



**Software Design and Architectures  
Project Description and Deliverables**

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Group 11**

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## Use Cases

Use Case	Description
UC-1: Customizable Battles	On the main screen there should be an option titled “custom battle” this will let the user select an existing character and customize the opponents are playing against OR generate a random character at a random level and play with them
UC-2: Inventory	The inventory screen should enable the user to “drop”, “inspect”, and “equip” items.
UC-3: Turn Based combat	At the start of every turn, turn order will be calculated based on speed and other variables (debuffs and buffs)
UC-4: Random Encounters	Based on the main party's level, enemies will be generated to be sufficiently difficult. Enabling a constant progression and easier creation of dungeons
UC-5: Combat mechanics	Combat should not be static, instead every action is based on the stats and status effects of the character that uses them. Damage should be calculated based on the stats and status effects of the character receiving the attack or spell
UC-6: Saves and Autosaves	The user should be able to save their game at any point, this will be stored in a text file that can be later loaded to continue the game. Also after certain key story events a file will be automatically saved
UC-7: Leveling System	Integrated in the character component, a leveling system should exist. Upon hitting a certain threshold the character gains stats and is able to distribute them as seen fit.

## Quality Attributes

### QA-1

#### UC-1: Customizable Battles

<b>Environment:</b>	Normal Operations
<b>Quality Attribute:</b>	Performance
<b>Source:</b>	Player
<b>Stimulus:</b>	Player selecting the specific battle mode
<b>Artifact:</b>	Menu system, Combat system, Player customize system, Opponent system, Display
<b>Response:</b>	System launches the battle with player selected/chosen attributes and opponents
<b>Response Measure:</b>	Take max of 30 seconds to load and create the battle

### QA-2

#### UC-2: Inventory

<b>Environment:</b>	Normal Operation
<b>Quality Attribute:</b>	Performance
<b>Source:</b>	Player
<b>Stimulus:</b>	Player interacting with inventory
<b>Artifact:</b>	Inventory system (equipping items, dropping items, inspecting items), display
<b>Response:</b>	Displays items available to the player
<b>Response Measure:</b>	Instantaneous response to any player action in the system. (

### QA-3

#### UC-3: Turn Based combat

<b>Environment:</b>	Normal Operations
<b>Quality Attribute:</b>	Performance
<b>Source:</b>	Player
<b>Stimulus:</b>	Player beginning a battle
<b>Artifact:</b>	Combat system, Opponent system, Turn-based system

<b>Response:</b>	Displays player stats, turn order and actions that can be deployed
<b>Response Measure:</b>	Instant response, with a maximum of 20 seconds to choose an action before turn is skipped

#### QA-4

##### UC-4: Random Encounters

<b>Environment:</b>	Normal Operations
<b>Quality Attribute:</b>	Performance
<b>Source:</b>	System
<b>Stimulus:</b>	System initiates a battle
<b>Artifact:</b>	Combat system, Opponent system, Turn-based system
<b>Response:</b>	Displays player stats, turn order and actions that can be deployed
<b>Response Measure:</b>	Instant response, with a maximum of 20 seconds to choose an action before turn is skipped

#### QA-5

##### UC-5: Combat mechanics

<b>Environment:</b>	Normal Operations
<b>Quality Attribute:</b>	Performance
<b>Source:</b>	System
<b>Stimulus:</b>	A battle was initiated
<b>Artifact:</b>	Combat system, Opponent system, Turn-based system
<b>Response:</b>	Character stats and attack stats calculated. Returns action performed with visual response
<b>Response Measure:</b>	Max of 2 seconds to allow fast responsive battles

#### QA-6

##### UC-6: Saves and Autosaves

<b>Environment:</b>	Normal Operations
<b>Quality Attribute:</b>	Performance
<b>Source:</b>	System or Player

<b>Stimulus:</b>	Player reaches checkpoint or Player forces a save
<b>Artifact:</b>	Saving system, Display system, Storage system
<b>Response:</b>	All current game stats are saved to file
<b>Response Measure:</b>	Max of 5 seconds to create a save file

