Sri Lanka Institute of Information Technology

Online E-commerce platform

Project Proposal

Information Technology Project - IT2080 [2022/FEB]

Group Number: WD_B04_ITP_04

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1. <u>Introduction</u>

1.1 Client background

Our client is Mrs. Gunewardhana who is living in Nederland and has a home-based cake shop. She has an idea to extend her business by starting an online e-commerce platform for where buyers can buy cakes from independent sellers just like eBay, Amazon, etc.

Although she has tried this idea once without an e-commerce platform, she failed to continue it because of COVID-19 pandemic. She has been making cakes and other items like sweets for special occasions for a while. She also has a group of like-minded friends who are willing to get started and fund this startup.

1.2   problem Statement

Lack of technological knowledge to handle the work needed to establish a working software product is the main difficulty faced by our client. Since she never worked in a tech environment, she had no idea where to start and who to call for help.

She also needed an effective an easy way to manage all the data involved with the project. She needed an abstract explanation of how to analyze data to improve decisions.

A major concern was that during her research on e-commerce platforms, she had come to realize that UI/UX was a major factor for consumers. She asked us to put a good amount of attention towards UI/UX of the system in order to make the platform user friendly and attract more crowd.

Our client has tried previously to start a business with the same model as our project but, she had a hard time maintaining it due to following reasons,

- Lack of knowledge on market
- Hard time with book-keeping
- Lack of knowledge on marketing strategies
- COVID-19

The primary goal she always mentioned is that these previous weaknesses should be considered, and the system should not fail as it did previously.

1.3 Solution

We needed a flexible and scalable solution due to the fact that external factors like COVID-19 and other economic policies within EU and Nederland could affect an online startup and since this is a startup, withholding these factors will not be easy.

We decided to build an online e-commerce platform which is described briefly down below.

Cake Lounge is an e-commerce platform in which users have the ability to sell as well as buy cake products. The platform will only operate in Nederland and only domestic sellers and buyers can use the platform at the moment (Expanding into the international market is not considered yet)

We used following example platforms to take an inspiration for our project

Reference 1: https://www.wishque.com/

Reference 2: https://www.jeeigentaart.nl/

Reference 3: https://www.giftsnideas.com/

Reference 4: https://sweetcelebration.nl/

We also used YouTube platform to take some ideas and knowledge on how cakes are made and what requirements should be included in an online platform concerned about cakes. Following links are some sample videos from YouTube.

Reference 5: https://www.youtube.com/watch?v=LhYV4Doj4do

Reference 6: https://www.youtube.com/watch?v=NT6ZMmJy65I

2. Benefits of the system

To the client

- Ease of managing users
- Ease of integrating with marketing strategies like Facebook ads etc.
- Ease of data visualization and decision making.
- Automated report generation
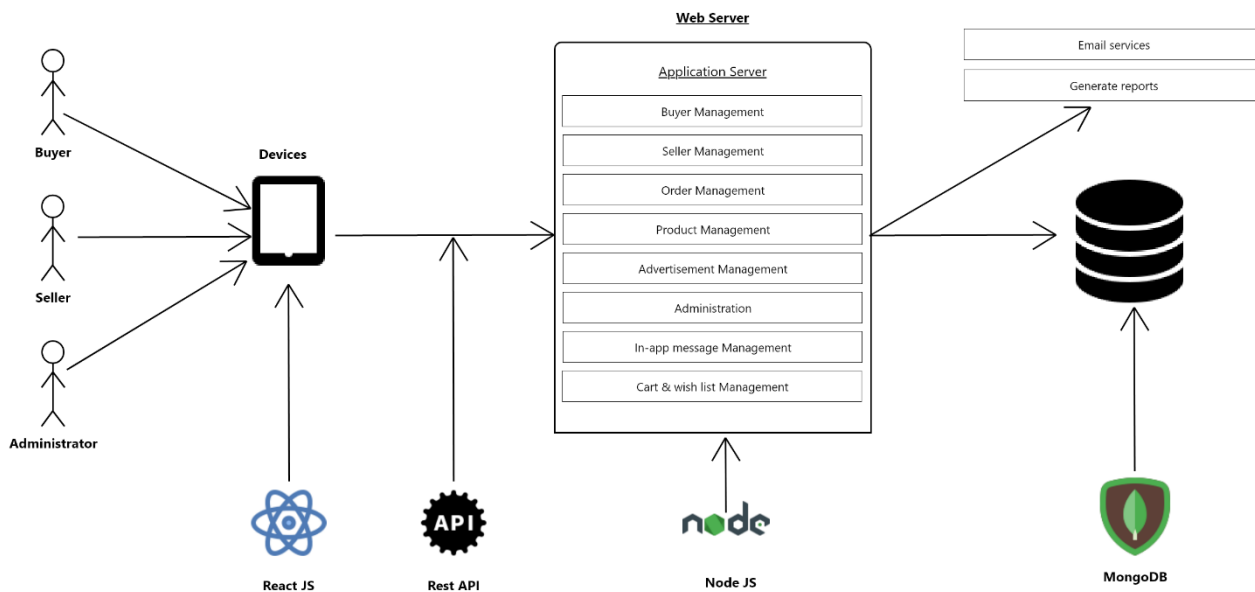- Cloud hosted database with scalability

