Dungeon Master: Final Deliverables

Team Skynet

Jordan DeBord, Jacob Frazier, Brett Hamilton, Gavin Norwood, Dustin Ollis, Hunter Page

Department of Computing, East Tennessee State University

CSCI 4250: Software Engineering I

Mr. Matthew Harrison

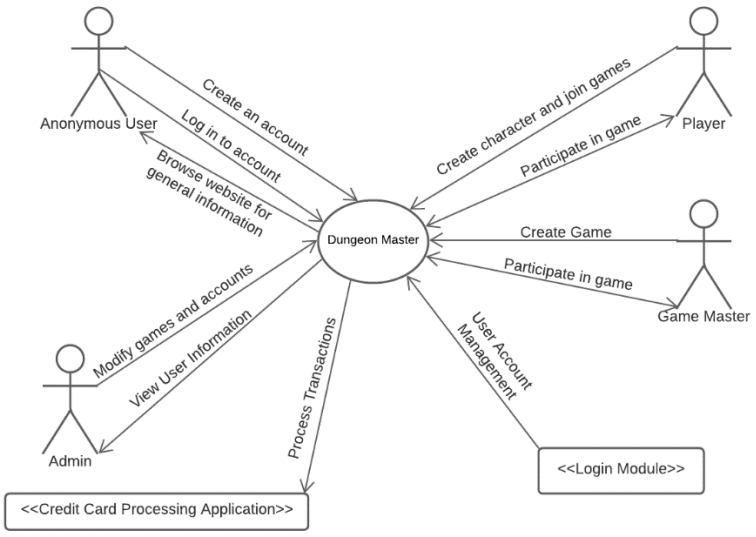
July 03, 2021

Table of Contents

Problem Identification & Definition 3
Project Scope 5
User Personas 5
Architecture Diagram 6
Class Diagrams 7
Use Cases 8
Iteration Goals 16
User Stories 17
  Completed Iteration 1 17
  Completed Iteration 2 17
  Completed Iteration 3 18
  Completed Iteration 4 18
  Completed Iteration 5 19
  Not Yet Completed 19
    High Priority Backlog 19
    Regular Priority Backlog 20
Acceptance Tests 21
  Completed Iteration 1 21
  Completed Iteration 2 22
  Completed Iteration 3 23
  Completed Iteration 4 24
  Completed Iteration 5 27

Problem Identification & Definition

1. **Project Name—** Dungeon Master
2. **Name and Contact Information of Project Sponsor(s)—**
   Customer: Dr. Jeff Roach, roachj@etsu.edu
   Project Manager: Mr. Matthew Harrison, harrisonms1@etsu.edu
   Project Team: Team Skynet
3. **Business Objectives**— Have a working prototype of a Role-Playing Game creator that will enable the business to pitch a fully featured version to various clients for future development, including a subscription revenue model. The prototype features up to three players joining a game master in the game.
4. **Vision Statement—** For Dr. Roach, who needs a working prototype, Dungeon Master is a proof of concept that will allow him to pitch his game to development studios for development and monetization.
5. **Scope—**
   Users, depending upon their role, will be able to interact with our program. They can join game sessions hosted by other users and participate in the three pillars of role-playing games: exploration, combat, and interaction. The game will allow monetization through the external credit card processing application.



6. **User roles—**
   - Admin - users that can manage other user accounts. Admins are also able to modify ongoing games (such as by replacing a Game Master with a new Game Master).
   - Game Master (GM) - users that set up and host each game session. They are responsible for controlling the non-player characters on the board.
   - Player - users that participate in a game hosted by a Game Master. These users control a specific character on the board and interact with the environment created by the Game Master. Players can create another character to be used in another game session.
   - Anonymous User - users that have not created an account or are not logged in are able to view general information about the game, and able to create an account to join future game sessions. These users, if an account exists, will be able to log in to their account.
7. **User functionalities—**
   - Admins shall be able to modify who the Game Master is for a game session.

- Admins shall be able to manage user accounts.
- Game Masters shall be able to choose a map.
- Game Masters shall be able to add game assets.
- Game Masters shall be able to design a map using previously saved or default assets.
- Game Masters shall be able to move and perform combat with non-playable characters.
- Game Masters shall be able to administer the game and police actions taken by players.
- Game Masters and Players shall be able to role play to create and participate in the story.
- Players shall be able to interact, move, and perform combat functions within the environment.
- Players shall be able to create characters to join game sessions hosted by Game Masters.
- Players shall be able to end their turn, to allow another player to participate.
- Anonymous Users shall be able to create an account and log in with the created account for future sessions.
- Anonymous Users shall be able to browse the website to view general information.

8. **Any special issues or considerations—**
   - The game should be designed for users with at least an 8th grade reading level.
   - External applications:
     1. Credit Card Processing Application - Handles users purchasing content.
     2. Login Module - Handles account creation and logging in and out of accounts. (This can be the module included with .NET)
9. **Glossary of Terms—**
   - Admin - Administrator user with privileges to modify accounts and game sessions.
   - RPG - Role playing game, where the user controls a specific entity.
   - Exploration - One of the three pillars of RPGs. Players need to have the ability to explore the world.
   - Combat - Another of the three pillars of RPGs. Players need to have the ability to fight certain other entities in the world.
   - Interaction - The final of the three pillars of RPGs. Players need to be able to interact with the world around them in the game.
   - User Interface - Portion of the application that allows users to interact with the program.
   - Non-playable character (NPC) - Characters in the world who are not directly controlled by the players. NPCs are controlled by the Game Master.
   - Playable Character - Character that is directly controlled by one of the non-GM players in the game.
   - Asset - object or non-playable character placed by the Game Master.
   - Dungeon Master (DM) - Another term for a GM.
   - Blazor - Framework for web applications featuring C# and HTML.
   - Canvas - HTML element which enables 2D graphics by allowing the program to draw upon it.
   - SignalR – Microsoft library that enables notifications between clients in a web application.
10. **Priority list of the user functionalities—**
    - Proof of concept includes the ability to explore, fight, and interact with things and creatures.
    - 2-Dimensional game board that the player or GM clicks on to interact with entities or to take an action.
    - Prepopulated world with preplaced assets.
    - Up to three players can join the Game Master in a game session.
    - Users can create accounts.
    - Predefined assets that provide the ability for the user to discover, interact, and/or fight.