## QA-7

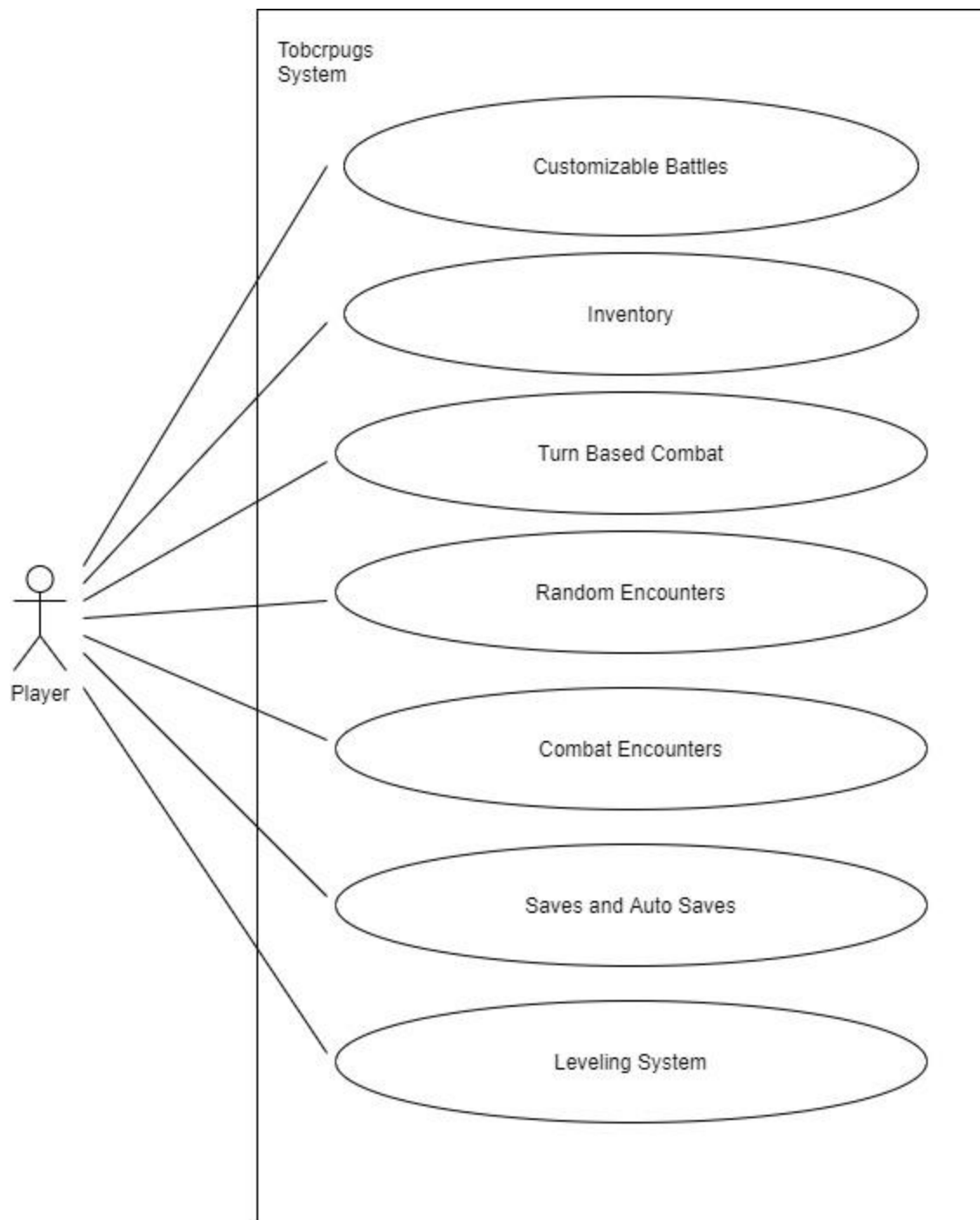
### UC-7: Leveling System

<b>Environment:</b>	Normal Operations
<b>Quality Attribute:</b>	Performance
<b>Source:</b>	System
<b>Stimulus:</b>	Player reaches certain experience goal/checkpoint
<b>Artifact:</b>	Player customize system, Display system
<b>Response:</b>	Generates random new stat variables and adds/inserts into current player stats
<b>Response Measure:</b>	5 second level up animation with max of 5 seconds to calculate stats

