Virtual Library

Group 6

The Team

08

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Weiwei

Mansi

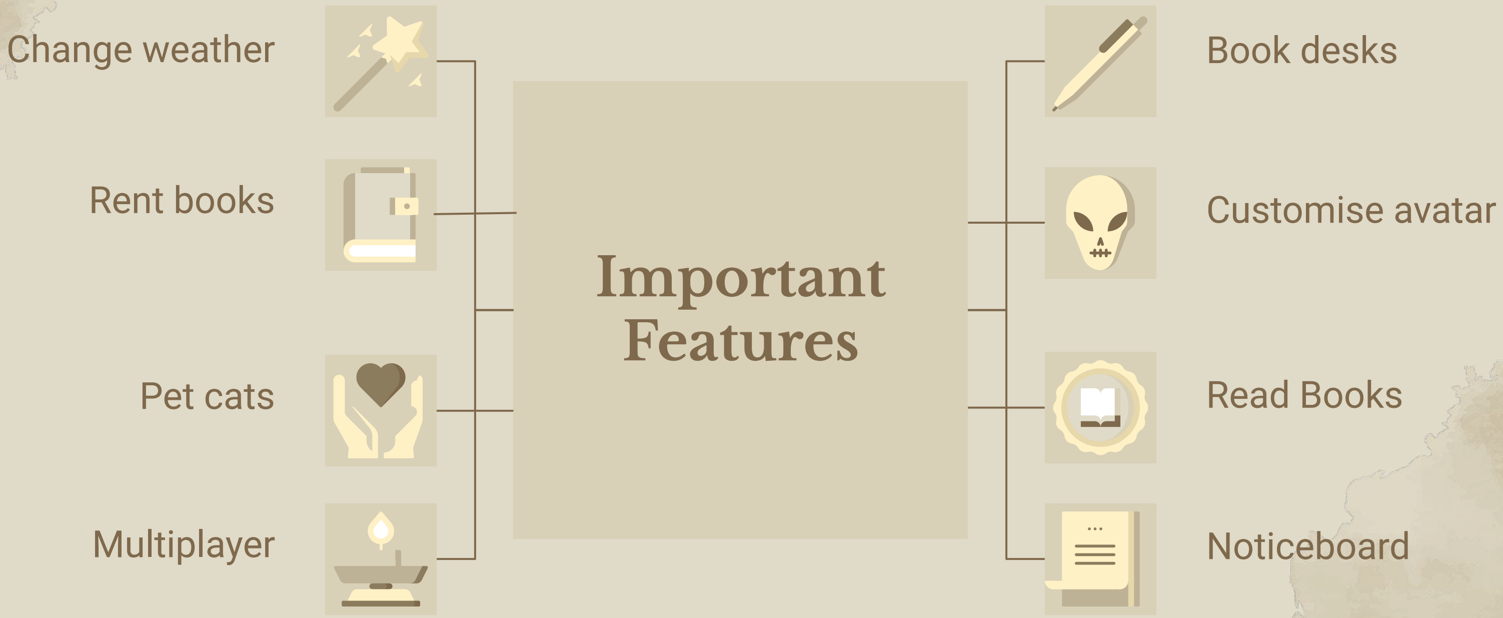
Madhura

Junwei

Motivation

The main motivation behind this was to create a space for readers where they could read in the perfect atmosphere in an old timey library. It would promote the use of ebooks while enhancing the *feel* and enriching the reading experience. It would also allow users to interact with other like minded readers.

Features



Important Features

Change weather

Rent books

Pet cats

Multiplayer

Book desks

Customise avatar

Read Books

Noticeboard

Methodologies

Pair Programming

We worked in pairs of coders and swapped the pairs every week.

Test Driven Development

We work in short development cycles where we first write a failing test before writing any production code.