- Ability for the Game Master to place those predefined assets on the game board.
- Administrators can modify who the GM is for games.
- GM and Players can drag assets on the board.

Project Scope

The project goal is to progress as far as possible in creating Dr. Roach's proof-of-concept within the limited time available over the Summer 2021 Software Engineering I course at ETSU. Development time is limited due to the class length and the need to follow the sustainable pace Agile concept. Team Skynet decided to focus upon the combat pillar, which makes up one of the three pillars of RPG's. Team Skynet's original goal is to have a working (if limited) combat system for demonstration to the client. This project can then be continued on by additional groups to finish the complete proof-of-concept for pitching to development studios for future development.

User Personas

Tim, 24, is a graduate student at East Tennessee State University in the Department of Computing. He has experience participating in Dungeons & Dragons games hosted by one of his classmates. He has decided that he would like to try to host his own role-playing game session. He does not have experience building a world or administering user interactions in games. He wants an RPG creator that includes prebuilt assets which will enable him to get experience hosting without having to put in maximum effort designing the game.

John, 30, is a local businessman in Johnson City. He graduated from the University of Tennessee in 2017 with an MBA. He has been participating in Dungeons & Dragons games for fifteen years and has a decade of experience hosting sessions. John has been using another web application for his game hosting but would like a solution with more functionality. He wants an RPG creator that provides him with the leeway to fully design his own game. He wants to place assets across his own designed map.

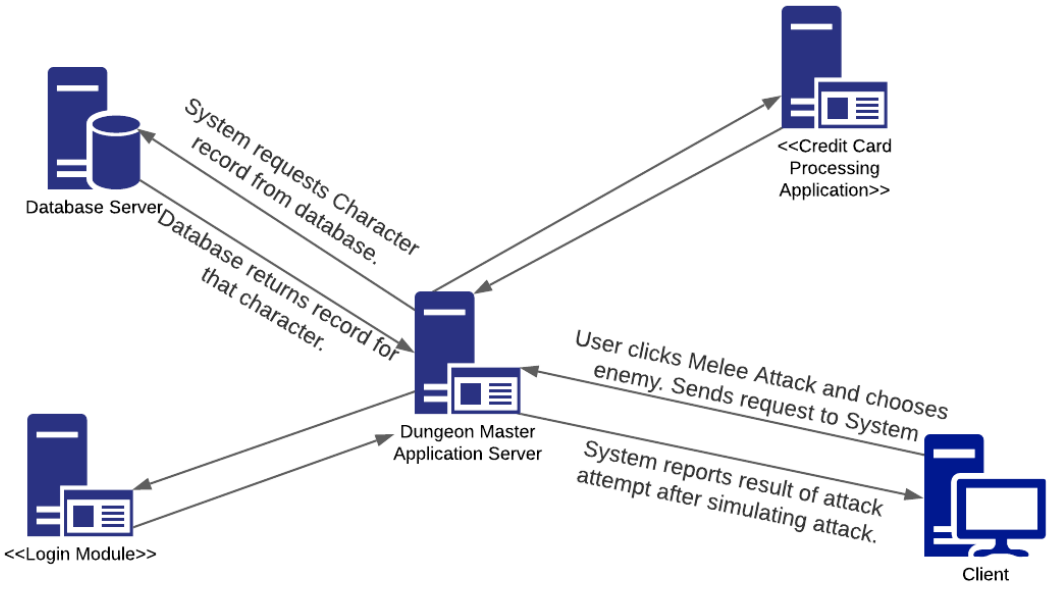
Bill, 20, is an undergraduate student in the Digital Media program at ETSU. He has no experience with role playing games. He has been invited by his friend (Tim) to join in a new session. Bill wants to be able to create a character, but with guidance from the system on what he needs to do.

Susan, 30, is a medical doctor at the Johnson City Medical Center. She has a decade of experience with role playing games. She has been invited to join a game hosted by her friend John. She would like the ability to create a character but would like the leeway to adjust her character within the ruleset.

