

Functional Requirements

ID	Requirements	Reference	Amendment
FR-1	Players can choose their own character	3ed pg. 14 3.3	
FR-2	Players can choose their starting location	3ed pg. 14 3.3	
FR-3	The game randomly sets up Treasures	3ed pg. 12 3.2	
FR-4	The game randomly sets up map chits	3ed pg. 16 3.5	
FR-5	The game sets up dwellings based on map chits	3ed pg. 16 3.6	Campfires are not placed
FR-6	The game rolls two dice and higher one taken unless special advantage	3ed pg. 18 4.1	
FR-7	A Player uses Action Chits to take his turn	3ed pg. 18 4.2	
FR-8	Players Plan their turn during Birdsong(start of a new turn)	3ed pg. 29 6.2	
FR-9	Players are randomly selected to take their turn	3ed pg. 32 7.2	
FR-10	Players use up specific number of phases depending on what type of move they perform	3ed pg. 33 7.3	
FR-11	Player searches to Locate a Site	3ed pg. 36 7.5.4	
FR-12	Players can Hide	3ed pg. 36 7.4	
FR-13	If a site has been found Players can Loot	3ed pg. 36 7.5.5	
FR-14	Players can perform a rest action	3ed pg. 42 7.8	Since only move/fight counters can be wounded, resting them will heal them instantly
FR-15	Players action are interrupted when they are blocked	3ed pg. 44 7.12	
FR-16	Monsters spawn when their correct roll has been summoned and a player is in the tile that their chit is located	3ed pg. 45 7.13	
FR-17	Players are attacked by	3ed pg. 48	Monster combat: monsters die

	monsters immediately when they are not hidden	8.2	immediately in a fight
FR-18	Player vs Player Combat: Encounter Step	3ed pg. 49 8.3	
FR-19	Player vs Player Combat: Melee Step	3ed pg. 52 8.4	
FR-20	Player vs Player Wounding	3ed pg. 63 8.5.3	
FR-21	Game Ends on the 28 th day	3ed pg 29 6.0	

Use Cases

UC-01 Admin sets-up server and Players Connects	
Description	Describes an admin setting up a Magic Realm server and Players Connecting
Actors	Admin, Players
Triggering Event	Admin has decided to start a Magic Realm server
Pre-Condition	N/A
Main Sequence	<ol style="list-style-type: none"> 1. Admin Runs the server 2. Admin chooses cheat mode as disabled 3. Server launches with cheat mode disabled and game setup 4. Players launches MagicRealm client 5. Players selects "Play" 6. Players enters the IP address of the server
Alternative Scenario	Alternative 1: Admin choose cheat mode as enabled A1.1 Admin selects cheat mode enabled A1.2 Admin selects Chit locations A1.3 Server launches with cheat mode enabled (rolls manually specified)
Post-Condition	Game Server is now running
Resulting Event	Players Select Character
Traceability	FR-3, FR-4, FR-5

UC-02 Players Selects their Character	
Description	Describes a player choosing their character and starting position
Actors	Players, System
Triggering Event	Player has connected to server
Pre-Condition	Player is in character select screen
Main Sequence	<ol style="list-style-type: none"> 1. Players choose their characters from list 2. Players choose their starting locations for available locations (for their character) 3. Player clicks "select" 4. System spawns players at their location
Alternative Scenario	Alternative 1: Character is already taken A1.1 Player dismisses popup

A1.2 Player selects new character	
Post-Condition	Player is viewing the game map and can see all the players locations
Resulting Event	Player is ready to plan turn
Traceability	FR-1, FR-2

UC-03	Players plans their turns
Description	Describes a player planning their turn
Actors	Players
Triggering Event	Players have selected a character and spawn position
Pre-Condition	Players have Spawned
Main Sequence	<ol style="list-style-type: none"> 1. Players selects an action to perform 2. While Players still have available phases players selects another action 3. Players sees actions submitted in status log 4. Players submits turn 5. Players sees turn submitted in status log
Alternative Scenario	Alternative 1: Players submits their turns before using all phases A2.1 Players submits their turns with extra phases remaining Alternative 2: Players runs out of Phases B2.1 Players sees all action unavailable (greyed-out)
Post-Condition	All Players turns have been submitted
Resulting Event	System Executes turn
Traceability	FR-7, FR-8

