



# Software Project

**Kacper Agatowski**

**N00212272**

Software Project

e.g. Develop an event ticketing application

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DL836 BSc (Hons) in Creative Computing

Link to resources created as part of the project.

Figma	<a href="https://www.figma.com/file/GaclqrPmwmgfJLx65f7xA/Software-Project-kacper?node-id=4%3A109&amp;t=LOz26SWk1t2tqPgB-1">https://www.figma.com/file/GaclqrPmwmgfJLx65f7xA/Software-Project-kacper?node-id=4%3A109&amp;t=LOz26SWk1t2tqPgB-1</a>
Miro	<a href="https://miro.com/welcomeonboard/YWtXQWIEdjFXODdkanlibUdDMTc0OUJkb2Inc1h4WHdOazZTb1NQtm9maEY1WTNpV1dvRU53QVVaUEVqTkNHZHwzNDU4NzY0NTE0MTk2NDIwODA5fDI=?share_link_id=314850675333">https://miro.com/welcomeonboard/YWtXQWIEdjFXODdkanlibUdDMTc0OUJkb2Inc1h4WHdOazZTb1NQtm9maEY1WTNpV1dvRU53QVVaUEVqTkNHZHwzNDU4NzY0NTE0MTk2NDIwODA5fDI=?share_link_id=314850675333</a>
Git Hub	<a href="https://github.com/y2-SW-project/swproject23-N00212272.git">https://github.com/y2-SW-project/swproject23-N00212272.git</a> when downloading this git make sure to open the second swproject rather than the full thing for artisan to run.
Video	<a href="#">Recording-20230421_200314.webm</a>

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# 1 Introduction

I am hoping to create a fully functional website where customers can buy and sell baby items to help reuse old items rather than buying brand new items where they'll only be used for a limited period.

To achieve this goal, I will be using different types of technologies such as Laravel which is a PHP framework which will be used as a backend framework. I will also be using MySQL as a database to hold data of customers and products. I will finally finish off the design and layout using bootstrap which is an open-source CSS framework.

I will use tools such as Miro and Figma to help me research and explore different system designs and explore different fonts and colors. I will mostly use figma to create wireframes to give me a good example of how my website will look.

To keep track of my project management, I will use GitHub to store and manage my code by trying to achieve a commit daily and see progress of my site throughout these next couple months.

In the report I will discuss my business concept and how the business will run and my business requirements I hope to achieve by the end of the project. I will also talk about the design phase and how I implemented it onto my website. Once my site is near to finish, I will perform functionality and user testing to help me fix errors and create the best user-friendly site.

## 2 Business Concept

### 2.1 Business Idea

This business idea came across me as my parents just had a child and were looking for baby clothes and accessories. The thing about buying baby clothes is that the baby would grow out of it and the parents are left with a lot of unused clothes and most importantly they are expensive. Generally, people would get clothes from people they know. Where my business idea is creating a site where customers could buy and sell from each other. This would save people money and allow people to get rid of these unused clothes for a price.

### 2.2 Business model

As the business is mainly dependent on customers. The business would have to make money from a small percentage of each item sold. This wouldn't affect the customer as the percentage would be small enough, they wouldn't mind or notice within their profits. Also, products sold straight from the business could be sold. The Business would have products made from sustainable material to keep the site environmentally friendly

### 2.3 Market Research

The Market for this business would be for babies. Including clothes and accessories for babies which would come in all types of sizes. From my research the market for baby clothes and accessories is huge and there is a huge demand as the market wouldn't depreciate in size, as there are babies being born and babies growing every minute. The target customers would be parents or future parents. These customers would use the service every couple months as their child would outgrow their clothes and they would be left with unwanted clothes and accessories for their child which is outgrown these products.

### 2.4 Marketing/Advertising

Advertising wouldn't be hard as there are many different locations parents would see. For example, Fliers in the school or speaking with the PTA for each school in the country. The only Con with this form of advertising is that it is not time efficient and it would take a long time to get the word around unless I had employees to advertise.

An easier way to advertise would be to place it on social medias such as TikTok, Facebook and Instagram. The Con of this would be that customers may flick past, and the message isn't sent directly to them. The Pro is the that the message can be advertised with one click of a button.

## 2.5 Suppliers

As I mentioned in my business idea, the customers supplying most of the market. As Parents would have unused clothes or clothes that their children have outgrown they would place it on the market for other customers to view and possibly buy. However, this would put all faith in customers to supply the market. So other suppliers could be EuroBaby.ie and M&M direct. The reasons I chose these two suppliers is as Euro Baby is a well-known Irish company and sell good quality accessories. M&M on the other hand is cheap and has a wide range of clothes.

