

Software Requirements and Design Document

For Korona Kingdom

Version 1.0

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1. Overview (5 points)

Korona Kingdom is a turn based RPG based on a parody of modern life under quarantine and inspired by early JRPGs like Dragon Warrior. It is written using the python arcade library. It will contain an inventory system, three dungeons, an overworld, a combat system, sprite animation, and the joy of adventure!

2. Functional Requirements (10 points)

Key: Working Issues Un-Implemented

Inventory System:

1. When the player hits [I] in the overworld the user's inventory should open. - High
2. When the player hits [I] in their inventory the user's inventory should close - High
3. When the inventory is open all the player's stats should be visible - High
 - a. Level / HP / Energy / Strength / Defense / Intelligence / Immunity / Agility / Luck
 - i. Stats wanted by Anthony for combat system
4. When the inventory is open all the player's equipped items should be shown - High
5. When the inventory is open the player's inventory should be separated by component type - Med
 - a. Helmet / Weapon / Shirt / Gloves / Pants / Shoes / Consumables / Quest Items
6. When the inventory is opened the current component tab selected should be highlighted and be the leftmost tab - Med
7. When the player hits [→] or [←] the current component tab selected should change relative to what is currently selected - Med
8. When the player opens the inventory their should be a list of items related to the current selected component tab that shows what the player has picked up - High
 - a. A single list Item shows: Name, Image
9. When the inventory is opened the first item in each of these component list should be the item that the player currently has equipped - Low
10. When the player hits [↑] or [↓] the player should be able to scroll up/down their list of items in the chosen component tab - High
11. When the player scrolls through these items the current selected item should show its description and its stats - High
12. When the player scrolls through these items the current selected item should show if its stats are better than the currently equipped item - Low
13. When the player is in their inventory the user should not be able to enter a battle - High
14. When the player is in battle they should not be able to enter their inventory - High
15. When the player hits [Enter] the player should equip an item - High
16. When the player hits [BackSpace] the player should un-equip the item - High

Overlay System

Player Info

1. When the player walks around the overworld the user's HP should be shown - High
2. When the player walks around the overworld the user's energy should be shown - High
3. When the player walks around the overworld the user's image should be shown - Low

Dialogue Box

1. When interacting with certain items / people the dialogue box should display - High
2. When the dialogue box appears the user should know who is speaking - High
3. When the dialogue box appears the user should see an image of who is speaking - Low
4. When the dialogue box appears the user should know what is being said - High
5. Once the interactions are over the dialogue box should disappear - High

Menu Box

1. When the player walks around the overworld the user should see all the available menu options - Med
 - a. Inventory / Map / Options

Event System

1. When the player walks into a gameplay event tile the dialogue box should show with the correct event dialogue (overlap with Overlay) - High
2. When the gameplay event ends the dialogue box should disappear (overlap with Overlay) and be able to move freely again- High
3. When the player is in a gameplay event they should not be able to move or enter a random encounter - High
4. When the player is in a gameplay event they should be able to open and use their inventory - Low
5. A gameplay event should allow for multiple users to be the speaker and for each speaker to have their own dialogue - High
6. When the player presses [Enter] the conversation should move on to the next person's dialogue - High
7. Once an event is over it should no longer occur on the map (once and done). - High
 - a. Ex. An event you saw on the overworld shouldn't happen again if you return from a dungeon

Inventory (Alexander Kostandarithes)

1. When an item is selected, the information should display without serious delay - High
2. Entity creation should not take a long time - Low

Map/Dungeons(Alexander Jordan):

1. The maps should be graphically pleasing and accurately represent the location they are portraying(currently the overworld and dollar store are fully implemented graphics-wise). - med

2. entering/exiting the dungeons should work with no issues and the player should be located directly outside the dungeon that they just exited(fully functional). - High

Animations(Ryan Goldberg)

1. The walking player animation should not decrease performance in any meaningful way - high

Encounter System(Alexander Jordan):