To the Customer

- Easy to navigate User interface.
- Easy to understand User experience.
- Filter options to narrow down search results which satisfy customer needs.
- Order tracking facilities.
- Trusted domestic sellers.
- Verified and trusted payment facilities.

To the Seller

- Sellers can engage with domestic customers which is a positive thing since sellers can understand the mindset of customers from their own country and sellers are aware of special festivals and occasion dates.

- All in one seller dashboard to manage shops.
- The platform can be used as a promoting ground for their own business.
- Verified and trusted payment and withdrawal facilities.
- Domestic delivery option with lower cost compared to international shipping.

3. System Overview

Web Server

Application Server

Buyer Management

Seller Management

Order Management

Product Management

Advertisement Management

Administration

In-app message Management

Cart & wish list Management

Email services

Generate reports

Buyer

Seller

Administrator

Devices

React JS

Rest API

Node JS

MongoDB

3. System Functions

Buyer Management.

Managing by buyer orders is one of the important functions of the e-commerce web application. Because getting all the details related to the order accurate is essential to complete the transaction properly.
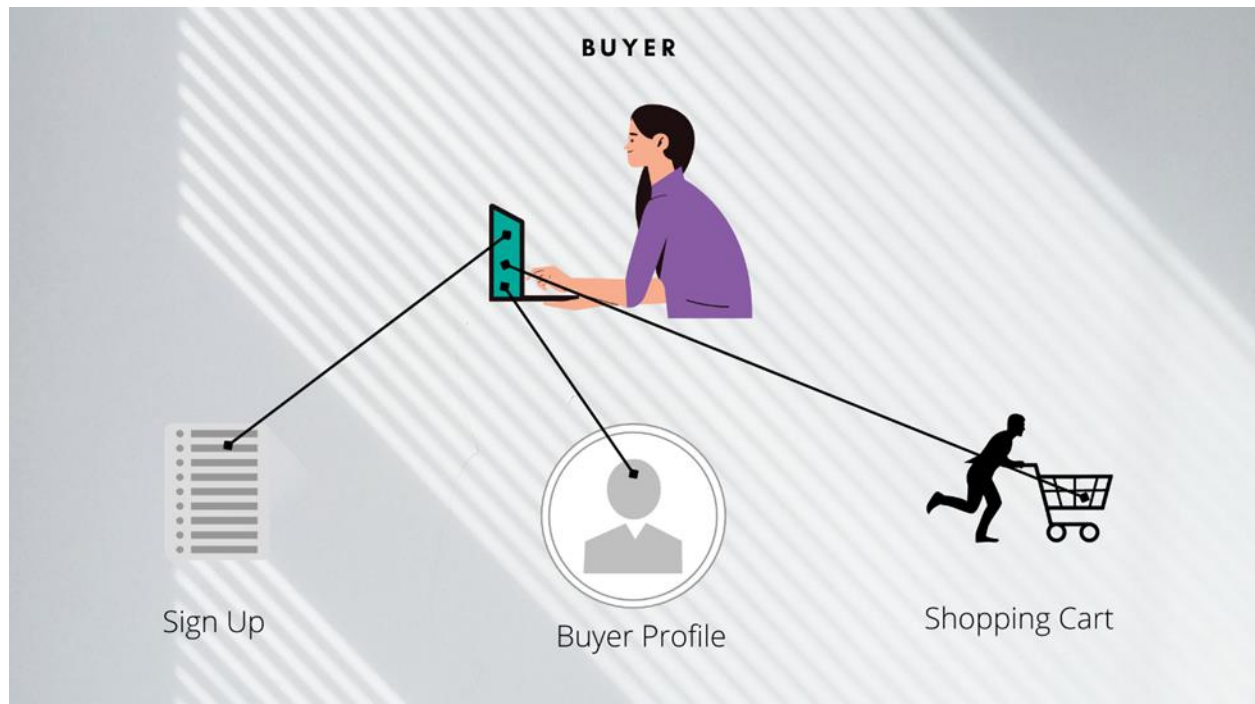
A new user of the system can register by filling the registration form, which contains,