## 2.6 Competitors

After my research within this section, I didn't find any similar ideas. However, I did find websites which sell baby accessories and clothes from a wide range however none with the selling feature and no clothes being second hand but coming straight from the manufacturer. DoneDeal and Facebook sites are similar sites where customers can buy and sell from each other are very successful businesses, however facebook you can't filter certain sizes etc and donedeal is seen as an unsafe site when buying from a private seller which would scare customers.

## 2.7 Employees

The business wouldn't need many employees. However, it could have advertising employees to widen and make the service grow. I personally don't think the customer should be sending the package straight to the other customer as it could invade the buyers privacy. Where the business could partner up or have a pickup/ delivery service. This would allow the buyers and sellers address stay private and secure.

## 2.8 Environmental Impact

As the Customers would be reusing and recycling clothes and accessories it would be very environmentally friendly. However, if there is no customers there is no market so the business would have to supply their own clothes and accessories which wouldn't be environmental friendly at all compared to the reselling, reusing and recycling.



## 3 Requirements

### 3.1 Introduction

This application main purpose would allow users to buy and sell their baby products. The application should be user friendly which would allow users to freely navigate and find what they are looking for. The selling point should be simple with some sort of verification that the item is in fact a baby accessory or clothing.

### 3.2 Requirements gathering

In this section I will be going through multiple business aspects. I did a competitor analysis and found the pros and cons of two similar applications. I then interviewed two people who would be seen as my target audience, this was to give me more insight on what users will want to see within my application.

#### 3.2.1 Similar applications

DoneDeal is one of two similar applications to my application I am creating. Using an extension called FullPageGo I captured the full page of the baby's section from DoneDeal.

DoneDeal is a trading site where people can sell and buy any item for a price. DoneDeal sells a wide variety of products, these products can either come from a private seller or a company. DoneDeal would make money from people placing ads which vary in price.

DoneDeal has many positives and very few negatives which made it very successful and Ireland's largest Marketplace.

#### **PROS**

1. The layout is very basic and easy to read as they had their card components on the right which people have posted and on the left the filters.
2. Their filter allows users to navigate freely throughout the website and find what they are looking for.
3. Filtering through location allows users not to travel far to collect their items.
4. If the user can't find the item they are looking for they can place a wanted ad to show other users they are looking for a specific product.
5. Users have the option to buy from a private or public seller. This allows them to buy products which aren't second hand and come from a legitimate business.
6. The Sign up is simple and users to have full access to the site once they're a member.

Very easy to navigate

Locating within your area

Choosing your seller

Users can request items or sell

DoneDeal

Search

Place Ad

log in

Sign Up

Baby & Kids in Ireland

Search Baby & Kids

DANCORVER Garden sheds - Super deals

10,734 ads for Baby & Kids in Ireland

Sort by: Best match

Filters

My Last Search

Section

All Sections

Baby & Kids

Car Seats 609

Strollers 3,048

Bathrooms 62

Toys 5,349

Baby Wear 443

Safety Equipment 297

Nursery 3,471

Feeding Time 472

Other Mother & Baby 666

Location

All Ireland

Price

From To

Seller Type

Any Private Trade

For Sale / Wanted

For Sale Wanted

Baby cot 4 days • Dublin • Nursery

Price €400 €120

Baby car seat isofix 3-12 year 2 days • Mouth • Car Seats

Price €80

R Generation Vet Clinic 22 hours • Woodford • Toys

Price €15

Child's Car seat 1 min • Tipperary • Car Seats

Price €40

Baby Safe & Secure Playpen €59.99 1 min

Baby playpen RRP 60 2 mins • Dublin • Nursery

Price €35

Sign Up

Already a member? [Log In](#)

Email

Password

Full Name

To get the most from DoneDeal, we'll send you members-only updates via email, push notifications and on site messaging. You can update your preferences at any time from your MyDoneDeal page.

☐ Yes, I agree

This site is protected by reCAPTCHA and the [Google Privacy Policy](#) and [Terms of Service](#) apply.

By selecting Agree & Continue below, I agree to the DoneDeal [Terms of Use](#) and [Privacy Policy](#)

Agree & Continue

It was very hard to find negatives on a site which is very successful.