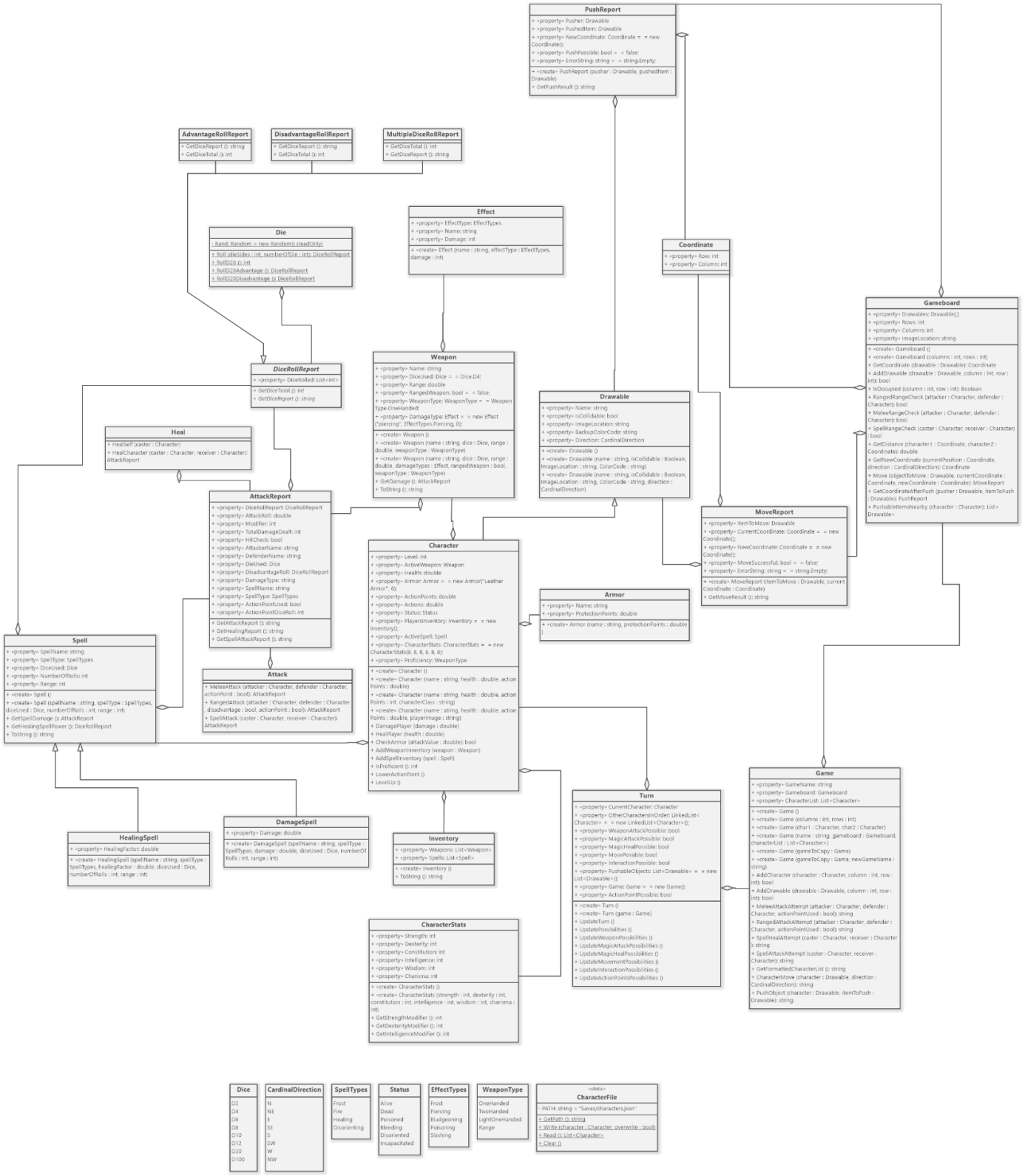
Charles, 18, is a freshman at Virginia Tech. He has no experience playing role-playing games. He does not have an account on any RPG creator websites. He would like the ability to search the website to get general game information. If he can learn about the game, he would be interested in creating an account and participating in games hosted by other users.

Architecture Diagram

(Including example actions)



Class Diagrams



Use Cases

Use Case ID:	EXP001		
Use Case Name:	Move Player		
Created By:	Jordan DeBord	**Last Updated By:**	Jordan DeBord
Date Created:	05/29/2021	**Last Revision Date:**	07/03/2021
Actors:	Player		
Description:	Player moves on the board.		
Trigger:	Player clicks to move on the game board.		
Preconditions:	If the player has movement points left. It is the player's turn.		
Postconditions:	The player is located at the new location.		
Normal Flow:	1. Player clicks to move to a new location. 2. The System verifies the player has movement points left. 3. The System verifies the new location is within the player's movement range. 4. The System verifies that the new location is on the gameboard. 5. The system verifies the new location is not occupied. 6. The player is then moved to the new location.		
Alternative Flows:	3a. If Player does not have movement points, display message to user that not enough points. 4b. If the new location is off the gameboard, display a message to the user stating such. 5c. If the new location is occupied, display a message to the user stating such.		
Exceptions:			

Use Case ID:	INT001		
Use Case Name:	Moves Item		
Created By:	Jordan DeBord	**Last Updated By:**	Jordan DeBord
Date Created:	05/29/2021	**Last Revision Date:**	07/03/2021
Actors:	Player, Item		
Description:	The Player tries to move the item.		
Trigger:	Player clicks button to push neighboring object.		
Preconditions:	Player has an action point to spend. It is the player's turn. Player has selected an item.		
Postconditions:	The item has been moved to its new square.		

