Final Year Project Report

Full Unit – Interim Report

Human Computer Interaction

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A report submitted in part fulfilment of the degree of

BSc in Computer Science

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1.1 Introduction

1.1.1 Abstract

My final year project is focusing on the topic of Human Computer Interaction (HCI) and I am designing 3 interfaces that show the different aspects of human computer interaction. Depending on my design decisions in the interfaces, should improve future interactions with a user.

I will be describing the different interfaces from explaining the different themes that I had in my mind when thinking of the original idea, then showing drawn out sketches of the wireframes that I envisioned for that interface. I have also inserted other diagrams like a site map that I think are important in understanding the flow of the interface which coincide with the different sections of the interface.

During this project, I have made many technical achievements as the technologies I used I only originally had a very basic concept of them and now I can confidently say I am well versed with the documentation and the different concepts that I have used across the interfaces.

Since this is my interim report, I have not completed all the interfaces I have a section on future planning which refers to the work I will be doing during Christmas Break before Term 2.

I have included a software engineering section where I talk about my use of code, testing, professional issues that came up developing my interfaces.

1.1.2 Background Theory

Human computer interaction (HCI) combines computer science, cognitive science, and human factors engineering. HCI began to be a popular topic of discussion that appeared in the late 1970s when more people had access to interfaces which affected personal computing. (Dix, n.d.)An example of HCI is through a desktop metaphor demonstrated by the apple Macintosh where you would be able to see files and folders as icons that could be dragged and dropped. However, some people use Linux, where you used commands back then. Even though at the time, it seemed odd to move these icons around, this trend has become part of our everyday lives. This is an excellent example of how HCI can make a user find a process more personal and meaningful to them. (Sawyer, 1992)

Considering HCI is a quite widespread topic, there are several ways to measure how effective the interface's design is, one suggested method is that there could be four design principles: (1) Learnability/Familiarity, (2) Ergonomics/Human Factors, (3) Consistency/Standards, (4) Feedback/Robustness. (Hinze-Hoare, 2004) The four principles cover the full range of System/User/Input/Output Interaction between a user and an interface. I agree that these principles measure HCI well, as humans will process information in a specific way, understand it, and then receive it in a consistent and familiar design throughout an interface to create feedback that can allow the design to grow. In regard to my interfaces these principles in particular can increase/decrease the usability of my interface: (1) the more difficult it is for the user to interact effectively with the interface the less of a chance they would want to use it regularly and gain the familiarity in using that interface. This learning time can be decreased by making use of the user's existing knowledge. I think this is incredibly important for my interfaces as one of them is an interactive learning tool so therefore the familiarity drives the memorability of the learning for the user. (3) Consistency can be broken down to visual, functional, internal and external. (Nikolov, 2017) These sections all make the interface eliminates confusion and increases familiarity in these interfaces.

For two of the interfaces I am designing, I focused on cognitive memory, especially for the demographic of children and a broader for children and literacy. So I wanted to explore the different themes like how children retain basic and simple objects and how in a general aspect how humans memorise actions.

1.1.3 Aims & Objectives

HCI is quite broad and I only have a limited time to complete these three interfaces, I am more focused on solving issues like aesthetics, design, navigation, feedback to the user, and cognitive issues (memory). I will ensure that these issues will be fully explored before implementing any onto my interfaces and going through reasonable research to back my mitigations to make the interface as usable as possible. All of my interfaces will be websites that are directed to different target demographics. Therefore, I will try to match many of the visual parts, such as aesthetics, to all genders. Nowadays, certain websites can be more influenced by feminine/masculine and less inclusive to everyone. (Abrosimova, 2019) This can take up in the form of the colour themes or even when filling out a form you only get a choice of male and female or even take into account different disabilities. So I will consider these factors and make sure to make it as inclusive as possible. Since one of my ideas will be a parent-guided website but a child learning, the navigation must be simple enough to use so that a child can use their cognitive functions to learn from this website. It is important to note that children's cognitive functions are still developing so this particular interface will require quite simple navigation/format so that they don't get overwhelmed. My third idea will also be teaching something to user, specifically computer literacy, I believe this links well with HCI as I can see how well a user can interact with an interface by seeing if they better understand how to use computers and different operations.

I chose this project because I wanted to understand how different types of users interact with an interface and how designers combat certain issues in order to make my interface more resistant to those issues, and I would like to spend more time researching how these types of issues can be mitigated against and how I can make similar judgements within my ideas to allow my users to interact with my interfaces fully. I would also like to learn how to create an interface that can be used intuitively for different types of users.

I hope to achieve a better understanding on how to make an interface more inclusive through design as well as allowing more people to understand basic computer literacy through understanding which parts of design correlate with computer literacy. I would also like to be able to create a design that instils familiarity and allows children to add to their working memory that will help them retain their new perception and processing of shapes.

1.1.4 Literature Survey

2.1 Interface Breakdown

2.1.1 Mental Health Online Journal

Inclusive Design

The 7 principles of inclusive design: Flexibly, Simplicity, Consistency, Perception, Equity, Prevention and Accommodation. (Belman-Adams, April 2022) The feature I'm most focusing on is accommodation as I would like all users to feel welcome and feel safe so I tried to avoid using male and female connotations in reference to aesthetic and colours referencing the societal view on "pink is for girls and blue is boys". I didn't just focus on gendered aspects but also the different ages I wanted to reach within my target demographic (16-25 year olds). I wanted the overall design to be relatively simple and classy and not overwhelming, the reason I didn't add pictorial elements in my proof of concept.

Wireframes

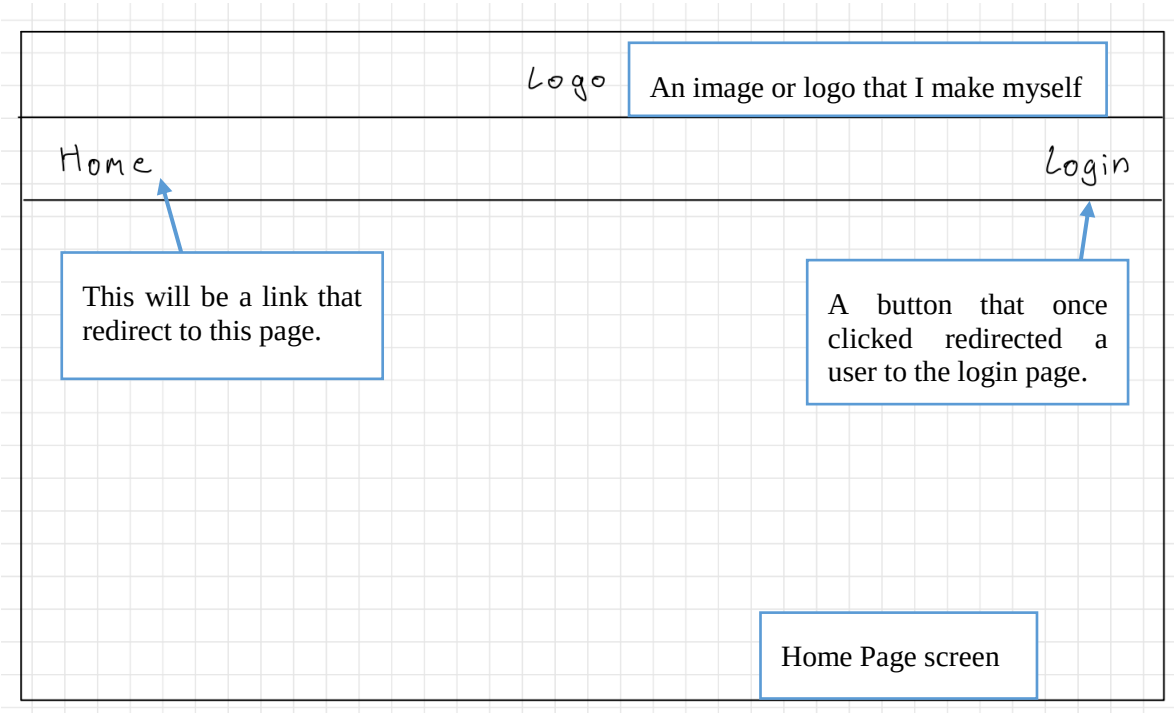


Figure 1: Home Page (User has not Logged In yet)

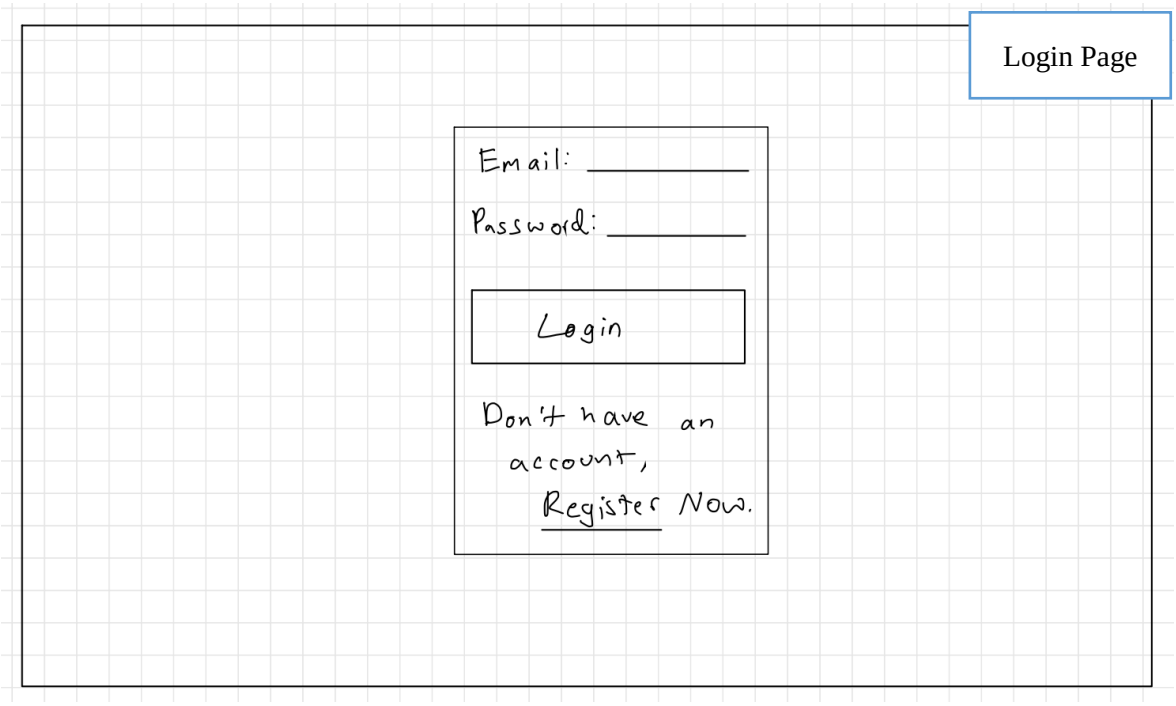


Figure 2: Login Screen

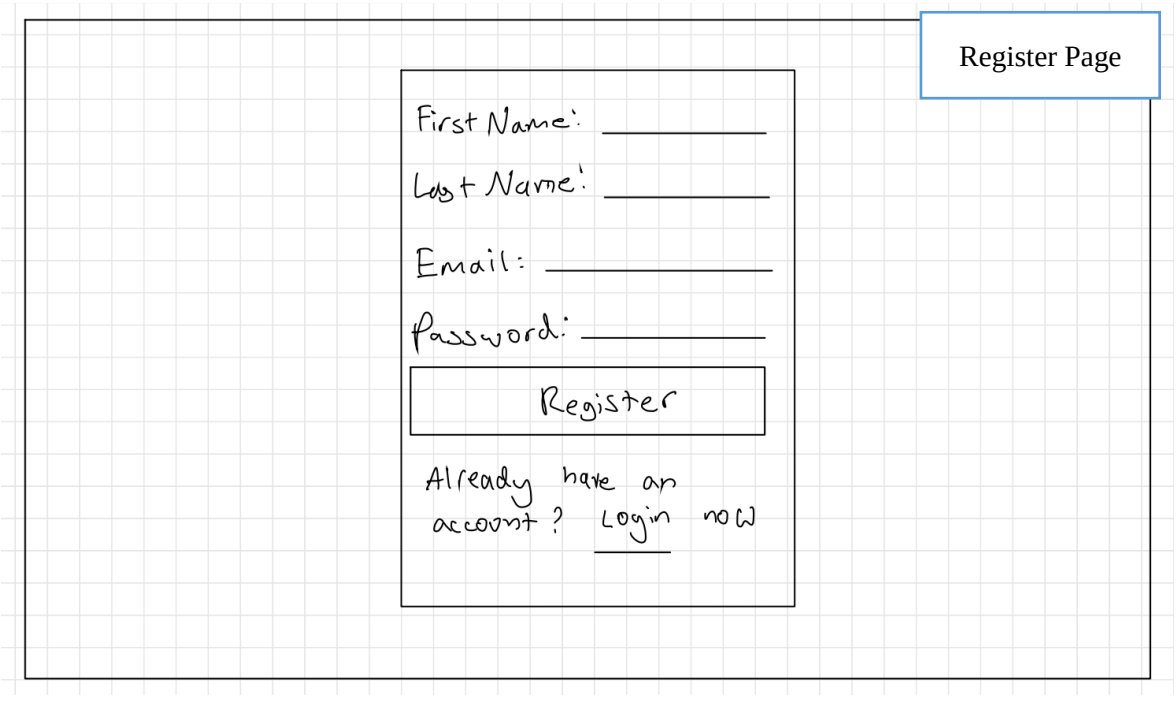


Figure 3: Register Screen

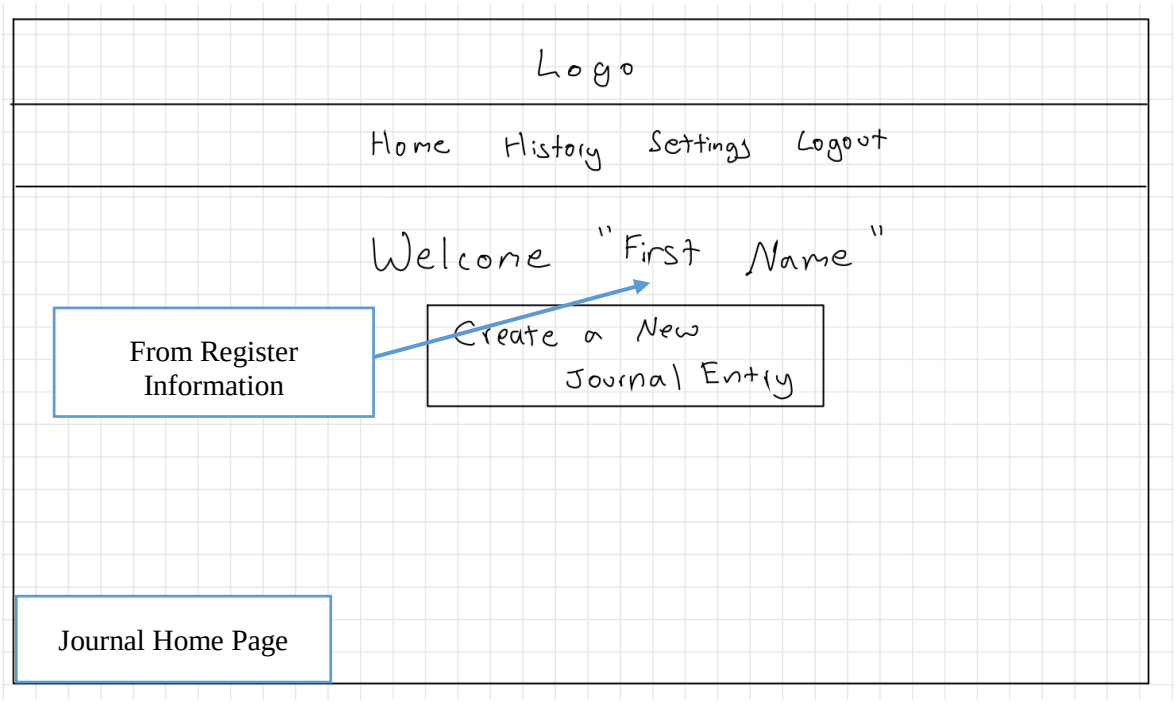


Figure 4: Journal Home Page (User Logged In)

