APR 26, 2022

REQUIREMENTS AND DESIGN OF RENTAL SKI SHOP WEB APPLICATION

PREPARED FOR

Talib S. Hussain

PREPARED BY

Eric Duffield
Liam Kopke
Pleasure Singh Ghotra

1. Requirements for the Business Logic

Introduction with Motivation

Pleasure

Our project idea comes from our passion for winter sports. We all love to ski and we usually ski together at Bromont, Saint-Sauveur and Mont Tremblant. With the project so soon after the end of the ski season, we thought it appropriate to base our project on our shared interests. Considering Eric has prior history with making a shop, as well as our mutual passion for the winter sport, we combined both ideas together and settled on a rental shop.

Our rental shop will be able to accommodate both skiers and snowboarders alike. Our shop has all the necessary equipment available, ranging from boots to helmets. We wanted to make our store a one-stop-shop for all slope enthusiasts. We also changed our minds to only rent single item rentals. We thought about bundles but soon we realized we have a lot on our hands already.

Business Logic Requirements

Liam

There are two types of users that will use the site and their type varies their experience. The three key pages a User has access to are home, rent and account. The home page allows them to get a gist of the entire site with call to actions to our different pages. Our rental page, the core of our site allows users to rent items. In order to access this page, the User must be logged in. Once in the rental page, the user has predefined input fields so that all inputs are of the right type. Once a rental is submitted, the back end checks that an item of the right type is available during that time slot. If everything works, the user will get a success message, and if it doesnt they will get the according error message. Users are to have no limits as to the quantity of rentals they can make, so long as the rental is possible. All rental times must be within operating hours, which are 08:00 to 22:00.

The other type of user, the Admin has a different experience. Their header has links to the list, items, itemTypes and users pages. The list page allows the Admin to see all of the items, item Types and users in the database whilst the other three pages allow the Admin to add, update or delete an item, item type or user respectively.

Furthermore, the following should be assumed:

All database fields are not null

All ids are autoincremented

All username are unique

Passwords are hashed and salted before being stored

Passwords must be considered strong (8 characters minimum, 1 uppercase letter, 1 lowercase letter, 1 number, 1 symbol)

Usernames must be alphanumeric

First and last name must be alpha.

2. Design of Web Application

Interface Design

Eric

We want to make a simple “clean” looking website that doesn’t have too much going on so that the user can focus on what they want to do. Because of this, the screen isn't filled with images, ads and features and only things that are important are displayed. We all really like dark mode because we use our computers at night and find that it is essential to ease eye strain. Because of this, we decided to make the default dark mode but we will have an option where a user can toggle between light and dark mode. We were inspired by other ski websites including Les Sommets. We like their simple colour scheme with light green accents and decided to do the same with a light blue instead.

We decided to stick with a design very similar to the one on our assignment 3. The navbar and footer are almost identical with some minor changes. We used the rough mockup in Microsoft paint from the last assignment and made improvements. This mockup does not include colours or logos as those will be added later.

Overall Layout:

Liam

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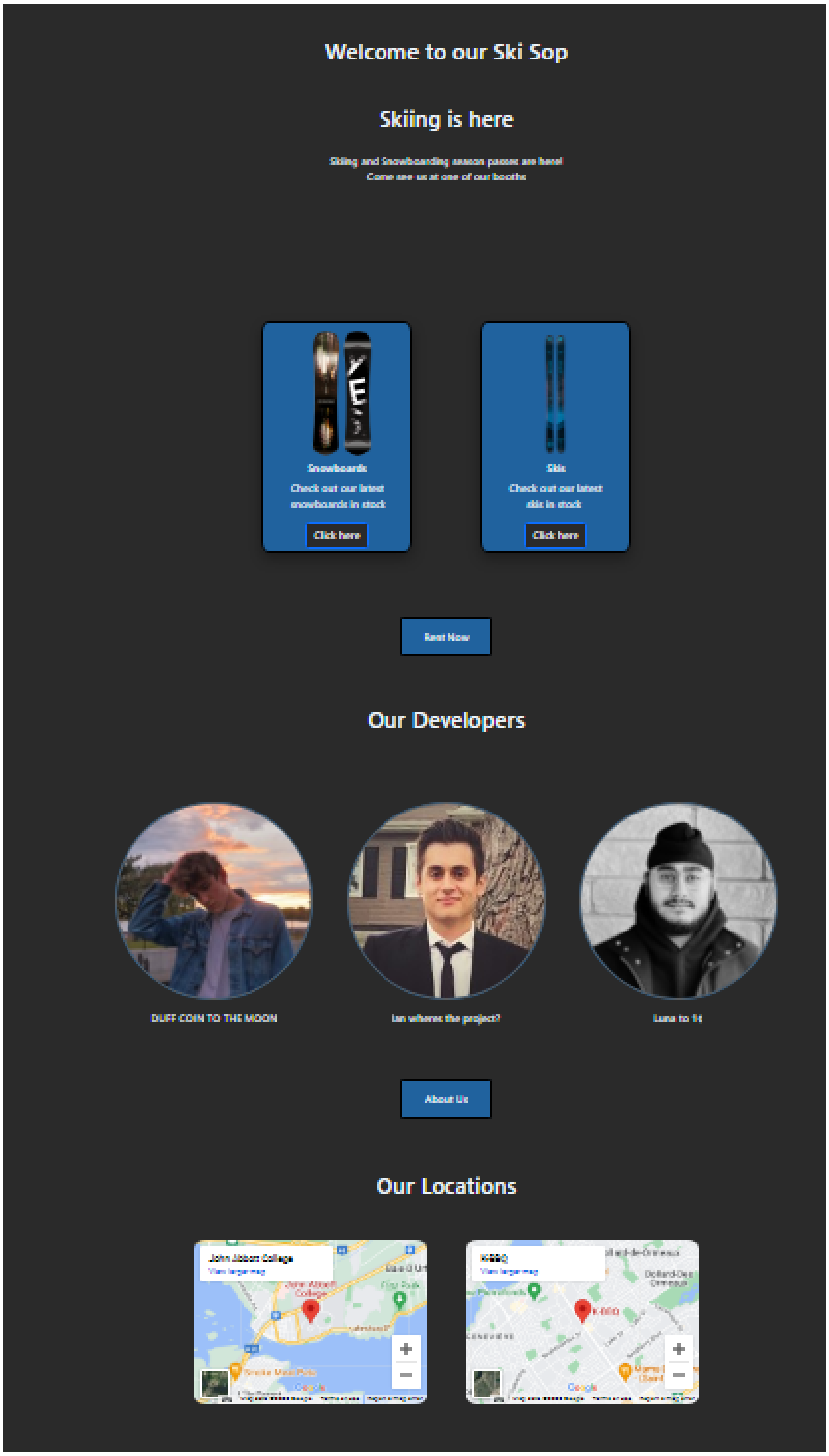


Welcome to our Ski Sop

Skiing is here

Skiing and Snowboarding season passes are here!
Come see us at one of our booths

Snowboards
Check out our latest snowboards in stock
Click here

Skis
Check out our latest skis in stock
Click here

Rent Now

Our Developers

DUFF COIN TO THE MOON

Ian wheres the project?