• The username

• An email address

• A strong password

• The password confirmation part.

After providing these details for the first time a new buyer can log in to the system and utilize system features.

An existing buyer can sign in by filling in the email and the password which they have provided during their registration. This helps to prevent unauthorized access to the system. When login to the system the buyer can create his/her buyer account and shopping cart by themselves. This buyer profile and shopping cart can be edited at any time if he/she needs to edit the profile. And they can remove their account permanently if needed.

he/she can place an order from the shopping cart. The order page is displayed to the buyer after selecting to place the order.

The order page is displayed to the buyer after selecting to place the order. The following details should be entered with the buyer order.

• Name

• Address

• Contact number

• Payment method

• Order items and quantity

After entering the above details, the buyer is shown a summary description including the full amount to be paid for the order. Shipping details, tax, etc. are also included in the calculation of the total amount to be paid.

Under this function, the buyer can enter order details, as well as edit them, and can cancel the order as required.

The buyer can also view the order history. Finally, generate the report including all the order details.

Seller Management

Sales management is the process of developing a sales force, coordinating sales operations and implementing sales techniques that allow a business to consistently hit, and even surpass, its sales targets.

- As a Seller, Seller need to create account. if the seller is not registered all ready. He will be directed to the Sign-up page.
- The Seller is asked to input details in order to create new seller Account. If seller is a registered user, He will be asked to login.
- Every seller has a seller dashboard. The dashboard will contain publish product, publish adds, Analytical tools, Withdraw option etc.
- I will be developing front end for login, sign up, Analytics and with draw pages.
- Back-end Scripts will be developed for these pages by me. We will be using mongo DB as our database management System.
- Sellers have an option to generate report for orders and other statistical matter.

- The Seller can search for particular product or and order using search bar provided.
- My Function has ties in app massage function product management function and administration.
- Seller will have to go through a verification process to verify their identity and that they are legit sellers

Order Management

Order management is one of the main functions of E-commerce site for selling and buying cake. A registered customer can order cake. Customer can enter order details, change order details

And delete orders as well as he/she can customize the order by additional favors, color, weight, quantity etc... as seller provided before seller confirm the order. Then calculate total amount

And display to the user. When the order is done, the payment

Receipt sends to the customer via email. Finally, generate a report

Including all the order details. Also, customers can get reports.

of his/her orders and payment details. Customer can find his/her past orders by clicking my orders tab.

As a seller, he/she can view orders that customers request. Orders are listed by date that order should deliver. Seller can confirm the customer order or make suggestions to customer for delicious product and better service with customer preference. However, when order is confirmed, seller should deliver the order. Finally, when customer receive the order seller gets the payment. Seller can also view all past orders that have been done.

As a manager he/she can view list of orders that have to be delivered and list of orders that have been done.