1. The encounter system should be randomly triggered based on a certain probability if the player is in motion (fully functional). - High
2. The encounter system should only call the encounter.handle_selection() function one time per user selection from the encounter menu (fully functional). - High
3. The encounter.handle_selection() function should call the relevant function from the combat system upon user selection. The encounter.handle_selection() function should then return the relevant string of information about the user's selection, in turn printing this string to the dialogue box handled in the overlay system (Fully implemented). - High
4. The encounter system should work as expected for every random encounter, not work for one to two encounters then break(this was a bug that has been fixed, explained in the IT template). - High

Combat System (Anthony Micciche):

- Add more enemies and attacks - Med
- Will add behavior that occurs when combat ends
 - Exp - High
 - Will also add leveling system of some sort - High
 - Enemies will drop currency and items sometimes
- Will write boss enemies - Med
- Will implement immunity, and corona based attacks that will attack max hp and not current hp. - Low

3. Non-functional Requirements (10 points)

Inventory System:

1. When the player enters / leaves the inventory it should take less than a second
2. Items within the inventory display correctly

Overlay System

1. When the player walks around the map the overlay should not make the game run noticeably slower

Event System

1. It should be easy for other people in the dev team to add gameplay events to the map
 - a. Not sure if this is considered non-functional as it's more dev related / not user related. I wanted the team to be able to create a Tile in Tiled with an ID, and all they had to do in code was reference this ID when they wanted to create a gameplay event (simple).