Normal Flow:	1. Player chooses to push the item. 2. The system verifies the player has an action point to spend. 3. The system verifies the item is next to the player. 4. The system verifies the item is moveable. 5. The system verifies the end target square is on the gameboard. 6. The system verifies the end target square is empty. 7. The item is moved to the new location.
Alternative Flows:	3a. If the player does not have an action point, report an error message to the user. 4b. If the item is not neighboring the player, report an error message to the user. 5c. If the item is not moveable, report an error message to the user. 6d. If the push will move the item off the gameboard, report an error message to the user. 7e. If the square the item will end in is not empty, report an error message to the user.
Exceptions:	

Use Case ID:	GM001		
Use Case Name:	Create Game		
Created By:	Jordan DeBord	**Last Updated By:**	Jordan DeBord
Date Created:	5/29/2021	**Last Revision Date:**	07/03/2021
Actors:	Game Master		
Description:	Game Master creates a new game.		
Trigger:	GM clicks the Create a New Game button.		
Preconditions:	User is logged in.		
Postconditions:	New game is created for the GM.		
Normal Flow:	1. GM clicks the create a new game button. 2. The system displays a new game modal. 3. GM chooses a map from list of options. 4. GM Provides a name for the game. 5. GM provides the email address for up to three players. 6. The system verifies that there are valid users for those emails. 7. Users are added to the game, and it is created.		
Alternative Flows:	7a. If a user email address does not have an associated account, an error message is reported to the GM.		
Exceptions:			

Use Case ID:	PLR001		
Use Case Name:	Join Game		
Created By:	Jordan DeBord	**Last Updated By:**	Jordan DeBord
Date Created:	5/29/2021	**Last Revision Date:**	07/03/2021
Actors:	Player		
Description:	Player joins a game that the Player is enrolled in.		
Trigger:	Player clicks to join the game.		
Preconditions:	User is logged in. Player is enrolled in the game.		
Postconditions:	Player joins the game.		
Normal Flow:	1. Player clicks to join the game. 2. System checks if the player has a character. 3. The system redirects the Player to the game page.		
Alternative Flows:	4a. If the Player does not have a character, System opens a "Create Character" modal. 5a. Player chooses character race and class. 6a. Player provides a name for the character. 7a. Player chooses starting attributes for character. 8a. System redirects to the game page.		
Exceptions:	Player is not logged in. The game does not exist. Player is not enrolled in the game.		

Use Case ID:	ADM001		
Use Case Name:	Replace GM		
Created By:	Jordan DeBord	**Last Updated By:**	Jordan DeBord
Date Created:	5/29/2021	**Last Revision Date:**	07/03/2021
Actors:	Admin, GM		
Description:	Admin replaces the GM for a game.		
Trigger:	Admin chooses to replace the GM by clicking the Replace GM button.		
Preconditions:	User is logged in as Admin.		
Postconditions:	GM is replaced for the game.		
Normal Flow:	1. Admin clicks the button to replace the GM for a game. 2. System verifies the game exists. 3. Admin enters email address for the new GM. 4. System verifies an account is associated with the email address. 5. System replaces the GM with a new GM. 6. System sends notification that GM was replaced.		

Alternative Flows:	3a. If the game does not exist, display an error message to the user. 5b. If the email address is not associated with an account, display an error message to the user.
Exceptions:	User attempting to replace the GM is not an Admin.

Use Case ID:	DIE001		
Use Case Name:	Roll Multiple Dice		
Created By:	Jordan DeBord	**Last Updated By:**	Jordan DeBord
Date Created:	5/30/2021	**Last Revision Date:**	07/03/2021
Actors:	Player		
Description:	The Player rolls dice to participate in the game.		
Trigger:	Player chooses the number and type of dice and clicks roll.		
Preconditions:	It is the Player's turn.		
Postconditions:	Result of the dice roll is displayed.		
Normal Flow:	1. Player chooses the type of dice to roll (4 sided, 6 sided, 20 sided, etc.). 2. Player chooses the number of those dice to roll. 3. Player clicks to roll the dice. 4. System verifies valid die sides. 5. System verifies valid number of dice. 6. System simulates the rolls and creates a roll report containing roll information. 7. System returns the roll report.		
Alternative Flows:			
Exceptions:	If the number of sides of the die is invalid. (< 2 or > 100) If the number of dice to roll is not valid. (< 1 or > 10)		

Use Case ID:	DIE002		
Use Case Name:	Roll D20 With Advantage		
Created By:	Jordan DeBord	**Last Updated By:**	Jordan DeBord
Date Created:	06/05/2021	**Last Revision Date:**	07/03/2021
Actors:	Player		
Description:	The Player rolls two 20-sided dice and takes the result of the larger.		
Trigger:	Player selects "With Advantage" and clicks roll.		
Preconditions:	The Player is on a page with the Roll Dice modal on it.		
Postconditions:	Result of the roll is displayed for the player.		
Normal Flow:	1. Player chooses to roll with advantage and clicks roll. 2. System simulates two dice rolls and selects the larger. 3. System creates a roll report containing the result of the roll. 4. System returns a string describing the roll report to the player.		

Alternative Flows:	
Exceptions:	

Use Case ID:	DIE003		
Use Case Name:	Roll D20 With Disadvantage		
Created By:	Jordan DeBord	**Last Updated By:**	Jordan DeBord
Date Created:	06/05/2021	**Last Revision Date:**	07/03/2021
Actors:	Player		
Description:	The Player rolls two 20-sided dice and takes the result of the smaller.		
Trigger:	Player selects “With Disadvantage” and clicks roll.		
Preconditions:	The Player is on a page with the Roll Dice modal on it.		
Postconditions:	Result of the roll is displayed for the player.		
Normal Flow:	1. Player chooses to roll with advantage and clicks roll. 2. System simulates two dice rolls and selects the smaller. 3. System creates a roll report containing the result of the roll. 4. System returns a string describing the roll report to the player.		
Alternative Flows:			
Exceptions:			