Luna to 1$

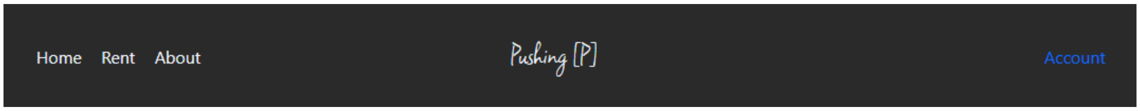
About Us

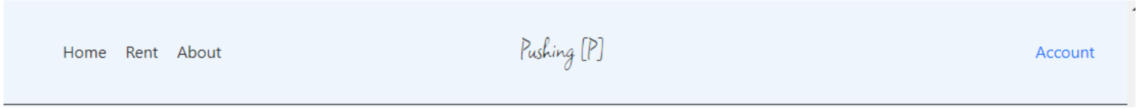
Our Locations

Eric

Navbar:

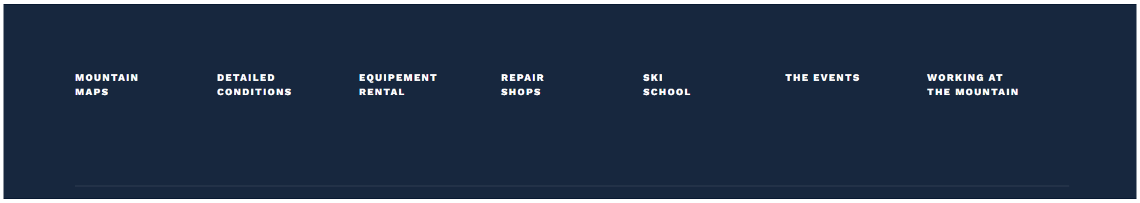
We decided to use a dark grey background for our dark theme and a light blue one for our light mode. The regular user will have 3 main pages: Home, Rent and About. Home will display information about ski renting and the website, Rent will allow users to rent ski equipment and the about page will have information about the three of us. In the top right corner, the user will either have a login or account button depending on if they are logged in.



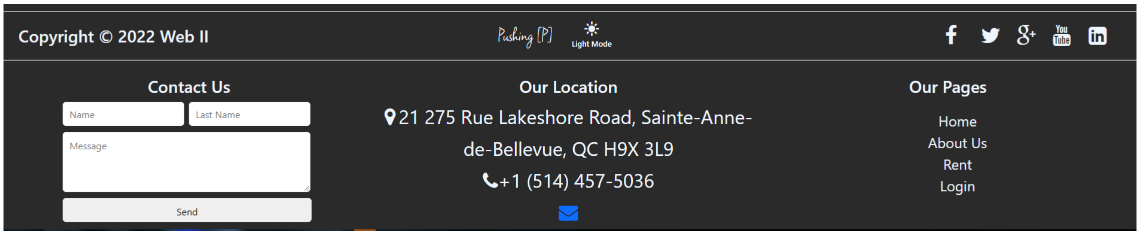


Eric

Footer: We will keep the same bottom of the footer from assignment 3 but will have some links to pages as seen below:



The footer also included links to our other socials, links to either the user pages or the admin pages



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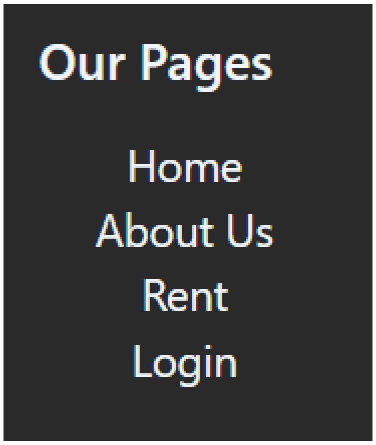
+1 (514) 457-5036



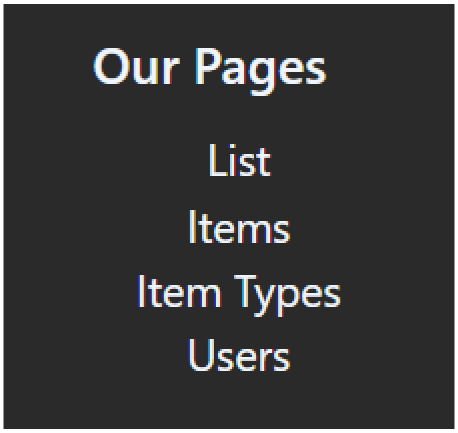
Our Pages

Home

About Us

Rent

Login



Our Pages

List

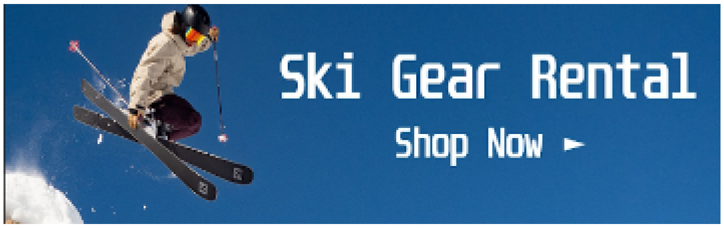
Items

Item Types

Users

Liam

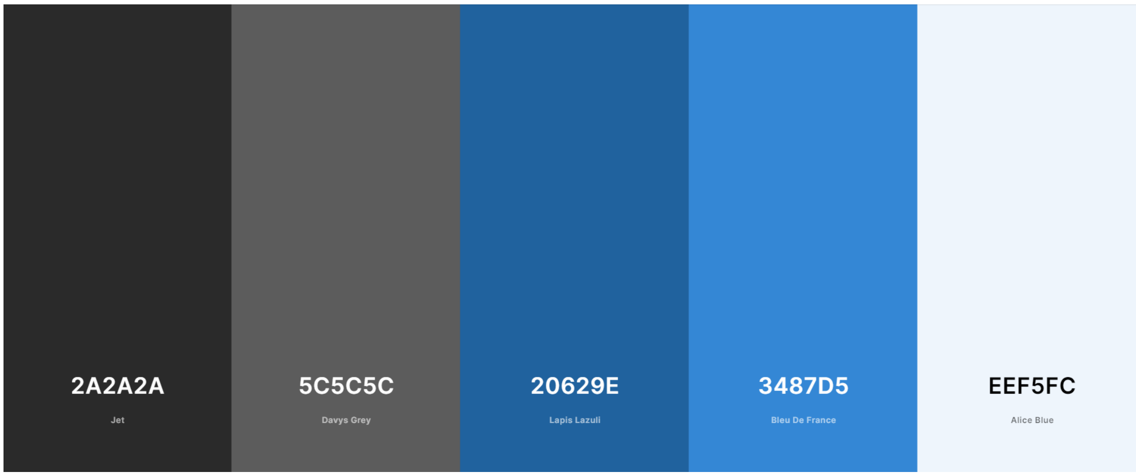
Hero Image: this hero image will be displayed at the top of the home page



Eric

Colours and Themes:

We want the user to be able to choose between light mode and dark mode so the majority of the website is dark grey with white text or white with dark grey text. We didn't choose complete black or white (#000000, #FFFFFF) because we learned in User Interfaces that it is bad to use absolute colours and instead should use shades of them because it is nicer on the eyes. We chose our primary accent colour to be blue because in our opinion skiing is a sport that is related to blue as seen in the hero image that has a blue background. We also have a lighter shade of blue and a lighter grey for hover effects and other small details. We used Coolors to come up with a colour palette and visualize how the colours look together as seen below.