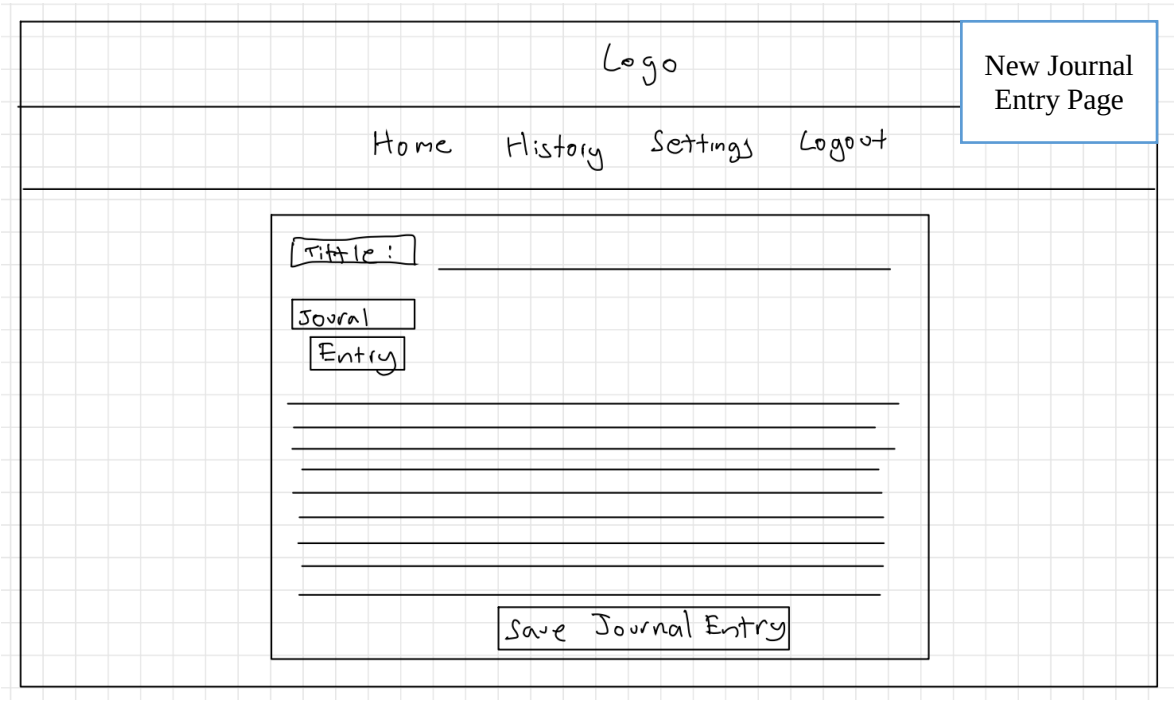


Figure 5: User creating a Journal Entry

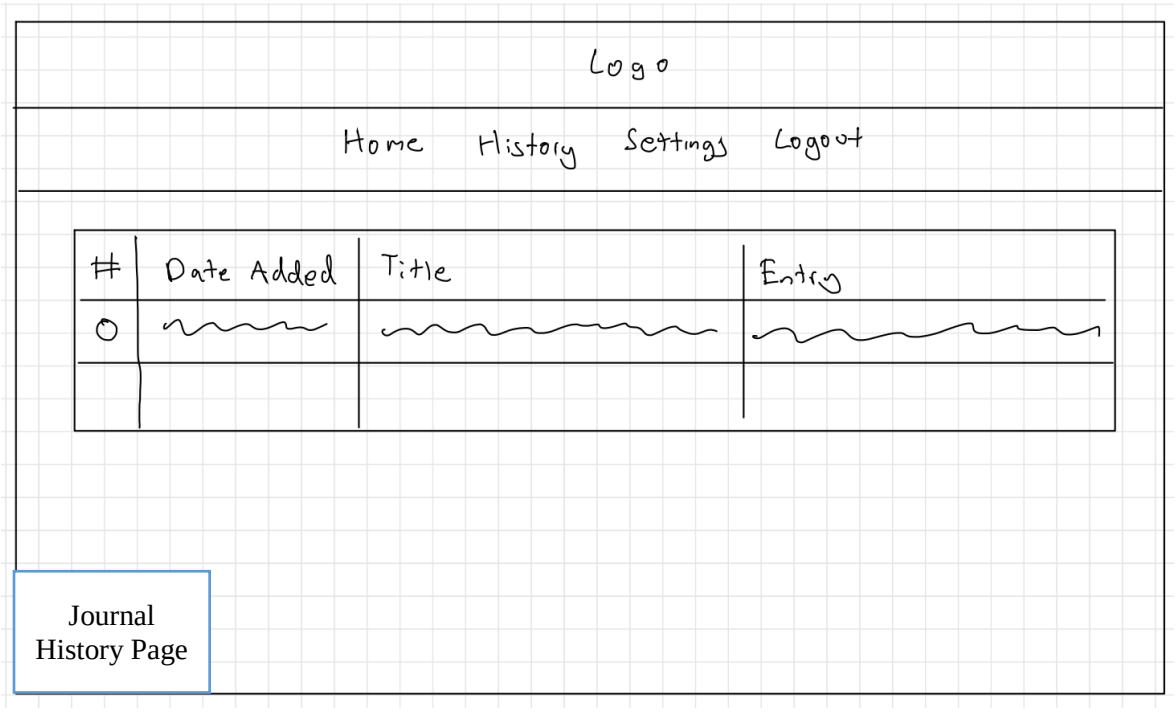


Figure 6: User can see their previous journal entries

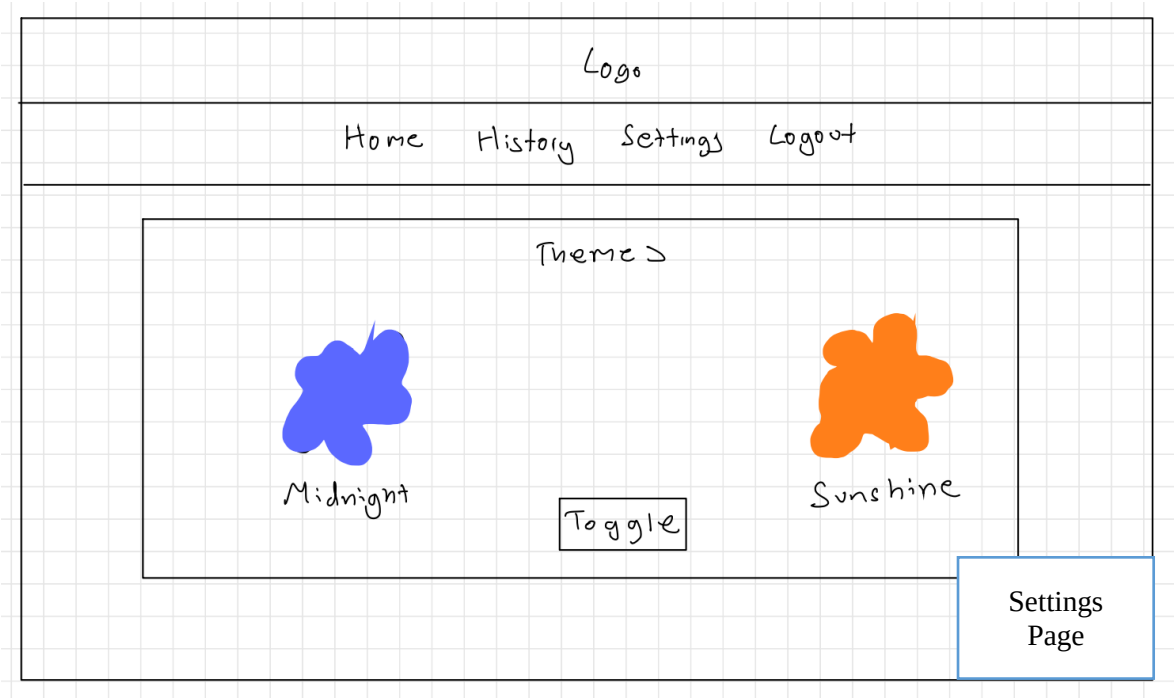


Figure 7: User can change themes on the settings page.

Site Map

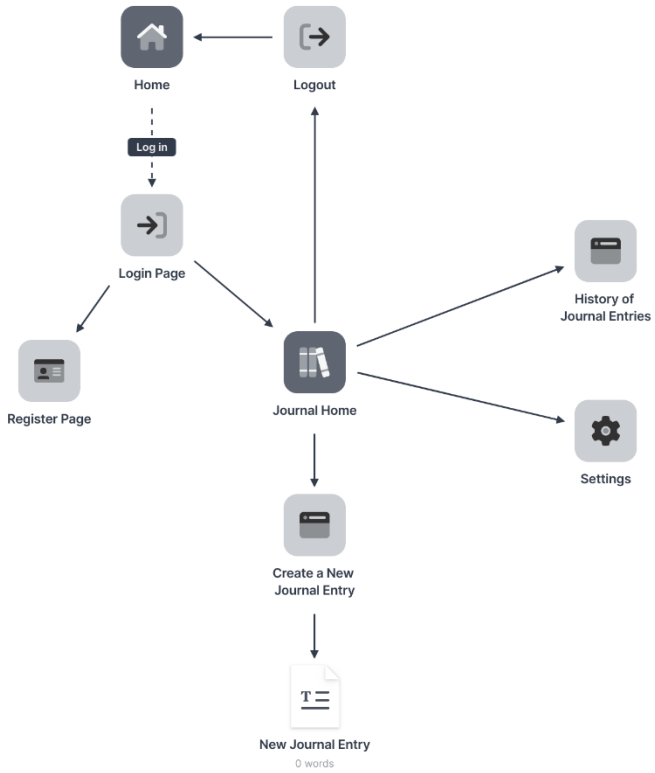


Figure 8: Mental Health Online Journal Site Map

Design & Interaction Features

Home Page

Home Page has a navbar that has a home link and a button that directs the user to the login page.

Login Page

A user will enter their email and password and it will authenticated by the firebase authentication process which will then redirect theme to the journal home page.

Register Page

A user can easily register by just adding their first name, last name, email and their password to the system through a form which will then automatically sign them in and direct hem to the journal home.

Navigation Component

I created two navigation components as one is for just a view interaction in the initial home screen and the other navigation bar once logged in has more private actions, like creating a journal entry. The journal home navigation bar includes history, settings and the log out button.

Create Journal Entry

Once you sign in, you are presented with a container with your first name to add to the customised experience. You will also see a button that will re-direct the user to a journal entry page. It has title

text box and an entry text box. Once the user decides they are finished writing their entry, they have the option to save it and then they get directed to the history page to see their past journal entries.

History of Journal Entries Page

This shows the user all the entries they have written and saved to the database.

Settings Page

This where a user can change the theme of the website to a customised dark mode called midnight to a light mode that's also been customised to the colour palette of yellow (as explained before as an inclusive design colour).

2.2.1 A Parent-guided shape learning tool for young children

Cognitive (Memory) Development

I was researching what type of topic is most effective for long-term development, shapes and numbers were the two key topics I saw. The reason I ended up picking shapes was because I wanted to also explore colour blindness and how this affected memory learning. Since colours and shapes are very common observable traits to young children, they are actually part of the foundation to higher level concepts like counting numbers, recognising letters. (Intervention, n.d.)

Colour blindness affecting design on websites

Color blind users need to be able to see a different change in state when clicking/hovering on a button on a website, to identify that an action occurring, e.g. that state being highlighted in a bright contrast colour or it being underlined. In regard to my shape learning tool, that is one of the reasons I have am using a colour blind filter that, would turn the images grayscale and I would already have patterns on the shapes so that the shapes can be identifies that way too. (Bigman, 2012)

Wireframes

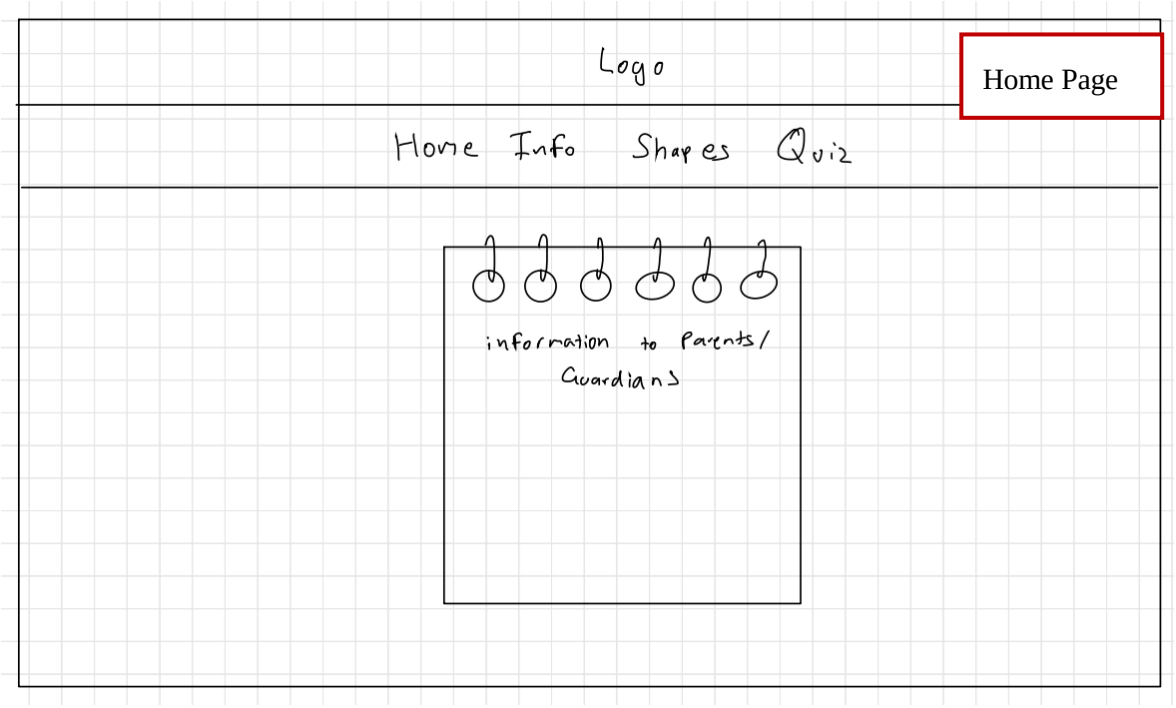


Figure 9: Shape Learning Tool Home Page

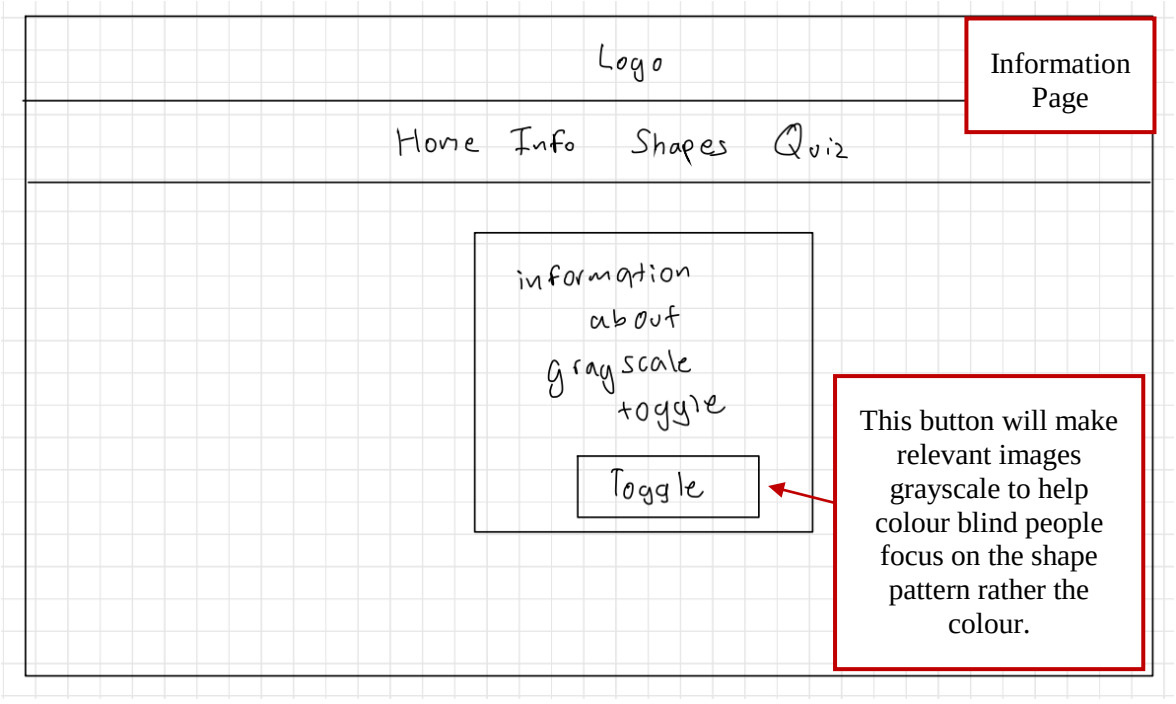


Figure 10: Information Guide Page (where colour blind users can use a grayscale mode)