In-app message management

In-app-messaging is the one of most important function in the e-commerce application. This site has buyers sellers and admin panel, these three actors have to communicate each other's because of solving issues of the buyers and sellers / update buyers and seller about site upgrades and handling disputes. Buyers can send messages to the seller and admin also. And buyers receive messages from sellers and admins. sellers can send messages to the buyers and admins. And sellers receive messages from the buyers and admins. An admin can send messages to the buyers and sellers also.
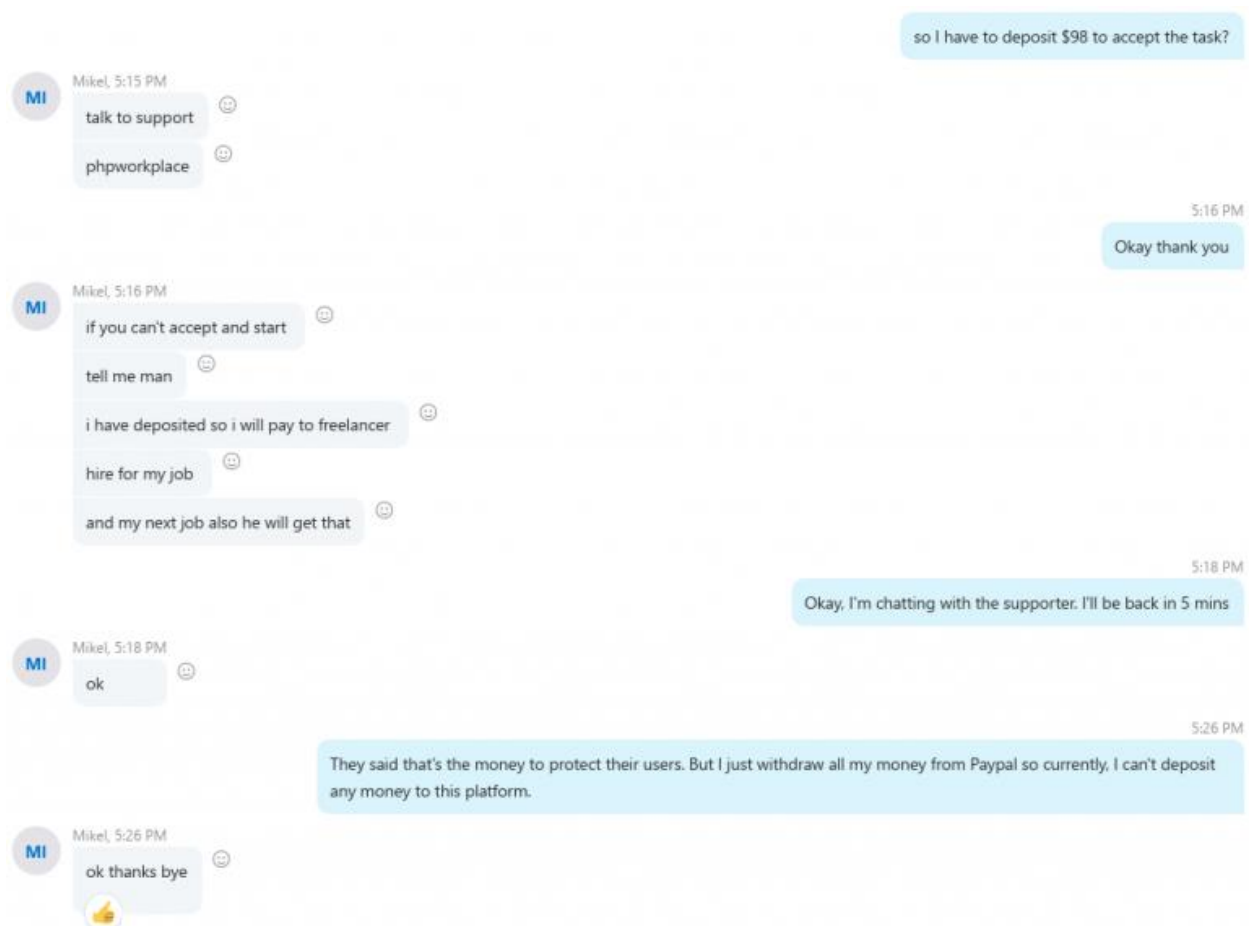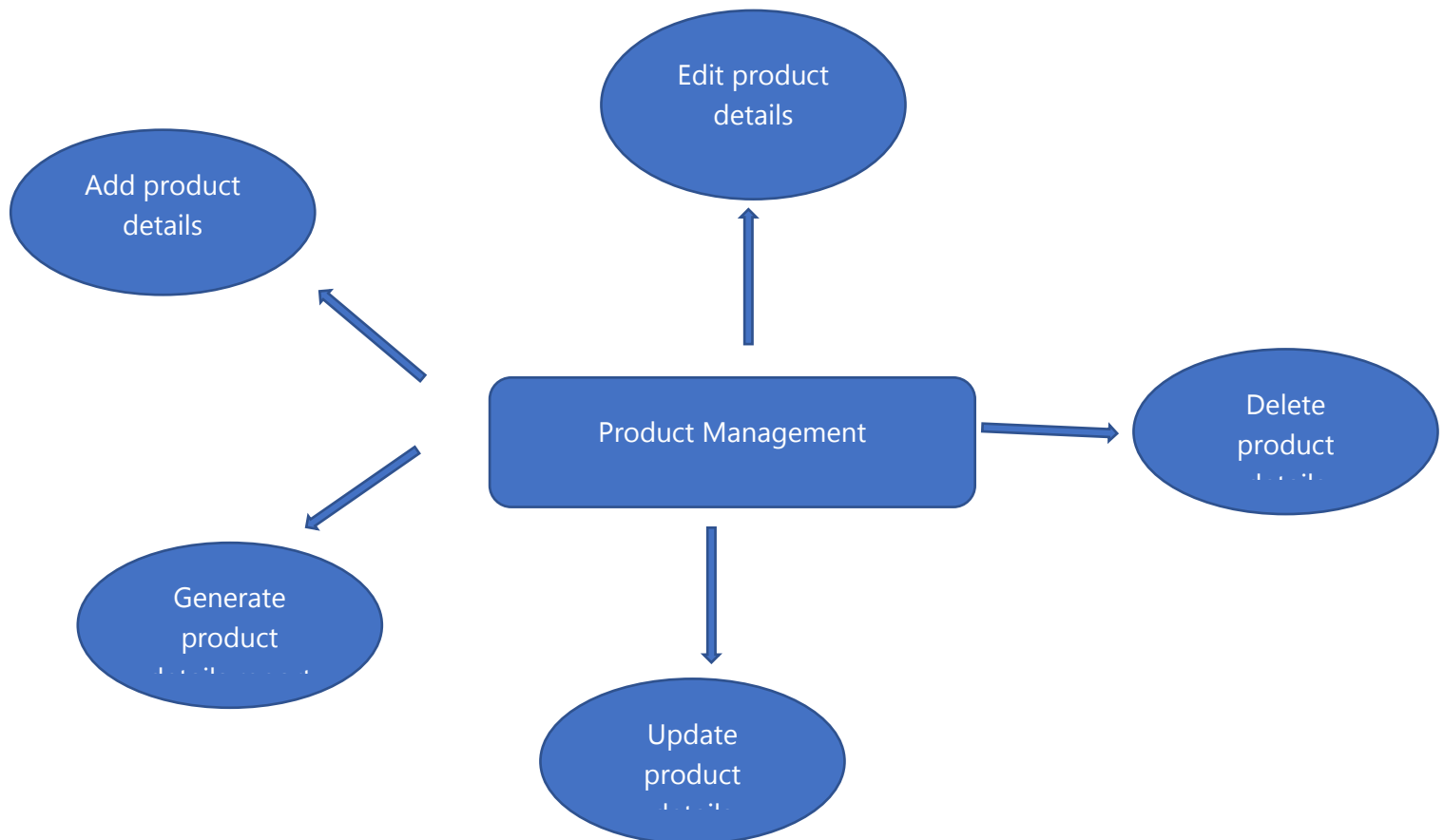