### CONS

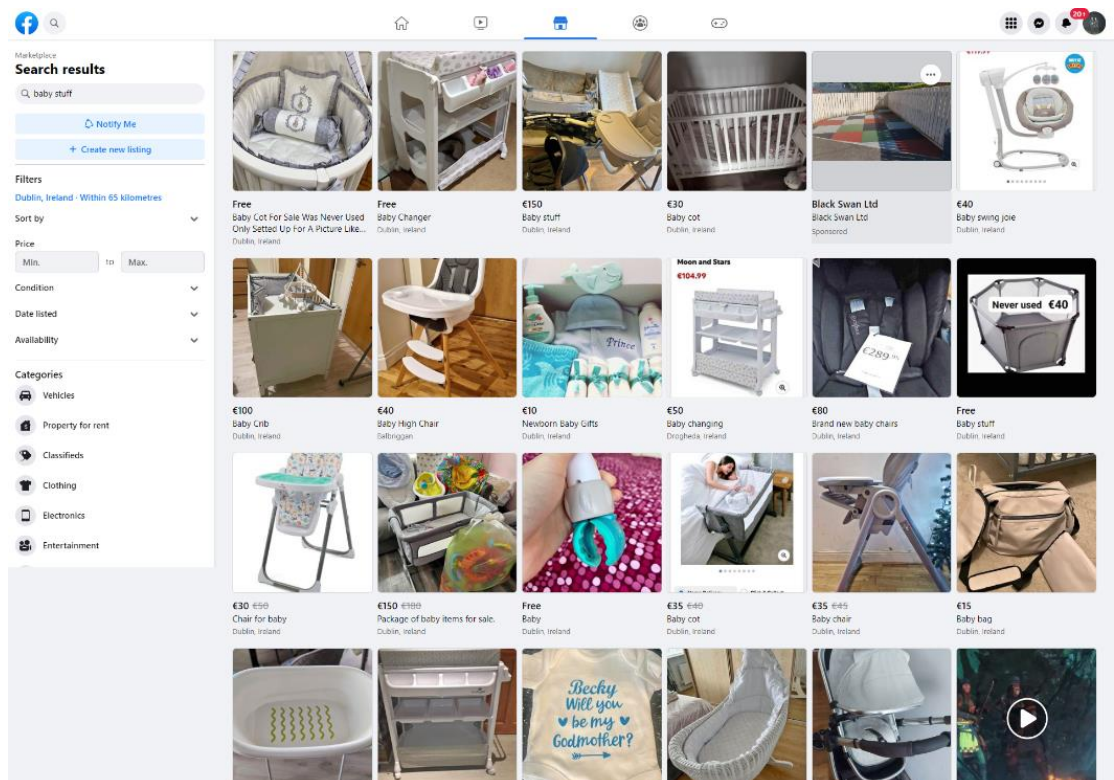
1. The marketplace covers plenty of products and doesn't focus on one thing in general.
2. Private sellers may be verified but their products cannot be verified.
3. The transport of a product and transaction is left to the responsibility of the to the users where DoneDeal are not responsible for anything.
4. This way of selling wouldn't be environmental friendly as the buyer would have to collect the product which could be on the other side of Ireland. Buyers would have to drive there.

**Facebook Marketplace** is the second similar application to mine. Facebook Marketplace is another online marketplace where users use their Facebook account to have access to this feature. Users can buy or sell products across the country. Facebook would make money through fees of 5% of items which are above 8 euro and only 40c which are under 8 euro, however these fees are for shipment which allows the users to have their product shipped.

### Pros

1. The layout is the same as DoneDeal which makes it user friendly as the layout is the same in every other site.
2. Filters like “condition” is very important as it allows buyers to understand the condition of the product.
3. As the marketplace is connect to the users Facebook, buyers can have a look at the persons profile to get an understanding who they are buying from.
4. Facebook can manage transport with a fee for transportation from one customer to another.

There aren't many pros about this marketplace in my opinion apart from the fact it relates to all your Facebook apps.



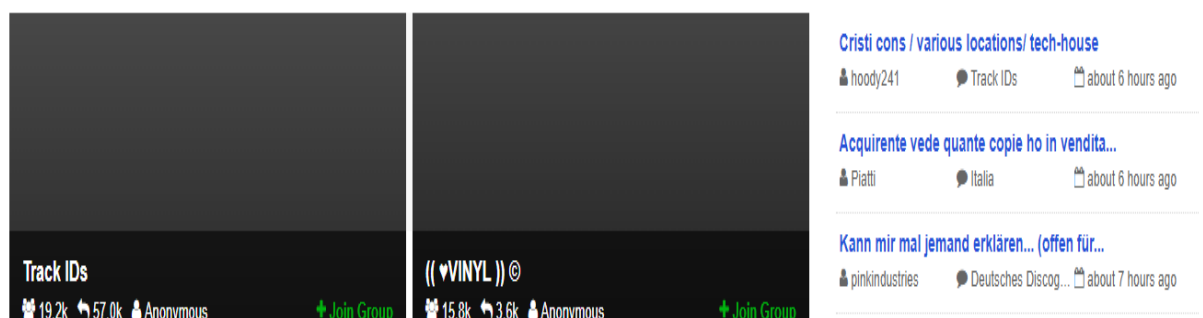
## Cons

1. The filters are very broad, and you can't narrow down your search unless you use the search bar which still doesn't show exactly what the user is looking for.
2. Products are not verified, and anyone can create a Facebook profile which has any email address.
3. The Facebook marketplace for baby products seems unused and not many people would buy baby products from here.

