresh” to make them more interesting abilities. “Desperation” now ramps up twice as quickly, allowing players to hit the maximum ATK increase earlier (+10 ATK at Level 3) and making an offensive Amelie build more viable. “Refresh” now restores 25% of Amelie’s max TP, recovering up to 7 TP at Level 3. This means that, with the “Refresh” passive unlocked, she can use either “Blood Draw” or “Blood Draw+” every other turn, which should hopefully make her a much more viable healer.

 - **Balancing Hendrick:** To make a defensive Hendrick build slightly stronger, I buffed his “Wall of Blades” passive ability to increase his DEF for every 4 ATK, rather than 5. This is a very small change (giving him 17 DEF at Level 3 instead of 16), but it will allow him to survive attacks from the Magpie without losing an enormous amount of HP each turn. This should also allow Amelie more breathing room. I also halved the TP costs of Hendrick’s abilities to account for his reduced max TP.
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- **Balancing the Magpie:** Originally, I found that the Magpie was dying too quickly, which meant it rarely used its charge-up “Inferno Breath” ability. To fix this, I raised the Magpie’s max HP from 1,050 to 1,200, allowing it to survive slightly longer. I initially considered raising its DEF from 12 to 13, as well, but I found that doing so made it incredibly difficult for certain builds to deplete its HP. To make “Inferno Breath” a more frightening ability, I increased its damage by about 20%. This should encourage players to defend whenever they see the Magpie start charging it up.

- **Fixing Visual and Audio Bugs:** During these past two weeks, I worked to fix some minor visual and audio bugs that I found particularly distracting. For example, I changed the music to make it loop properly, rather than having a noticeable gap before restarting. I also swapped out all the default Text assets for TextMeshPro ones, making the game look a bit more consistent.

Future Changes (Going Forward with Development):

- Perform further balancing on enemies and player characters
- Create new characters, abilities, enemies, and environments
- Add new mechanics to improve the gameplay and add potential for new character types:
 - Elemental damage
 - Status ailments
 - Evasion and accuracy
 - Split physical and magical damage apart and implement new “magic” stats (INT and RES)
- Update character art to feature more unique visuals (i.e., not made from modified *Octopath Traveler* designs)
- Add an intro screen so players can select their characters and environments before entering the game



Double Down will be developed in the Unity 3D game engine, specifically **Unity 2019.2.19f1**. Utilizing a 3D engine will allow me to add many interesting visual effects to each combat instances, such as 3D particles and 3D lighting. I also hope to use at least one plugins for this project, which was developed by and for Unity:

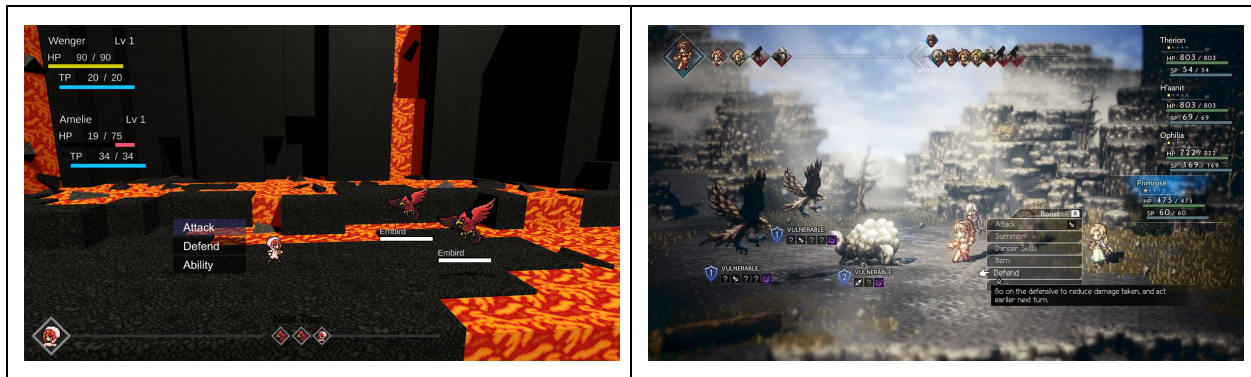
- **TextMeshPro**, which will help me make *Double Down*'s text-based UI elements look far more visually interesting



Art Style

Double Down's art style will feature 2D sprites for characters, enemies, and UI elements against 3D backgrounds. I will create the sprites in a pixel-art style, while the backgrounds will consist of simple 3D shapes with appropriate textures. Using simple sprites instead of 3D models will allow me to create and animate the characters fairly quickly. Utilizing 3D backgrounds, on the other hand, will allow me to easily manipulate the camera to create depth both during battle and while players are exploring the hub. As mentioned above, I will also be able to take this opportunity to play around with particle effects and lighting, though this will come later into the project's life cycle.

Currently, *Double Down*'s fights are designed to resemble traditional turn-based combat scenes, albeit with the enemies appearing on the right and the player characters appearing on the left. This can be seen in the table below, which compares *Double Down* with its main artistic inspiration, Square Enix's *Octopath Traveler* (2019). Note that this style may change as development progresses.





Music:

Currently, *Double Down* features a variety of tracks I composed in *GarageBand*. The music is designed to sound appropriate and fit in with the players' current situation. It mostly consists of orchestral, piano-heavy, or atmospheric pieces.

- **Hub Theme:** This song plays when neither player character is in battle. To give the impression that the players are wandering through an active volcano (the main environment I am trying to convey), the hub theme is bombastic, powerful, and fairly slow.
- **Battle Theme:** The battle theme is fast-paced to further the sense that the player or players are engaged in combat; when either player enters battle, this theme will override the hub theme automatically. This song and the hub theme are dynamic, allowing them to seamlessly transition between one another without feeling too jarring.
- **Boss Theme:** The boss theme is bombastic, exciting, and powerful. If done correctly, players should feel a sense of danger while facing *Double Down*'s boss monster. Unlike the battle theme, I have no intentions of making this song dynamic, as it should override the rest of the music in the scene.

Sound Effects:

Double Down currently features several sound effects I took from the *RPG Maker MV* engine, which I legally purchased a license for several years ago. Major sound effects will include:

- *Menu Navigation:*
 - Selecting a “positive” menu option
 - Selecting a “negative” menu option
 - Moving between menu options

- *Combat:*
 - Normal attacks (slashing; hitting; and piercing)
 - Various sound effects for abilities:
 - Magical attacks (“Blood Draw”; “Pyre”; and “Inferno Breath”)
 - Special abilities (“Heavy Slash”; “Provoke”)
 - General buffs and debuffs

- *Other:*
 - Transitions into and out of battle
 - Receiving experience points
 - Leveling up