If there are any buyer seller or admin is in online, already chatted users can see who is online in the chat list. Message body / message time /

chat ID / username and user id is saved in the database. If any user logged in their account new messages are update and show unread messages. When someone send a message it will update on time in other side. Messaging direction will find using chat id. If any user sends new message to the any user asking more info about product / any issue about the site or any order customization, the message body send using target user's id and create new chat id and create new document in the "mongo dB" database with messages and both user id and name of the relevant users. If there are any user continue already existed chat, that messages are send using chat id. If users receive any new messages it will show in the notification and unread message count will update. User can **delete** messages when messages was deleted database will **updated.** and users can **create** new message conversation with another user

The main attributes in the chat database document
- Both users Id's
- Name of both users
- Messaging time
- Message body

Product Management

Edit product
details

Add product
details

Product Management

Delete
product

Generate
product

Update
product

Product management is a very important function in this web
application because this project is fully dependent on selling products.
Consumers log in to the system with a need to purchase a product so as
designers our main job is to sort products into a shortlist so that buyers
can easily purchase the product. There are so many ways we can
implement such features into this system namely,

- Providing a search bar to the customer so that customer can search and select the required product.
- Providing categories to the customer so that customer can select the needed category by then the system will show all the products in that category.
- We can provide filters to the consumer thereby consumers can filter the required products and make a shortlist.

By using these 3 methods consumers can select the product very easily and within a short period.

As a designer we implement a star rating system also, by this system consumers can find the best and most reliable product. We implement a comment section also so customers can add their comments publicly so that sellers and other buyers also can interact with the conversation and share their ideas. In the user interface, we implement an attractive design thereby we can display images and descriptions of the product.

Advertisement Management
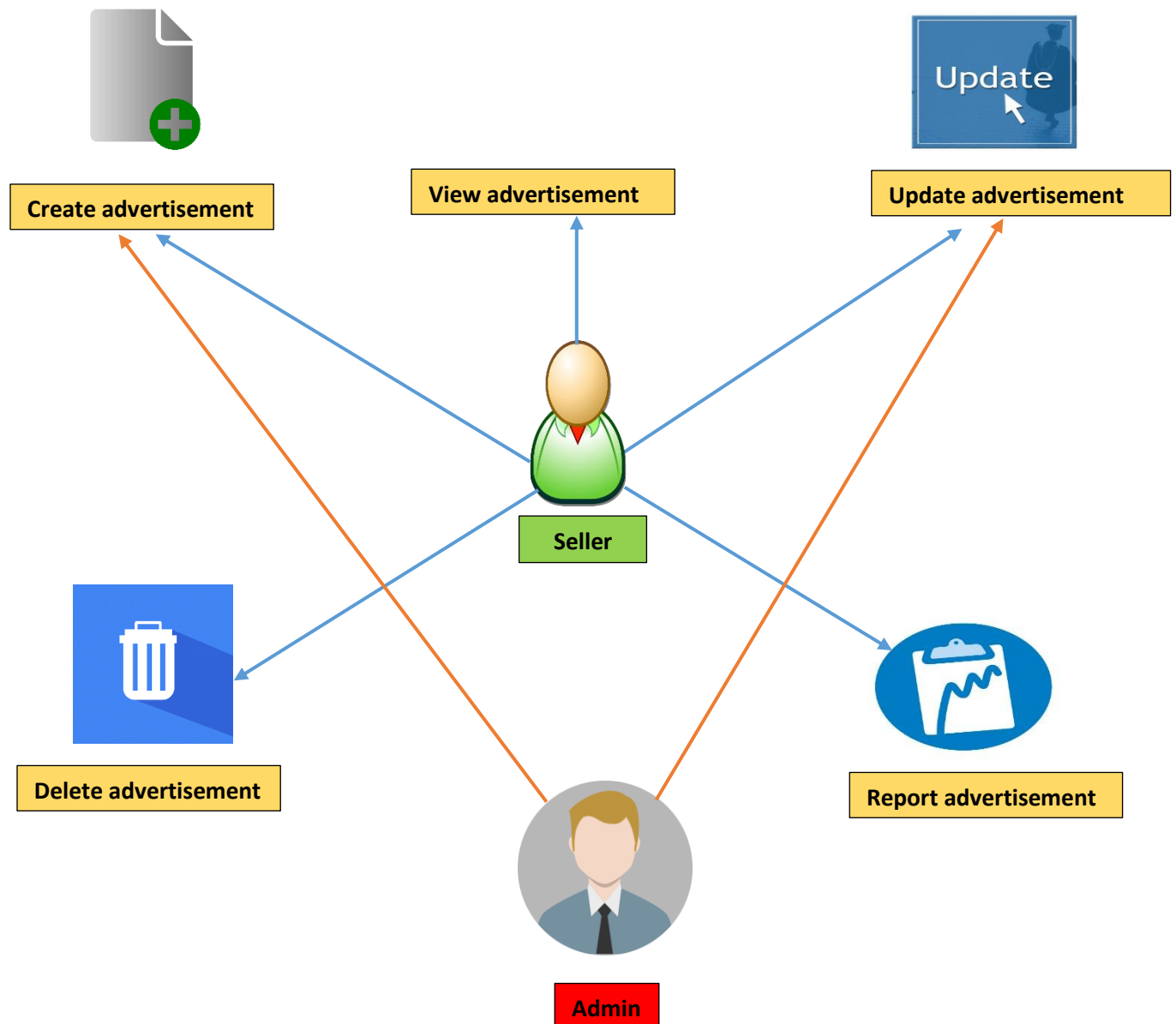
According to the Advertisement management system, as shown in the figure above, in the seller profile there is a function called advertisement. After clicking the function, it will go to the seller