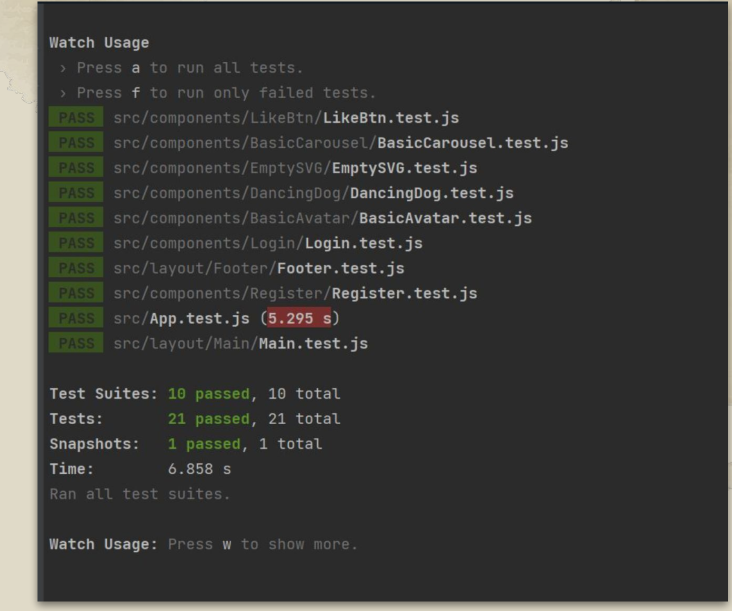
Continuous Integration

We completed continuous integration by uploading code updates for front-end, back-end, and Unity components to our GitHub repository.

Code Quality

We ensured code quality by refactoring the code, analysing the code and using coding standards.

Test Driven Development

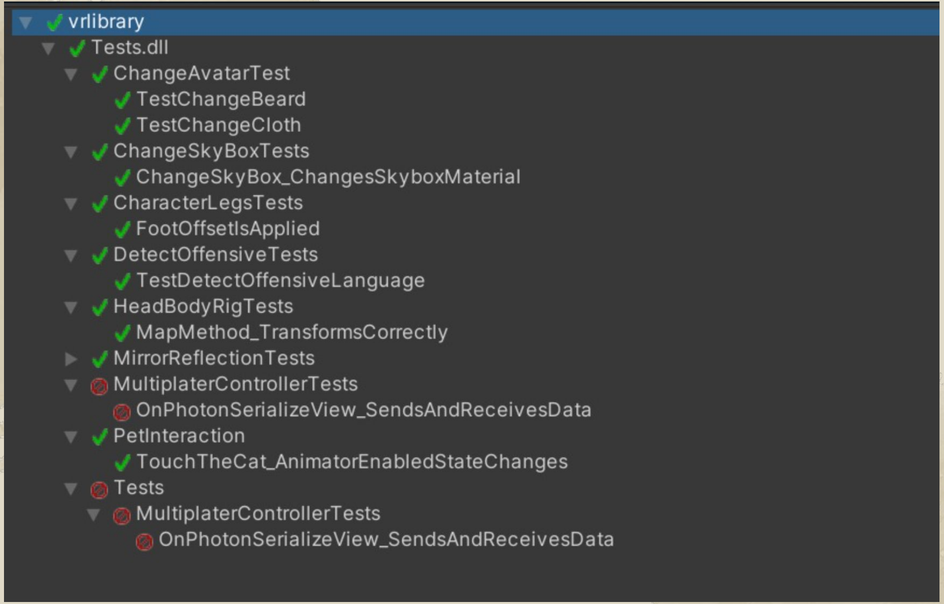


```
Watch Usage
 › Press a to run all tests.
 › Press f to run only failed tests.
 PASS  src/components/LikeBtn/LikeBtn.test.js
 PASS  src/components/BasicCarousel/BasicCarousel.test.js
 PASS  src/components/EmptySVG/EmptySVG.test.js
 PASS  src/components/DancingDog/DancingDog.test.js
 PASS  src/components/BasicAvatar/BasicAvatar.test.js
 PASS  src/components/Login/Login.test.js
 PASS  src/layout/Footer/Footer.test.js
 PASS  src/components/Register/Register.test.js
 PASS  src/App.test.js (5.295 s)
 PASS  src/layout/Main/Main.test.js

Test Suites: 10 passed, 10 total
Tests:       21 passed, 21 total
Snapshots:   1 passed, 1 total
Time:        6.858 s
Ran all test suites.

Watch Usage: Press w to show more.
```