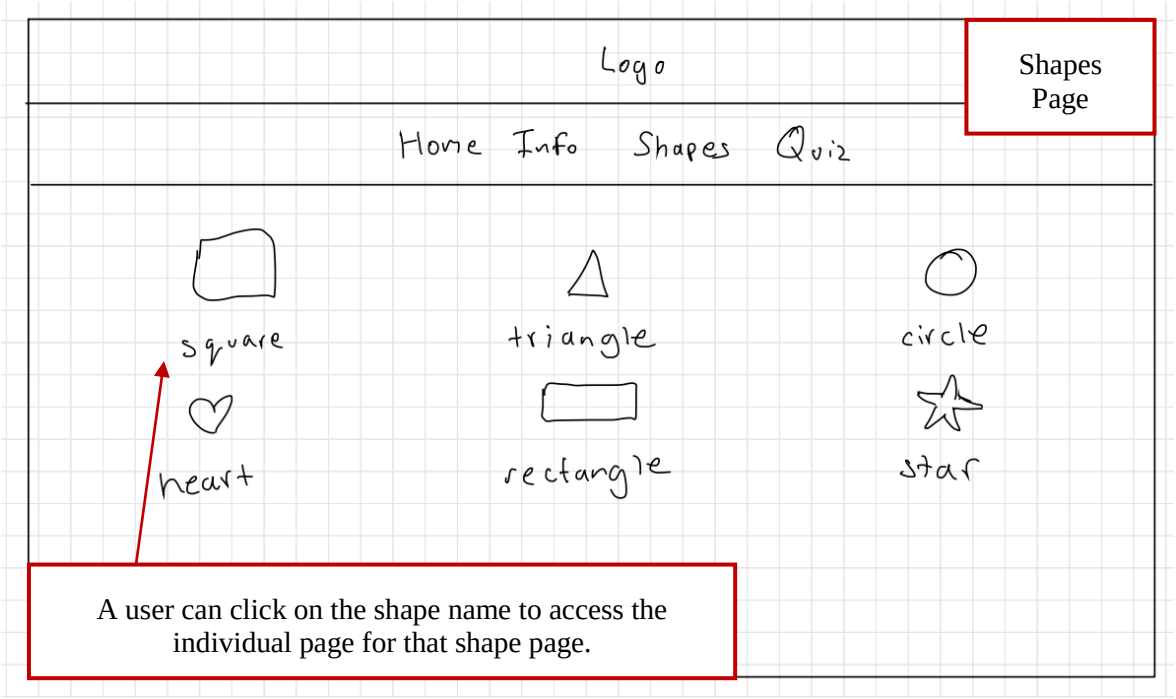


Figure 11: Shapes Page

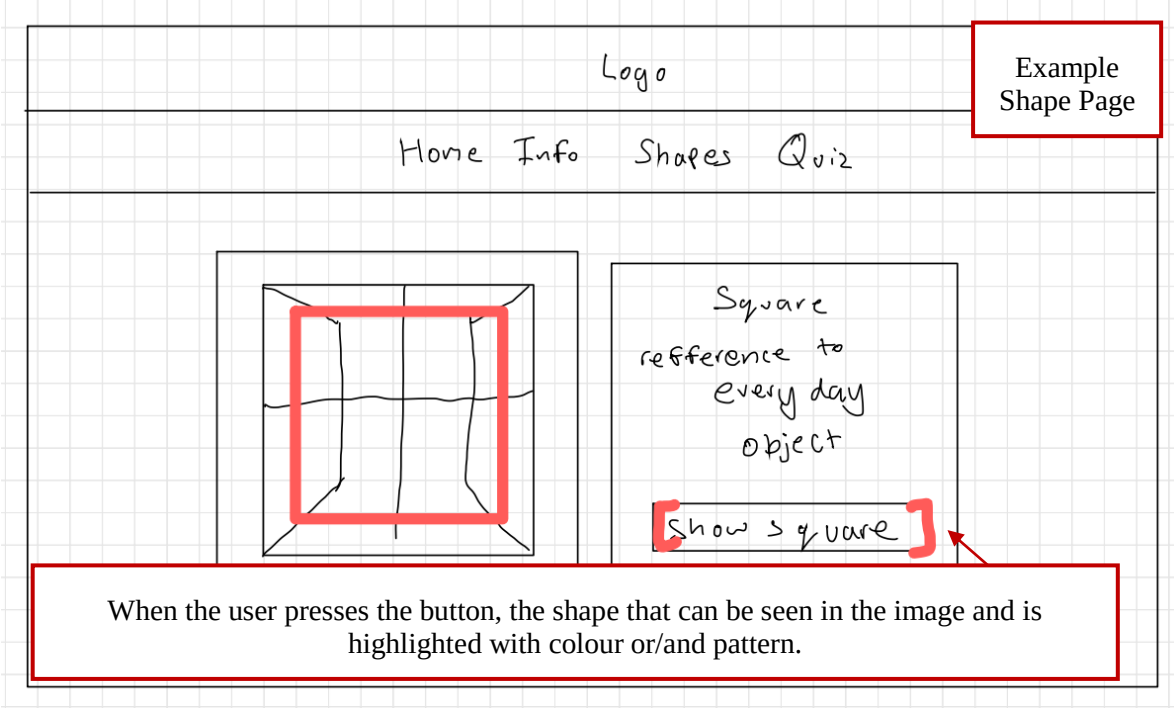


Figure 12: An example of what an individual shape page would look like

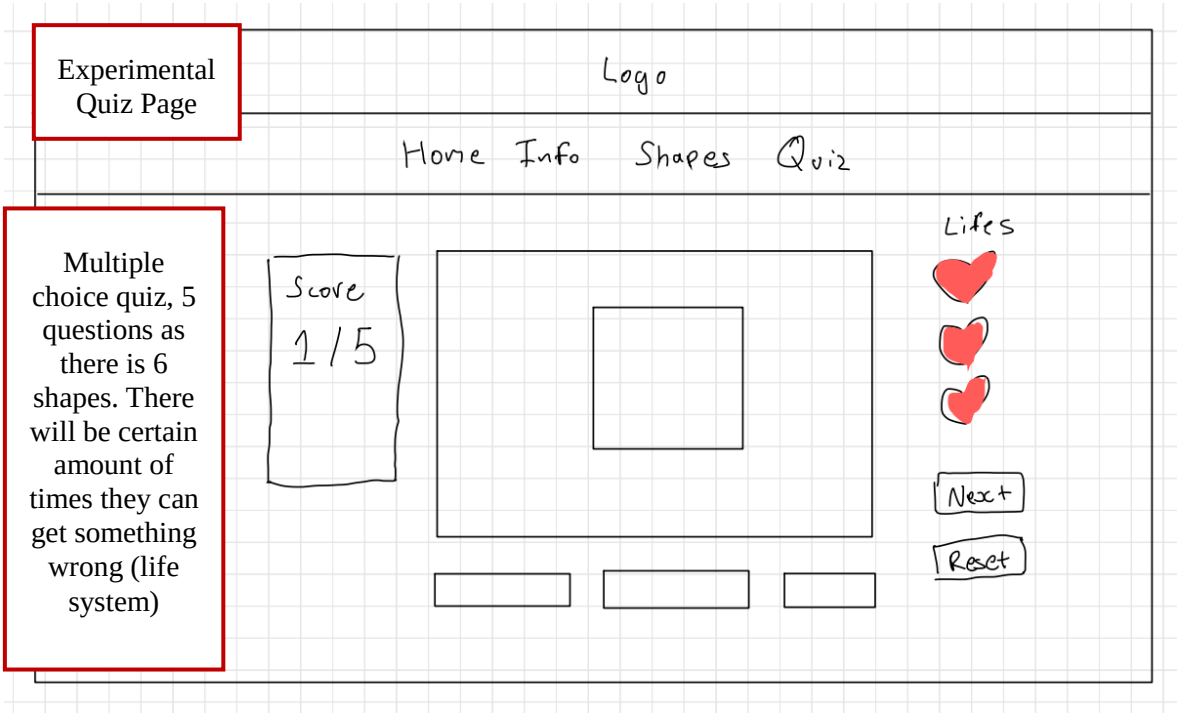


Figure 13: Quiz Page

Site Map

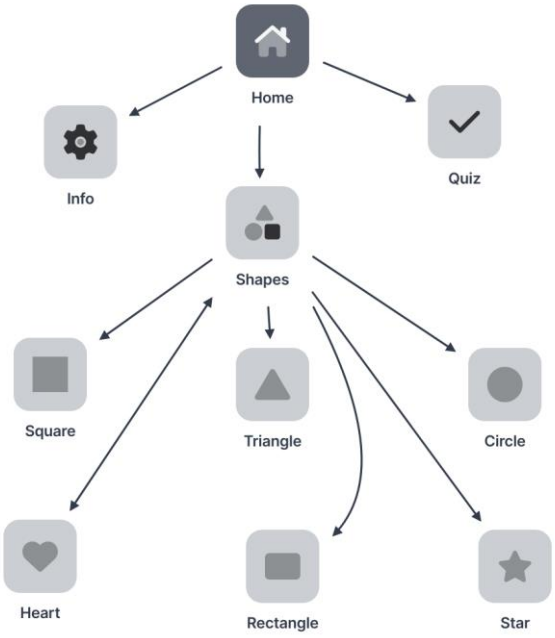


Figure 14: Parent-Guided Shape Learning Tool Site Map

Design & Interaction Features

Home Page

This page is currently informing to the parent (user) that this website is a tool to help children learn shapes.

Info Page

This is where parents are directed from the home page to be able to toggle the "colour blind switch" which should make all relevant images grayscale on the website. Currently can only make the grayscale feature work on the Info Page and not accessible on the other pages.

Shapes Page

The shapes page is a menu of all the shapes that I provide, to a child to learn on this website. The reason I have created 6 shapes, is because I would like to be able to test at least 5 of the 6 shapes to make sure that the child is actually learning and be able to at least have the familiarity of shapes and their respective colours/patterns I have chosen.

Example Shape Format page – "Square Shape Page"

Each of the shape pages have an everyday object as an image on the left and a small description asking the user if they can recognise the shape outline, if not there is also button below that description that will make the image highlight the shape.

The reason I used everyday objects to show different shapes is that, I was hoping that when the children aren't using the website, in their everyday life their brains will make subtle connections, e.g. a window is normally in the shape of a square so the children will then be used to that idea.

Quiz Page

My plan for this functionality is to show the shape with the pattern and colour or the everyday objects that I have used before (which creates familiarity) and then allow them to choose the answer by multiple choice.

Note: This functionality hasn't been implemented yet, and is subject to change.

2.3.1 A Practice Website for Computer Illiterate Users

The importance of computer literacy

As an undergraduate student, computer literacy is important to me as otherwise I wouldn't be able to create this project, for example as I would need to have skills to search errors and writing emails is a key skill I use to communicate to my supervisor. (Hoar, 2014) This interface is to help every one of all ages that I why I want to focus on:

- Browser/Search Engines
- Word Processing Skills
- Communication

Design & Interaction Features

Home Page

A short description on what computer literacy is and how this website will try to combat this. (Minnesota, n.d.)

Browser/Search Engine Page

This page will have examples of search bars and browser features, e.g. an empty search bar to search specific keywords to find specific websites that are well known to familiarise them on those of the names of the websites.

Word Processing Skills

How to create an email, how to tell difference between emails and URLs. Send/Reply/Reply All/Forward an email.

Communication (in regard specifically to social media)

How to create posts, like/comment, Public and private settings.

Note: This interface hasn't been implemented yet, and are subject to change.

3.1 Technical Achievements

3.1.1 Technical Application Achievements

React

In my application, I generally use Hooks to change my variable's value using these methods: useState () and useEffect (). UseState is a Hook that allows you to define a variable that is a current state and also a method that can update the current state. UseEffect allows me to add extra methods to the original function while effecting the original function.

For my 1st interface I use Firebase to store my data, in doing so it means I have to create a firebase configuration file that has all the methods I require as well as my links and ids to the different types of databases I use. For example, databaseURL: https://mental-health-online-journal-default-rtdb.firebaseio.com is the connection URL for my real-time database.

React – Bootstrap

This is a library of convenience as I prefer to use certain components that already have built in css and base structure, this helps me have an initial design that I can add on to easily.

Bootstrap

Certain components in my interfaces have prebuilt class structures, e.g. "navbar" is a class that bootstrap provides that creates a navigation bar that is presented on the web page. This node module also has the main css file that is imported into my pages to interact with my components that I create as it creates base css for the class structures I use.

CSS

For my 1st interface, I have made 2 different themes which will be covered in Inclusive design. Currently they don't work interchangeably however this functionality will be worked on over Christmas break.

Node.js

This Node Package Manager installs all my libraries and also allow me to run the react app that I have built for the interfaces.

Firebase

For my first interface, authentication is needed so I use the authentication service to authenticate by email and a password. This stores the different created users, their account created date, their user ID.

I use the Cloud Firestore Database to also store the authenticated users in a database which stores their personal information such as their first name and last name and which authProvider they used to create the account.

I use the Real-time Database to store my user's personal journal entries under their personal user id. Each of these journal entries will have their own id as well. I reference this database to show the journal entries in a table as well, so that the users have access to their previously written entries.

4.1 Future Planning

Over Christmas Break (12/12/2002 to 09/01/2023)			
Start of the week	**Milestones**	**Additional Notes**	**Personal Deadlines**
12/12/2022	Focusing on Mental Health Online Journal	I want to add more pictorial elements – I'll be looking into to see how feasible it will be to create a drag and drop system to add stickers to the page. To decorate the journal pages.	
		I also would like to look into and try to implement a way for the user to see their journal entries in the original format that was given to them.	
		I want to also fix my toggle themes css.	**26/12/2022**
26/12/2022	Focusing on the Parent-guided shape learning tool for young children	I will need to research the most effective way to test children to see if they learnt anything or gain some familiarity of shapes. (For the quiz page functionality.)	
		Implement the base part of the quiz functionality.	
			02/01/2022
02/01/2022	Focusing on A Practice Website for Computer Illiterate Users	Start Making the wireframes and understanding which components I have to make by planning out the types of structures I need to use/div containers.	