advertisement page. It will show the list of current advertisements. On that page, seller can **create advertisement, view advertisement, delete advertisement, update advertisement**, and **get report of advertisement**.

Seller can **create the advertisement** in creating advertisement form, and it will go under the admin approval, after admin decision which is accepted or declined, the ad will publish or reject in the system. When the admin accepts or declined the request, the seller will get a notification about the request.

In creating an **advertisement form,** the seller can enter the product name, price, discount, contact number, and image of what seller want to publish. After filling out the form, data will go to the database, and it will auto convert to an advertisement template, and it will publish on home page and category page as Carousel.

The seller can **update** the ad by requesting the admin. when the admin accepts the request, the update will change. Seller also can **view** the previous advertisement and new advertisement as well.

When sellers need to **remove the advertisement**, no need for the approval of the admin. The seller can delete it as his own opinion.

Seller can **get the report of advertisements** as clicking the get report of advertisement.

Administration

Admin will manage nearly every aspect of the system. Some of the tasks admin will have to perform are,

- Approve/Reject requests from buyers/ sellers
- Block/Unblock users
- Respond to user complaints
- Oversee the vetting process of sellers

An administrator will have his own dashboard with all necessary options and tools to perform his tasks. Admin is allowed to perform following operations.

- Search for a particular seller to see his/her shop and listings.
- See selling analytics if the seller gives consent.
- Generate reports to see the performance and weaknesses of the platform
- Search for a particular buyer to view his/her purchases if the buyer gives consent.
- Generate reports on buyer behavior in order to enhancer the platform to increase selling.

Administrators will log into the system using a different URL.

Cart & wishlist management

Shopping cart software is the engine behind the scenes of an online store, making it possible to easily manage inventory, add or remove products, calculate taxes and everything else required to manage a website and fulfill orders. It's like the one we use at the supermarket, but it can wear a lot more hats.

To be able to offer products to clients, every online store must have a shopping cart. Shopping carts are divided into two categories: hosted and self-hosted shopping carts.

For Creating Our E-Commerce platform, we will be using a self-hosted shopping cart that is uniquely designed for the enterprise. And to make the user experience easier and reduce the number of shopping cart abandonment scenarios we will be adding these features to our system.

