Title page

Table o Contents page

<introduction- how to use, explain site> ++user sequence diagrams maybe not???

## WebSite Navigation🡪add images

The website starts with the index page. This contains slideshows with news and update information. Up at the top there is a Navigation bar, used to change pages and login. Clicking news and information text will take the user to the info page. This <contains all the update and news contained on the index page, and that which does not fit on the index page.

Clicking the login button will open a form. This contains buttons to close the form, submit or signup. Login asks for username and password. Upon submitting correct info, the user will be taken to the index page with user information. Signup requires creating username, password, email and Date of birth. The username is required to be unique(not taken). Once created it will ask for you to login.

Trying to navigate to the game page without being logged in will result in the login form opening. If logged in, this will grant accesss to the game page. This page holds a playable webGl build. If a running server/host is present this will spawn the player and The username will be sent to the game and displayed. When other users are in game, they will also be displayed.

# Project aim

The aim is to create a web application hosting a game. The game will be multiplayer and require logging in to play. This will require successful communication between the website and server for verifying users’ logins, and communication between the host server and client in game to allow for a working multiplayer connection. Without successful communication, the game will not sync clients and the host server. This can cause a variety of errors, including game objects not being in the same location across clients.

# Proposal—Change prop???

The game should include elements of standard RPG games combined with some fighting style elements. There shall be enemies, PVP, tournaments, unique environments, loot, and quest rewards. The gameplay will focus heavily on long playtimes and progression loops, to try and keep audience’s enjoyment. The site will include multiple pages, with a login system. Users shall have unique usernames displayed in Game to distinguish themselves.

### Risks🡪more detail

Some risks may occur during development. File deletion and corruption are potential. Completion of project may also not be complete, since allot of stuff will have to be implemented, Incorrect time management may also affect this. Lack of file management means files can be somewhere there not supposed to be, this can delay development. Problems with the environment may also slow development, issues with the building means we cannot work there, or delay work there. Backups and planning time properly will have to suffice in order to prevent these problems.

### Motivations🡪change

I wish to complete the project as it could be a fun take on modern RPG styles, combining elements of different genres of games. Too many RPG Games follow the same systems, and I want to change the systems slightly enough to stand out enough against others.

Most RPG are similar, but the ones that put a spin to the game outstand. The game should captivate players for the take on the genre, this will lead to popularity of the game allowing the games development to increase due to more feedback. This is why I will focus heavily on the gameplay as this will be the section most interesting.

### Target🡪bulk, more detail-> add questions on how to better deduce/tailor to the audience.

People looking for a fresh RPG Game. The Age will try to reach teens and adults, but restrictions may prevent teens. Targeting this demographic will allow the game to be more enjoyable to those people. Further research will be required to better target the audience and find out how to better pursue this goal.

### Problems🡪bulk, more detail

Accidental Copying from other sources, even though thought to be original, can lead to complications from the sources, this can lead to legal problems with copyright.

Restricting the audience will have to suffice to stay ethically and legally within bounds of the audience, depending on the outcome of the game, different restrictions will have to be considered.

Character designs can spark controversy especially in RPG games.

### Questions🡪add better questions (relevant to previous discussions) do research on the questions (add mirror to how to do multiplayer)

How do you manage multiplayer?

How do you assess the restrictions of the game?-->add legal research

What are the complications of running a game like this if it gets big?-->research multiplayer requirements (big servers, processing for each connections??)

How do you keep players interested in longer, and are progression loops best? //remove???

How might a game be implemented to a website?

# Ideas??? No better name

# Planning

## Research

PEGI, used to determine age rating. Determined rating will need to be used for signup to restrict age.

Other games/sites of same genre (Observations)

### Unity, WebGL

Unity can Be used to make the game. This requires the game to be built and exported to <webGL> stored within the website’s files. This Build can be displayed on a page. Unity is chosen due to ease of use and exporting.

In order to allow the website to communicate with the game. <sendmessage> can be used. This allows a named objects’ method to be called, with arguments from JavaScript in the page.