Animation

1. Walking animation should convey to player that the sprite is moving - high

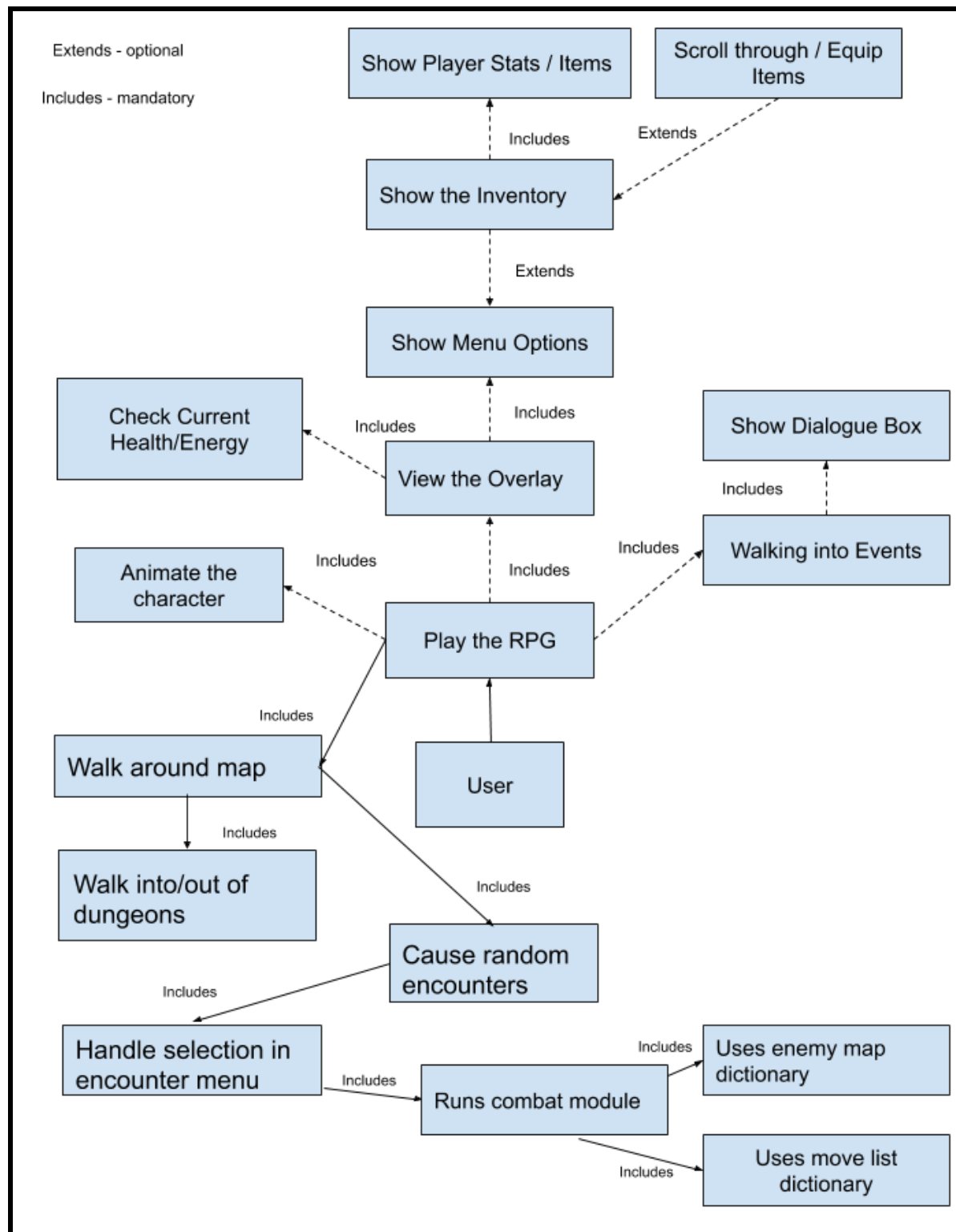
Combat System

1. Combat data structures will be written and called in a way such that the user does not notice any loading or searching of such structures

Encounter System

1. The encounter system should display the relevant information about attacks from the user as well as the enemy. - high

4. Use Case Diagram (10 points)



Textual Use-Case Descriptions:

Play the RPG

- In order for the user to use this system they must play the game.

Show Menu Options

- When playing in the overworld the player is forced to view the overlay.

Check Current/Health Energy

- The player is forced to see their health/energy at the top of the screen when in the overworld (overlay).

Show Menu Options

- The player is forced to see their menu options at the top of the screen when in the overworld (overlay).

Show the Inventory

- The player can open the inventory in the overworld by pressing [I].

Show Player Stats/Items

- The player is required to see their stats when the inventory is open.

Scroll Through/Equip Items

- Once the player is in the inventory they are not required to use it, they can just leave with [I].

Walk around map/into and out of dungeons:

- The player can properly move about using the arrow keys and enter and exit the dungeons

Cause random encounters:

- If the player is in motion there is a random probability that an encounter will happen
- Once an encounter happens, the user makes a selection which will trigger the encounter system to call `handle_selection()` which in turn causes the combat system to call specific attack functions

Run combat module

- The Encounter will set up combat using various functions from the combat module