The third similar application would be **Discogs**, this buy and sell website mainly focuses on one type of item which would be CDs. This is a multinational site where you can buy CDs in whatever genre you like. They have free listings when users sell products with a 8% interest take on an item sold which is less than Facebook and eBay. However, I noticed more cons rather than pros with this website. <https://www.discogs.com/>

## Pros

1. Many filters to filter a specific thing you're looking for.
2. Manages transportation at a cheaper cost compared to other sites.
3. Unique functionality to connect users with their music, this allows users to join each other's music taste.



## Cons

1. Not user friendly at all. Site is very hard to navigate through.

2. Components seem very clustered with too much information.



**Stevie Wonder - Masterblaster (Jammin') (12\", Single)**  
Label: Motown  
Cat#: 12TMG 1204  
Media Condition: Very Good Plus (VG+) ⓘ  
Sleeve Condition: Very Good Plus (VG+)  
Superb condition, clean sounding and near immaculate looking for its age. Vinyl is near flawless, with only a few light scuffs from removing and replacing the record into the sleeve that do not affect play. Audio quality is a strong VG+, only the occasion

heavy-stylus  
★★★★★ 100.0%, 255 ratings  
Ships From: United Kingdom

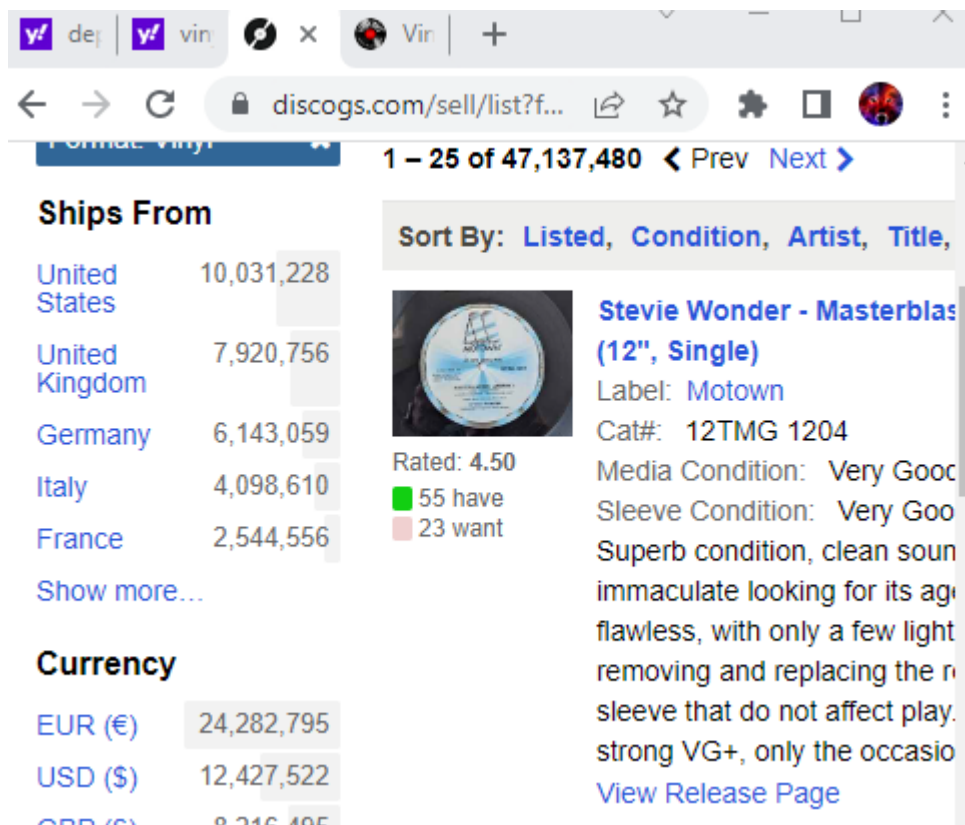
£3.50  
+£13.00 shipping  
about €18.54 total

Add to Cart  
Details

Rated: 4.50  
55 have  
23 want

View Release Page

3. The website is not accessible on all breakpoints



discogs.com/sell/list?f...