### Mirror

Mirror is a bunch of networking scripts based of the deprecated UNET. Mirror will be used to connect clients from the game to the server. It works by syncing users to the host or server, by using the Modules provided. Modules included are, Network ID- the unique identity of the connected client’s object, Network transform- allows transforms of an object across all clients, Network Animator- allows animations to go across all clients.

Mirror provides methods and attributes required to for the local client and server. Including the check <islocalClient> to allow client to interact with their personal object.

In Order To allow mirror to work with webGL the <websocket> module has to be used. This is a socket that will allow networking from a website. <Websocket> and webGL does not allow hosting of the server, by itself, and another non-webGL build or an <SSL Certificate> is required. For now, it will be done through the unity editor or build (for moving), for sake of development.

## management

Management needs to provide guidelines for time constraints, ease of work, and flexibility.

### Trello

Trello was Originally used for managing TODOs and Ideas. Trello is a website allowing Boards designed for management. It allowed separation of elements into their own lists. I used the lists to jot down TODOs, Ideas and Completions[[1]](#footnote-1). Trello Allowed easy movement of tasks between lists, by drag and drop. This allowed movement of TODO to completions.

### TODO Tree

TODO Tree was used instead of Trello to limit the use of external tools, lessening time spent switching between them. TODO Tree is a VS code extension that adds highlighting grouped into categories and the files they come from.

TODO Tree allows TODOs to be highlighted in **all** files throughout the project. I used this to add TODOs within code and on separate TODO files. This allowed identification of specific areas for TODOs to be completed, including on the lines where code is required[[2]](#footnote-2).

Its Tree groups TODOs by Type (which can be Custom created) and then into the files they are located in, Similar to a directory tree[[3]](#footnote-3). this makes it easy to find what needs to be done and in which file without having to search through them. Custom TODOSs where made with different highlights to group different things, for example BUG was used to distinguish a BUG in a line of code. This allows me to find it and fix it later. This allowed faster identification of areas that needed more attention.

### Time Management

In order to manage Time effectively, a Gantt chart was used. This allowed tracking of task completion. The Gantt Chart separates tasks into chunks on a monthly basis, and with the importance of each task (dark🡪more Important)[[4]](#footnote-4). Multiple Gannt charts were made with progression of the project, to reflect on the previous. With each new Gantt, the previous was highlighted based on what’s been done, green being complete, yellow worked on and red unstated[[5]](#footnote-5). This helped track the completion of tasks. This Gantt Chart would manage time between Nov and May

The Project up until january did not reflect the Gantt chart effectively, As Tasks were completed out of order, and in untimely manner. The Gantt Charts Shown below also show a missing month, February, showing a lack of proper management. This was quickly rectified in the second Updated Gannt chart. Starting from December[[6]](#footnote-6). This Gantt Chart also separates tasks between the website and game. This helps management between the two, as task are now properly ordered the way they should be. For example, adding images to the site can only occur with enough completion of the game’s terraforming/map, as this is where images will be gathered from.

<add second Gannt chart completion>

### Directory changes

Originally messy, change organised

Scripts split

### PHPmyAdmin

Used to create and manage the databases.

### SQLTOOLS

Was used instead of PHPmyAdmin to limit external tools.

### GitHub

# web design

ui/ux sequence diagram logins

wireframes

decisions

# web implementation-

## vscode + extensions stated before + live server

why use? How use?

reference game stuff when both needed (i.e., send message, WebSocket)

## Testing and Experimentation🡪.md file log stop.

Incompletes:

# game design

sequence diagram networking

# game implementation

## VS studio 2019 + Unity <as stated in research>

reference game stuff when both needed (i.e., send messaged WebSocket)

## Testing and Experimentation🡪 use of test.jslib fail,

Incompletes<what not finished, started, why>

[[7]](#footnote-7)

<conclusion, summarise what went well, what dint, why, what does the usage mean(how much done, how well it works)>