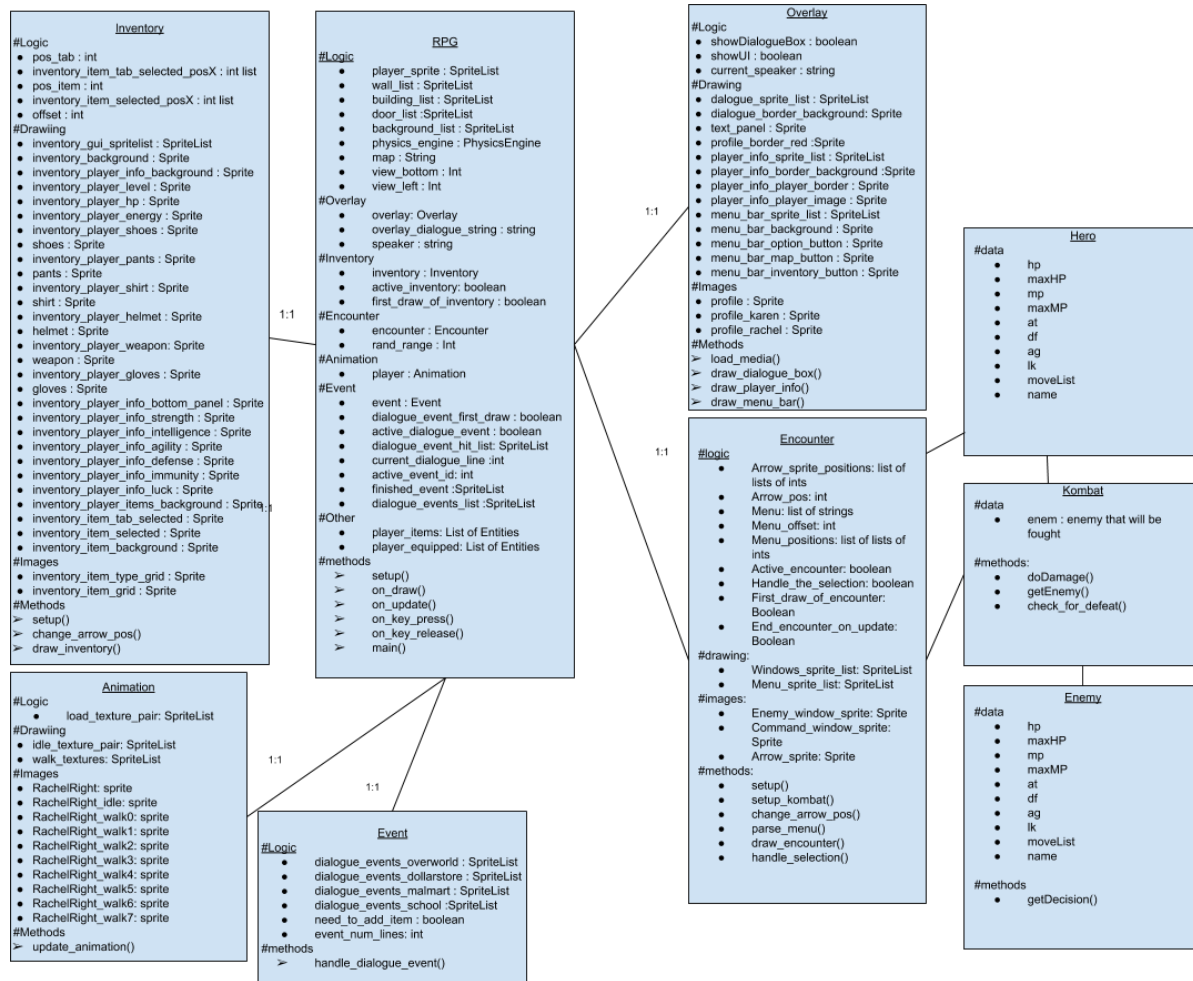
Uses enemy map dictionary

- Data structure containing all enemies in the game, grouped into lists according to a string that represents their location. For example, "Overworld" will map to a list of enemies that can appear on the overworld screen.