1 – 25 of 47,137,480 < Prev Next >

**Ships From**

United States	10,031,228
United Kingdom	7,920,756
Germany	6,143,059
Italy	4,098,610
France	2,544,556

Show more...

**Currency**

EUR (€)	24,282,795
USD (\$)	12,427,522

**Sort By:** Listed, Condition, Artist, Title,

**Stevie Wonder - Masterblaster (12\", Single)**  
Label: Motown  
Cat#: 12TMG 1204  
Rated: 4.50  
55 have  
23 want  
Media Condition: Very Good  
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Superb condition, clean sounding and near immaculate looking for its age. Vinyl is near flawless, with only a few light scuffs from removing and replacing the record into the sleeve that do not affect play. Audio quality is a strong VG+, only the occasion

View Release Page

4. It also has very poor design behind it, with simple black and white design.

Overall, the website had some very unique and good functionality but had no design or ux in it to make it a good website. The only thing that made this website similar to mine is that they focus on a specific group rather than range of products like ebay and facebook

### 3.2.2 Interviews

I conducted interviews with each one of my parents as they would be my target audience. My parents have after had another child, which is now six months old and even before my baby brother was born I could see them stressing about baby products and complaining about the prices. I asked them the same questions which I have listed below.

Hi, I will be conducting a few questions for my Software project in school, and I will be asking questions about online marketplaces.

1. Would have used any online marketplace to find clothes and accessories for your baby? If yes, ask which online marketplace. If no, ask how they would gather products.
2. What were the apps best features when looking for products?
3. What were the apps worst features when looking for products?
4. If you were to use an app like this again what would you like to have included?

Thank you for your time and cooperation.

Interview 1 -> Greg (no recording)

- 1) Yes, I mainly would have used DoneDeal.
- 2) Their best feature would probably have been the wanted filter as it was really easy to find what we wanted. For example, we were looking for a specific Philips Avent sterilizer and a new one was around 120 euro and we put up a wanted ad where we got a reply within, I think two weeks and the person sold it for 30 euro which was second hand but never used.
- 3) The worst feature would be privacy, I've had my account since 2016 but know a friend of mine who got texts from a random number and believes its from donedeal when he posted his car for sale.
- 4) I don't know probably have a safer policy to not allow people to contact your private number but your account possibly.

Interview 2 -> Kamila (not recorded)

- 1) Yes, eBay and Facebook.
- 2) eBay was good for looking for everything and was easy to find but most things I found were from the UK. Facebook was hard to find things as it was difficult to find a specific thing.

- 3) eBay had good features, but Facebook was just difficult to find specific things. They would have needed more filters and their search just didn't work, when I was looking for a specific crib.
  - 4) I would love to see all the filter options like eBay has but possibly some sort of trading feature as well.
- Greg's feedback was good and gave me some good feedback but Kamila's feedback seemed a bit too bias towards eBay but both allowed me to understand what they would like to see in my application.

### 3.3 Requirements modelling

I went through the functional and nonfunctional requirements i expect to fulfil at the end of creating my project. I then created a case diagram to help me visualize how the business will work.

#### 3.3.1 Functional requirements

- 1) Placing Products on the database through the app.
- 2) View page when clicking on a product.
- 3) Filter
- 4) Search
- 5) Gamification when buying and selling.
- 6) Contacting users to one another (buyer and seller)