Use Case ID:	DIE004		
Use Case Name:	Quick D20 Roll		
Created By:	Jordan DeBord	**Last Updated By:**	Jordan DeBord
Date Created:	06/05/2021	**Last Revision Date:**	07/03/2021
Actors:	Player		
Description:	The Player rolls a single 20-sided die.		
Trigger:	Player clicks the “Quick D20 Roll” button.		
Preconditions:	The Player is on a page with the Roll Dice modal on it.		
Postconditions:	Result of the roll is displayed for the player.		
Normal Flow:	1. Player clicks the Quick D20 Roll button. 2. System simulates one twenty-sided die roll. 3. System creates a roll report containing the result of the roll. 4. System returns a string describing the roll report to the player.		
Alternative Flows:			
Exceptions:			

Use Case ID:	CC001		
Use Case Name:	Damage the Player		
Created By:	Hunter Page	**Last Updated By:**	Jordan DeBord
Date Created:	06/04/2021	**Last Revision Date:**	07/03/2021

Actors:	Attacker, Defender
Description:	After a successful attack, damage is applied to the defender.
Trigger:	Successful attack triggers damage roll and deducts health from defender.
Preconditions:	Attacker's attack roll was higher or equal to defender's defense.
Postconditions:	Defender's health is updated.
Normal Flow:	1. The Defender has their Health attribute decremented by the damage value passed into the method. 2. Check if the Health attribute is decremented to 0 or below. 3. If not, end method
Alternative Flows:	3a. If the Health attribute is equal to or less than 0 4a. Set Health to 0. 5a. Change Defender's Status to Dead 6a. End method.
Exceptions:	

Use Case ID:	CC002		
Use Case Name:	Check Defender's Armor		
Created By:	Hunter Page	**Last Updated By:**	Jordan DeBord
Date Created:	06/05/2021	**Last Revision Date:**	07/03/2021
Actors:	Attacker, Defender		
Description:	The Defender's Armor is compared to an attack value made from another Player to determine whether the attack will hit or miss.		
Trigger:	Attacker rolls attack value, then checks if attack is equal to or greater than Defender's armor value.		
Preconditions:	An Attacker launches an attack against a defender.		
Postconditions:	Attack is determined to hit or miss.		
Normal Flow:	1. The attack value from the attacker is passed in. 2. The Player's Armor object has its Protection Points compared to the attack value passed through. 3. If the attack value is greater than or equal to the Armor's Points, then a true Boolean value is returned to confirm the attack.		
Alternative Flows:	3a. If the attack value is less than the Armor's Protection Points, a false Boolean value is returned to show the attack missed.		
Exceptions:			

Use Case ID:	CBT001		
Use Case Name:	Melee Attack		
Created By:	Hunter Page	**Last Updated By:**	Jordan DeBord
Date Created:	06/05/2021	**Last Revision Date:**	07/03/2021
Actors:	Attacker, Defender		
Description:	Attacker attacks enemy with a melee weapon.		
Trigger:	Attacking Player chooses enemy and clicks to attack.		
Preconditions:	It is the attacking Player's turn.		
Postconditions:	Result of attack is reported to those in the game.		

Normal Flow:	1. System checks that Defender is not already dead. 2. System verifies that the Defender is next to the Attacker. 3. A hit is determined through CC002. (See Above Case) 4. System determines damage to apply to defender. 5. System applies damage to Defender through CC001. 6. System assembles a report about the attack attempt. 7. System returns a string containing information on the attack attempt.
Alternative Flows:	2a. If Defender is dead, system reports that to those in the game. 3b. If Defender is not within range, system reports that to those in the game. 4c. If attack missed system assembles a report about attack attempt. 5c. System returns a string containing information on the attack attempt.
Exceptions:	

Use Case ID:	CBT002		
Use Case Name:	Ranged Attack		
Created By:	Jordan DeBord	**Last Updated By:**	Jordan DeBord
Date Created:	07/03/2021	**Last Revision Date:**	07/03/2021
Actors:	Attacker, Defender		
Description:	Attacker attacks enemy with a ranged weapon.		
Trigger:	Attacking Player chooses enemy and clicks to attack.		
Preconditions:	It is the attacking Player's turn.		
Postconditions:	Result of attack is reported to those in the game.		
Normal Flow:	1. System verifies that the Attacker has a ranged weapon. 2. System checks that Defender is not already dead. 3. System verifies that the Defender is within the Attacker's range. 4. System verifies that the Defender is next to the Attacker (for disadvantage). 5. A hit is determined through CC002. (See Above Case) 6. System determines damage to apply to defender. 7. System applies damage to Defender through CC001. 8. System assembles a report about the attack attempt. 9. System returns a string containing information on the attack attempt.		
Alternative Flows:	2a. If the Attacker does not have a ranged weapon, system reports that to those in the game. 3b. If Defender is dead, system reports that to those in the game. 4c. If the Defender is outside of the Attacker's range, system reports a message to those in the game. 5d. If the defender is within melee range, Attacker's attack uses a disadvantage roll (DIE003) instead of normal roll. 5e. If attack missed system assembles a report about attack attempt.		