Website



```
▼ ✓ vrlibrary
  ▼ ✓ Tests.dll
    ▼ ✓ ChangeAvatarTest
         ✓ TestChangeBeard
         ✓ TestChangeCloth
    ▼ ✓ ChangeSkyBoxTests
         ✓ ChangeSkyBox_ChangesSkyboxMaterial
    ▼ ✓ CharacterLegsTests
         ✓ FootOffsetIsApplied
    ▼ ✓ DetectOffensiveTests
         ✓ TestDetectOffensiveLanguage
    ▼ ✓ HeadBodyRigTests
         ✓ MapMethod_TransformsCorrectly
    ▶ ✓ MirrorReflectionTests
    ▼ ⊘ MultiplaterControllerTests
         ⊘ OnPhotonSerializeView_SendsAndReceivesData
    ▼ ✓ PetInteraction
         ✓ TouchTheCat_AnimatorEnabledStateChanges
    ▼ ⊘ Tests
      ▼ ⊘ MultiplaterControllerTests
           ⊘ OnPhotonSerializeView_SendsAndReceivesData
```

VR

Test Driven Development Video

Test Driven Development Video

Complex Implementation

Multiplayer

Integrating with Unity for multiplayer required logic to handle multiple controllers and cameras in the same scene, due to lack of useful documentation and resources this took an enormous amount of time. Already existing complex UI interactions caused multiple crashes which had to be dealt with by bringing about parent-child relationship between avatar and camera movements.

Shared Database Implementation

We have implemented a database shared between WebApp and Unity with access and initialisation given only with authentication. There is a separate cloud storage for book pdfs with firebase cloud storage, authentication and firestore for other details and all related APIs were implemented.

Complex Algorithms

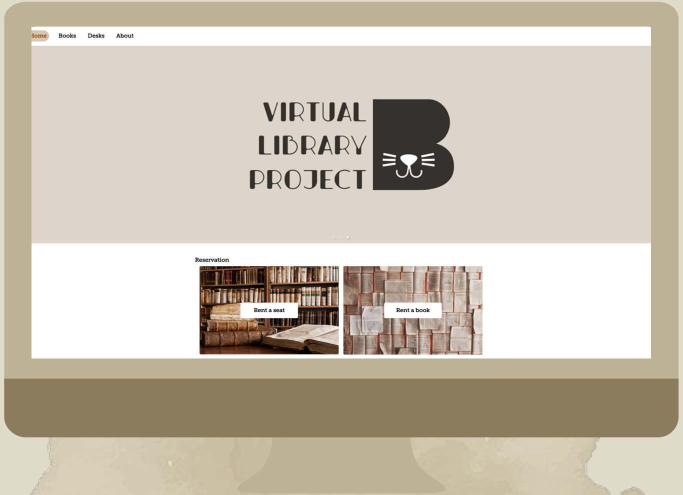
Multiplayer Kinematics

Manager, an empty game object is connected to a free server, photon. Each time a player enters the room we initialise a game object (avatar of the player), which will be assigned as the children of camera rig in the hierarchy. Each step the game object (the avatar) moves, its transforms (position, rotation) are transferred to the server and hence the other player.

Offensive language detection

We have created a dictionary of offensive words and assigned weightage to it. Each message posted on the notice board is ran through an algorithm that breaks down the message into smaller components through lemmatization and assigns an offensive weightage to the message by comparing with vocabulary. If found to be offensive, a warning is posted instead of the offensive message.