#### 3.3.2 Non-functional requirements

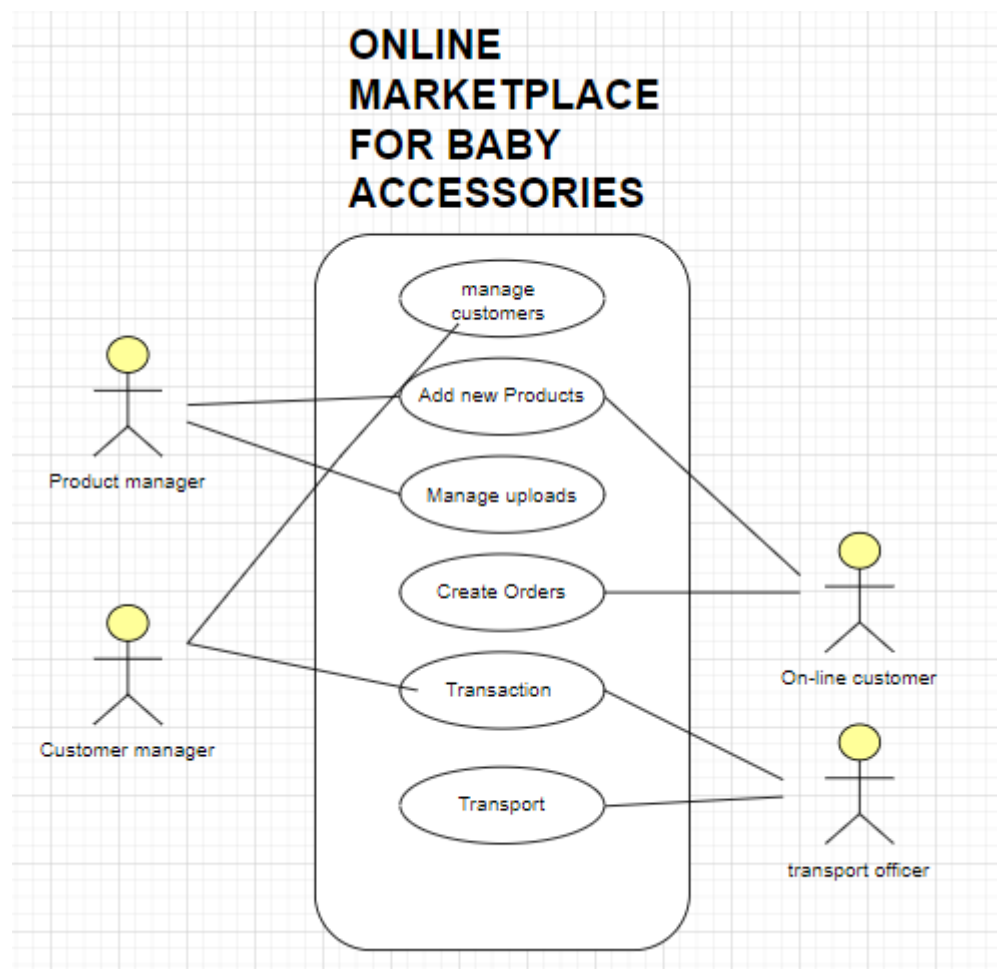
The application should be user friendly. I will keep the layout the same to not confuse the user from where everything is. Keeping the filter on the left and the components on the right with a search on the top of the screen.

I will track performance by keeping a record of error rates. I will carry out test where I will bring in users to test the performance of my app.

I will manage security when coming to the different roles when deleting and editing users posts. Giving each component a uuid to not allow anyone to view items and access other

users' profiles. I will try to keep users registering information hidden as much as possible from other users.

### 3.3.3 Use Case Diagrams



### 3.4 Feasibility

The two technologies I plan to use are Laravel and Bootstrap as I am familiar with both programs. According Cloudways.com it is said that bootstrap and Laravel are compatible with each other. I will also use xampp to use mySQL to be allowed to store data. I will install Breeze for an authentication method as it is compatible. I will use bootstrap for css and



html. From other research VueJS is the best compatible framework with Laravel, however I am unfamiliar with VueJS.

## 4 Web application Design

In this section I will discuss the design aspect of my website. I explored layouts, interactions, investigated colour schemes and font choices on an application called Miro. I then created wireframes using an application called Figma to help me visualize my online marketplace.

### 4.1 Layout

After comparing my competitors' websites, I noticed that each of their layouts were the same with a filter on the left side of the screen and their card components on the right. I decided to keep the overall layout the same as it won't confuse users and allow them to move fluidly through the application. Using Bootstrap, I will be able to achieve my goal to recreate the basic layout fundamentals by using their cards and responsive forms.

### 4.2 Interaction

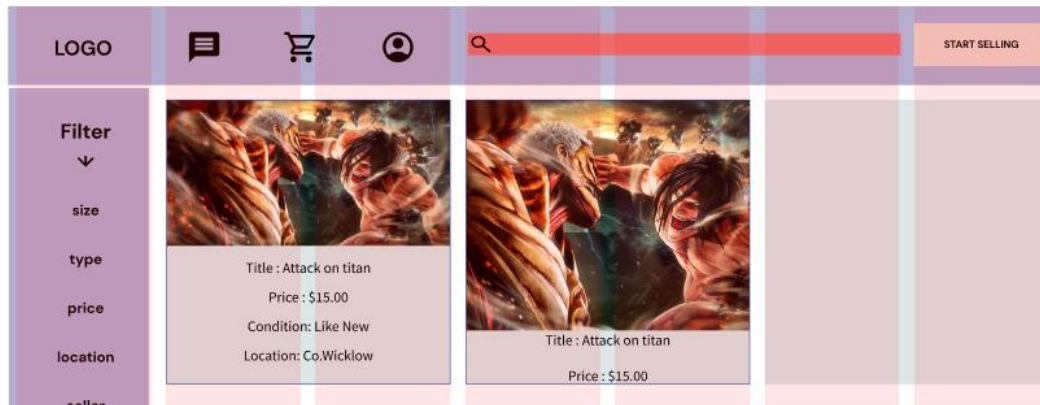
The user will be able to interact with the application in many ways. Each page will have a navigation bar at the top of the screen to change the views between discover, profile, notifications etc. The discover/ main page would have filters on the left for the users to interact and narrow down their search for their product they are looking for. The search bar would allow them to filter for specific items.