			Term 2 start on 09/01/2023

Cypress Testing Library

Currently I have some testing, which is in the report later on, however when I have completed all of my functionality for all the interfaces. I want to use the cypress library for the rest of my testing which focuses on end-to end testing: which means to measure the success of the working order of a complex product in a start-to-finish process. (Gillis, n.d.) I prefer to do this at the end of my development so that I will be able to make sure that I will test every possibility a user could take as a journey on my website, especially since it is a website test automation library. Which refers to the "test user" clicking and typing on its own rather than myself or a beta test user using the system. I prefer this to TDD (Test Driven Development) because I think it shows a more reliable representation of how the user is interacting with the system rather than just presenting that the system works.

5.1 Software Engineering

5.1.1 Code Breakdown

Mental Health Online Journal

Journal History component

```
//Reference: https://www.youtube.com/watch?v=NueuZjC9_Og
//Creator: The Amazing Codeverse

const [tableData, setTableData] = useState([]);

  const [user] = useAuthState(auth); //current user logged in

  useEffect(() => {
    try {
      const journalRef = ref (journalEntryDatabase, "/journalEntries/" +
user?.uid); //this is referencing the firebase real-time database where it
stores user' journal entries

      onValue(journalRef, (snapshot) => {
        let entryRecords = [];
        snapshot.forEach(childSnapshot => { //the reason it is checking
for a childSnapshot is because the reference is isolate the current user's
journal but not the induvial entries
          let keyRecord = childSnapshot.key;
          let data = childSnapshot.val();
          entryRecords.push({ "key": keyRecord, "data": data });
//individual entries being added to an array so that can be set to the
table's contents
        });
        setTableData(entryRecords);
      });

    } catch (error) {
      alert("No entries saved!");
    }
  }, [user]); //dependent on the current user (refreshes the results if a
different user is logged in)

  return (
    <>
      <Table bordered className='historyTable'>
      {/* displaying the results of my query */}
        <thead>
          <tr> //table headers
            <th>#</th>
```

```
            <th>Date Added</th>
            <th>Title</th>
            <th>Entry</th>
          </tr>
        </thead>

        <tbody>
          {tableData.map((row, index) => {
          //it goes through the values of the entries, and takes specific
parameters and return it to the user
            return (
              <tr>
                <td>{index}</td>
                <td>{row.data.currentDate}</td>
                <td>{row.data.title}</td>
                <td>{row.data.entry}</td>
              </tr>
            )
          })}
        </tbody>
      </Table>
    </>
  )
```

Toggle Theme (Midnight and Morning Sunshine)

```
const [currentTheme, setTheme] = useState(
        localStorage.getItem('currentTheme') || ''
    );

    useEffect(() => {
        localStorage.setItem('currentTheme', currentTheme);
        //localStorage requires the page to store the currentTheme as a
variable that will help other pages in the website to follow the correct
css style.
        document.body.className = currentTheme;
    }, [currentTheme]);

    function toggleThemes() {
        if (currentTheme === "midnight-theme") { //midnight being the
default theme
            setTheme("sunshine-theme");
        } else {
            setTheme("midnight-theme");
        }
    }

    return (
        <>
```

```
            <br />
            <div class="container">
                <div class="row">
                    <div class="col">
                        <h2>Themes</h2>
                    </div>
                </div>
                <div class="row">
                    <div class="col">
                        <img
                            src={defaultTheme}
                            alt="Default"
                        />
                    </div>
                    <div class="col">
                        <img
                           src={sunshineTheme}
                            alt="morning-sunshine"
                        />
                    </div>
                </div>
                <div class="row">
                    <div class="col">
                        <h1>Midnight</h1>
                    </div>
                    <div class="col">
                        <h1>Morning Sunshine</h1>
                    </div>
                </div>
                <div class="row">
                    <div class="col">
                        <button class="btn-toggle"
onClick={toggleThemes}>Toggle Themes</button>
                    </div>
                </div>
            </div>
        </>
    )

//Note: This code snippet doesn't allow toggleThemes to work across the
website only the current page the component is on.
```

A Parent-guided shape learning tool for young children

Click button image – code is minor but the interaction is good.

5.1.2 Testing

Mental Health Online Journal

Test Number	Test Description	Expected Output	Actual Output	Screenshot /Figure
1	Users can load website and see home page.	Website is presented to the user can see the home and Login button.	Website is presented to the user can see the home and Login button.	Figure 15
2.1	Users can click on the register link on the login page (assuming that they already clicked the login button to show the login screen) and see the register page.	User can click on the register link on the login page and sees the register page.	User can click on the register link on the login page and sees the register page.	Figure 16
2.1.1	Users get an error message if they leave everything blank on the register screen.	Users should get two error messages: "Please enter your details" and "There is an invalid email address"	User puts nothing in and gets two error messages: "Please enter your details" and "There is an invalid email address"	Figure 17, 18
2.1.3	Users can register by entering their details.	User can enter their first name, last name, email-address, and password.	User can enter their first name: "Riona", last name: "John", email-address: "testing@email.com", and password: "testing".	Figure 19, 20
2.1.	User can successfully login and see their first name: "Riona"	User should be able to see their first name in a container and see a button "Create a New Journal Entry"	User sees their first name: "Riona" in a container and see a button "Create a New Journal Entry"	Figure 21
2.2.1	Users can click on Login button and be	User should be able to click on the login button	User clicks on the login button and is	Figure 22

	redirected to the login screen.	and shown the login screen.	shown the login screen.	
2.2.2	Users can login with an email and password successfully.	User can login with their details.	User logins with testing@email.com", and password: "testing" successfully and see home screen.	Figure 23, 24, 25
2.2.3	User can see an error alert if nothing is inputted in the textboxes.	User leaves the input textboxes blank and see according error message.	User leaves the input textboxes blank and see according error message.	Figure 26
2.2.4	Users input the wrong details in the login page.	Users input the wrong details in the login page and see error message.	Users input the wrong details in the login page and see an error message: "auth/user-not-found".	Figure 27
3	User create a new journal by clicking on the button: "Create a New Journal Entry" and shows the journal page.	User clicks on the button: "Create a New Journal Entry" and shows the journal page.	User clicks on the button: "Create a New Journal Entry" and shows the journal page.	Figure 28
3.1	Users can add a journal entry and then re-directed to the history page.	Users should be able to write an entry, save it and receive a confirmation message before being redirected to the journal history pages.	Users should be able to write an entry, save it and receive a confirmation message before being redirected to the journal history pages.	Figure 29, 30, 31
4	Users can access the settings page. Users should be displayed with a container showing the 2 different themes: Midnight (Dark Mode) and Morning Sunshine	User should be able to toggle between the themes.	Users can toggle the themes for the current page but it isn't able to reach other pages.	Figure 32, 33, 34

	(Light/Happy Mode).			
5	Users can Logout by clicking on the button	User can click Logout and be redirected to the original home screen.	User clicks Logout and then gets redirected to the original home screen.	Figure 35

A Parent-guided shape learning tool

Test Number	Test Description	Expected Output	Actual Output	Screenshot /Figure
1	User can load website.	Website is presented to user.	Website is presented to user.	Figure 36
2	A user can access the information (info) page and displays.	Info page is shown.	Info page is shown.	Figure 37
3	If toggle button is clicked, all images turn grayscale. (including if user goes to a different page)	Images turn grayscale.	Only current page's images go grayscale, if a user went to another page, it immediately goes back to its original colour.	Figure 38, 39
4	User can access the shape page and see all shapes and shape name displayed.	User should see a square, triangle, circle, heart, rectangle and star images and respective names.	User sees a square, triangle, circle, heart, rectangle and star images and respective names.	Figure 40
5.1	User should be able to click on the shape name and be redirected to the square page.	Users can click on "Square" and see the square page.	Users see the square page once clicking on "Square".	Figure 41
5.2		Users can click on "Triangle"	Users see the triangle page	Figure 42

		and see the triangle page.	once clicking on “Triangle”.	
5.3		Users can click on “Circle” and see the circle page.	Users see the circle page once clicking on “Circle”.	Figure 43
5.4		Users can click on “Heart” and see the heart page.	Users see the heart page once clicking on “Heart”.	Figure 44
5.5		Users can click on “Rectangle” and see the rectangle page.	Users see the rectangle page once clicking on “Rectangle”.	Figure 45
5.6		Users can click on “Star” and see the star page.	Users see the star page once clicking on “Star”.	Figure 46
6.1	User should be able to click on the show “shape name “and see the patterned shape over the image.	User click on “Show Square” and should see a patterned square appear.	User clicks “Show Square” and sees a patterned square appear.	Figure 47
6.2		User click on “Show Triangle” and should see a patterned triangle appear.	User clicks “Show Triangle” and sees a patterned triangle appear.	Figure 48
6.3		User click on “Show Circle” and should see a patterned circle appear.	User clicks “Show Circle” and sees a patterned circle appear.	Figure 49
6.4		User click on “Show Heart” and should see a patterned heart appear.	User clicks “Show Heart” and sees a patterned heart appear.	Figure 50
6.5		User click on “Show Rectangle” and	User clicks “Show Rectangle” and	Figure 51

		should see a patterned rectangle appear.	sees a patterned rectangle appear.	
6.6		User click on “Show Star” and should see a patterned star appear.	User clicks “Show Star” and sees a patterned star appear.	Figure 52
7	User can click on quiz page and see empty page with the header and nav bar.	User should see quiz page.	User see displayed quiz page. (Currently Empty, explained previously that this functionality has not been implemented yet.)	Figure 53