UC-04	System Processes turns
Description	Describes a player submitting their planned turn
Actors	Player, System
Triggering Event	All turns have been submitted
Pre-Condition	Players are in game
Main Sequence	<ol style="list-style-type: none"> 1. System randomly chooses a player and executes turns 2. System asks players for input based on their chosen actions 3. Players respond to input 4. Players see their action being displayed and events in the status log 5. Players see Monsters spawning on tiles that contain other players
Alternative Scenario	Alternative 1: Players get blocked A1.1: Players turns get caught off once they are blocked A1.2 Players see the turn was not fully completed and blocked message in status log
Post-Condition	Player is no longer able to submit turn or plan actions
Resulting Event	System transitions to processing combat
Traceability	Fr-6, Fr-9, Fr-10, Fr-11, Fr-12, Fr-13, Fr-14, Fr-15, Fr-16

UC-05	Players Fight Monsters
Description	Describes a player seeing the result of the executed turns

Actors	Player, System
Triggering Event	System has spawned a monster or player has run into Ghosts
Pre-Condition	N/A
Main Sequence	<ol style="list-style-type: none"> 1. System notifies players that monsters has spawned on their clearing and they must fight 2. Players presses ok 3. Players kill the monsters on their clearing 4. Players gains the fame and notoriety of those monsters
Alternative Scenario	Alternative 1: Players are hidden A1.1 Players decide whether or not to fight combat A1.2 Players sees the result of their decision
Post-Condition	System can now handle Player Combat
Resulting Event	System can now handle player Combat
Traceability	FR-17

UC-06	Player Combat: Encounter
Description	Describes a player fighting another player in combat
Actors	Players, System
Triggering Event	Monster Combat has completed
Pre-Condition	Two Players are in the same clearing
Main Sequence	<ol style="list-style-type: none"> 1. Players are placed into combat mode by system 2. Players select move chits 3. Players decides to fight 4. Players submit their encounter 5. System processes encounter
Alternative Scenario	Alternative 1: Players decide to run away A1.1 System determine whether a player is successful in running away A1.2 Players is notified the result
Post-Condition	System determines players have to fight
Resulting Event	Players enter Melee stage
Traceability	Fr-18

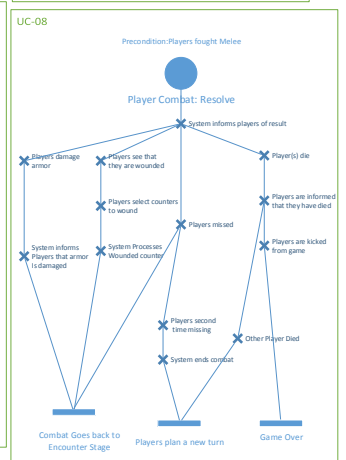
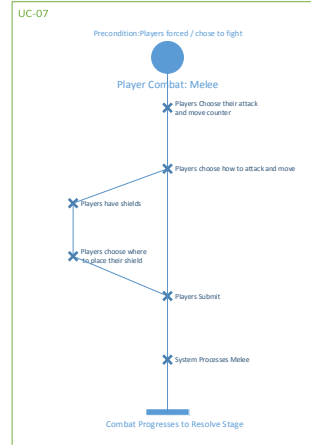
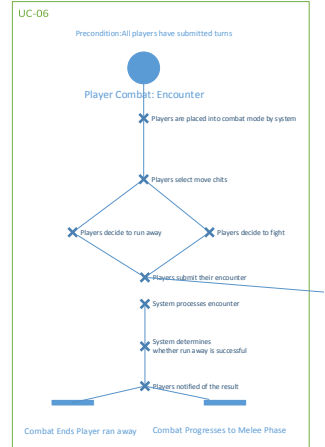
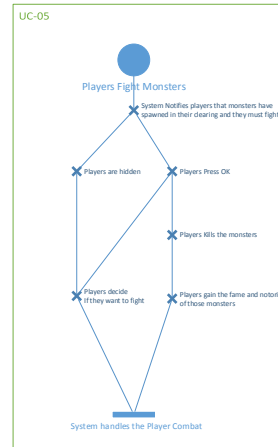
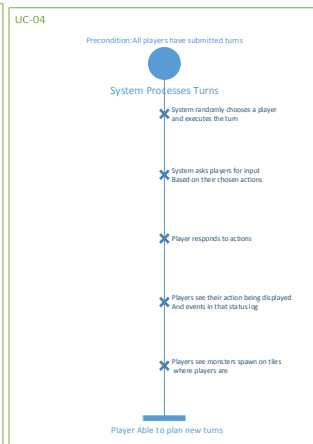
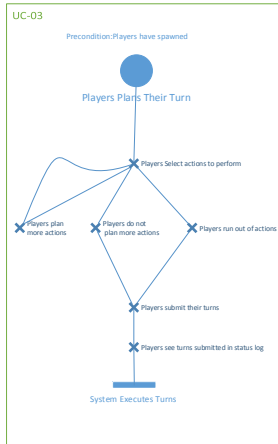
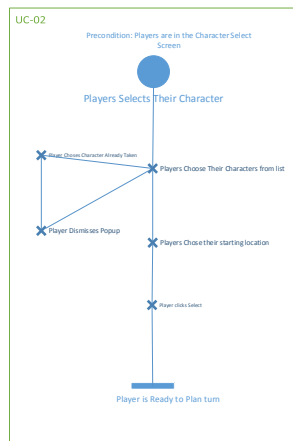
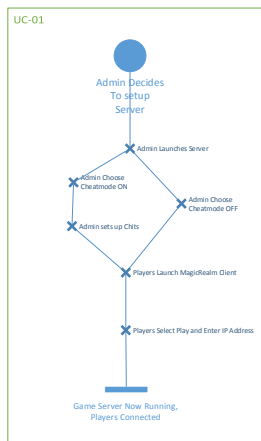
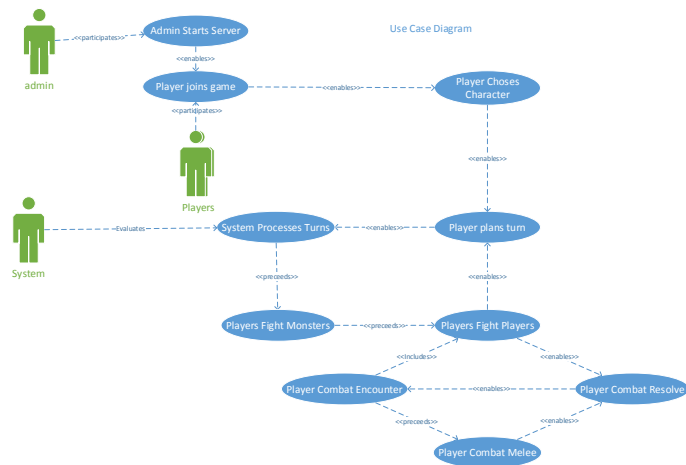
UC-07	Player Combat: Melee
Description	Describes a player fighting another player in combat
Actors	Players, System
Triggering Event	System has processed encounter stage
Pre-Condition	Players forced to fight
Main Sequence	<ol style="list-style-type: none"> 1. Players choose their attack and move counter 2. Players choose how to attack and move 3. Players choose where to place their shield 4. System processes Melee
Alternative Scenario	Alternative 1: Players do not have shields A1.1 Players does not see the shield option