## Constraints

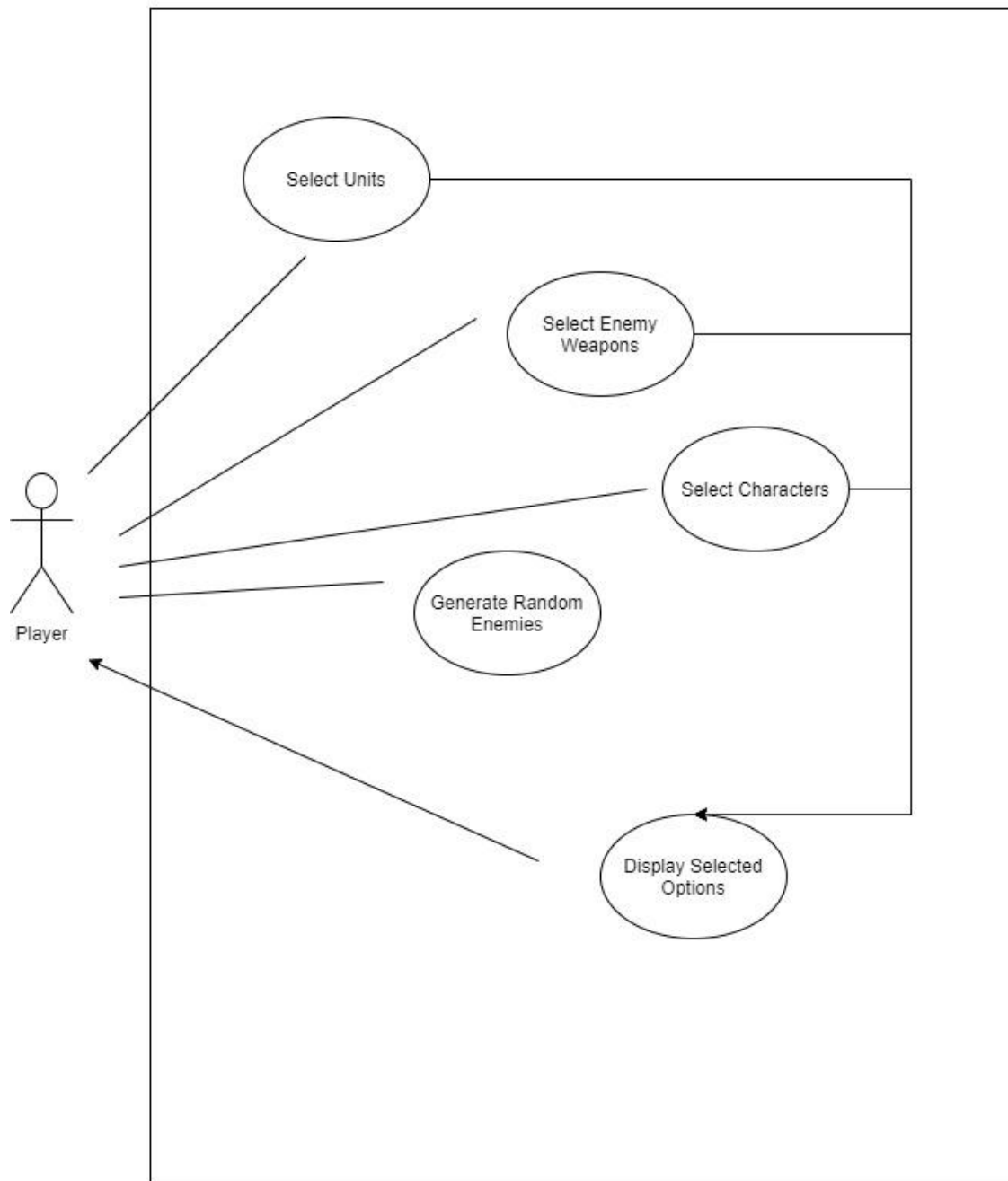
ID	Constraint
CON-1	Max of 10 opponents created at a time
CON-2	Player can only hold specific amount of items (10-20 slots based on level)
CON-3	Max of 3 actions could be performed per turn
CON-4	Minimum of 1 opponent generated with level scaling to player
CON-5	Minimum of 0 damage can be dealt to avoid calculation issues
CON-6	Max save file directory up to 1GB total allocated
CON-7	Max of 5 different character save files before data overwritten
CON-8	Max of 1 autosave files are generated
CON-9	A max player level of 30, after which no more levelling up for the player
CON-10	Minimum player level of 1