6.1 Screenshots/Figures

6.1.1 Mental Health Online Journal testing references

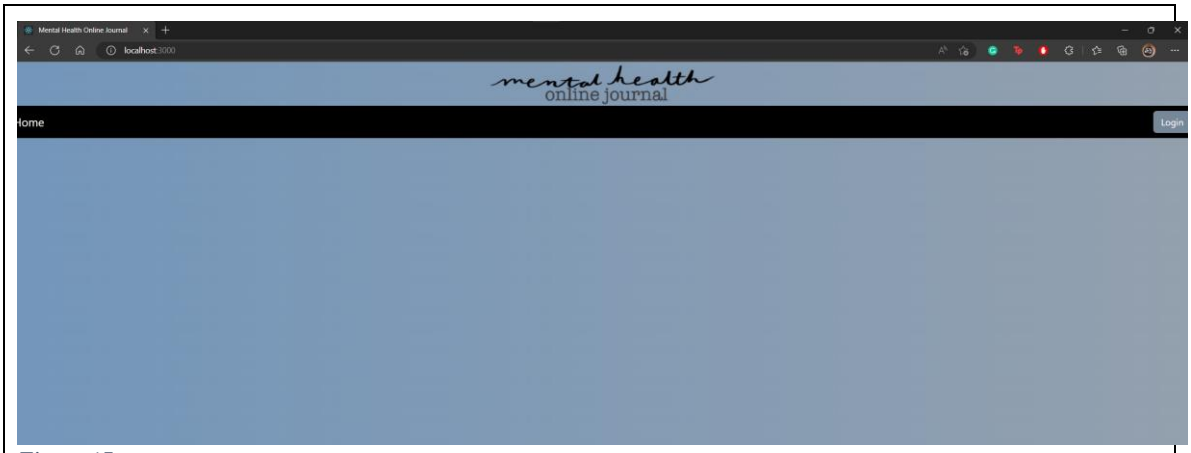


Figure 15

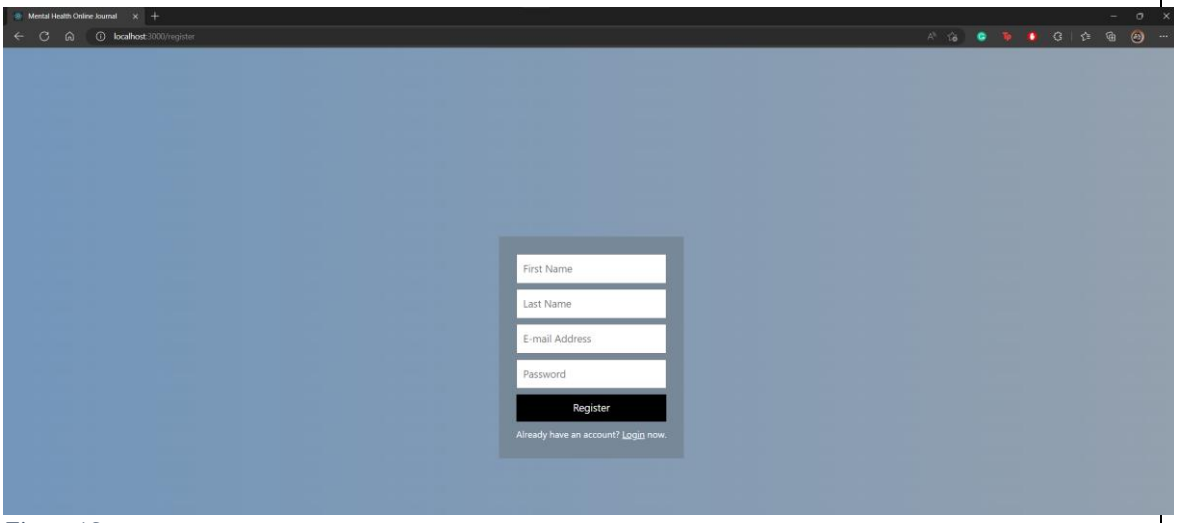


Figure 16

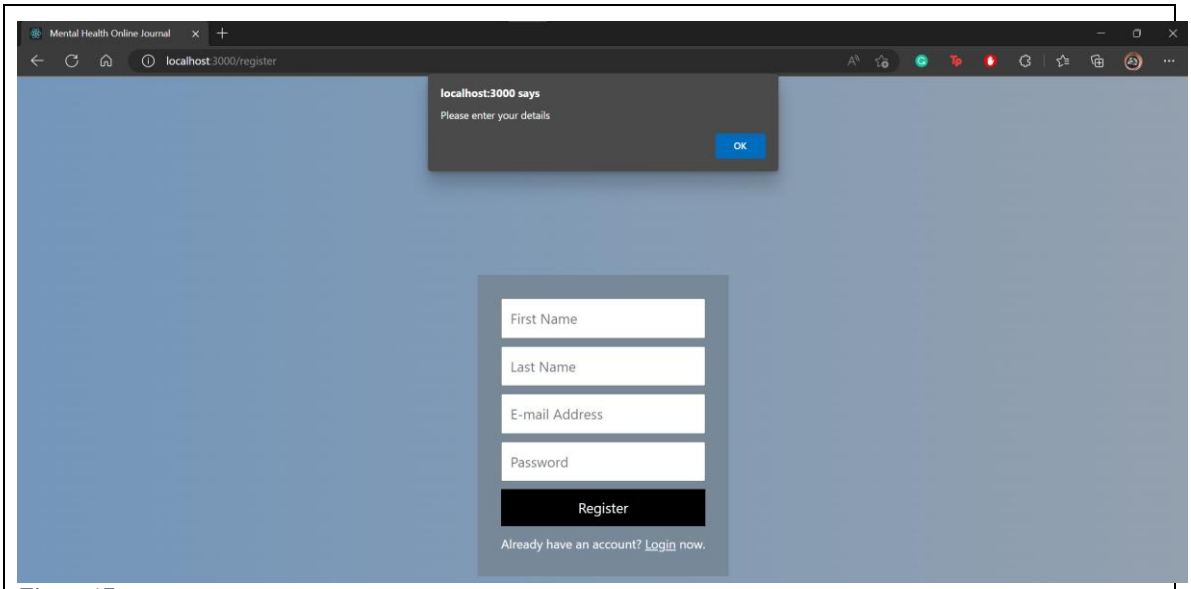


Figure 17

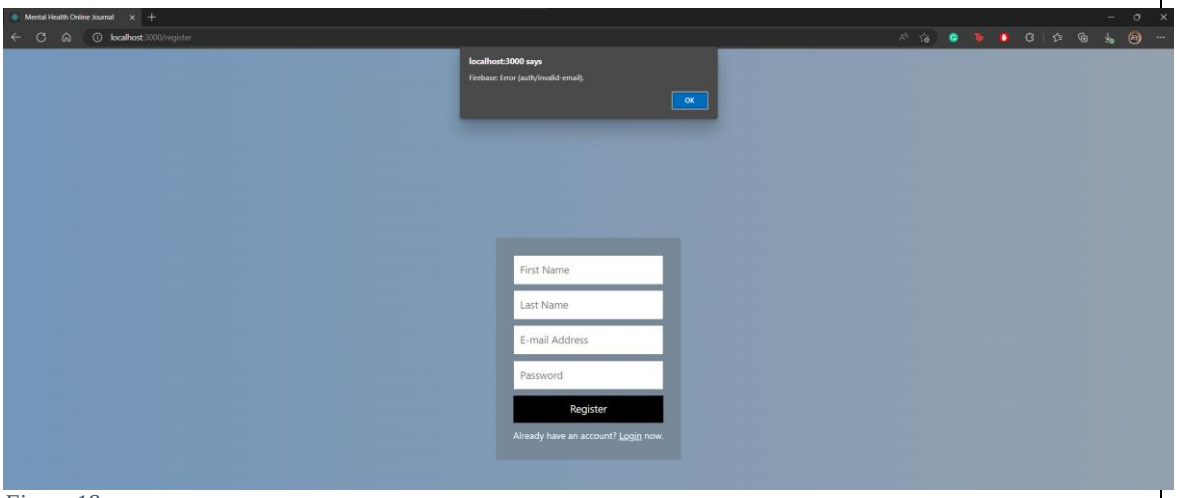


Figure 18

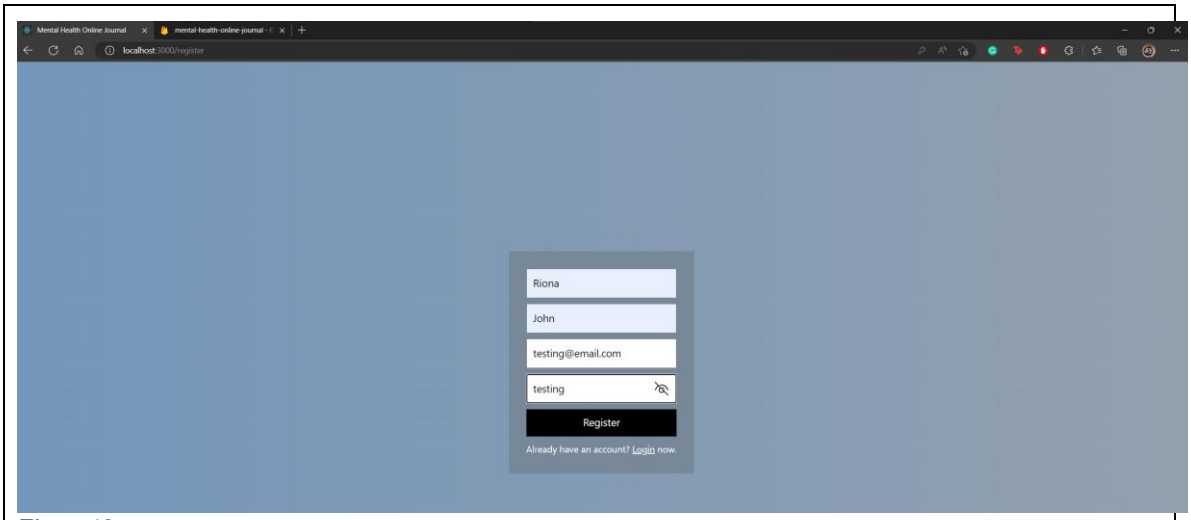


Figure 19

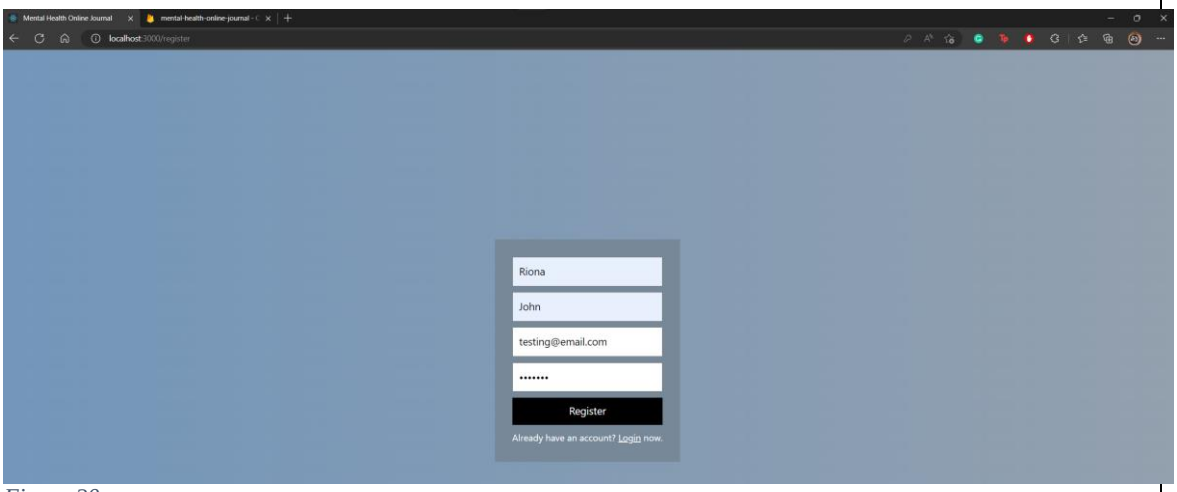


Figure 20

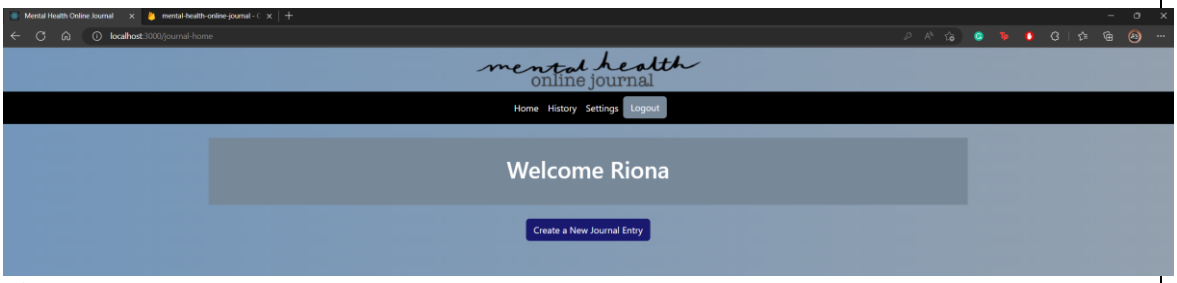


Figure 21

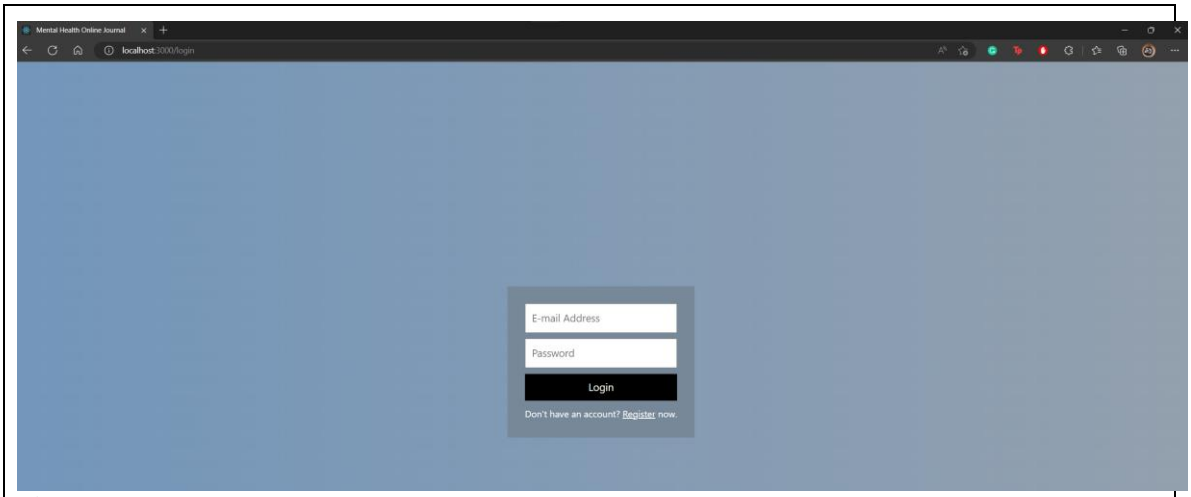

Mental Health Online Journal
localhost:3000/login
E-mail Address
Password
Login
Don't have an account? Register now.