Post-Condition	System determines outcome of melee
Resulting Event	Players enter Resolve Stage
Traceability	Fr-19

UC-08	Player Combat: Resolve
Description	Describes a player fighting another player in combat
Actors	Players, System
Triggering Event	System has processed melee stage
Pre-Condition	Players fought melee
Main Sequence	<ol style="list-style-type: none"> 1. System informs players of results 2. Players see that they are wounded 3. Players select counters to wound 4. System processes wounded counter and goes to encounter step
Alternative Scenario	<p>Alternative 1: Players die</p> <p>A1.1 Players inform that they have died</p> <p>A1.2 Players are kicked from the game</p> <p>Alternative 2: Players missed</p> <p>A2.1 System goes to encounter step</p> <p>Alternative 3: Players missed for the second time</p> <p>A3.1 System ends combat, players obviously suck at it.</p> <p>Alternative 4: Players damage armor</p> <p>A4.1 System informs players that their armor is damaged</p> <p>A4.2 System goes to encounter step</p>
Post-Condition	System cycles to a new day
Resulting Event	Players plan their turns
Traceability	Fr-20

Use Case Models next page

NOTE: Sorry for shrink, full size is pdf in the source zip.



Architecture Discussion

Our Design Pattern Decision was to use M.V.C. for our game.

We chose this pattern because we felt it effectively managed the control structure and organization as it applies to game programming, in particular this game.

Models

Our Model was the board class and all its elements (tiles, clearings, paths, monsters, chits, players, etc.). This was where we stored our game pieces and their appropriate data.

Controller

The Controller objects were split into two groups, the game object, and combatManager were responsible for controlling the game flow and decisions that the player did, while the server (and commThreads) was responsible for communicating the different actions between the players and managing the game/combatManager appropriately.

View

The view was our client (gameWindow, dialog boxes, etc.), in was responsible with displaying all the information from our board and model objects as well as any notifications the server sent.

This pattern was effective at managing object responsibilities and ownership.