## Use Case Model



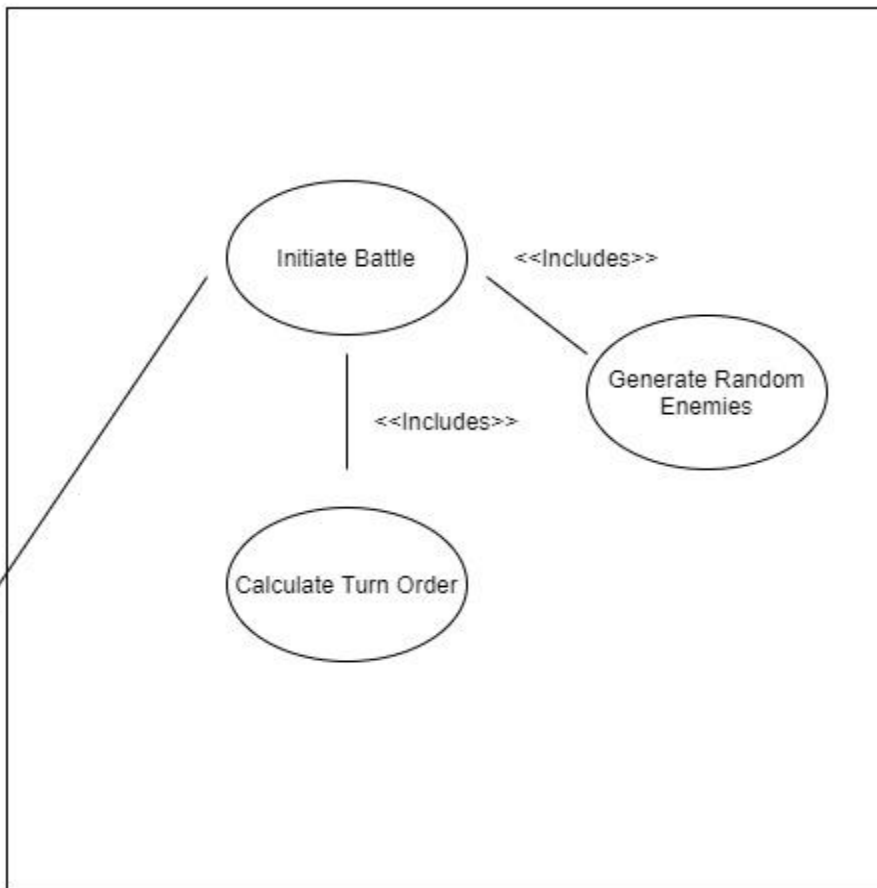
# UC 1

## Customizable Battles