Figure 22

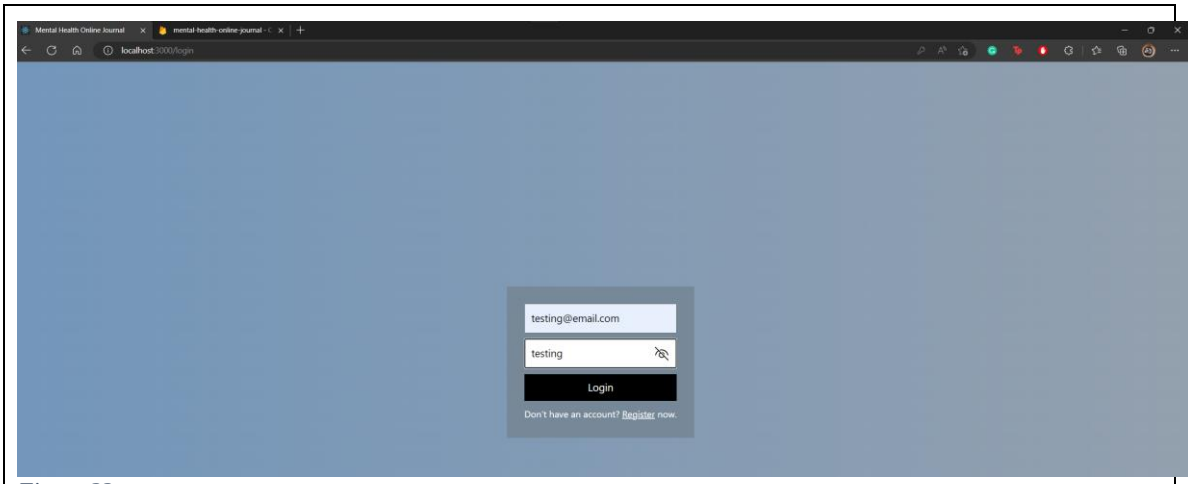


Figure 23

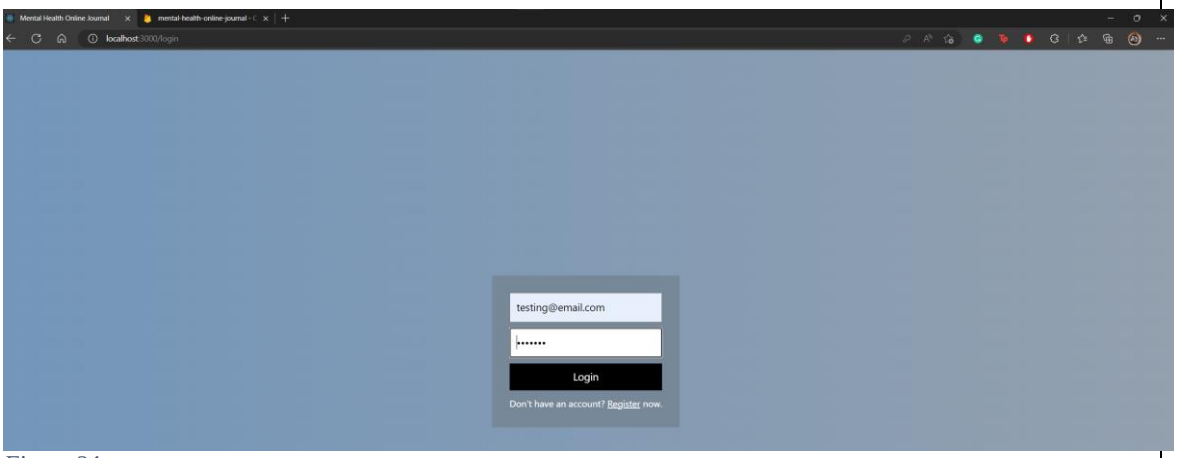


Figure 24

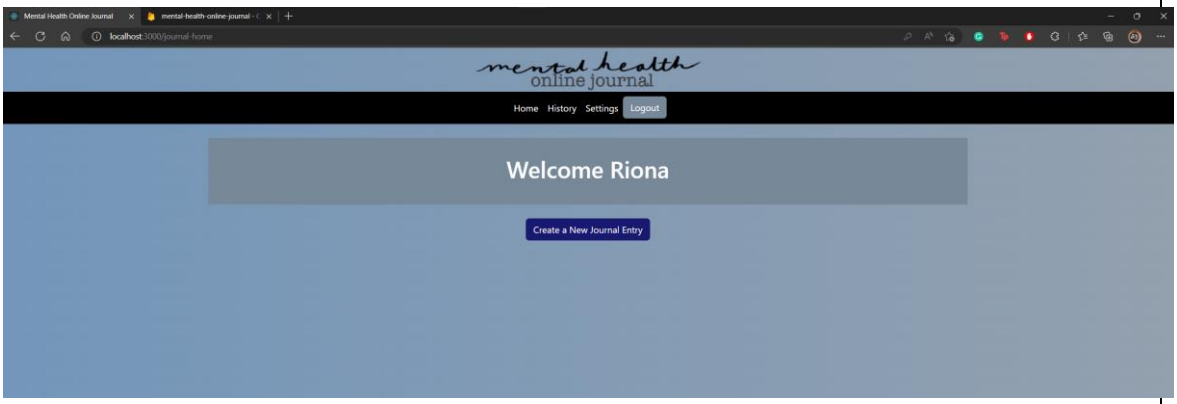


Figure 25

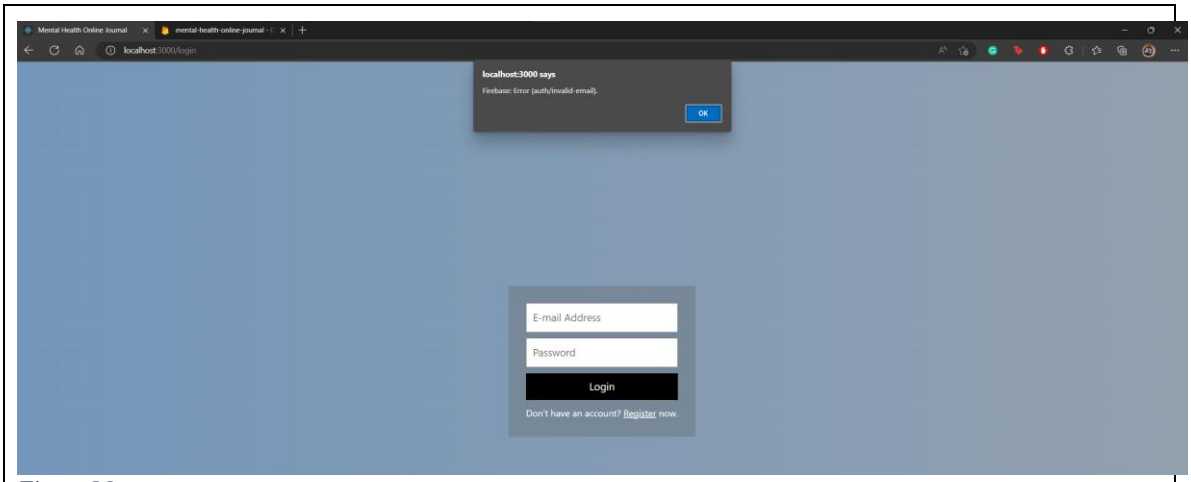


Figure 26

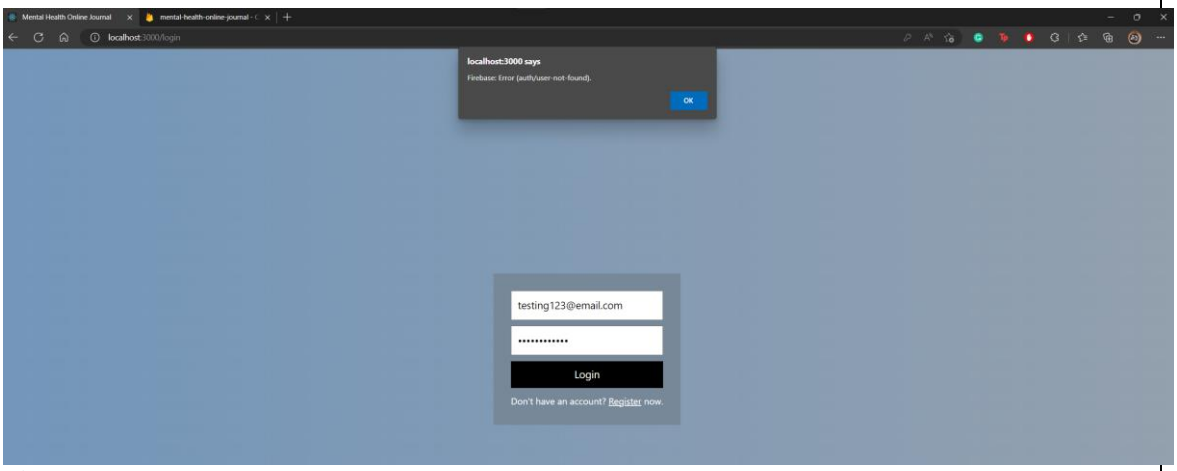


Figure 27

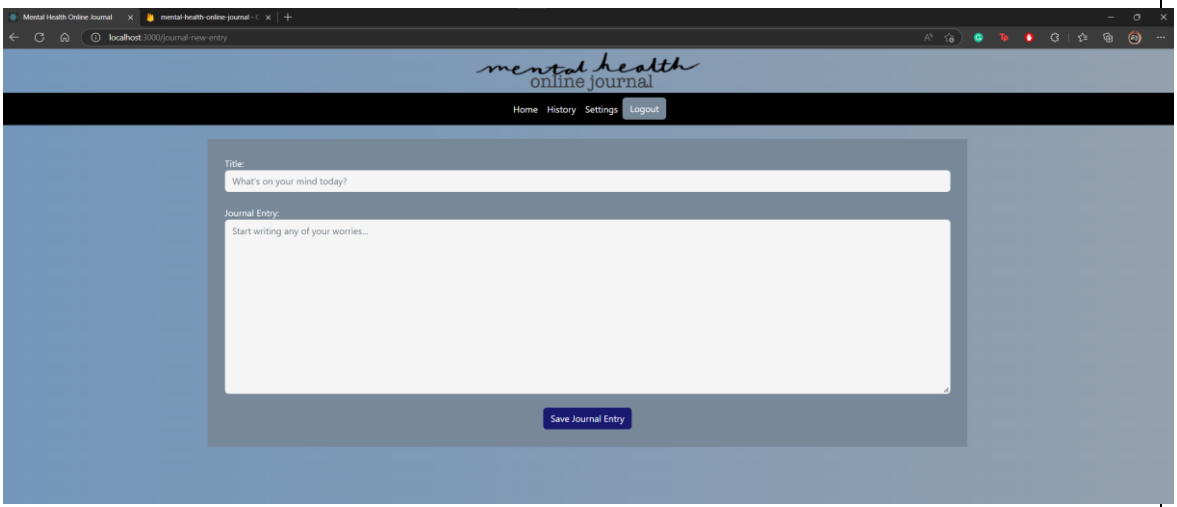


Figure 28

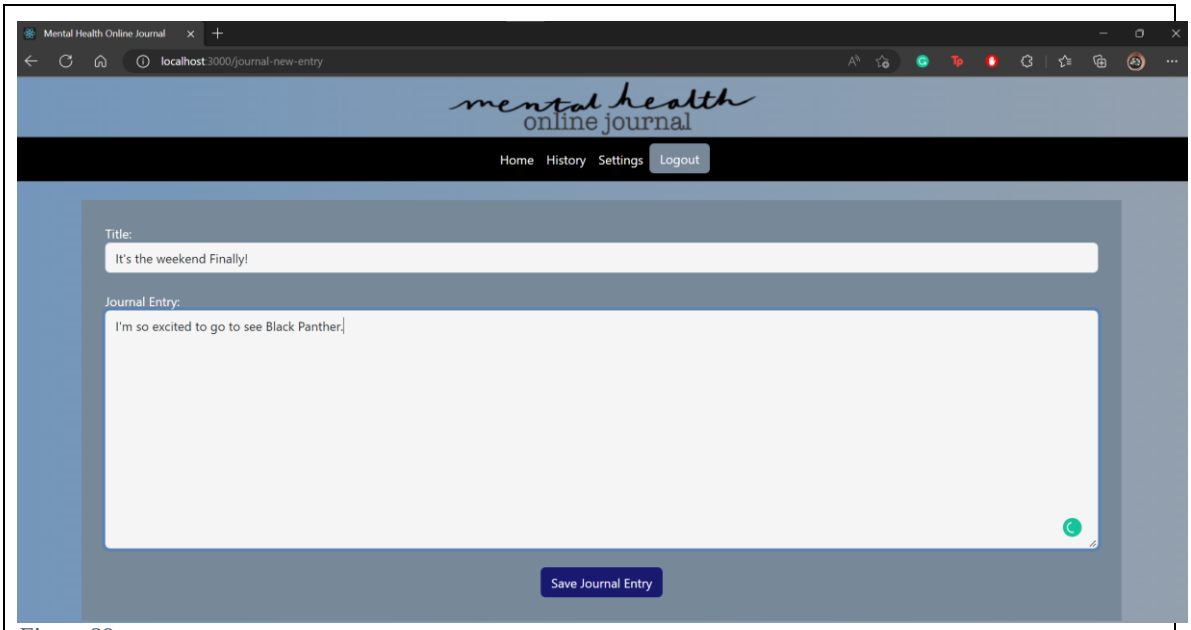


Figure 29

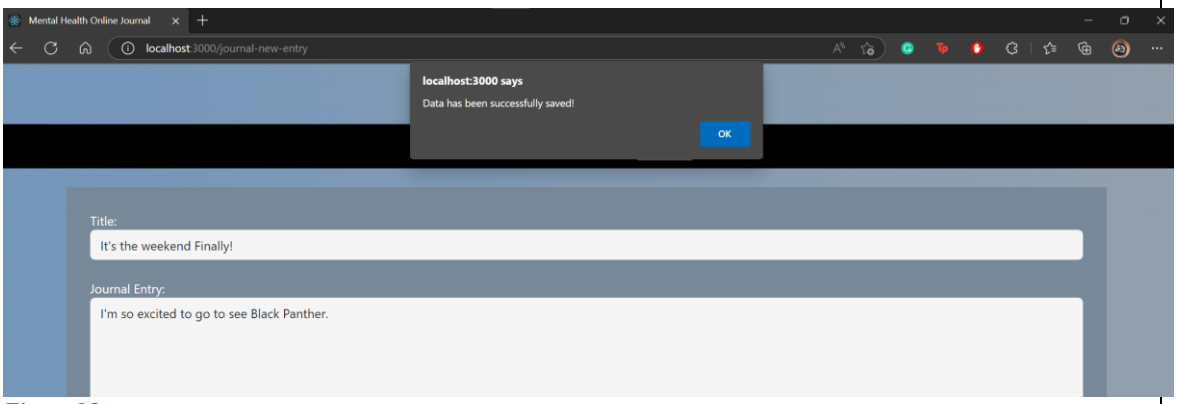


Figure 30

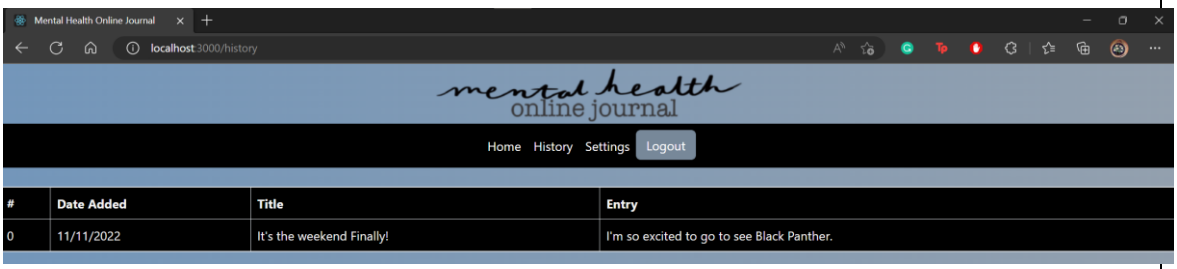


Figure 31

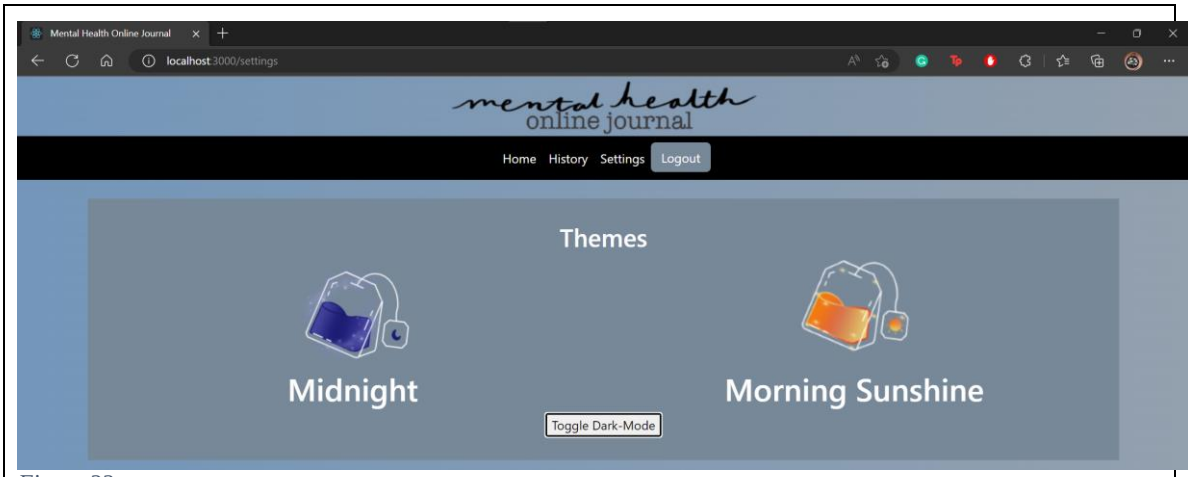


Figure 32