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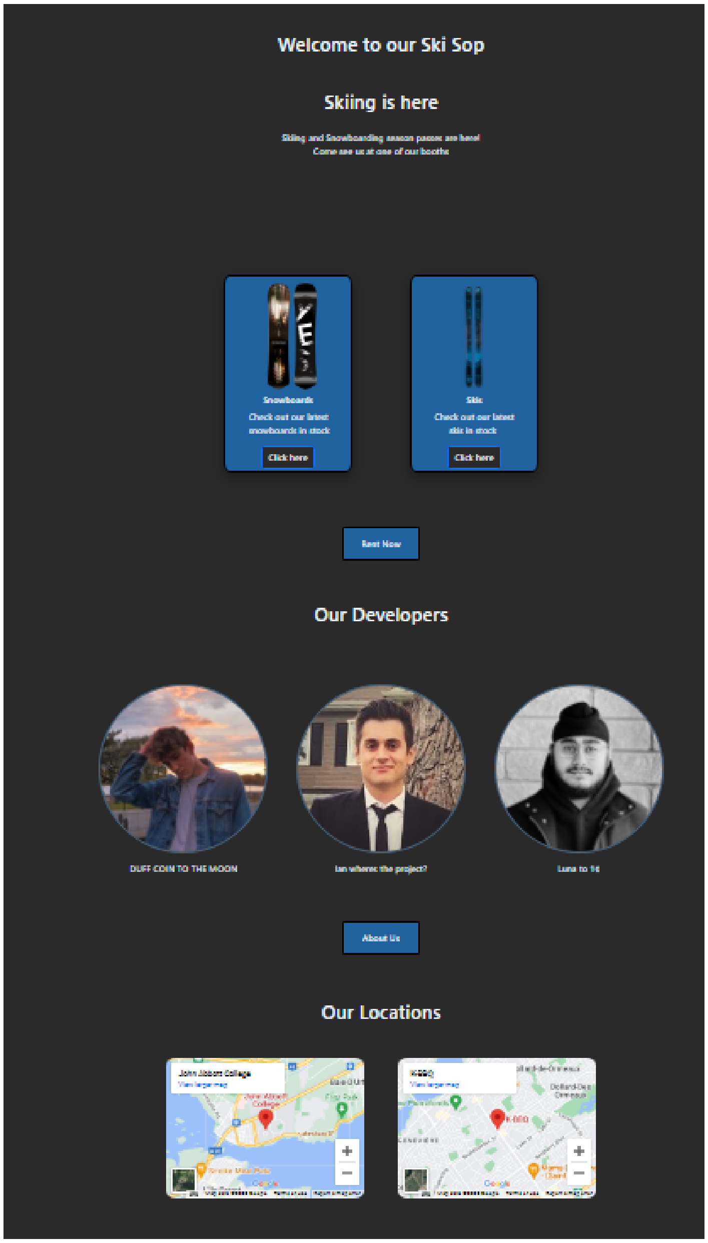
Eric

Home: The home page design was intended to call to draw attention to the other parts of our site. Because of our minimalistic aesthetic, we decided to keep things stacked and not go too crazy. As the User scroll down, they are greeted with a sneak peak of the possible rentals they can make, our pictures and small descriptions in order to put a face behind the site ans well as locations they are likely to find us at.



Welcome to our Ski Sop

Skiing is here

Skiing and Snowboarding season passes are here!
Come see us at one of our booths

Snowboards
Check out our latest snowboards in stock

Skis
Check out our latest skis in stock

Our Developers

DUFF COIN TO THE MOON

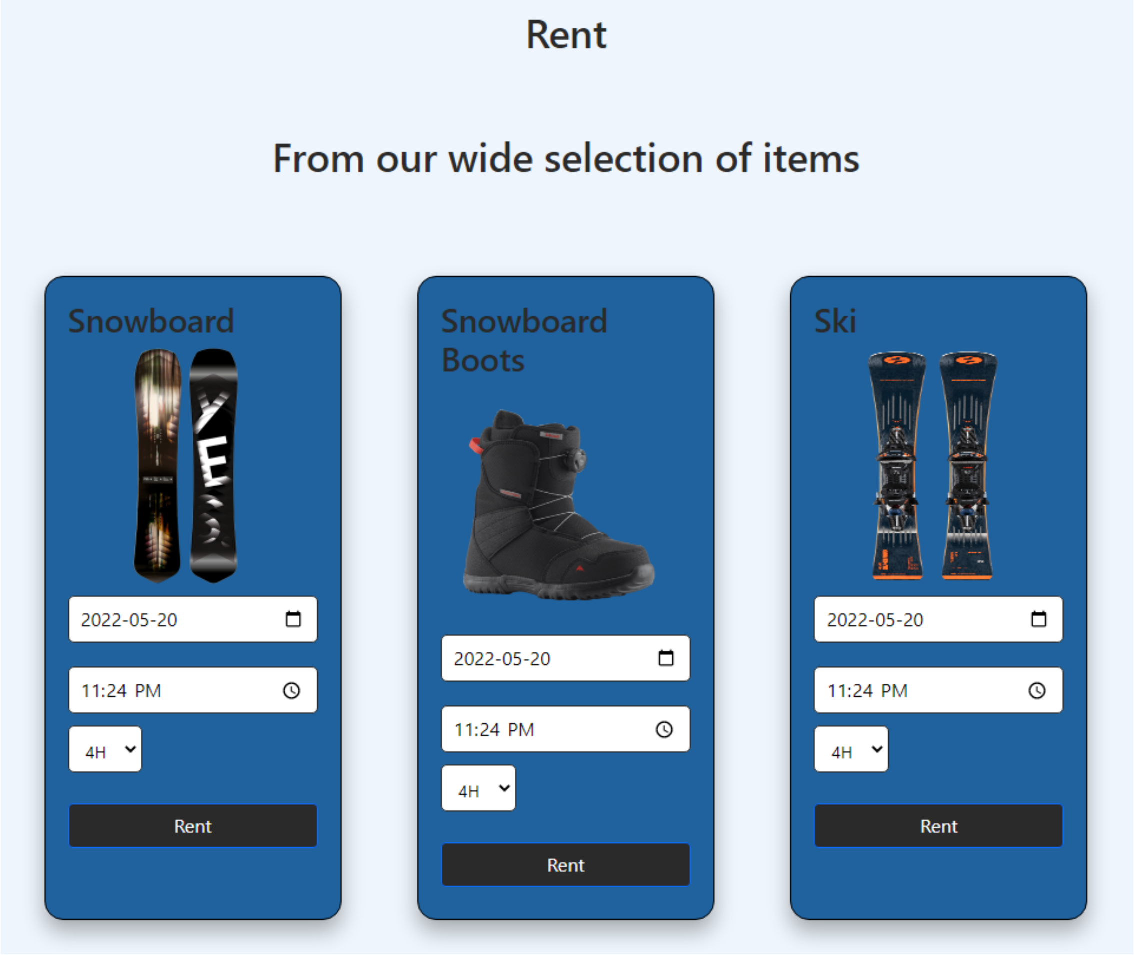
Ian wheres the project?

Luna to 1$

Our Locations

Eric

Rent: The rent page will have many cards with all the rental possibilities. Users can select the start date, start time and duration of their rental. All of these choices are from given fields for ease of use.