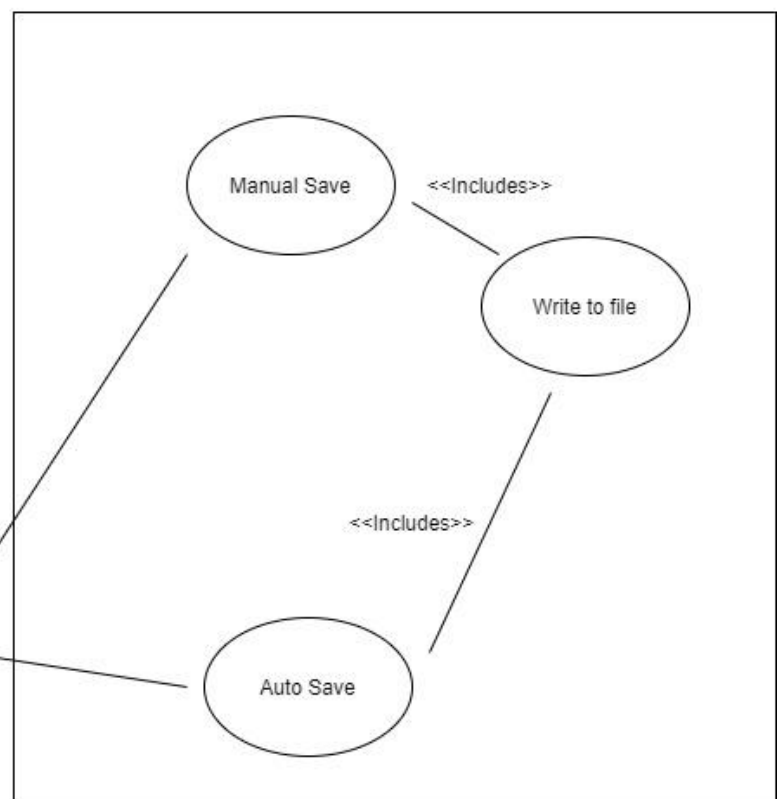
Initiate  
Battle

UC 3 & 4



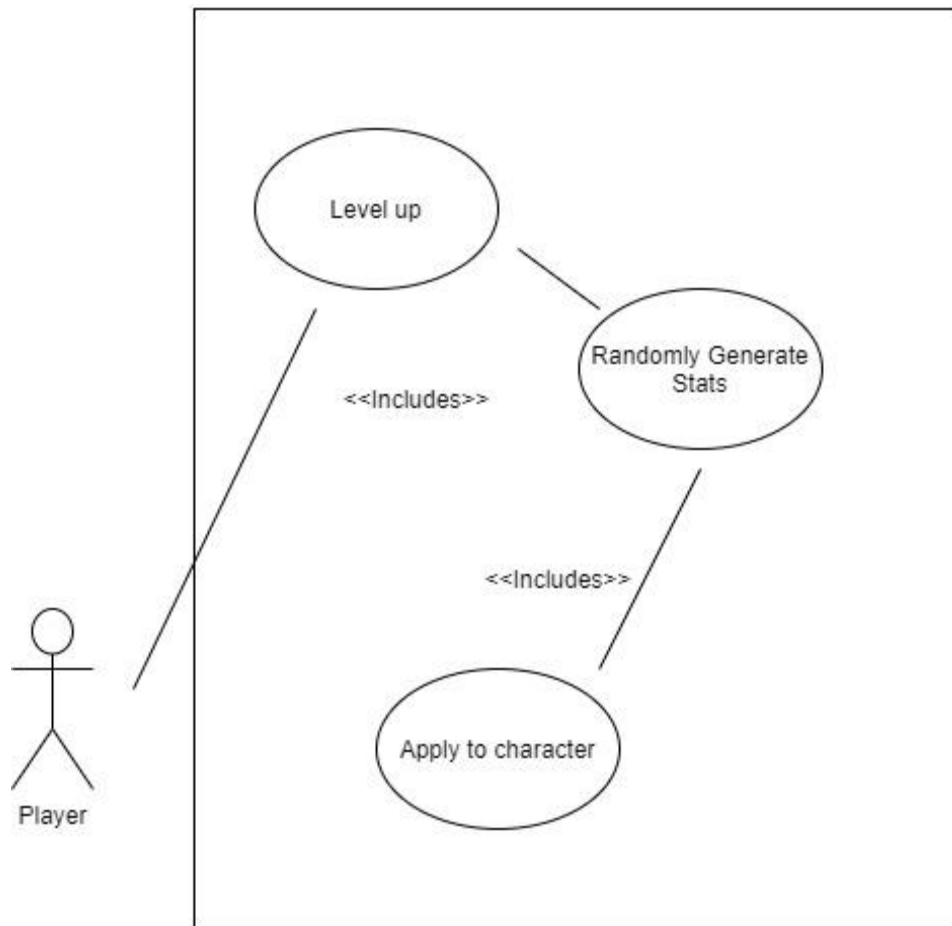