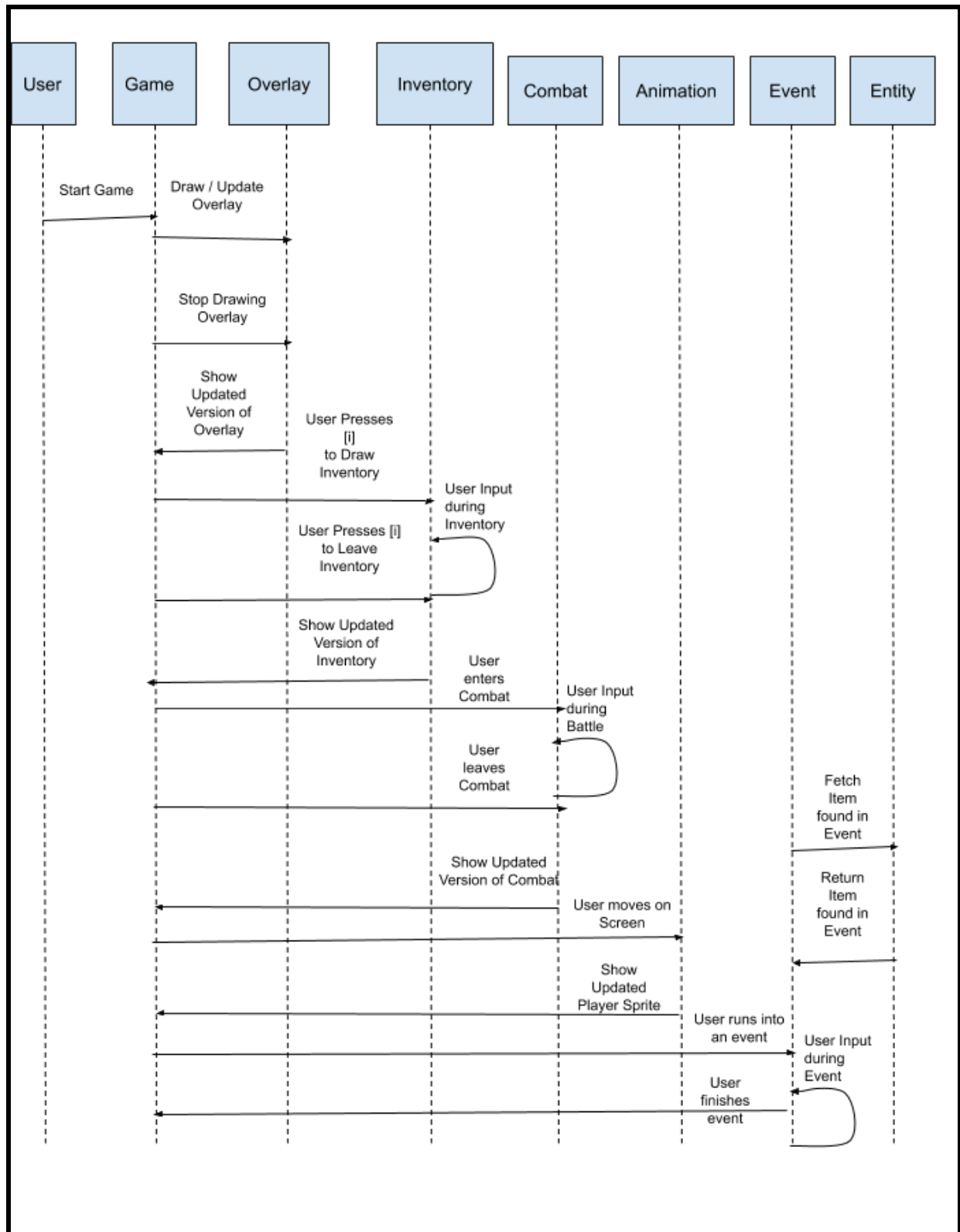
Uses move list dictionary

- Data structure that contains all moves in the game. Maps a string, the name of a move, to a function object that will calculate how much damage it did and what to write to the UI.

