Platform used - Unity

Programing language - C#

Database engine - sqlite

# Introduction

The game is a strategy adventure game where the player is intended to travel through different rooms to reach the end. Each room has a different challenge put in place and the players will be judged on completing trials, out of the 9 in total. By beating one room it doesn't mean that it will lead to the exit making it similar to a dungeon maze but rather than getting lost in a maze the player has to use their knowledge to find the end. The game involves obstacles like a variety of puzzles, traps, and enemies threatening the players success, on completing the game. The game also ends if all the players die without reaching the end of the game.

It's a free to move game in a three dimensional environment.

The game should have multiple game modes including a multiplayer feature. New world created should be able to be saved and reloaded.

Rooms / flores

Optimally the rooms the players go into need to be random as well as systematically placed. This means as the player reaches higher rooms they must get harder and more challenging. Also the final room has to appear when the player has completed all of the other 8 rooms. Each room has a set of its own unique enemies and puzzles to other rooms.

# Objectives and criteria.

## The login page.

|  | Objectives | Performance criteria |
| --- | --- | --- |
| 1a | The new user must be able to create a new user account on the login page. | From the login page the user has an option to create a new account by travelling to the registration page. The user creates the account by using their game name and their new password.The password is secured using hashing techniques. For the user to login they need to successfully type in their password and username. |
| 2a | There must be a forgot password feature on the login page. | After the user has made an account they can assign an email to their account which is later on used as an identification proof. If the user has forgotten their password there will be an option for them to receive an email asking for the persimmon to change their password. |
| 3a | Create a way for the user to login into their account. | The user can successfully login to their account by using their password and username or automatically login with their email and remember password option. |
| 4a | Make an option for the user to save their password. | The user can use an option to save their password which will be memorised by the system. This means when the user is active on the device the password is saved and types the same email the password will automatically be filled in for them. |

## The Title Screen

|  | Objectives | Performance criteria |
| --- | --- | --- |
| 1b | Create a settings option. |  |
| 2b | Create an exit/logout option. |  |
| 3b | Create an area for the user to start a new game. |  |
| 4b | Create an area for the user to load a played game. |  |
| 5b | Make the title screen simple and easy to navigate around. |  |
| 6b | Add background music to the title screen, which can be switched off or on. |  |

## In game objectives

|  | Objectives | Performance criteria |
| --- | --- | --- |
| 1c | The game is played by 4 players at the same time. | There will be a multiplayer feature allowing 4 users to play the same game world simultaneously. This is achieved through a hosted server. The game is stored on the creators account and can be then accessed by other users when playing multiplayer. |
| 2c | The players beat the game when at least one player reaches the end and completes the trials in the game. | When a player has cleared the path to the final room and completed it the game is over. The message will be displayed and the players will be able to move freely through the rooms. Just one player has to reach the end for the game to be cleared. (non-zero-sum-game) |
| 3c | The players should not be able to harm each other but can be harmed by the in-game enemies and puzzles. | Every player/character, enemy and interactable objects have a health bar. When the bar reaches 0% that component is destroyed or if it's a player the game is over. |
| 4c | When the player's health reaches 0 the player cannot play their current world or has to restart the game. | When the game is over the current world is reset and the player has to start from the beginning. This means that all the progress and all the achievements the player has accomplished during their playthrough will be reset. |
| 5c | Players and enemies must have implemented stats. 5c | A player's stat is a parameter which determines the player's abilities. The game will implement 9 stats :  Special Primary Secondary   1. Strength stat 1. Vitality 1. Wisdom 2. Dexterity stat 2. Mana 2.Perception 3. Defence stat 4. Intelligence stat 5. Luck stat |
| 6c | The in-game character has levelled up, increased their stats or progressed to be different from other players. | The player earns experience points (XP) for certain actions done in the game. The actions can be everything from a player reaching a certain point or defeating a challenge, enemy or level. |
| 7c | The player has to have an option to choose at least one of 4 different characters to play as.7c | The player is going to choose one of 4 playable characters at the start of the game. The 4 characters won't only differ in their appearance but also their skills and their parameters eg strength agility health. |
| 8c | The in game character has successfully stored multiple items into his inventory. | The player will be able to store different game objects in their inventory which they have found and obtained. The stored items must still be in the inventory after the player logs in and out of their world. |
| 9c | The players are able to communicate through an in-game messaging system. | The player is able to send and receive a message through the chat option/log window. When a player has sent a message the name of the player sending the message is displayed and the message itself. The messaging system also informs the players of the actions taken by the other player. For example when a player has died or a player has made a new advancement in the game a message informing others is successfully displayed in the chat menu. |
| 10c | The enemy reacts to the player and is able to move and attack. (Finite state machine)  10c | After the player is in a certain radius of the enemy the enemy must respond to the player by turning hostile. The enemy can move in its designated territory and will engage the player in combat. When the player is successfully attacked by the enemy ( for every hit dealt by the enemy) the player will lose a proportion of its health. This is the same for the player attacking the enemy. |
| 11c | The character can interact with the surrounding objects and game components  11c. | There are many components the game will have that the player can interact with. This varies from the main puzzles the player has to solve to the object scarred around the game, and the game map itself, as well as the items the player can carie and store. |
| 12c | Wearable game objects are stored and placed in the player menu.  Also the equipped items can be seen on the player  12c | Items found, dropped or used by enemies can be all stored and their four equipped and used by the player. After the player has picked up a piece of equipment or a weapon they can equip that item in their player menu. When the item is equipped then that item is currently in use. |
| 13c | Enemies' attacks must differ between different types of enemies.  13c | Enemies' attacks can differ in their strength, the way they affect the player, and the patterns the enemies have between their attacks. There are multiple types of enemies for each floor/level of the game. Each type of enemy has a unique way it fights and interacts with the player. |
| 14c | The player has successfully interacted with multiple puzzles. 14c. | The game's challenges and puzzles are designed to test the players skills in the game and their problem solving knowledge. The challenges can be hidden (levers and secret passageways) or hard to get to (like guarded doors and trap rooms) . While, puzzles can be logical (seacret messages and clues ) or mechanical puzzles where the player is ment to find an object and bring it to a designated area. |