	6e. System returns a string containing information on the attack attempt.
Exceptions:	

Use Case ID:	SP001		
Use Case Name:	Spell Attack		
Created By:	Hunter Page	**Last Updated By:**	
Date Created:	07/05/2021	**Last Revision Date:**	
Actors:	Caster, Defender		
Description:	Character with a Spell (caster) attacks another Character with a Damage Spell		
Trigger:	Attacking Player chooses enemy and clicks to attack.		
Preconditions:	It is the Caster's turn.		
Postconditions:	Result of attack is reported to those in the game.		
Normal Flow:	1. System verifies that the Caster has a Damage Spell Active 2. System checks that Defender is not already dead. 3. System verifies that the Defender is within the Caster's range. 4. System determines damage to apply to defender. 5. System applies damage to Defender through CC001. 6. System assembles a report about the Spell attack attempt. 7. System returns a string containing information on the attack attempt.		
Alternative Flows:	1a. If the Attacker does not have a Damage Spell as the active spell, system reports that to those in the game. 2b. If Defender is dead, system reports that to those in the game. 3c. If the Defender is outside of the Attacker's range, system reports a message to those in the game. 4d. System returns a string containing information on the attack attempt.		
Exceptions:			

Use Case ID:	SP002		
Use Case Name:	Spell Healing		
Created By:	Hunter Page	**Last Updated By:**	
Date Created:	07/05/2021	**Last Revision Date:**	
Actors:	Caster, Receiver		
Description:	Caster heals Receiver with a healing spell		
Trigger:	Caster chooses Player to heal		
Preconditions:	It is the Caster's turn		
Postconditions:	Result of attack is reported to those in the game.		

Normal Flow:	1. System verifies that the Caster has a healing spell 2. System checks that Receiver is not already dead. 3. System verifies that the Receiver is within the Caster's range. 4. System determines healing amount to apply to Receiver. 5. System applies healing to Receiver. 6. System assembles a report about the healing attempt. 7. System returns a string containing information on the healing attempt.
Alternative Flows:	1a. If the Caster does not have a healing spell as its active weapon, system reports that to those in the game. 2b. If Receiver is dead, system reports that to those in the game. 3c. If the Receiver is outside of the Caster's range, system reports a message to those in the game. 4d. System returns a string containing information on the attack attempt.
Exceptions:	

Use Case ID:	SP003		
Use Case Name:	Self-Healing		
Created By:	Hunter Page	**Last Updated By:**	
Date Created:	07/05/2021	**Last Revision Date:**	
Actors:	Character		
Description:	Character heals themself with a healing spell		
Trigger:	Player clicks the self-heal button		
Preconditions:	It is the Character's turn		
Postconditions:	Result of healing attempt is reported to those in the game.		
Normal Flow:	1. System verifies that the Character has a healing spell as their active spell 2. System determines healing factor to apply to defender. 3. System applies health through healing self-healing method. 4. System assembles a report about the healing attempt. 5. System returns a string containing information on the healing attempt.		
Alternative Flows:	1a. If the Character does not have a Healing Spell as their active spell, system reports that to those in the game.		
Exceptions:			

Iteration Goals

Iteration 1: The goal for this iteration was to get dice rolling working as well as melee combat.

We also wanted to create test pages to show these aspects working for our client.

Iteration 2: The goal for this iteration was to expand combat to include working ranged combat. We also wanted to add an inventory for the character to hold spells or weapons.

Iteration 3: The goal for this iteration was to implement a 2D canvas representation of our game for our client. We also wanted to add damage types and begin implementing unit tests.

Iteration 4: The goal for this iteration was to implement attack spells and healing spells. We also strived to implement a better three level canvas, so only the character sprite layer must redraw after movement.

Iteration 5: The goal for this iteration is to finalize documentation for our client. He will then turn over this documentation, and our code base, to future students for further expansion and development.

User Stories

Completed Iteration 1

- As a Player or Game Master, I want to roll dice, to participate in the game.
- As a Player or GM, I want to be able to roll a die with modifiers, to participate on the game.
- As a Player (with the ability) in a live game, I want to attack another Player or enemy with a melee weapon and cast damage.
- As a developer, I want to get experience with BitBucket, to contribute to the project.
- As a Player, I want to be attacked by another Player or enemy, so that I can participate in combat.

Completed Iteration 2

- As the development team, we want to learn a way to implement 2D graphics for our game.
- As a Player, I want to access an inventory of weapons and spells.
- As a Player or Developer, I want to see a log of all actions that have been taken, to keep up with the game.
- As a Player, I want to attack an enemy with a ranged weapon, to participate in combat.
- As a developer, I want to get experience with SignalR in Blazor to help my team in development.

- As a Player, I want to create a character to participate in the game.

Completed Iteration 3

- As a developer, I want to complete a Blazor Canvas tutorial to learn how to implement it so that we can continue the project.
- As a player, I want to see the player locations in the world so that I can explore it.
- As a developer, I want to update the current game options to better implement what the customer wants. (3 QoL Updates)
- As a Player, I want to add attributes to a Character on the Character creation page.
- As a player or GM, I want my weapon to have a damage type, and that type to be reported back in the game log.
- As a developer, I want to have unit testing for the Die and DiceRollReport classes.
- QoL Fix for Customer - Customer wants the "Roll with Modifier" to be named something different, to better represent what it means (Advantage/Disadvantage).
- QoL Fix for Customer - Customer wants the advantage or disadvantage roll to report both die total, and the high/low one chosen.
- Bugfix: Off by one error on GameCreationBoard

Completed Iteration 4

- As a player or GM, I want a movement report to come back with additional information.
- Bugfix - Check IsDead when updating turn.
- As a player, I want to be able to view the game page which includes both a view of the game board, the ability to attack enemies, the combat log, and a die roller.
- As a Player, I want to attack an enemy, to participate in combat in the game. (completion of melee, ranged, and spell attacks all)
- As a player or game master I want to be able to delete a character.
- As a Player, I want to use Spells to heal me or other players.
- As a player next to a moveable object, I want to push that object one tile over, to participate in interactions.
- As a Player, I want to create additional characters, so that I can join additional games.
- As a character, I want to use Spells to attack another Player.