Website



Home Books Desks About

VIRTUAL LIBRARY PROJECT

Reservation

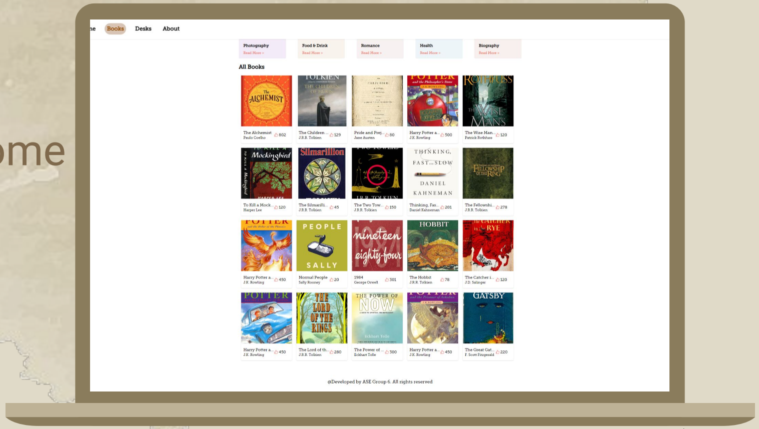
Rent a seat

Rent a book

Website:
https://virtual-library-ase.github.io/Front-end/#/home

Firestore (Firebase):
https://console.firebase.google.com/

Back-End Documentation:
https://github.com/Virtual-Library-ASE/Back-end



me Books Desks About

Photography
Read More >

Food & Drink
Read More >

Romance
Read More >

Health
Read More >

Biography
Read More >

All Books

The Alchemist 802
Paulo Coelho

The Children ... 129
J.R.R. Tolkien

Pride and Prej... 80
Jane Austen

Harry Potter a... 500
J.K. Rowling

The Wise Man... 120
Patrick Rothfuss

To Kill a Mock... 120
Harper Lee

The Silmarilli... 45
J.R.R. Tolkien

The Two Tow... 150
J.R.R. Tolkien

Thinking, Fas... 201
Daniel Kahneman

The Fellowshi... 278
J.R.R. Tolkien

Harry Potter a... 450
J.K. Rowling

Normal People 20
Sally Rooney

1984 301
George Orwell

The Hobbit 78
J.R.R. Tolkien

The Catcher i... 120
J.D. Salinger

Harry Potter a... 450
J.K. Rowling

The Lord of th... 280
J.R.R. Tolkien

The Power of ... 300
Eckhart Tolle

Harry Potter a... 450
J.K. Rowling

The Great Gat... 220
F. Scott Fitzgerald

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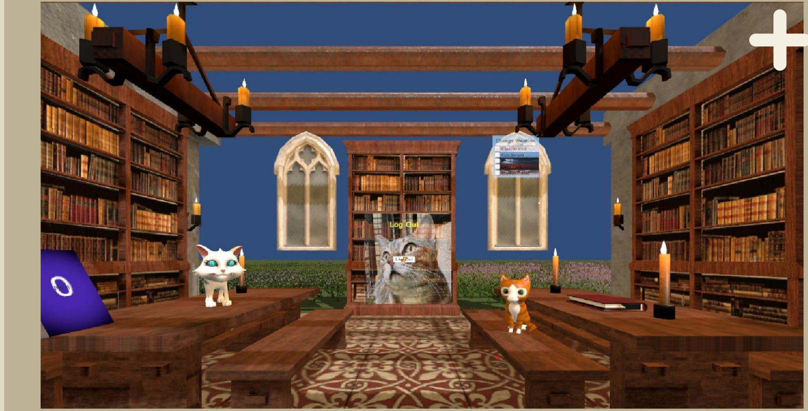
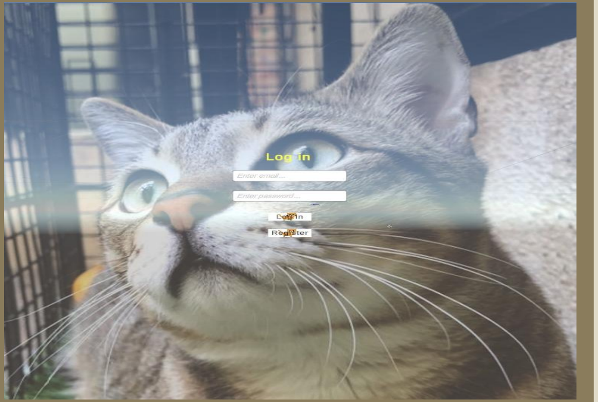
Demo Video

VR Library





Demo Video (VR)