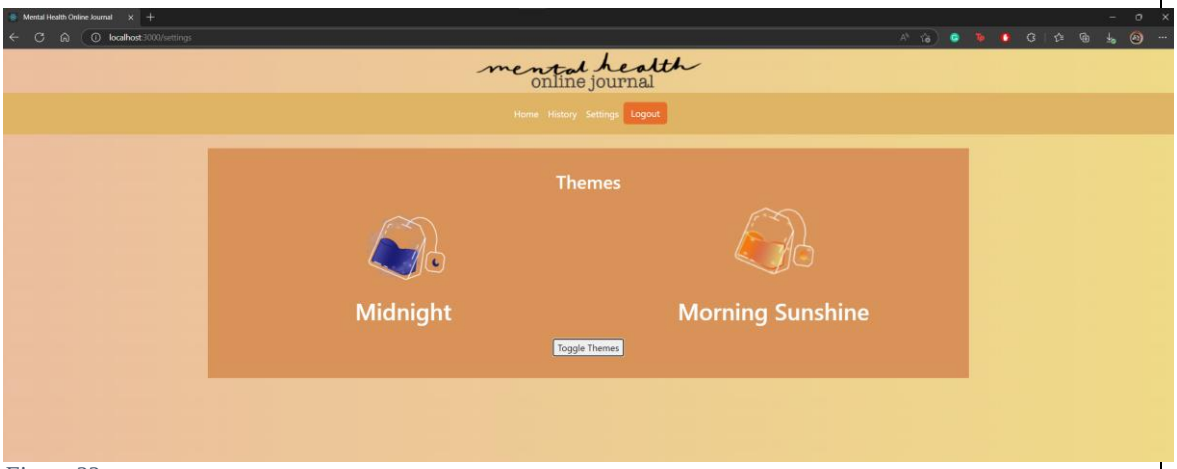


Figure 33

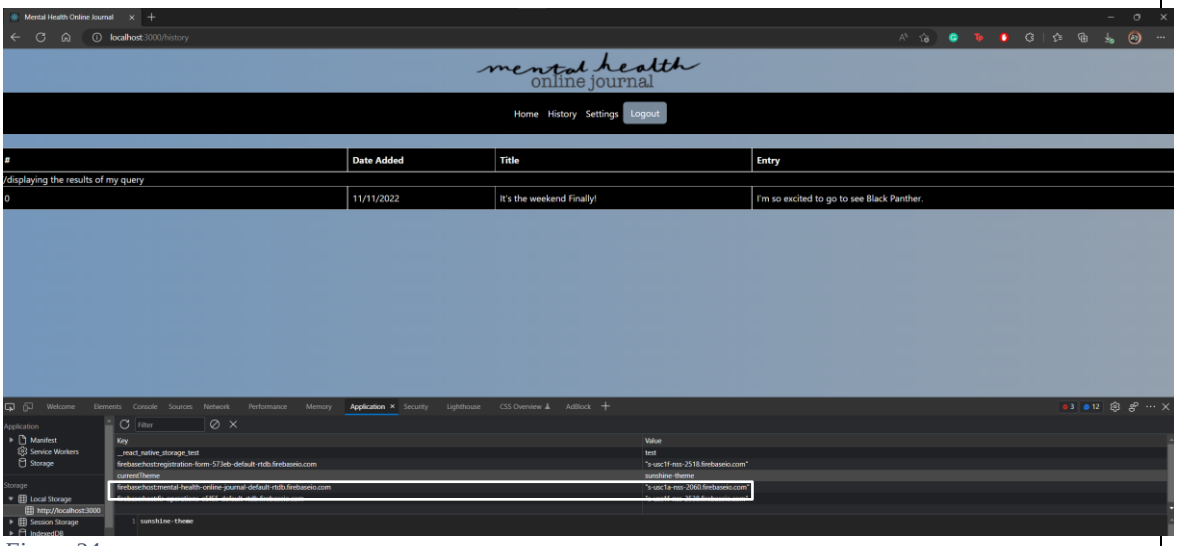


Figure 34

Figure 35

6.1.2 A Parent-guided shape learning tool testing references

Figure 36

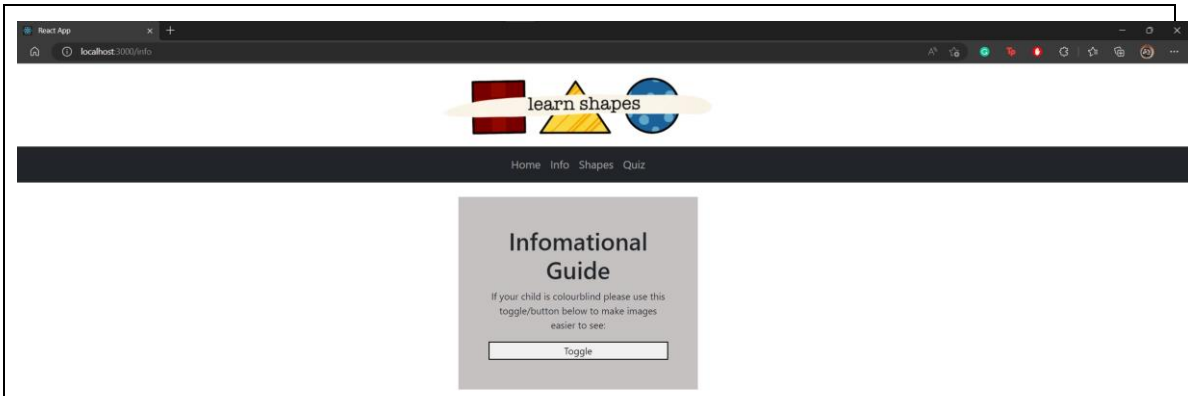


Figure 37

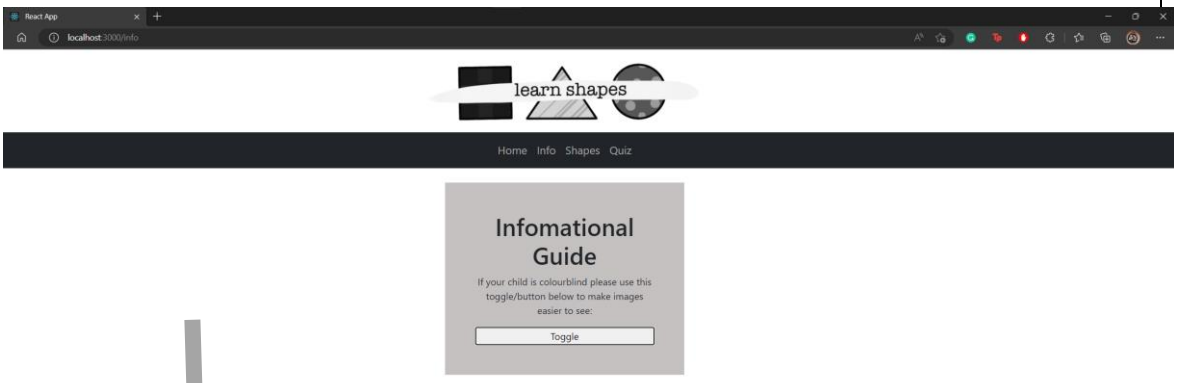


Figure 38

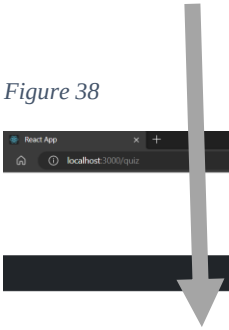


Figure 39

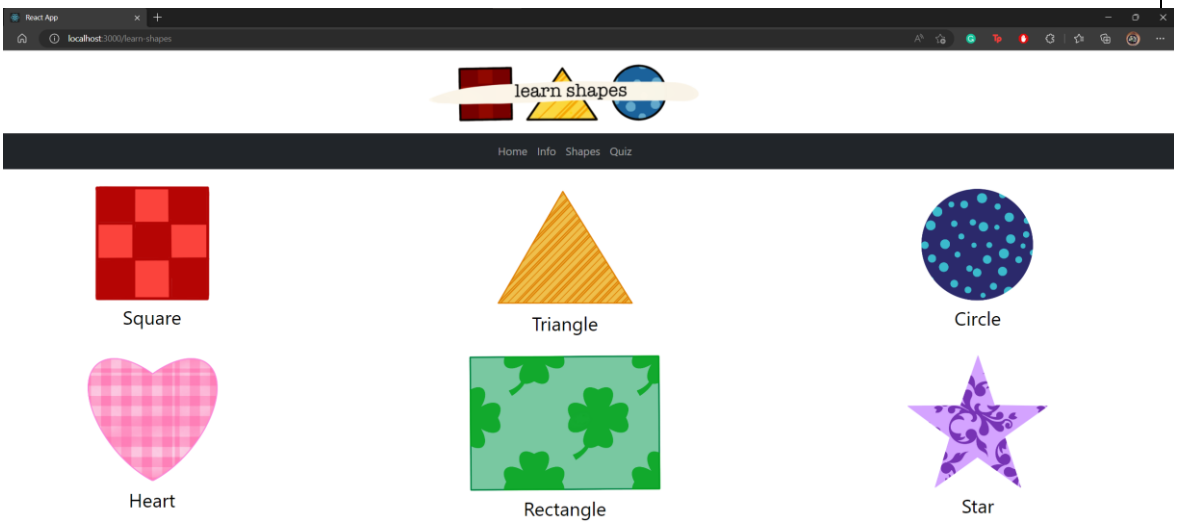
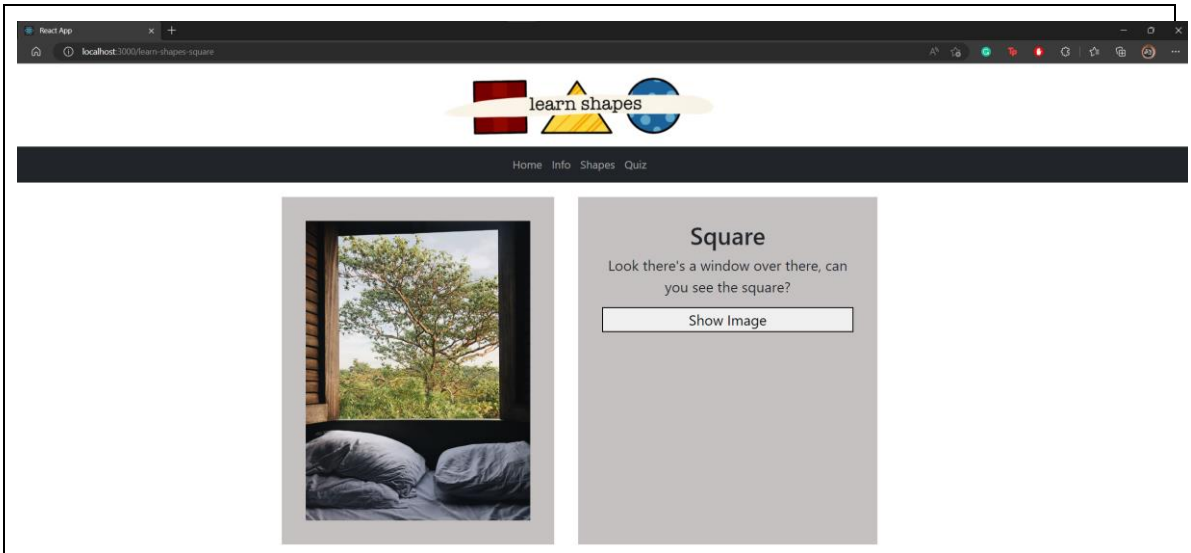


Figure 40



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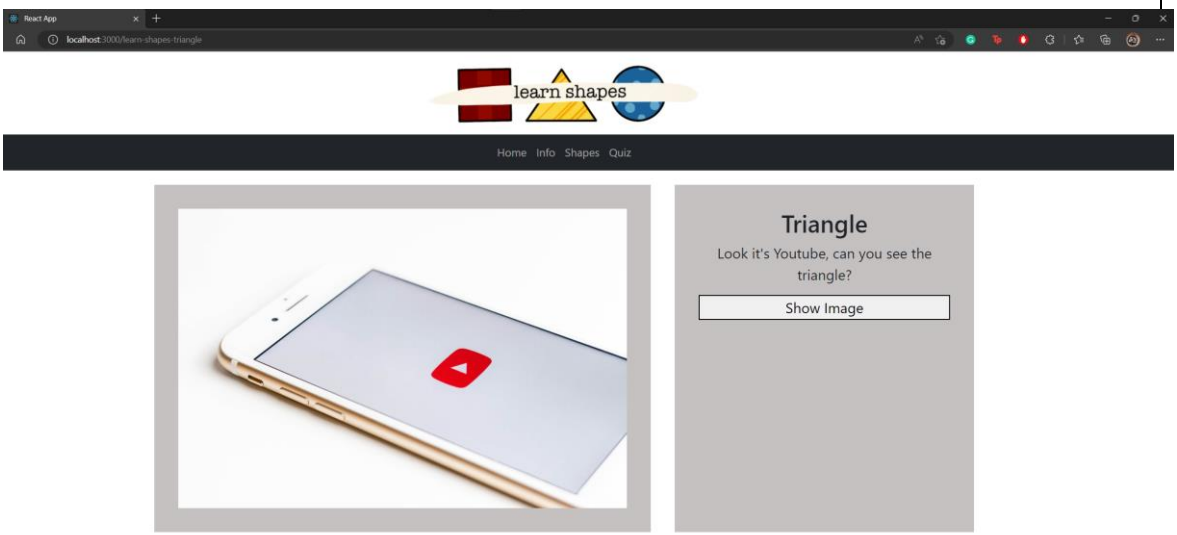