- The customer will be able to add or remove items from his cart easily

- The total order cost of each product will be shown to the customer before the checkout process

- The total value of items in the cart will be displayed to the customer all the time

Wishlist

Wish lists are collections of desired products saved by customers to their user account.   When the customer selects a product and sees a product of their choice, the customer can add that product into the wish list. So, the customer can purchase the item later. If the customer does not want that item later, he/she can remove the item in wish list.

To add items into wish list customer must register to the site. As well as customer can find the product by searching in wish list.

So, the basic steps completed by a customer in my function are,

1.   View Product

2.   Select the quantity

3.   Add to the cart / Add to Wishlist

4.   Processing on the cart / Saved in wish list

5.   Continue to Checkout

Finally, the system will generate a report about the wish list.

4. Technologies

MERN stack is used as the technology stack for our project. Tools like GitHub and Visual Studio Code are also used within this project. Wireframes will be designed using Adobe XD. Given below is a brief description of the technology we use and what benefits they provide.4

Node JS

The technology was first introduced back in 2009 by Ryan Dahl at the annual European JSConf and was immediately recognized as "the most exciting single piece of software in the current JavaScript universe".

Benefits
- o better efficiency and overall developer productivity
- o Code sharing and reuse
- o Speed and performance
- o Easy knowledge sharing within a team
- o A huge number of free tools

React JS

React.JS is a JavaScript library created by Facebook. React.JS is a User Interface (UI) library. React.JS is a tool for building UI components. React.JS is an open-source, back end, JavaScript library for building user interfaces or UI components. React can be used as a base in the development of single-page or mobile applications.

Benefits
- o It facilitates the overall process of writing components.
- o It boosts productivity and facilitates further maintenance.
- o It ensures faster rendering.

- o It guarantees stable code.
- o It is SEO friendly.
- o It comes with a helpful developer toolset.
- o There is React Native for mobile app development.
- o It is focused and easy-to-learn.
- o It is backed by a strong community.
- o It is used by both Fortune 500 companies and innovative startups.

Express JS

Express.js, or simply Express, is a back end web application framework for Node.js. It is released as free and open-source software under the MIT License. It is designed for building web applications and APIs. It has been called the de facto standard server framework for Node.js.

Mongo DB

MongoDB is the most popular database for modern apps. MongoDB is a source-available cross-platform document-oriented database program. Classified as a NoSQL database program. MongoDB uses JSON-like documents with optional schemas.

Benefits

- o Schema less.
- o Structure of a single object is clear.
- o No complex joins.
- o Deep query-ability.
- o Tuning.
- o Ease of scale-out - MongoDB is easy to scale.
- o Conversion/mapping of application objects to database objects not needed.
- o Uses internal memory for storing the (windowed) working set, enabling faster access of data.

5. Gannt Chart

Plans	Week 0-1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Start Date – 07/02/2022												End Date - 06/05/2022		
01) Find the client and plan the project	▓													
02) Create and submit Charter document	■													
03) Scrum Document Submission		▓												
04) Do proposal Presentation/Create Proposal Document			■											
05) Draw an ER diagram and Create Database				▓	▓									
06) Interface Designing						■								
07) Develop function						▓	▓	▓	▓	▓				
08) Test the System											■			
09) Present the system to client											▓			
10) Fix system vulnerabilities and test the system												■		
11) Write a report												▓		
12) Do final presentation and submit a report													■	■

This Gantt chart demonstrates our time allocation for this project. Information shown as project duration is 14 weeks. As illustrated in the figure, all the steps will be followed within the given time. First three steps we have already completed in addition to that, we have started interface designing. Remaining steps will be started soon.

5. Work breakdown

Name	Registration number	Function
IT20661724	I.S.C.Dharmapriya	Administration
IT20662646	M.R.J.S.Mallawa	Buyer Management
IT20665548	H.M.R.K.Herath	Seller Management
IT20657628	G.D.A.Thennakoon	Order Management
IT20662196	V.G.S.Randika	In-app message management
IT20651138	B.G.C.S.Nanayakkara	Product management
IT200643522	M.K.Weerasinghe	Advertisement management
IT20166342	H.A.G.D.Hettiarachchi	Cart & wishlist management