## Further analysis of objectives

**5c. Player Stats.**

Stats also known as player statistics, are a display of the players strengths and weaknesses. In other words stats are a show of different parameters the player's character has. Stats will increase or decrease in certain citations or due to specific conditions. As the player progresses through the game their stats will increase. The only time the player's stats decrease is when the player has entered combat where the enemy has a special attribute to decrease a player's stat (This change is temporary). The player stats consists of 3 groups of a total of 9 different parameters.

There is a limit to how many stats a player can have. This means that they can not have all their stats maxed. -Primary ( is not affected by this).

-Secondary 8 levels.

-Special - 600 tears.

**Primary Stats.**

Primary Stats are the so called main stats. These stats are always in play and are considered the heart of the player. Primary stats are constantly displayed on the player's screen and always visible. Why primary stats differ from all the other stats is because they constantly change and are only able to increase as the player level increases. This also means that when the stat has decreased it has to be refiled. Primary Stats include Vitality/Health and Mana (magic capacity).

Vitality/Health is the show of how much damage the player can take before they die (lose the game). This stat constantly changes upon the environment the player is placed in and the difficulty of the enemy they are facing. The vitality stat will decrease in these circumstances, but if fully not depleted can be recovered and therefore restored.

Mana (magic capacity) shows how much the player can use their skills and abilities ( similar to stamina) . Like vitality mana can also be depleted and restored, but upon it completely being consumed the player doesn't die. Instead of dying of depleted mana the player will receive a weakening of their stats for a period of time before they can recover. Unlike vitality mana, after the player is not in any danger, will slowly regenerate until full.

**Secondary Stats.**

Secondary Stats also known as passive stats are stats that help the player in different situations compare to primary stats. While primary stats help with fighting and survival in the game secondary stats help with the players progressing through the game's puzzles and challenges. Another way secondary stats are different to others is because they are split into levels. This means that for them to become stronger or more effective the player needs to unlock each stage/rank the stats have. Secondary stats have 5 levels that can be unlocked.

Wisdom/ understanding is a stat that helps the player acces different puzzles aspects of the game. For example, let's say there is a chest that the player wants to oppen, they would need to have a high enough wisdom stat to access it and therefore oppen it. A certain level of wisdom also allows the player to access different rooms and passages. The wisdom stat also serves as a boundary for upgrading special stats. For instance the player is not able to upgrade their intelligence stat past a certain tear because the wisdom stat isn't high enough.