# References/Documentation

|  |  |
| --- | --- |
| [1] | Mirror, “WebSocket,” [Online]. Available: https://mirror-networking.gitbook.io/docs/transports/websockets-transport. |
| [2] | Unity, “SendMessage( ),” [Online]. Available: https://docs.unity3d.com/Manual/webgl-interactingwithbrowserscripting.html. |
| [3] | “WebApp,” [Online]. |
| [4] | Mirror, “SyncVars,” [Online]. Available: https://mirror-networking.gitbook.io/docs/guides/synchronization/syncvars. |
| [5] | Mirror, “Network Identity,” [Online]. Available: https://mirror-networking.gitbook.io/docs/components/network-identity. |
| [6] | Self, “WEBAPPhost,” [Online]. |

Include all final project stuffs GitHub in each section when necessary, in references.

Reference mainlog file(github???)

Include network manager (not hub/menugui thing) when implemented for auto connect()

1. [↑](#footnote-ref-1)
2. [↑](#footnote-ref-2)
3. |  |  |
   | --- | --- |
   | 1 Graphical user interface, application  Description automatically generated  *Trello Board Originally used. Shows Project Progression order from original ideas, idea used, TODOs, specific TODOs, and Finished* | |
   | 2 A screenshot of a computer  Description automatically generated with medium confidence  *Custom TODO for the implementation of Fullscreen script+* | Text  Description automatically generated  *Custom TODO for the implementation of Fullscreen script* |

   [↑](#footnote-ref-3)
4. |  |  |  |  |  |  |  |
   | --- | --- | --- | --- | --- | --- | --- |
   | (Each section will also be tested at said time) | Nov | Dec | Jan | Mar | Apr | May |
   | Create site |  |  |  |  |  |  |
   | Login(start back end) |  |  |  |  |  |  |
   | Move test(attack+move) |  |  |  |  |  |  |
   | Animate test |  |  |  |  |  |  |
   | Make basic character(name, design, proper animations) |  |  |  |  |  |  |
   | Add enemies+Boss |  |  |  |  |  |  |
   | Test multiplayer |  |  |  |  |  |  |
   | Add proper land |  |  |  |  |  |  |
   | Make start area |  |  |  |  |  |  |
   | Add city |  |  |  |  |  |  |
   | Polish(if unfinished what is already there) |  |  |  |  |  |  |

   [↑](#footnote-ref-4)
5. |  |  |  |  |  |  |  |
   | --- | --- | --- | --- | --- | --- | --- |
   | (Each section will also be tested at said time) | Nov | Dec | Jan | Mar | Apr | May |
   | Create site |  |  |  |  |  |  |
   | Login(start back end) |  |  |  |  |  |  |
   | Move test(attack+move) |  |  |  |  |  |  |
   | Animate test |  |  |  |  |  |  |
   | Make basic character(name, design, proper animations) |  |  |  |  |  |  |
   | Add enemies+Boss |  |  |  |  |  |  |
   | Test multiplayer |  |  |  |  |  |  |
   | Add proper land |  |  |  |  |  |  |
   | Make start area |  |  |  |  |  |  |
   | Add city |  |  |  |  |  |  |
   | Polish(if unfinished what is already there) |  |  |  |  |  |  |

   [↑](#footnote-ref-5)
6. |  |  |  |  |  |  |  |
   | --- | --- | --- | --- | --- | --- | --- |
   |  | Dec | Jan | Feb | Mar | April | … |
   | Login/signup |  |  |  |  |  |  |
   | Scroll to news from homepage |  |  |  |  |  |  |
   | Polish design |  |  |  |  |  |  |
   | Insert images |  |  |  |  |  |  |
   |  |  |  |  |  |  |  |
   | Character design and animations |  |  |  |  |  |  |
   | Attack script |  |  |  |  |  |  |
   | Enemies and boss |  |  |  |  |  |  |
   | Name display |  |  |  |  |  |  |
   | Test multiplayer |  |  |  |  |  |  |
   | Terraform |  |  |  |  |  |  |
   | Polish design |  |  |  |  |  |  |

   *New Gannt showing the separation of the site(above) and game (below)* [↑](#footnote-ref-6)
7. Footnote images/ code snippets(research and implementaion)>???? [↑](#footnote-ref-7)