UC 6

Saving



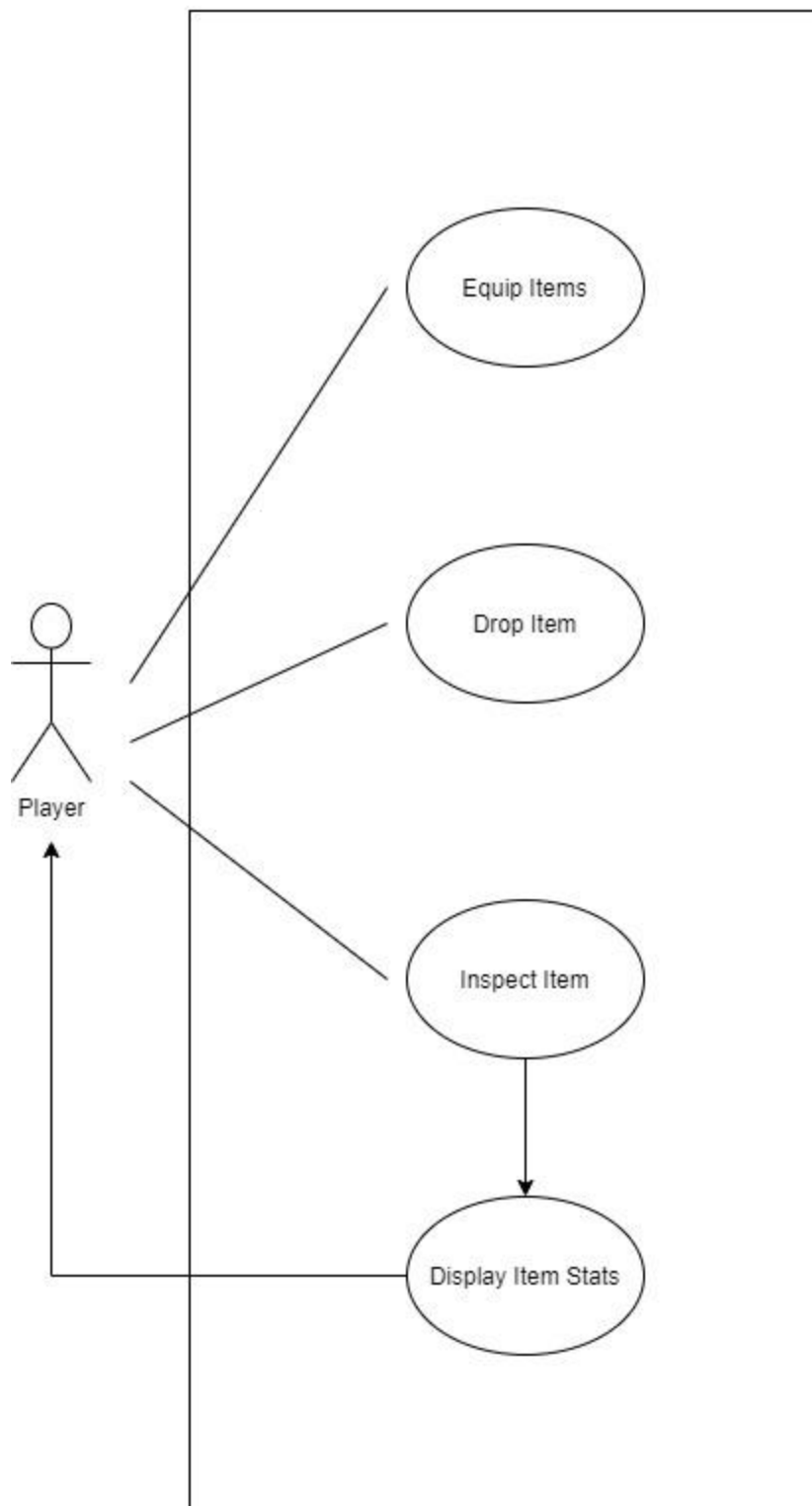


## Level Up



UC 7

## Inventory



UC 2