Perception/ insight is a way the player can detect, see and analyse their surroundings. The higher the level of perception the further will the player be able to see around them. This also means the player's ability to direct enemies and puzzles will become more apparent and there will be more information displayed on the enemies the player encounters.

**Special Stats**

Special Stats are the player's distinctive qualities that are displayed in the form of numbers (tears). There are 5 special stats: strength, dexterity, defence, intelligence, luck. Each one of these stats is upgradable and unique. Special stats are upgraded through the game in tears going up to 200. The higher the tear the stronger the stat is as well as the harder it is to upgrade it. As individual special stats reach tear 50 the chance to gain more of that individual stat decreases by a certain amount ( This is different for every special stat). This also occurs on tears 50 , 100 , 150 and 200.

The strength stat is a combination of players' attack power and ability to carry equipment.

As the strength stat increases the player will be able to use heavier equipment and carry more items in their inventory. This also increases the player's physical damage dealt to enemies (easier to eliminate their foe).

The dexterity stat is a parameter that alters the player's movement and attack speed. AS the dexterity stat increases the player will be able to use their weapons and techniques with greater efficiency and speed as well move slightly faster in combat.

The defence stat , not to be confused with vitality, helps absorb the damage dealt by an enemy. The defence stat is directly connected to vitality as the higher the defence stat the less damage will be taken by enemies attacks at the player.

The intelligence stat allows the player to increase their efficiency in use of mana. As the intelligence stat increases the players skills and abilities will be more efficient (use less mana) and will give non physical attack more power/ potency. Furthermore the player's mana regeneration and vitality recovery will increase.

The luck stat increases the players chances of finding more valuable resources and treasure as well as landing a higher damage attack on an enemy. This means that chance of attacking an enemy with more damage than usual will occur more often

**7c. Playable Characters.**

At the start of the game the player can choose one of 4 different characters to play as. When playing with multiple people, players can't choose the same character. The characters are all unique and differ in skills, abilities and capabilities.

First character.

Smaller body than the rest of the characters. He/she starts with a higher amount of dexterity and luck. On the other hand they have weaker strength and defence stats. The speciality of this character is to move quickly and quietly as they are lighter and smaller.

Bonuses - attack power increases with lighter weapons.

- can use two weapons.

Disadvantage - They drain a lot more mana when fighting.

Bigger body than the rest of the characters. He/she can deal high amounts of damage and has the most defence out of all of the characters. Their high amount of damage is due to the cost of their dexterity stat. This character specialises in using their high defence to defeat their foe.

Bonuses - can carry any weapon they choose no matter its weight.

- can use a shield more efficiently.

Disadvantage - can only use low level, non physical skills and abilities.

Average body but outshines all the other characters in terms of wits and intellect. He/she has the highest amount of intelligence and has an above average luck stat. Their physical attacks are limited to close range, light weapons and they also have a weak strength stat. This character is gifted with knowledge to understand high level non physical skills and abilities.

Bonuses - can carry a lot of items despite having a weak strength stat.

- high amount of mana

Disadvantage - cant use shields.

This character is average in all areas and is not special in any area.

Bonuses - has “Jack Of All Trades” ability.

Jack Of All Trades - is an ability that allows the player to master any technique, skill or attack they want. Also gives the user 5% chance to learn an ability from an enemy (10% weaker than original)

**10c. Enemy states**

An enemy has an implemented AI and has 3 main states in which it acts differently. The states are changed when the enemy is close to the player, far away from the player and when it is able to attack.

It also has 2 sub states when in the attack state.

1st state. (Idle state).

In this state the enemy wanders around a defined space until it locates a target. Its movements are random and won't stop until the player has been discovered. The enemy has an area in which it can detect the movement of players. After the player has been cited by the enemy it will approach a different state.

2nd state. (follow state).

In this state the enemy has already spotted a player and is approaching them. As the player moves the enemy moves towards them until it reaches a distance it can attack from. This distance varies from enemy to enemy. The enemy can only follow one player at a time (first player it has noticed). If the player escapes from the enemies site the enemies won't follow them anymore and will refer back to the “idle state”. After the enemy has closed the distance it will activate a new state.

3rd state. (hostile state).

In this state the enemy is in contact with the player. This state only works if the player is a certain distance from the enemy. Depending on the enemy, whether it be close or far range, the enemy will attack the player trying to deal damage. The “hostile state” has 2 states of its own:

Attack state: there the enemy will be attacking in random intervals circling between different attacks.