- As a user, I want to see sprite graphics on the game board.
- As a Player, I want to be able to move my character on the board, to participate in the game.
- As a player, I want to move to an empty spot in the gameboard, to participate in the game.
- As a player or GM, I want to end my turn, so that the next player can begin theirs.

Completed Iteration 5

- As a developer, I want to generate class diagrams for our last iteration.
- QoL Fix - Updated dice roll report to include player name.
- QoL Fix - Updated game view so movement buttons will stay up until closed (or another action taken).
- As a player or GM, I want to spend an action point for my attack, to further the depth of the game.
- As a Player, I want to move an object in the environment, so that I can interact with the game.
- As a developer, I want to make a sprite to better represent a movable object.
- As a developer, I want to update the PID to the format the customer requested.
- As a developer, I want to update the Use Cases, as requested by the client.
- As a developer, I want to improve the background image, so it looks better for the presentation.
- As a developer, I want to write the acceptance tests for stories completed in Iteration 1 and 2.

Not Yet Completed

High Priority Backlog

- QoL Fix for Customer - Customer wants JSON character file to be printed in a readable manner rather than a single line per character.
- As a Player or Game Master, I want the character controlled by me to have a movement range, to limit movement around the game.
- As a developer, I want to learn how to implement unit testing.
- As a character or gm, I want to limit the number of actions I can take per turn to add depth to the game.

- As a Player or Game Master controlling a character with a weapon, I want the weapon to have range, to add more to the game experience.
- As a GM, I want to place players into the game board, to begin a game.
- As a Player, I want to select a character from a list of my created characters, so that I can use these characters in games.
- As a Player, I want to accumulate action points, so that I can inflict more damage during combat.
- As a Player, I want to destroy an object, so that I can further interact with the environment.
- As a Player, I want my character to be highlighted when moving around the map when it is my turn.
- As a Player, I want the Character that I am attacking to be highlighted so it is easier to know who it is.
- Improve the main menu to be interactive and pretty.

Regular Priority Backlog

- As an Anonymous User, I want to create an account, so that I can join or create games.
- As a GM, I want to choose a map for my game, so that I can play.
- As a character, I want to use weapons that have effects to further damage another Character.
- As an Anonymous User, I want to browse the website and get basic information without using/needing an account.
- As an Admin, I want to replace the current Game Master (GM) in a game, so that the game can continue.
- As a Registered User, I want to create a new game so that I can invite players to play.
- As a Player, I want to join a game, so that I can play the game.
- As a Player, I want to be able to open a door, so that I can enter different rooms on a map.
- As a Player, I want to open a chest, so that I can discover new items.
- As a Player, I want to be able to use an aura effect, so that I can boost stats for other characters.
- As a GM, I want to control NPCs on the gameboard, to interact with players.
- As a GM, I want to place an asset on the board, to be used in the game.
- As a Player, I want to be able to interact with NPCs, so that I can progress in the game.
- As a team, we want to implement a turn-based combat system into the 2-D game.

- As the GM, I want to be able to set up my own Map, to use in the game.
- As a GM, I want to be able to drag assets on the board to edit the map.
- As a Player, I want to be able to drag assets on the board.
- As a Player, I want to be able to explore the map, to progress the game.

Acceptance Tests

Completed Iteration 1

User Story: As a Player or Game Master, I want to roll dice, to participate in the game.

Acceptance Test:

- Given I am a Player or Game Master
- given it is my turn.
- When I want to attack or use a spell
- When I click the 'Attack' button
- Then I will be able to roll a die to gain an attack roll
- Then I will be able to roll a die to gain a damage roll

User Story: As a Player or Game Master, I want to be able to roll a die with modifiers to participate in the game.

Acceptance Test:

- Given I am a Player or Game Master
- given it is my turn.
- When I want to roll a die for an attack or spell use
- When I click the 'Attack' button
- Then my roll will have a modifier.

User Story: As a Player (with the ability) in a live game, I want to attack another Player or enemy with a melee weapon and cast damage.

Acceptance Test:

- Given I am a Player or Game Master
- given it is my turn
- given I am in a live game
- When I want to attack another enemy or Player
- Then I will be able to use a Weapon to attack the Player
- Then I will be able to cast damage

User Story: As a Player or Game Master, I want to roll dice, to participate in the game.

Acceptance Test:

- Given I am a Player or Game Master
- given it is my turn.
- When I want to attack or use a spell
- Then I will be able to roll a die to commit those actions.

User Story: As a Player, I want to be attacked by another enemy Player or enemy, so that I can participate in combat.

Acceptance Test:

- Given I am a Player or Game Master
- given it is not my turn.
- When a Player uses an attack against me
- Then I will take damage from that attack.

User Story: As a developer, I want to get experience with Blazor, to assist on development.

Acceptance Test:

- Given I am developer
- When I want to develop using Blazor
- Then I will be able to help towards the project using the skills I have obtained from learning Blazor.

Completed Iteration 2

User Story: As a Player, I want to create a character to participate in the game.

Acceptance Test:

- Given I am a Player
- When I click the Create Character button
- Then my named character will be saved in a JSON file.

User Story: As a Player, I want to attack an enemy with a ranged weapon, to participate in combat.

Acceptance Test:

- Given I am Player
- When I am participating in combat, and
- When I am wielding a ranged weapon, and
- When I click the Attack button

- Then an enemy character will take damage (or miss) from my ranged weapon.

User Story: As a Player or Developer, I want to see a log of all actions that have been taken, to keep up with the game.

Acceptance Test:

- Given I am a Player, or
- Given I am a Developer
- When I have taken an action
- Then I see a log of those actions in a readable and user-friendly list.

User Story: As a Player, I want to access an inventory of weapons and spells.