Rent

From our wide selection of items

Snowboard

2022-05-20

11:24 PM

4H

Snowboard Boots

2022-05-20

11:24 PM

4H

Ski

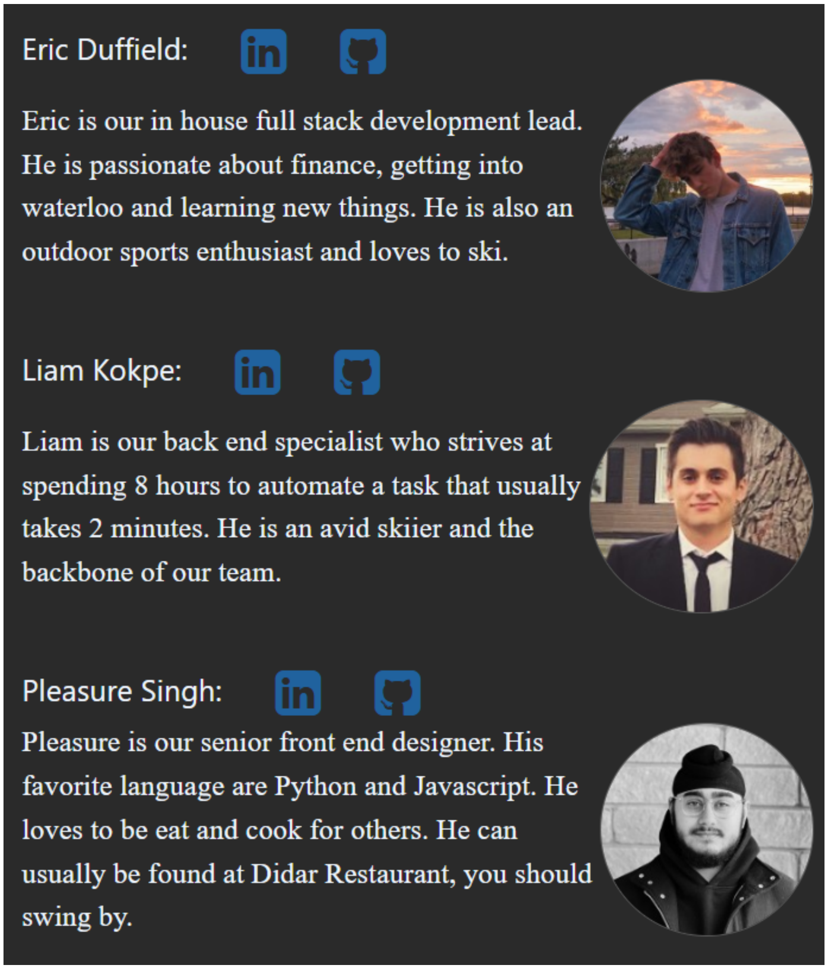
2022-05-20

11:24 PM

4H

Eric

About: The about page has small descriptions of all our devs as well as links to our personal sites / socials.



Eric Duffield:

Eric is our in house full stack development lead. He is passionate about finance, getting into waterloo and learning new things. He is also an outdoor sports enthusiast and loves to ski.

Liam Kokpe:

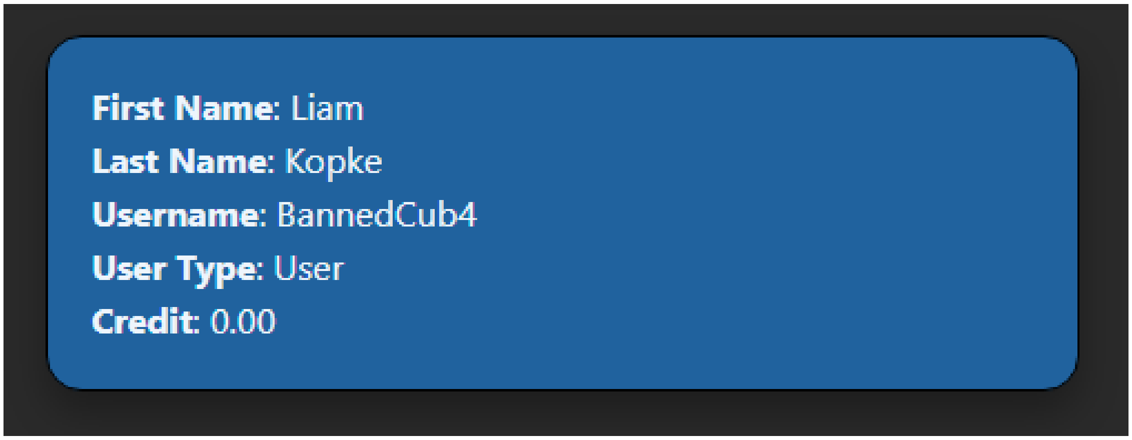
Liam is our back end specialist who strives at spending 8 hours to automate a task that usually takes 2 minutes. He is an avid skiier and the backbone of our team.

Pleasure Singh:

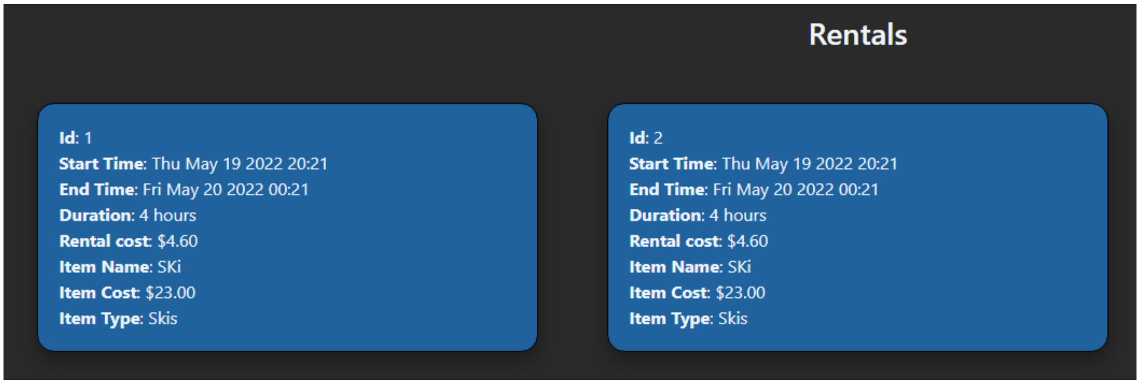
Pleasure is our senior front end designer. His favorite language are Python and Javascript. He loves to be eat and cook for others. He can usually be found at Didar Restaurant, you should swing by.

Eric

Account: The account page shows the users information as well as all of their rentals



First Name: Liam
Last Name: Kopke
Username: BannedCub4
User Type: User
Credit: 0.00