Bootstrap framework has built-in features with validation. This would mean a fully responsive form will be seen when trying to buy a product which their details will be stored within the database including their role.

### 4.3 Colour schemes

I used Miro and Figma to allow me to view different colour palettes and allow me to choose the most eye-catching one. Each of the competitor applications were standard black and white with a tertiary colour of red on Done Deal and blue on Facebook. I created four different color palettes on my Figma and used the most eye-catching ones in my wireframes to help me visualize. The two colors that were the most eye-catching were the Thistle light blue and International Klein blue. I plan to use the Thistle color on the nav bar and filter and

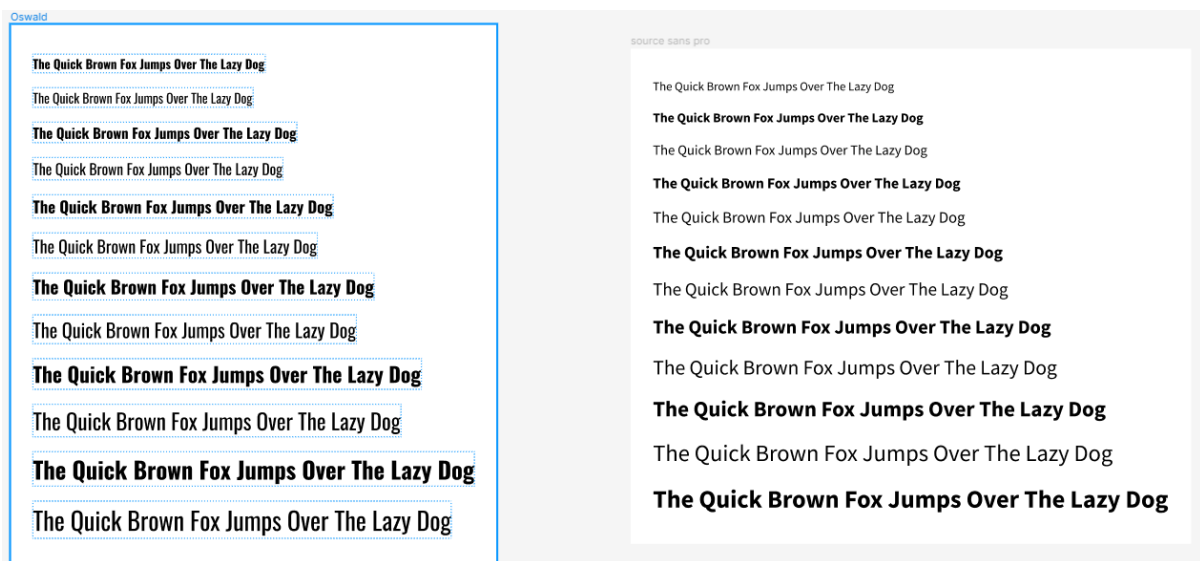
use the darker blue on strokes of my cards with black text and grey cards.



#### 4.4 Font choices

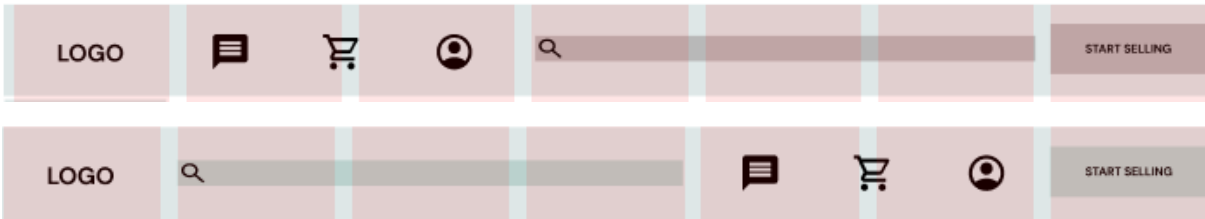
I explored three different font pairs using fontpair.co to see which fonts are compatible with each other. The three font pairs I explored were Work Sans & Merriweather, Oswald & Source Sans Pro and DM Serif Display & DM Sans. I chose serifs to use as my headings and sans for normal paragraph text as it would be easier to read. I explored these fonts in Figma seeing the text in bold and different sizes.