Figure 42

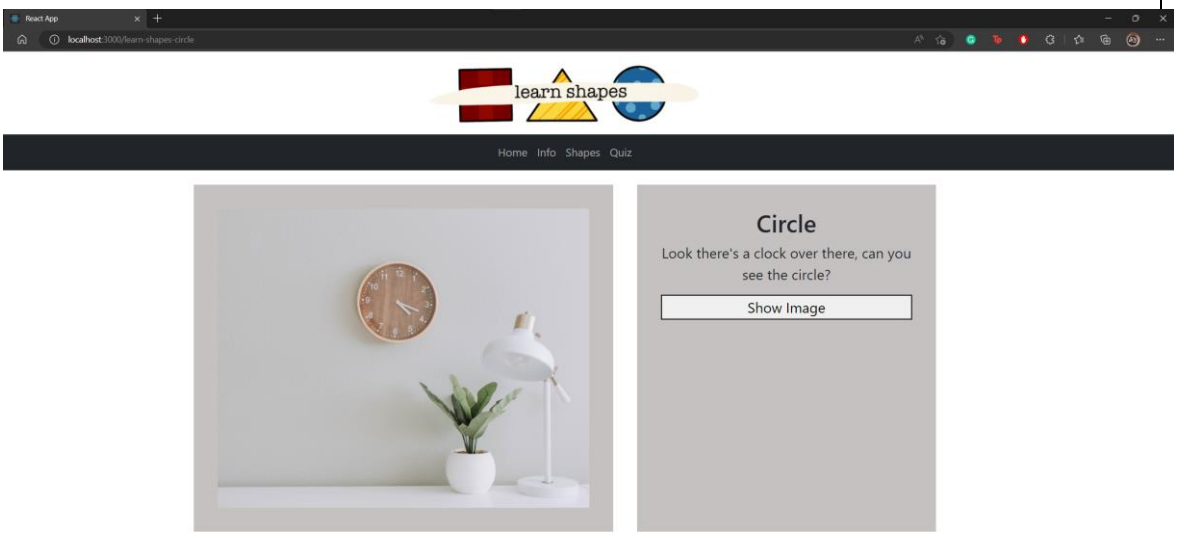


Figure 43

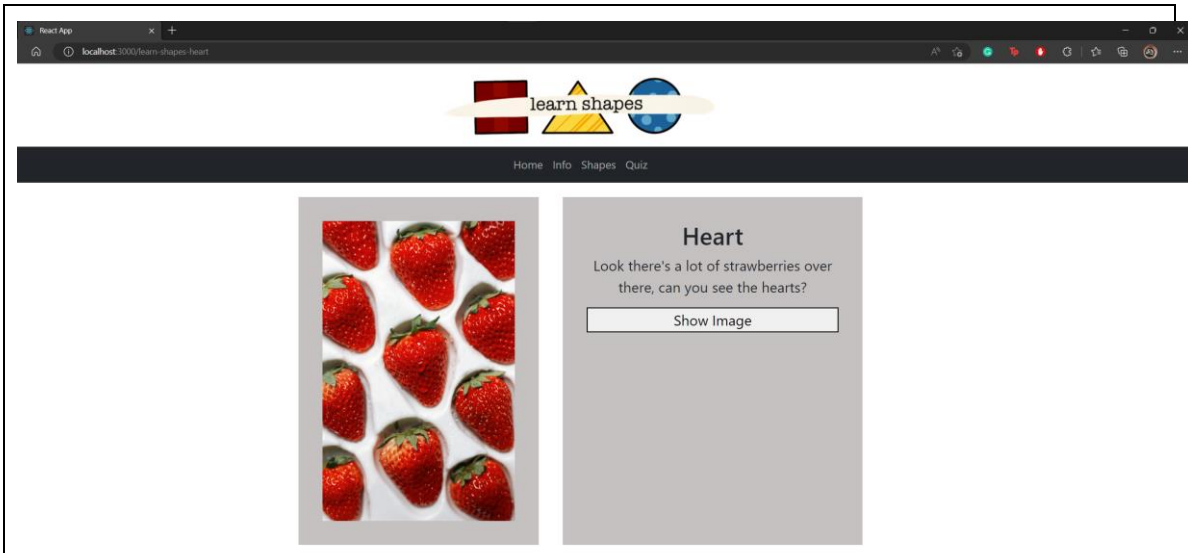


Figure 44

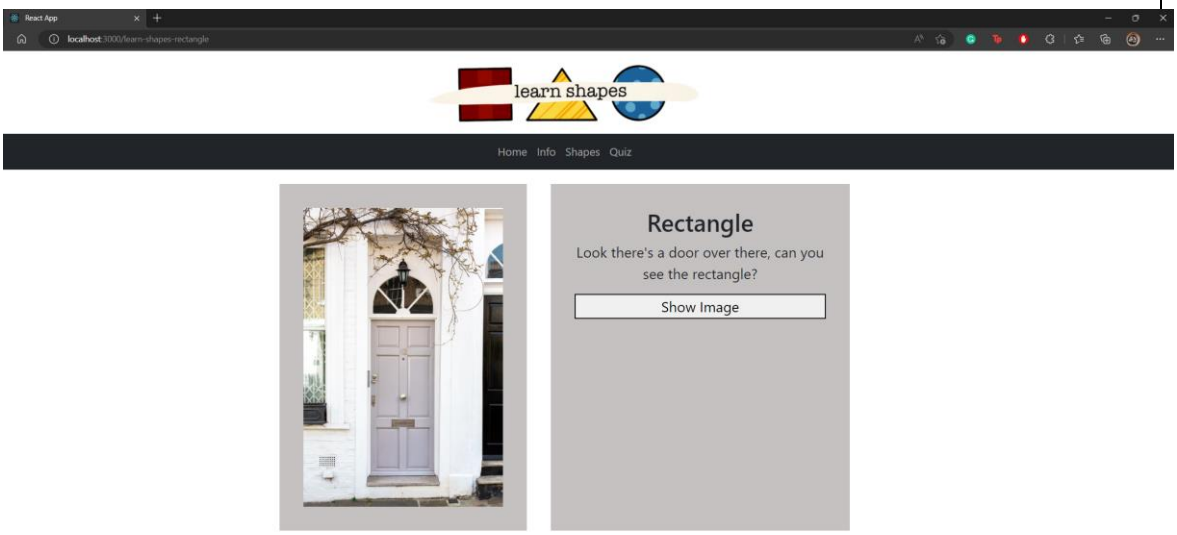


Figure 45

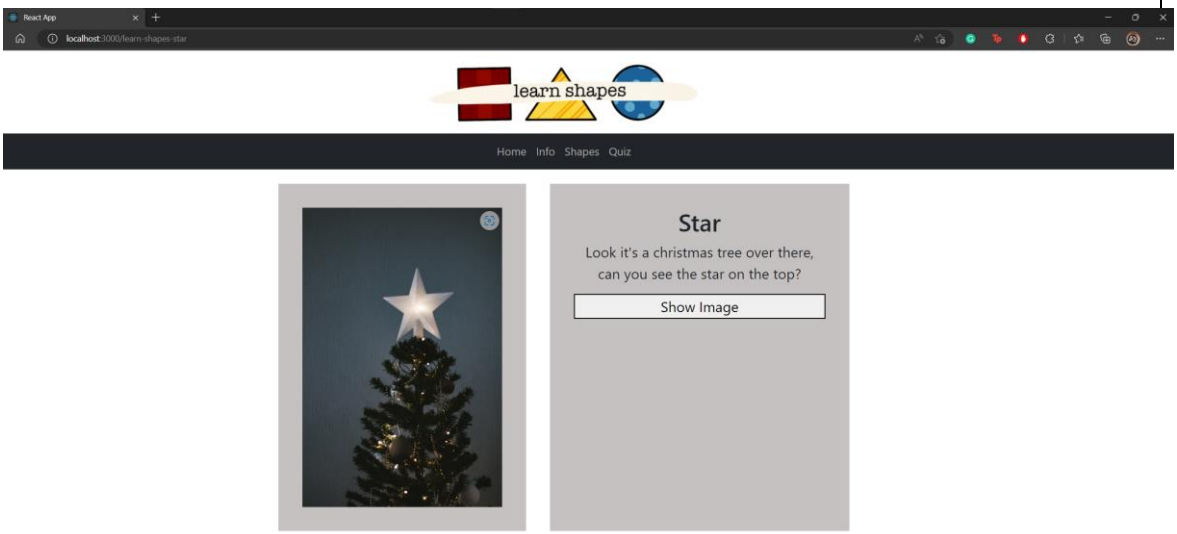


Figure 46

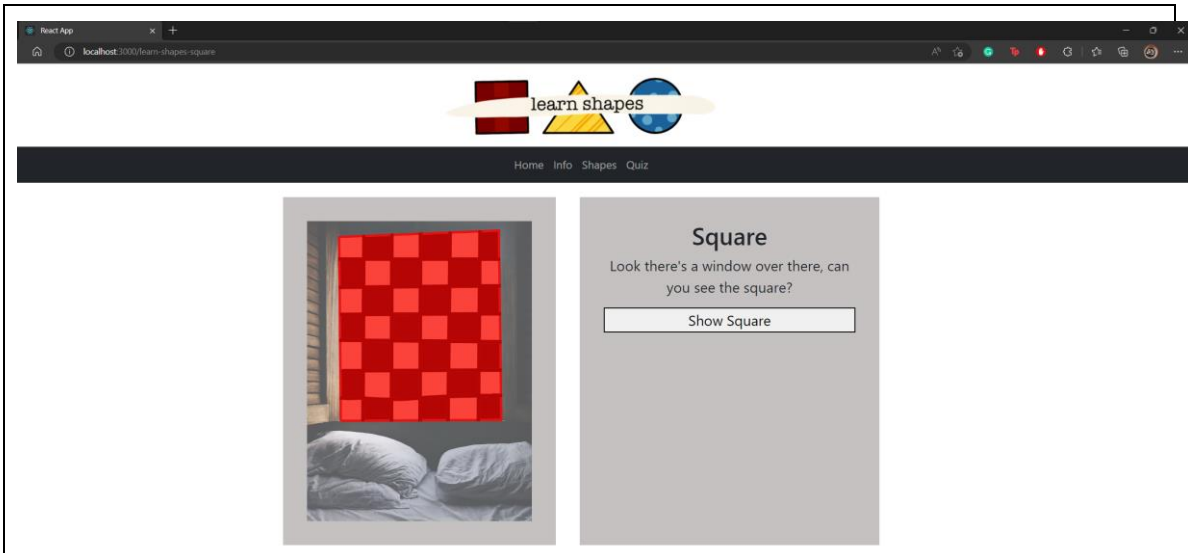


Figure 47

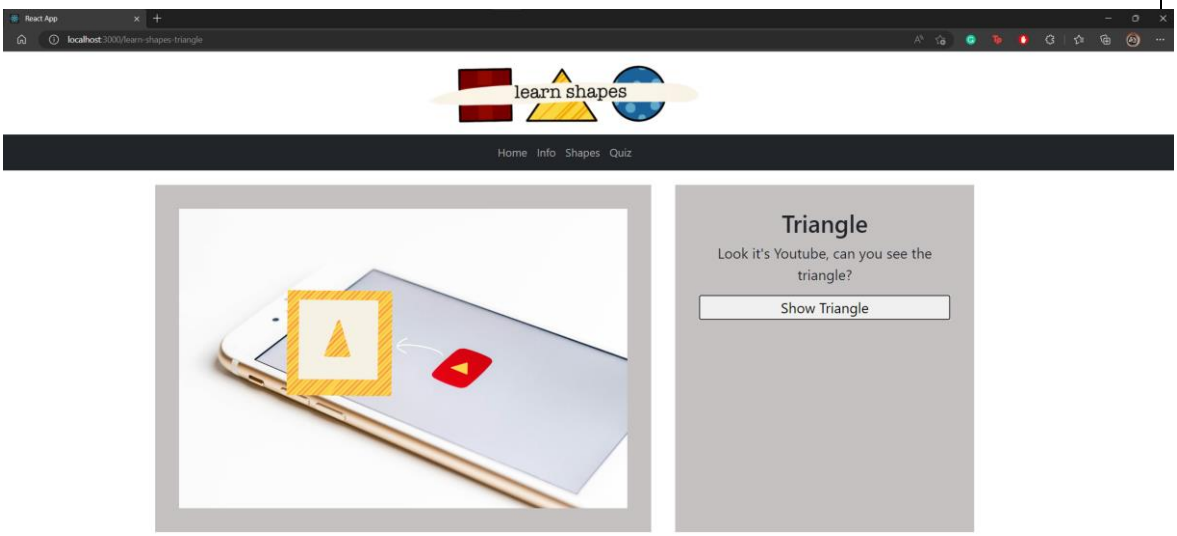


Figure 48

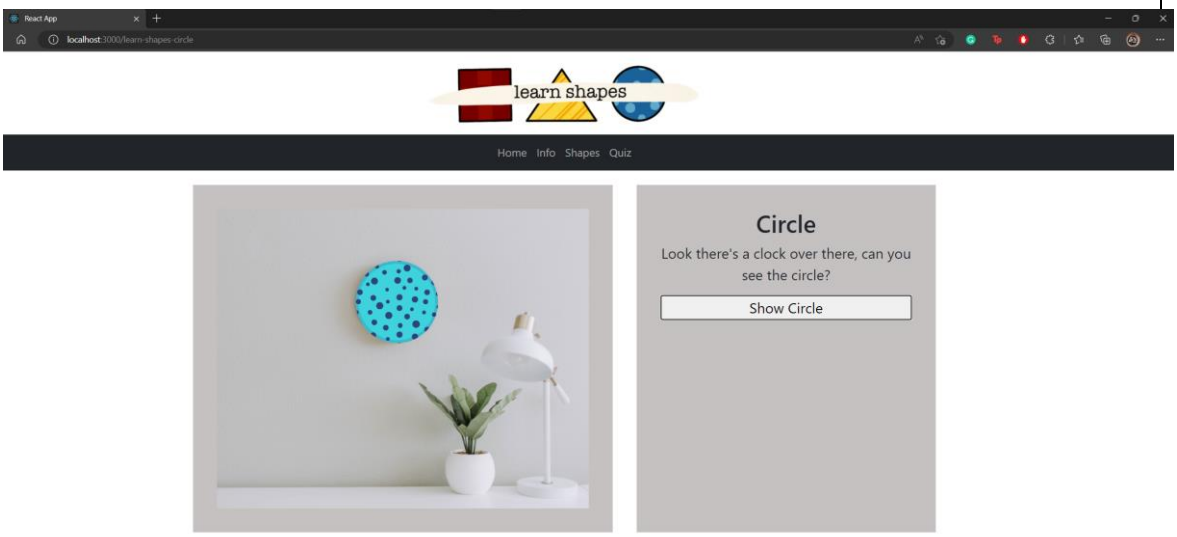
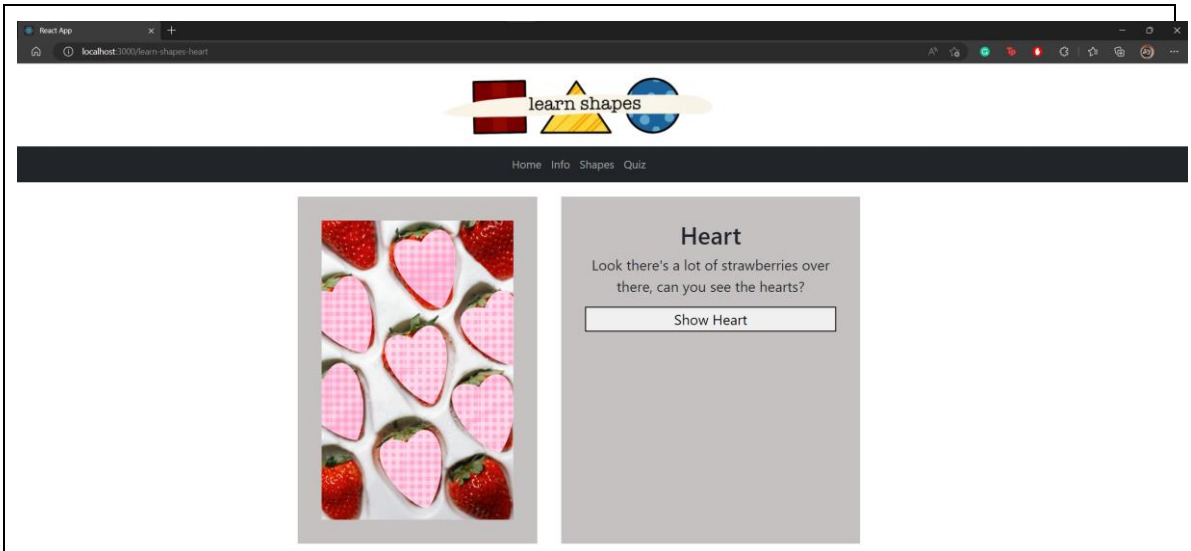


Figure 49



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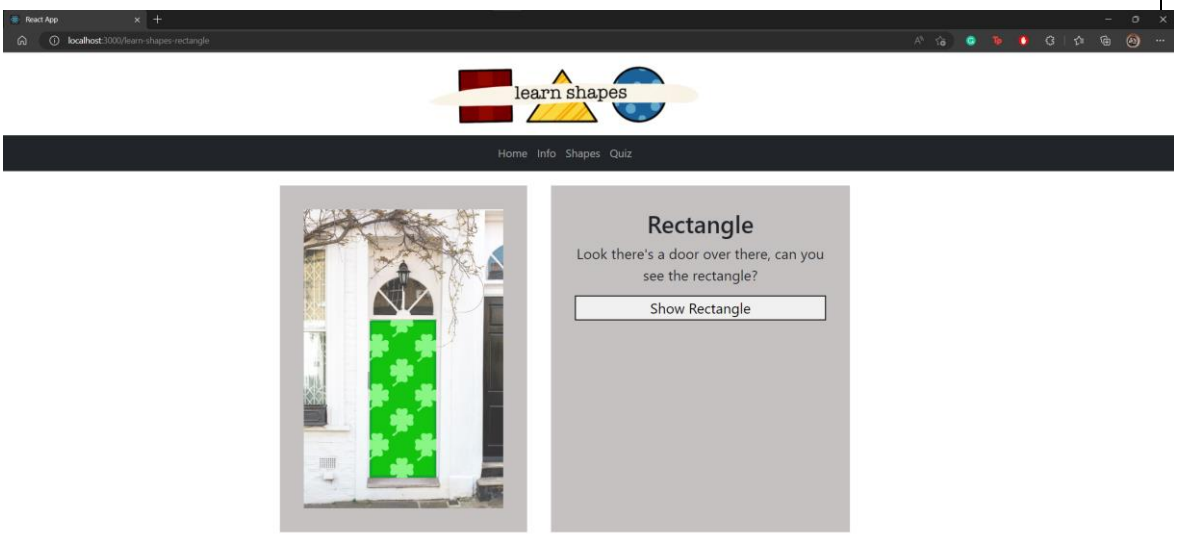

Figure 51

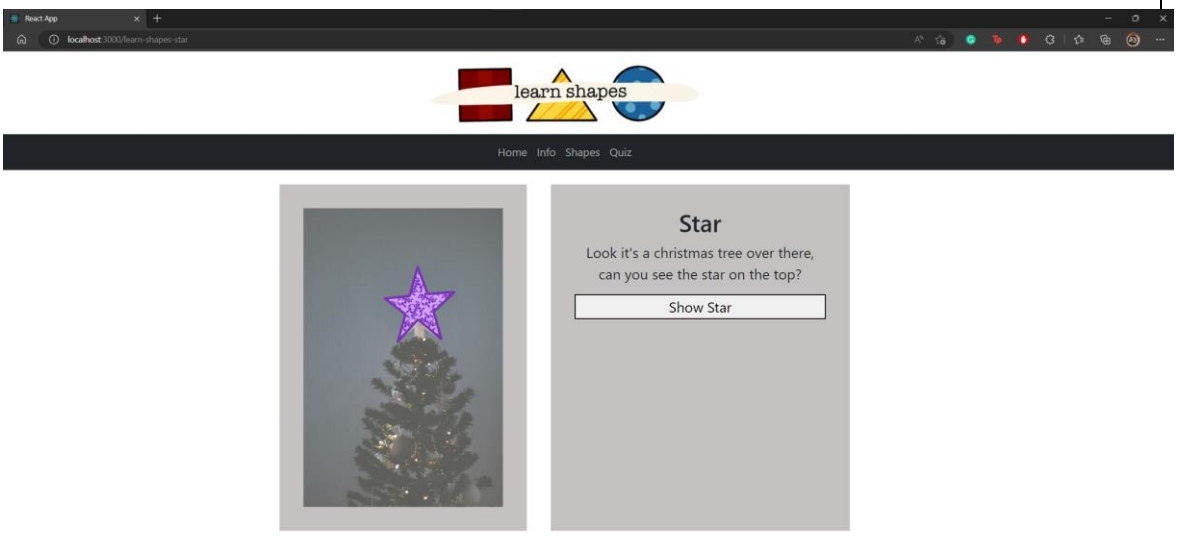

Figure 52


React App
localhost:3000/quiz
learn shapes
Home Info Shapes Quiz

Figure 53

5.1.3 Professional Issues

Using Open Source Code

Since I was inexperienced with firebase capabilities for my first interface, I used open-source code for my login and register containers and functionality. I referred to the author's name in the classes I used their code in. Also, my repository has a reference file that explicitly says which classes or components originated with his code. (Deosthale, n.d.)

Plagiarism

Since I have used open-source code, there is a risk that I copied their code, but since I referenced their work, I acknowledged that their original code is theirs, and I might have adjusted their original code to suit my program better.

6.1.1 Appendix

7.1 Bibliography

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