Basic Control flow functioned as follows:

- View(client objects) displays information from the model(board et al)
- Controller(server/comm objects) gets input from the users and passes it off to either game or combatManager
- Controller(game/combatManager) updates the game state (Model(board et al))
- Controller(server/comm object) arranged the new game state (sending updated models to the clients)
- View displays the new model.

Test Plan

- This test plan is meant to be run with two characters
- Elf and amazon

display correct titles of the board

board is scrollable for each client

- see the board is displayed correctly

one player moves and other clients are updated

- Player 1 plan a move to Borderlands Clearing 1 and Submit turn
- Player 2 submits turn
- **Players notice player 1 moved**

one player hides and other clients are updated

- Player1 hide and submit
- Player2 submits nothing
- **Player 1 and 2 see that player 1 hid**

one player blocks and other clients are updated

- Plan the amazon to move to bad valley clearing 5, then bad valley clearing 2. (this will run him past elf)
- Elf submits nothing
- Elf gets option to block amazon accepts
- **Amazon does not move past bad valley clearing 5, she has been blocked.**
 - o *Note this will trigger combat between the two players at the end of the turn, both choose to run away.*

a second player moves and other clients are updated

- Plan Amazon move borderlands clearing 1 and submit
- Plan Elf move borderland clearing 2 and submit
- **Both characters see each other has moved**

initial character selection offers two or more distinct characters

(minor) support selection of starting location for characters

- Show the character selection screen

can the V chits (and thus dwellings and ghosts) be assigned

can the W chits be assigned to specific tiles

can the M chits be assigned to specific tiles

can the C chits be assigned to specific tiles

can set up the 5 chits (red/sound and orange/treasures) manually for Lost Castle

can set up the 5 chits (red/sound and orange/treasures) manually for Lost City

- Specify the chits you want win custom setup on the server when cheat mode is enabled
- Load the game navigate around ensuring that the correct chits have been placed

can assign manually Lost castle AND 4 of 8 remaining red/orange chits to M tiles

can assign manually Lost city AND last 4 remaining red/orange chits to C tiles

- Done through server cheatMode

sound and warning chits are correctly displayed to clients

- Specify in cheat mode then launch game to verify

support character legal moves within the same tile

support character legal moves across tiles

- Use the amazon, press the move action, displays all legal moves, add them to the turn
- Submit turn for both characters
- **See amazon move valid**

support Amazon extra move

- **Submit move actions as amazon, note extra specific move phases**

support manual dice result for hiding

- Enable cheat move
- Submit hide action by amazon
- **Submit rolls on server side**

support a player hiding unsuccessfully (setting the dice to 6)

- Use cheat mode
- Submit hide action by amazon
- Specify dice roll 6
- **Notice amazon fails to hide.**

support a player hiding successfully

- Use cheat mode
- Submit hide action by amazon
- Specify dice roll to anything not 6
- **Notice amazon hides.**

support selection of fight and move counters for combat

- get into combat with another player
- Notice encounter step specify move counters,
- Chose to fight
- **Get into melee stage notice selection of fight and move counters**

can choose shield location

- Get into combat with another player (make sure you are a character with a shield)
- Both choose to fight on encounter
- Notice shield option available
- Chose a shield location
- **Submit melee turn**

support multi-round combat between two characters: outcome 1 death

- Get into combat vs another player
- Chose to fight during encounter
- 1 Player wound the other player (by getting an unblocked attack to where the person moves)
- Repeat until not enough counters to wound
- **Result is dead**

support multi-round combat between two characters: outcome 2 deaths

- Same as support 1 round of combat between two characters: outcome 1 death except:
- Cause player1 to wound player 2 and player2 to wound player 1
- Repeat until both being killed during next melee stage

- Run through melee
- **both dead**

support for multi-round combat: no death

- Get into combat vs another player
- Chose to fight during encounter
- Both players miss eachother (attacking where the other is not)
- Repeat previous 2 steps
- Combat ends with no deaths (missed eachother twice in a row)

support random order of player turns

- show turn order changes after sub sequential turns

support manual specification of order of play

- Use cheat mode, specify the roll that matches to the player

support dwarf having only 2 phases

- Play as the dwarf
- Plan moves
- Notice no sunlight phases
-

support black-knight

- Show character select he is playable

Priory of actions

- Plan actions then submit them to be executed

can combat with a non-alerted weapon

visually (ie somehow via GUI) support wounding counters

- Get into combat vs another player
- Chose to fight during encounter
- Get yourself wounded (other player hits you where you are without armor)
- Notice you need to select counters to be wounded
- Select counters, notice that next melee phase those counters cannot be played

rules respected for wounding

- Get into a combat vs another player
- Chose to fight during encounter
- Get yourself wounded (other player hits you where you are without armor)
- Notice you need to wound the number of counters based on the damage they dealt to you.