Acceptance Test:

- Given I am a Player
- When I am playing an active game
- Then I will see an accessible inventory, and
- Then I will have optional weapons and spells in the inventory.

Completed Iteration 3

User Story: As a player, I want to see the player locations in the world so that I can explore it.

Acceptance Test:

- Given I am a player or game master, Geralt, and
- Given a game has been created, and
- Given other characters have been placed into the gameboard
- When I load the webpage for the in-progress game
- Then I am able to see a visual representation of the world, including the location of Geralt and other characters, in order to explore and participate in the game.

User Story: As a Player, I want to add attributes to my character on the character creation page.

Acceptance Test:

- Given I am a player joining a game, and
- Given I have not previously created a character for this game, and
- Given I have not already assigned attributes
- When I go to create my character for the game, Geralt
- Then I am able to assign my points to the six attributes for Geralt, based on the default roll values.

User Story: As a developer, I want to have unit testing for the Die and DiceRollReport classes.

Acceptance Test:

- Given I am a developer and given I am in Visual Studio
- When I build the project and choose to run all the tests
- Then tests are run for the Die and DiceRollReports, and these tests are passed.

User Story: As a player or GM, I want my weapon to have a damage type, and that type to be reported back in the game log.

Acceptance Test:

- Given I am a player or game master, and
- Given I am controlling a character, Geralt, and
- Given it is Geralt's turn
- When Geralt attacks another character, and
- When that attack is successful
- Then the sword equipped has a damage type, and
- Then the report that returns from the attack contains that damage type listed to add further immersion to the game.

Completed Iteration 4

User Story: As a Player, I want to use Spells to heal me or other players

Acceptance Test:

- Given I am a player with at least one spell that can heal a character, and
- Given it is my turn
- When I cast the spell on myself or another character
- Then health is added to the chosen character.

User Story: As a Player, I want to create a character to participate in the game.

Acceptance Test:

- Given I am joining a game, and
- Given I do not have a character created for a game
- When I go to the character creation page
- Then I am able to create a character to participate in the game.

User Story: As a Player, I want to create additional characters, so that I can join additional games.

Acceptance Test:

- Given I am a player with at least one previously created character in another game

- When I click to save a character
- Then I am able to create a new character for a new game.

User Story: As a user, I want to see sprite graphics on the game board.

Acceptance Test:

- Given I am a participant in the game
- When I load the game
- Then I can see a game board as well as sprites on the gameboard representing objects in the game and their location within the game.

User Story: As a player or game master I want to be able to delete a character.

Acceptance Test:

- Given I am a player in the game
- When I select the player Geralt to delete, and
- When I click the 'Delete Character' button
- Then Geralt is removed from the characters file, and
- Then Geralt is no longer usable.

User Story: As a player, I want to move to an empty spot in the gameboard, to participate in the game.

Acceptance Test:

- Given I am a player in the game, and
- Given it is my turn and given the chosen spot is a valid location in the gameboard
- When I choose to move my character Geralt to an unoccupied spot in the gameboard
- Then Geralt moves to the empty spot in the gameboard.

User Story: As a Player, I want to be able to move my character on the board, to participate in the game.

Acceptance Test:

- Given I am a participant in the game
- When I choose to move my character to a new position,
- Then my character moves, if that position is a valid position, otherwise, my Character will not move

User Story: As a player or GM, I want to end my turn, so that the next player can begin theirs.

Acceptance Test:

- Given I am a player or GM, and

- Given it is my turn
- When I click the 'end my turn' button
- Then my turn will be over, and
- Then it will be the next player's turn.

User Story: As a character, I want to use Spells to attack another Player.

Acceptance Test:

- Given I am a player in the game, and
- Given I have one spell which deals damage
- When I attack another player with the spell
- Then if the attack is successful, damage is applied to the other player. If the attack is unsuccessful then damage is not applied, and
- Then the outcome of either result is reported to the game log.

User Story: As a player, I want to be able to view the game page which includes both a view of the game board, the ability to attack enemies, the combat log, and a die roller.

Acceptance Test:

- Given I am a player in the game
- When I navigate to the game page
- Then the page will be loaded, and
- Then I will see graphics representing the gameboard and objects in the world, buttons to attack enemies, a log to hold messages from the game, and buttons to open die roller modals.

User Story: As a player next to a moveable object, I want to push that object one tile over, to participate in interactions.

Acceptance Test:

- Given I am a player or game master in the game, and
- Given I am participating in the game, and
- Given I am located next to a moveable object
- When I attempt to push the object on the gameboard
- Then the object moves one tile over if the resulting location is not occupied and within the bounds of the gameboard.

User Story: As a Player, I want to attack an enemy, to participate in combat in the game.

Acceptance Test:

- Given I am a player in the game with the ability to attack, and
- Given I have a target to attack
- When I click an attack button
- Then I will see the results of the attack move.

User Story: As a player or GM, I want a movement report to come back with additional information.

Acceptance Test:

- Given I am a player or GM with the ability to move, and
- Given it is my turn to act
- When I click to move myself, and
- When I choose a direction
- Then I will see a more detailed report of my movement reported in the game log, including the ending coordinates.

Completed Iteration 5

User Story: As a Player or Game Master, I want to spend an action point to further the depth of the game.

Acceptance Test:

- Given Jordan is a Player or GM, and
- Given he has Action Points to spend, and
- Given it is his turn
- When Jordan chooses to use an action point on an attack with his Great Sword
- Then it will add an extra 1 d6 roll to his attack roll, and
- Then once his turn ends, an action point will decrease from his Stats.