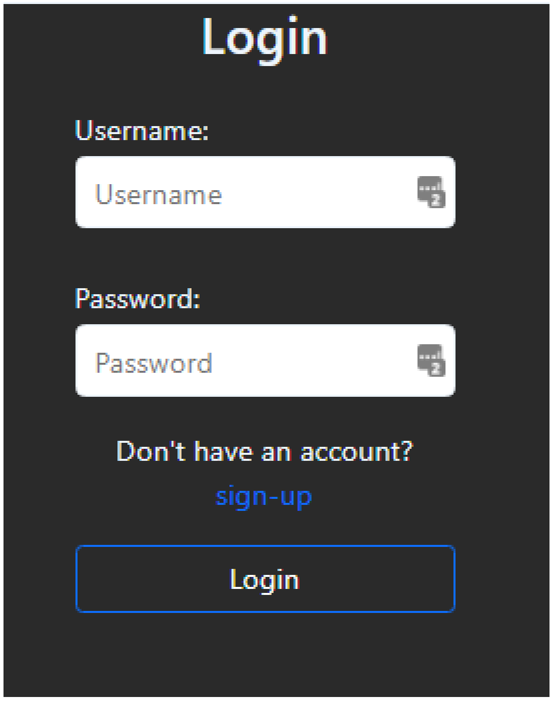
Rentals

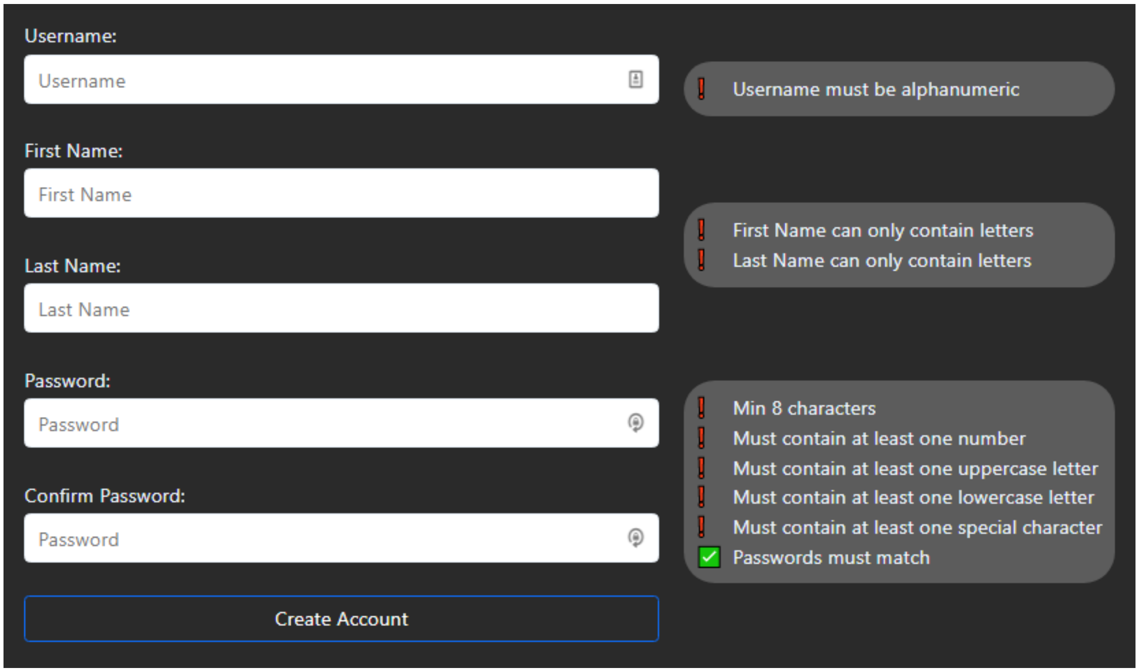
Id: 1
Start Time: Thu May 19 2022 20:21
End Time: Fri May 20 2022 00:21
Duration: 4 hours
Rental cost: $4.60
Item Name: SKi
Item Cost: $23.00
Item Type: Skis

Id: 2
Start Time: Thu May 19 2022 20:21
End Time: Fri May 20 2022 00:21
Duration: 4 hours
Rental cost: $4.60
Item Name: SKi
Item Cost: $23.00
Item Type: Skis

Eric

Login/Sign up: Log in and sign up pages





! Username must be alphanumeric

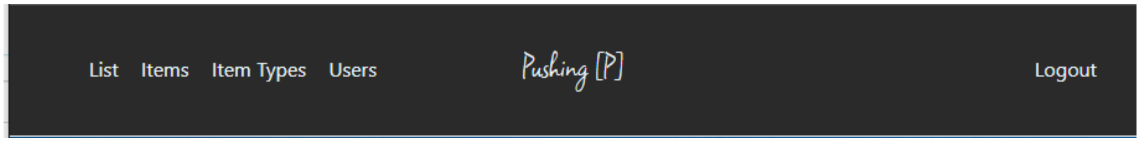
! First Name can only contain letters
! Last Name can only contain letters

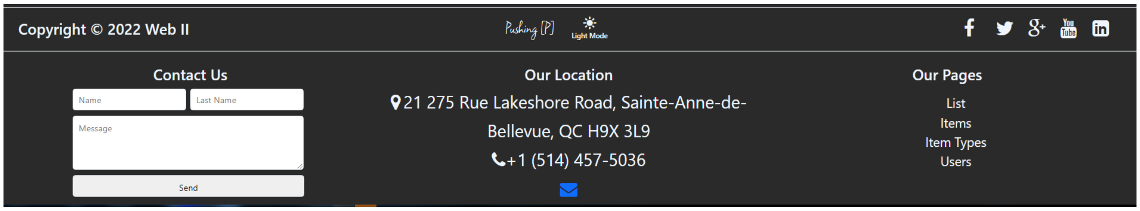
! Min 8 characters
! Must contain at least one number
! Must contain at least one uppercase letter
! Must contain at least one lowercase letter
! Must contain at least one special character
✓ Passwords must match

Admin Pages

Admin Header And Footer:

The admin header and footer have different links as to provide the right pages for the right user.

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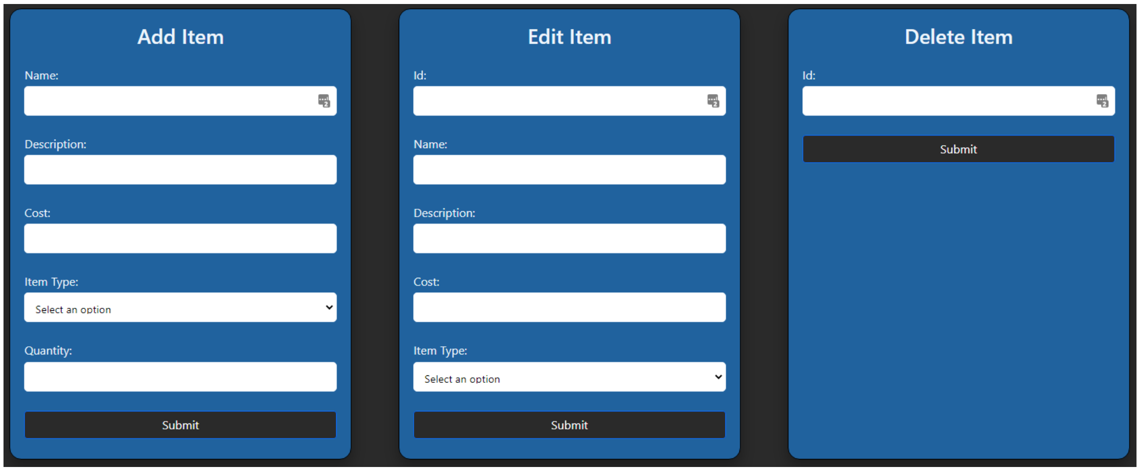
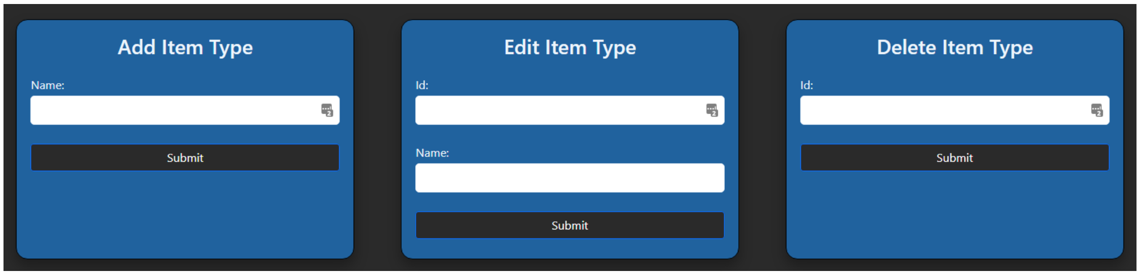
Eric