Defend state: every so often the enemy will defend itself or try to block a player's attack. If the enemy is capable it can also heal if its vitality drops to a certain level. Furthermore if the enemy has been hit multiple times in a period of time it will try to block.

**13c. Enemy attacks**

Note: because of the limited amount of time i have there won't be a wide range of enemies.

There will be 9 types of enemies each one special to the room they are in.

Enemy 1.

Uses one physical attack. Its size is small.

Enemy 2.

It is much bigger and is versatile in its attacks.

* Attack quickly every few seconds.
* Deals hard, slow movement hits with the full force of its body.

Enemy 3.

Human size and uses distant attacks. It will attack far away from the player's reach.

* Attacks can temporarily decrease the player's dexterity.
* Attacks can cause the player to temporarily drain more mana than usual.

Enemy 4.

This is the first bos/ higher enemy the player has to face. It is the biggest in size and can cause a lot of damage to the player in one attack. It has an abnormally high amount of health. Uses a wide range of attacks and can heal itself.

* Attack the ground to deal an area of damage.
* Uses attacks that deal consecutive damage after they have been hit.
* Can spawn weaker enemies from the first room.

Enemy 5.

This enemy is focused on giving the players consecutive damage.

This enemy is unique as it will try to run away when it hits the player. This is its defence strategy.

* The attack dealt by this enemy gives player damage every few seconds.

Enemy 6.

This enemy is the second bos/ higher enemy. This enemy will circle around the player trying to get behind them to attack. Its attack consists puerly of long range distance shots. But, there is a small chance when a player gets close to the enemy it will deal short range damage.

* Can freeze the movement of the player for a period of time.

Enemy 7.

This enemy hides from the player until it is time to come out. If the player has high enough perception the enemy will be visible. If not the enemy will not be seen until the player is in close proximity. After that the enemy deals a lot of damage to the player.

* The first attack deals 3x more damage.

Enemy 8.

This enemy is troublesome as it deals damage in percentage. After the player is in a state with low amount of vitality the enemy will use a one time finishing attack dealing normal damage.

* The finishing attack will also kill the enemy and everything in a set radius.

Enemy 9.

This is the 3rd bos/ higher enemy. This enemy is actually a group of enemies with exactly the same appearance. They are a total of 4 all with different attacks. To kill the enemy all 4 of them have to be killed in a set period of time, after the first one has been killed.

* 1st Attacks close range.
* 2nd Attacks from a distance with negative status effects.
* 3rd Uses slow high damage attacks
* 4th Grants healing effects to the rest of the enemies

**14,10c. Puzzles and Player interactions**

The game has hidden buttons puzzles passageways and interactable components the player can access. This includes 3 types of components. Each component has their own unique way of working and interacting with the player.

Hidden switch.

When a player finds a hidden switch they can press the switch which will activate a curtain event.

Itam holders.

Upon a player finding a suspicious item they have the option to deliver it to a set location for a secret room to open. The items can warie from gold medals to keys and puzzle-like objects.

Quest room.

The player can find a request from a scroll. Upon completing the given quest a player will open a room with a reward inside of it. The quest can be a series of enemies that need to be eliminated to a curtain task, like finding a rusty sword, being completed.

**12c. Inventory**

A player mey find items/ game objects during their battles and exploration. These items are stored in the player inventory. Other items like swords and armour (equipable items) are displayed on the player menu. Items moved from the inventory to the player menu can be used when fighting enemies and or exploring. The items stored in the player menu and inventory have to be able to be accessed after the game has been reloaded / reopened.

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Game making process checklist.

1st Player and Enemies

* Create player (This includes the inventory and levelling system)
* Create 9 enemies ( This includes the states and AI)

2nd World mechanics and design

* Make the 9 rooms/levels
* Add puzzles, challenges and quests
* Make items and usable game objects ( weapons armour consumables etc)

3rd Interface and login system

* The login page( password and username)
* The game menu/ title page

4th Game flow. ( Beginning and End to the game)

* Connect everything into a final system
* Make the game function. (Have a beginning and end)
* Add on to the UI of the character and enemies

5th Game Modes and Final touches.

* Add Multiplayer gamemode ( 4 players max)
* Make timed gamemode
* Add easy, normal and hard difficulty to the game.
* Final touches (public scoreboard, and improve quests)