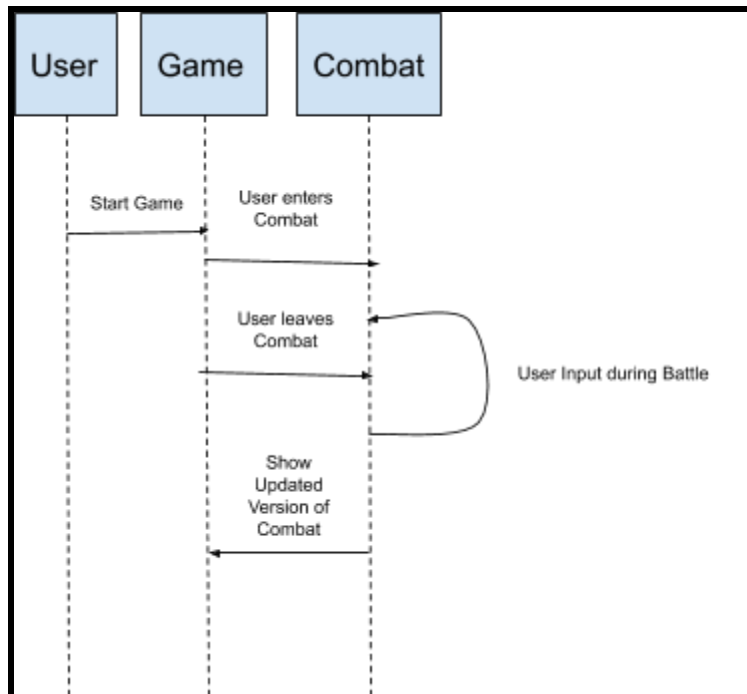
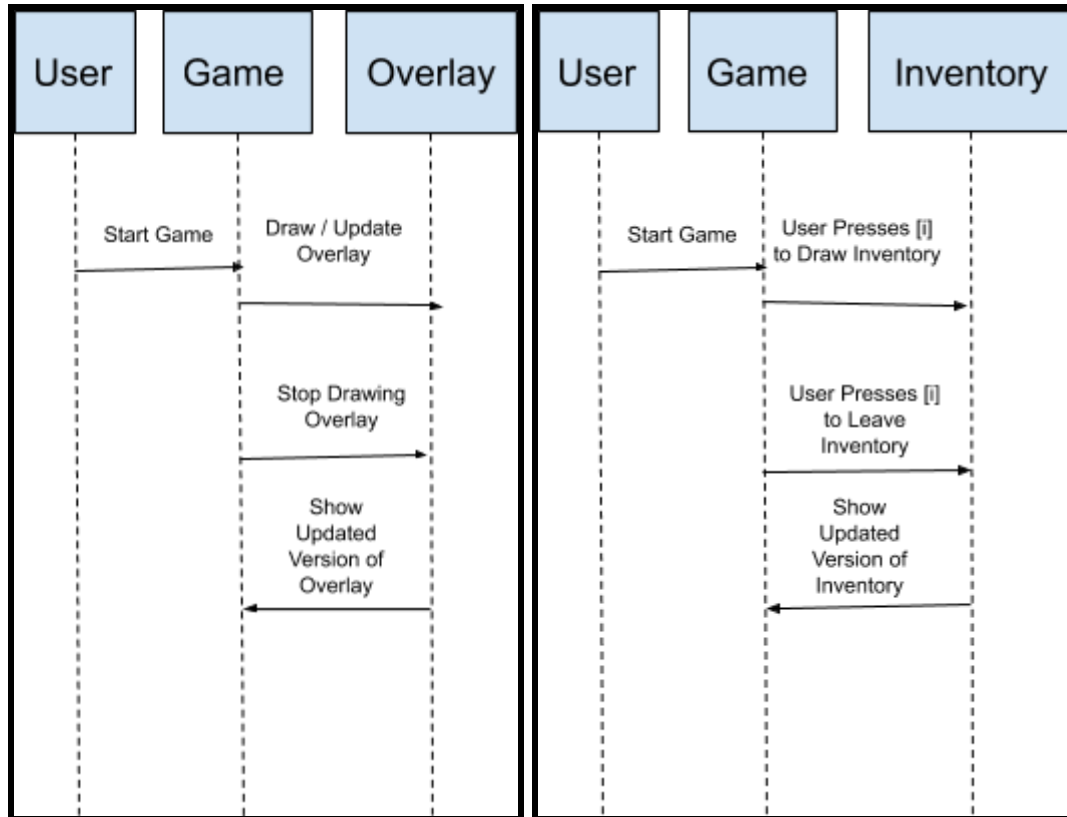
5. Class Diagram and/or Sequence Diagrams (15 points)



Sequence Diagram (whole)



Sequence Diagrams (Individual)



6. Operating Environment (5 points)

The software will operate on any PC whether it be desktop or laptop. The operating system/version of the PC should not have any effect on the user's ability to operate the software. In order for the software to run the user must have python3.6 or higher installed on their machine as well as the arcade library.

7. Assumptions and Dependencies (5 points)

Assumed factors:

- Assume that the arcade library is properly installed and remains functioning
- Assume that the user does not modify source code or integral components related to Korona Kingdom
- Assume that the player interphases with the game as intended (i.e not actively trying to exploit bugs or glitches)

Dependencies:

- Python3.6 or greater must be installed to run the software
- The python arcade library must be installed to run the software