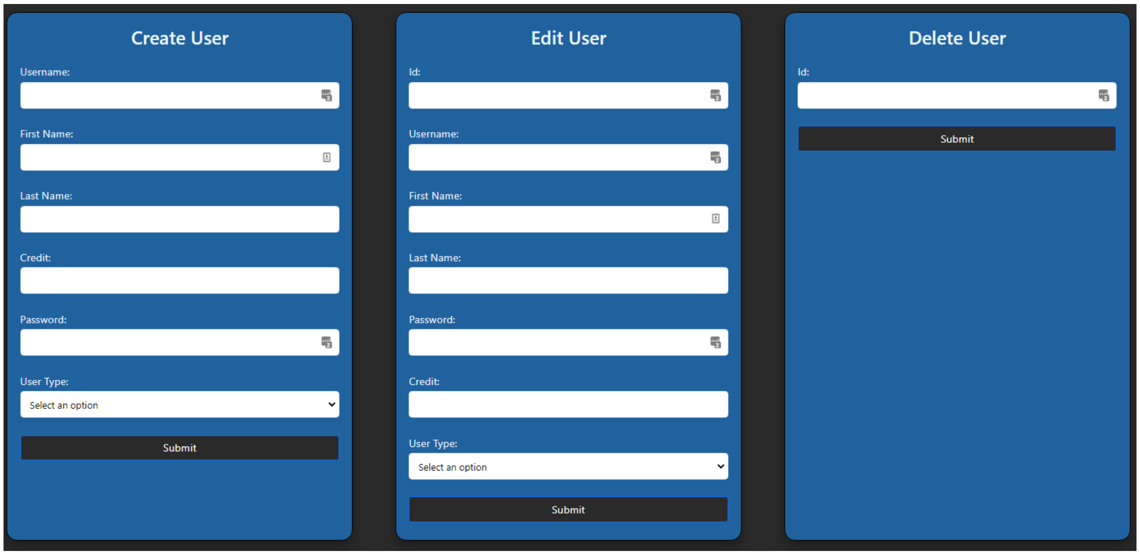
Items Page:



Item Types Page:

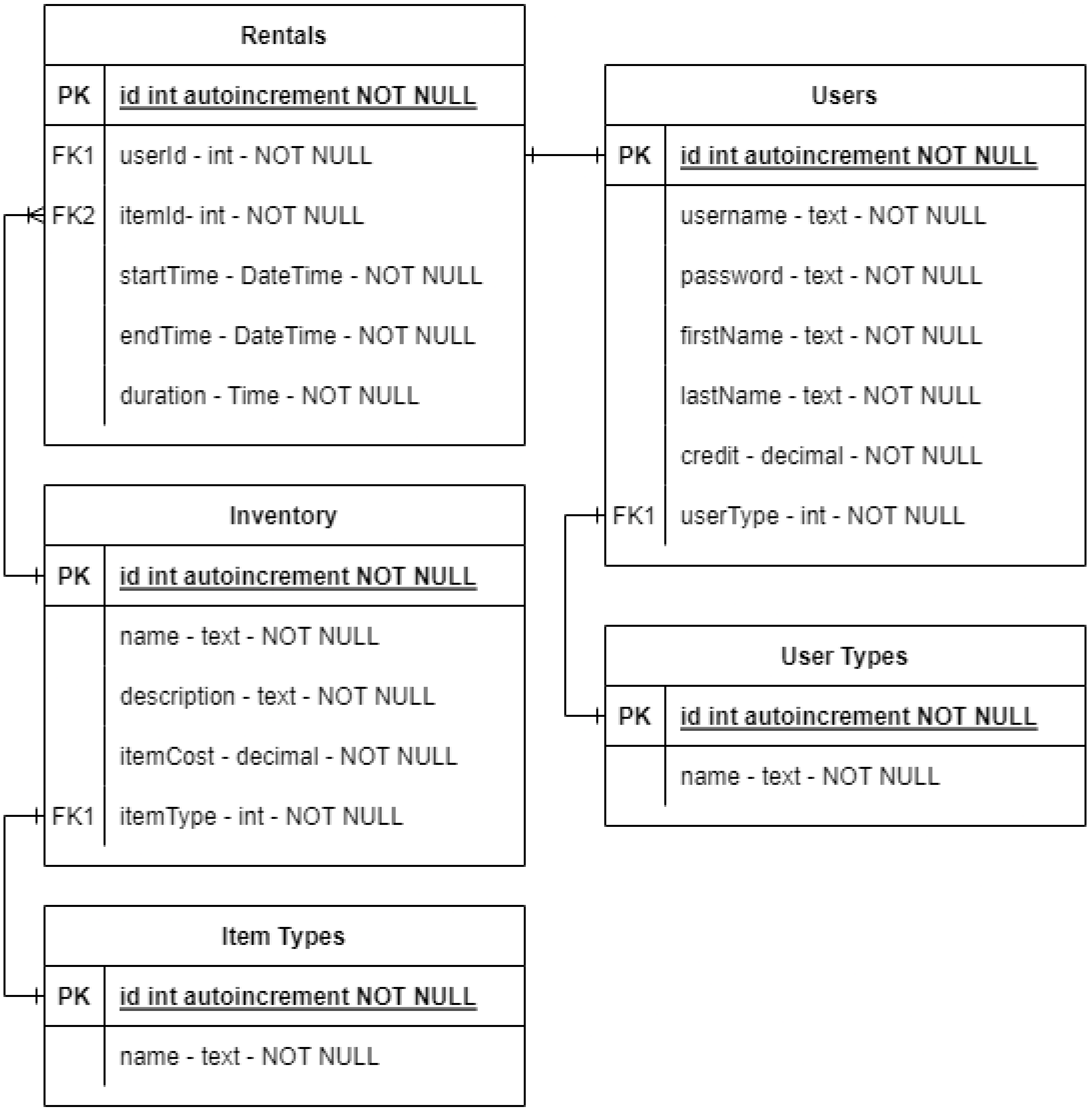

Add Item Type
Name:
Submit
Edit Item Type
Id:
Name:
Submit
Delete Item Type
Id:
Submit

Users Page:


Create User
Username:
First Name:
Last Name:
Credit:
Password:
User Type:
Select an option
Submit
Edit User
Id:
Username:
First Name:
Last Name:
Password:
Credit:
User Type:
Select an option
Submit
Delete User
Id:
Submit

Database Design

Liam



	Rentals
PK	id int autoincrement NOT NULL
FK1	userId - int - NOT NULL
FK2	itemId- int - NOT NULL
	startTime - DateTime - NOT NULL
	endTime - DateTime - NOT NULL
	duration - Time - NOT NULL

	Users
PK	id int autoincrement NOT NULL
	username - text - NOT NULL
	password - text - NOT NULL
	firstName - text - NOT NULL
	lastName - text - NOT NULL
	credit - decimal - NOT NULL
FK1	userType - int - NOT NULL

	Inventory
PK	id int autoincrement NOT NULL
	name - text - NOT NULL
	description - text - NOT NULL
	itemCost - decimal - NOT NULL
FK1	itemType - int - NOT NULL

	User Types
PK	id int autoincrement NOT NULL
	name - text - NOT NULL

	Item Types
PK	id int autoincrement NOT NULL
	name - text - NOT NULL

Liam / Pleasure

Rentals: The rental table contains the core information about the rental. I.e. the start time, duration and end time. The table also links to the the item being rented in the inventory table.

Inventory: The inventory table has all the items the shop has. It has basic item information as well as what item type it is.

Item Type: Each item has its item type.

Users: The users table has all the information about the user. It is linked to the user types table.

User Type: A user can be either a regular user or an admin.

Application Features

Eric

Core Features

Login: The login form has two input fields, a username and password. These are checked to see if any user matched those credentials. If so, the correct cookies are created and the user is redirected to the rent page.

Sign-Up: The sign up takes in 5 fields in order to make a user. The username must be alphanumeric and unique. The uniqueness is checked in the database but the alphanumerical aspect is checked in real time. The user must also input a first and last name that must be alphabetical. Lastly, the user must input a strong password and confirm it. Visual indications on the side of the form inform the user if their password is valid and matching.