support resting wounded counters

rules respected for resting wounded counters

- After fighting a combat where you got wounded.
- Perform a rest action. Submit turn
- Pick a counter from the list when prompted
- Perform another rest phase **Notice old counter no longer there**
- Get into another combat vs a player
- **Notice the counter is back in the list to play**

support manual monster roll (eg for treasure appearance)

support appearance of one (or more!) treasure site guard monsters

- Use cheat mode (specify hoard go to borderland)
- Start at inn, move to borderlands 1 submit turn.
- Notice monster roll notification specify 1.
- **Monster spawns on player**

if there's a treasure (orange) chit on a tile, can a player discover this treasure site

- Use cheat mode (specify hoard go to borderlands)
- Start at inn, Move to borderlands 1
- Move to clearing 6
- Run a search and submit
- Run the locate
- Put in the correct roll value to successfully discover a site
- **Discover hoard site**

support treasure looting (with manual spec of roll)

do you use search tables to discover a treasure site or something simpler

- (with above discover of hoard, using cheat mode)
- run a loot
- specify the number to do a lookup on the "treasure table"
- receive the correct treasure from the slot
- NULL if no treasure is in that slot

are the current gold, fame, notoriety (great treasures and victory points) shown

- (continuing from above)
- Upon receiving a treasure notice the gold fame and notoriety updated

support 1 round of a combat with one monster 1 player

- (with cheat mode) put hoard in borderlands
- FROM INN
- Move to borderlands 1
- Roll 1 on monster roll
- Spawn monster
- Click fight
- **Monster has died, you gained fame and notoriety**

support cave phase restriction

- From inn
- Move to borderlands clearing 1
- Move to borderlands clearing 6(cave)
- **Notice sunlight phase is gone (if amazon means you only have 1 more move phase, your special phase)**

support cost of moving in mountain clearing

- From inn
- Move to borderlands clearing 1
- Move to High Pass Clearing 2 (notice the notice about cost)
- **Lost 2 phases (if amazon, used a day phase and your special move phase)**

support for random placement of all chits

- Create server with cheatmode off
- Load game, move around, notice random placement of chits

support for random rolls

- Run game with cheatmode off, notice random rolls

support for one character blocking another

- From inn
- Move player1 to borderlands one submit turn
- Player2 do nothing and submit turn
- (new turn) player1 do nothing and submit turn
- Player2 move to borderlands clearing1, move to borderlands clearing 6
- **Notice player1 gets asked to block player2**
- Hit yes
- Notice player2 gets stopped at borderlands *note this will also trigger combat*

support one monster appearing according to monster roll 4

triggered by BONES M (ie specific yellow chit)

- From cheat mode put bones M into Ledges
- From INN
- Move to borderlands 1, borderlands clearing 6, borderlands clearing4 submit turn
- Move to ledges clearing 4 submit turn
- With cheat mode specify monster roll 4
- **Notice Giant spawns**

triggered by ROAR (M) (ie red/sound chit AND type of yellow/warning (M,W,C)

- From cheat mode put ROAR 4 to ledges
- FROM INN
- Move to borderlands 1, borderlands clearing 6, borderlands clearing4 submit turn
- Move to ledges clearing 4 submit turn
- With cheat mode specify monster roll 4
- **Notice Giant spawns**

support monsters appearing according to monster roll 4 with STINK C for 2 trolls

- From cheat mode put STINK C in borderlands
- FROM INN
- Move to borderlands 1
- With cheat mode specify roll 4
- **Heavy Trolls Spawn**

support monster(s) roaming to another clearing

- From INN
- Move to borderlands 1, borderland 6, borderland 3, borderland 2, evilvalley 4
- **Ghosts move to player's clearing**

support monster(s) blocking

- From INN (cheat mode) borderlands with hoard
- Move to borderlands 1
- Hide

- Specify monster roll 1.
- Decline combat
- Move to bad valley 5
- Move to borderland 1, borderland 6
- **Notice block by monster at borderland 1**

3 or more distinct monsters activated by 3 different monster rolls

for each possible monster roll, 1 or more monsters appear

- (in cheat mode) store lair, shrine, pool, vault, statue in lost city, and place lostCity in borderlands, place ruins in ledges
- Move character to borderlands 1, borderlands 6, borderlands 4.
- End turn 5 times specifying monster roll starting at 1 and incrementing each time
- **Show monsters have spawned**
- Move to ledges clearing 4
- Specify monster roll 6
- **Notice Monsters spawn**

clearing coordinates have been shown to be relative to tiles

- Show code