Logout: Users can find the logout in the account page whilst admin can find it in the admin header.

Rent Ski Equipment: Users are able to rent ski equipment on the rent page. They will choose from a dropdown the type of equipment they want the time of day from a date picker and the duration of the rental.

See Ski equipment: On the account page, the user will be able to see their rented ski equipment. The following information will be displayed: Id (Rental number), start time, end time, duration, rental cost, item rented, item cost and item type.

Admin Features: Admins have their own set of pages that allow them to perform different features. Admins can use forms to perform the following actions.

- Add items that can be rented. The form will have the following fields: Id, Quantity available, Name, Description, Type of equipment
- Edit item information. The form will have the following fields: Id, Name, Description, Quantity, Type of equipment
- Delete item. Delete item with a specified id.
- Add Item Type. The form will have the following fields: Id, Name
- Edit Item Type. The form will have the following fields: Id, Name,
- Delete item type. Delete item type with a specified id.
- Edit users: The form will have the following fields: Id, Username, Password, First Name, Last Name, Email, Phone number
- Delete users: Delete user with a specified id.

Admin Validation and Confirmations: Any action performed by an admin will either show a confirmation of success on the screen or show an error message describing the problem. All admin input will be validated: If adding Id will be checked it does not already exist and when getting will be checked it exists in the database. Names, descriptions and quantities will have a max length and made sure they are alphabetical or numerical. Types of equipment will be checked that it exists and names and ids will also be validated when adding or editing types. When editing user information new usernames will be made sure is unique, passwords are min 8 chars and strong enough, names, email and phone numbers will also be made sure is valid.

Informative Error Messages: Error messages are displayed in an eye-catching way that does not intrude on the overall look and feel of the site. They will show a descriptive error message that will tell the user what the problem is.

Coding Technique / Technologies

Liam

Our coding techniques pretty much fall in line with what we have been doing in class except for a couple of changes. Just like in class, we will be using all the node packages listed below. We will most likely not be using any Bootstrap as we have not delved too deep into it. We will be using js and CSS later to look at and feel our site. On top of that, we will be using the MVC pattern we learned in class.

To facilitate group work and codeshare, we will be using a combination of Discord and Github. We dive deeper into the use of each further in the document, but essentially we will be using Discord to share small bits of code when helping each other out / working on the same bit of code and we will use GitHub for the rest of the code sharing. We will be using branches to work on our attributed sections of the project and will be merging into the main once we are done with that part.

Node Modules we used:

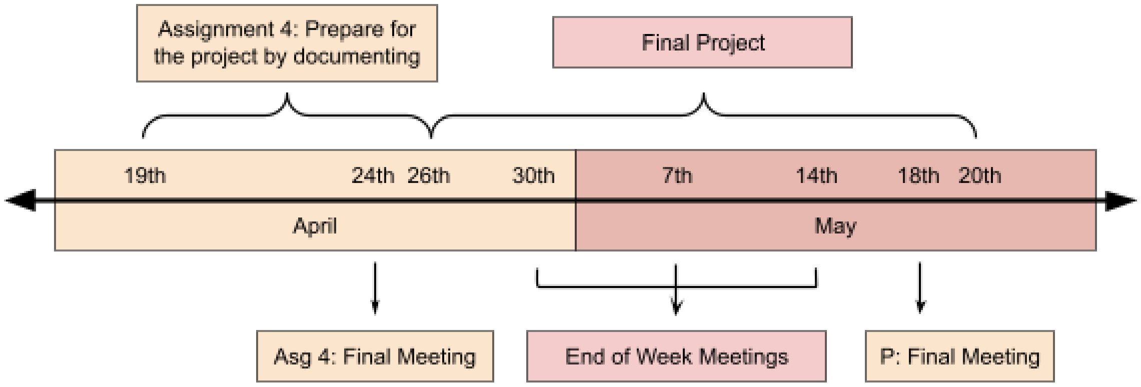
- express
- express-handlebars
- express-list routes
- jsdoc
- jest
- jest-puppeteer
- mysql2
- nodemailer
- uuid
- pino
- pino-caller
- pino-http
- pino-pretty
- supertest
- validator
- bcrypt
- cookie-parser
- add-time

Althought most of our packages were the same as in class, we added the use of node-mailer and add time. The former is used in our footer. It allows any user to send us an email with a question. The ladder is used to add two times together in for our rentals.

3. Development Plan

Timeline

Liam



Pleasure

This section will cover the development plan and our time frame of particular achievement. We first thought Jira would be a excellent choice to keep track of our progress and make sure we're on time with everything. But we soon reazlied it was not a efficient way. We kept looking at our task list to make sure weren't forgetting anything.

From the 19th to the 26th of April we will do our plan, this includes the descriptions, requirements, and the different sections of our final project. Having the Design of the application; Having the different images on each of our pages, our pages will include the information. For example, the home page has two images which redirects the user to the rent page.

From the 26th to our final date for our project, we will work in an asynchronous working method, we will use discord to communicate between us and give tasks and show the different milestones in our code. We will have meetings every 2 days to make sure we are up to date since it will help each other not forget important information to put in our application. Before our presentation, we will have a day to dedicate to our presentation.

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The day before the presentation, we came together in discord to make sure our client-side and server-side are working perfectly. This ensured us to have a good understanding of our sections. This includes our views being done and having most of our server-side to be done. We unfortunately did not add any explicit logging; Winston. We soon learned that we had any task and the Talib only wanted endpoint testing to be done. Debugging was a hassle.

Before the 20th, our due date, we had a quick meeting to all come together and discuss any other changes we would like to do, this ranged from changing some of the text around to make it look nice, or any other minor changes we would like to do. We won't do anything big since that could ruin the main theme of the application. Since we realized puppeteer was not needed we did endpoint testing

Our tests helped us finish the project and make sure all of our functionalities were good .

Every meeting we had, we presented our task we completed and make sure to help the others if they were stuck on a particular step. This will include the view to be perfectly in sync with the controller and model. Since we already have a footer and header completed the first thing we worked on is making sure the homepage fits the characteristics we want. We also made sure all of us understand cookies and how they function since that is a crucial part of this application. We then

Tasking Plan

Stories, who is doing what, story point estimates

Task List

Pleasure

	Task	Assigned To	Due Date	Dif. Lvl.
✓	Make the user nav bar	eric	30th April	1
✓	Make the admin nav bar	eric	30th April	1
✓	Ensure links to correct pages work	eric	30th April	1
✓	Make the header	eric	30th April	1
✓	Ensure header has nav inside	eric	30th April	1
✓	Header should have a Dark mode button	eric	30th April	2.5
✓	Header logo should redirect to main page	eric	30th April	1
✓	Dark Mode should be saved as a cookie	eric	30th April	2.5
✓	Create the footer	pleasure	30th April	1
✓	Footer should contain links to all of our pages	pleasure	30th April	1
✓	Footer should contain contact information	pleasure	30th April	1
✓	Footer should contain pertinent company information	pleasure	30th April	1
✓	There should be a socials section in the footer	pleasure	30th April	1

🟦	Socials links should link to something pertinent	liam	30th April	1
🟦	Footer should have copyright information	liam	30th April	1
🟦	Create the home page	liam	30th April	2
🟦	Home page contains a hero image	liam	30th April	2
🟦	Hero image click should go to rental page	liam	30th April	2
🟦	Home page should have introduction text	pleasure/liam	30th April	2
🟦	Home page should have some prices to entice the user to go to the rental	liam	30th April	2
🟦	Home page should have simple version of about us	eric/liam	30th April	2
🟦	Write the introduction text for the home page	pleasure	30th April	2
🟪	Write About Us text	pleasure/liam/eric	7th May	2
🟪	Start the Rent page	pleasure	7th May	2
🟪	Rental has the start time (user can pick)	liam	7th May	2.5
🟪	Rental has a end time (user can pick)	liam	7th May	2,5
🟪	Each rental has the duration (user can pick)	liam	7th May	2.5
🟪	Cost of each rental	liam	7th May	2,5
🟪	View more “click”	liam	7th May	1
🟪	View more will contain the bundle	eric	7th May	3
🟪	Name of the bundle	eric	7th May	3
🟪	Description of bundle	eric	7th May	3

□	Cost of bundle	eric	7th May	3
□	Start the About Us	pleasure	7th May	3
□	Page contains our personal links	pleasure	7th May	3
□	Has a photo of each member	pleasure	7th May	2.5
□	Name of each member	pleasure	7th May	2
□	Start Login page	liam	7th May	3
□	Have a form inside	liam	7th May	2
□	Username, text	liam	7th May	2
□	Password, text	liam	7th May	2
□	underneath , have “Don’t have an account, sign up?”	liam	7th May	2
□	Have a login button, submit	liam	7th May	2
□	Verify the credentials	pleasure	7th May	3
□	If not good, go to same page with error message, No Alert	pleasure	7th May7th May	1
□	“Sign up” text should click, go to another page	pleasure	7th May	1
□	Start the Signup page	pleasure	7th May	2
□	A form which will take the information	pleasure	7th May	1
□	Have a username, text	pleasure	7th May	1
□	Have a password, text	pleasure	7th May	1
□	First name, text	pleasure	7th May	1
□	Last name, text	pleasure	7th May	
□	Have a confirm password box	pleasure	7th May	1
□	Sign up button to submit	pleasure	7th May	1

🟪	When logged in, the headers “Login” should be changed to “Account”	eric	7th May	1
🟪	Start of Account page	eric	7th May	1
🟥	Account should contain all rentals you’ve made for that user	liam	14th May	4
🟥	Information, Description, cost, quantity should all be displayed	liam	14th May	3
🟥	Admin log in	liam	14th May	3
🟥	Able to change the rental information	liam	14th May	3
🟥	Able to change the cost	liam	14th May	3
🟥	Able to change the Description	liam	14th May	3
🟥	Able to change quantity	liam	14th May	3
🟥	Able to see the users	liam	14th May	3
🟥	Logout button in Account page, logs out afterwards change the header to “log in”	eric	14th May14th May	3
🟥	Start the model	eric	14th May	2
🟥	SQL query for adding customers	pleasure	14th May	3
🟥	SQL query for getting customers	pleasure	14th May	3
🟥	SQL query for getting rental products	pleasure	14th May	3
🟥	SQL query for getting the customer, admin feature	liam	14th May	
🟥	SQL query for getting the inventory	liam	14th May	3
🟥	SQL query adding to the inventory	eric	14th May	3
🟥	SQL query for adding rental products	eric	14th May	3
🟥	SQL query to edit the inventory	eric	14th May	3
🟥	SQL query to edit the rental products	pleasure	14th May	3
🟥	SQL query to adding product bundles	pleasure	14th May	3

🟥	SQL query to getting product bundles	liam	14th May	3
🟥	SQL query to ed it product bundles	liam	14th May	3
🟥	SQL query to get all the customers	liam	14th May	3
🟥	SQL query to get all the rentals	eric	14th May	3
🟥	SQL query to get all the product bundles	eric	14th May	3
🟥	SQL to get all the products	pleasure	14th May	3
🟥	SQL to get all users	pleasure	14th May	3
🟥	SQL to get all the of the inventory	liam	14th May	3
🟥	Make Rental table	eric	14th May	2
🟥	Make Rental Product table	eric	14th May	2
🟥	Make product Bundle table	liam	14th May	2
🟥	Make products table	pleasure	14th May	2
🟥	Make Users table	pleasure	14th May	2
🟥	Make User type table	liam	14th May	2
🟥	Make Inventory table	liam	14th May	2
🟥	Make cookies for session	eric	14th May	2
🟥	Use cookies to keep the dark/light mode if its the same user	eric	14th May	3.5
🟥	Make authentication for the users and admin	eric	14th May	4
🟥	Make sure to authorize users/admin to appropriate	eric	14th May	4
🟥	For every method in router Adding a customer router	eric	14th May	2.5
🟥	Editing customer controller router	eric	14th May	2.5

☐	Get customer controller router	eric	14th May	2.5
☐	Getting the rental products router	eric	14th May	2.5
☐	Getting the inventory router	eric	14th May	2.5
☐	Adding to inventory router	pleasure	14th May	2.5
☐	Adding rental product router	liam	14th May	2.5
☐	Editing inventory router	liam	14th May	2.5
☐	Editing rental product router	pleasure	14th May	2.5
☐	Adding product bundles router	eric	14th May	2.5
☐	Editing product bundles router	pleasure	14th May	2.5
☐	Getting all customer router	liam	14th May	2.5
☐	Getting all the rentals	liam	14th May	2.5
☐	Getting all the product bundle router	pleasure	14th May	2.5
☐	Getting all the products router	pleasure	14th May	2.5
☐	Getting all the user router	eric	14th May	2.5
☐	Getting all of the inventory router	liam	14th May	2.5

30th	7th	14th	19th
Finish Skeleton	Finish Admin SQL	Finish Rental SQL	Add the details
Fill out skeleton	Start Front End	Add Cookies	Write texts
Add all the pages	Finish Admin feats.	Finish Rental feats.	Finish Tests

Software Used

Pleasure

Our team decided to communicate through an external software called Discord. Discord was made for people to join servers with people who share common interests. Very much like a group chat, discord also allows people to join voice calls and share code. The three of us already use Discord to communicate, so it is the best way for us to communicate with each other.

For all of our picture editing needs, we will be using paint 3d, GIMP and photoshop depending on the complexity of the edit.

We will also use GitHub in order to facilitate collaboration and code sharing. GitHub lets us have different branches so we can work on our different sections of the project without having overlapping each other. This also lets us track who did what in order to keep us honest and do our fair shares. GitHub also lets us use workflow testing, which only allows us to merge our code once it has passed all the pre-written tests.

Other than this document, we will be using Discord for file sharing and tasks that are not necessarily done on Github. This allows us to get notifications when someone needs something as opposed to having to check the document.

Another benefit of using Github as opposed to coding together is the freedom it allows us in our every decision and the pace at which we finish tasks is threefold. Since we all have different tasks, we can each pick our preferred time of day to work and go from there. For example, Pleasure is a morning person whereas Liam gets up in the afternoon. Furthermore, we work at different speeds, so splitting up the work allows us to each be able to contribute as opposed to one person doing everything with two eyewitnesses giving ideas every once in a while.

We've known each other for almost 3 years and we know our strengths and weakness thus assigning tasks for our application is a lot easier than teams who haven't worked together. Some of us are more efficient in server-side development and others are more efficient on the client-side. We won't put pressure on another teammate because he isn't very efficient in technology, that would be very disrespectful and would break our team mentally. We also like to work individually because we think our team chemistry is a lot stronger than having to see someone code.

We will also present our project to our friends and families to get good approval. This will let us know how people who aren't doing it, feel about our application. Since our application is user dominant, we will ensure to have the best interface and server-side for our admin to use and the regular customers who will visit our website. Then we will proceed to take the suggestions given to us by them to make our program better and focus on the issues they might have come across.

We will follow this plan, we have had good team chemistry from the start since we got into computer science and we know our differences and our strengths. This will help us finish our project in a timely manner and have a nice presentable product.