The font pair I decided to choose which I thought was suitable for my site was Oswald for Headings and Source Sans Pro for normal paragraph text.

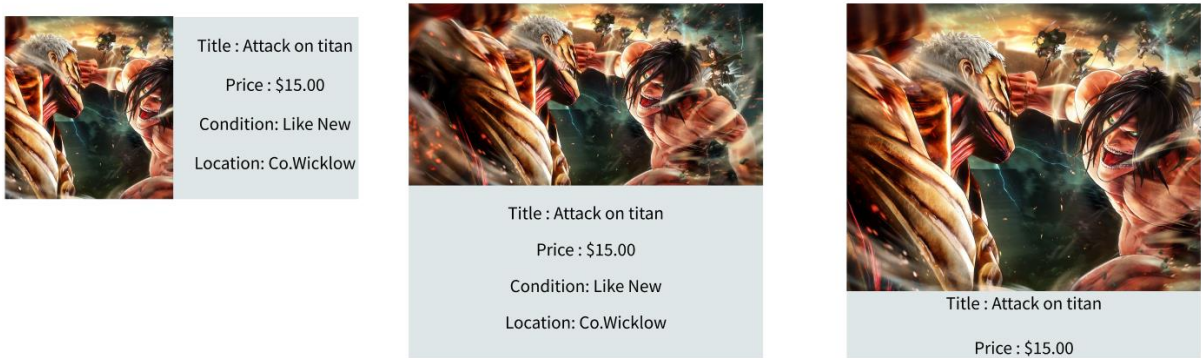


### 4.5 Wireframes

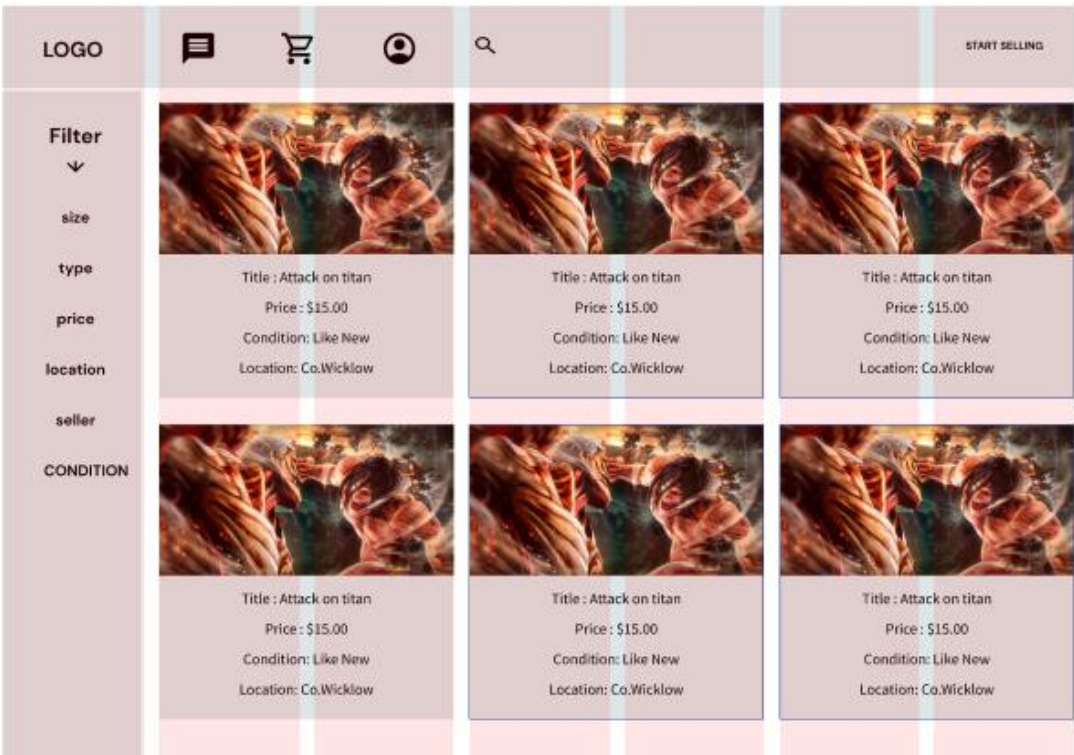
The user would open the application and view the main page first which shows all the products available and filter. I created iterations to explore new layouts and components. Here are two iterations of my nav bar.



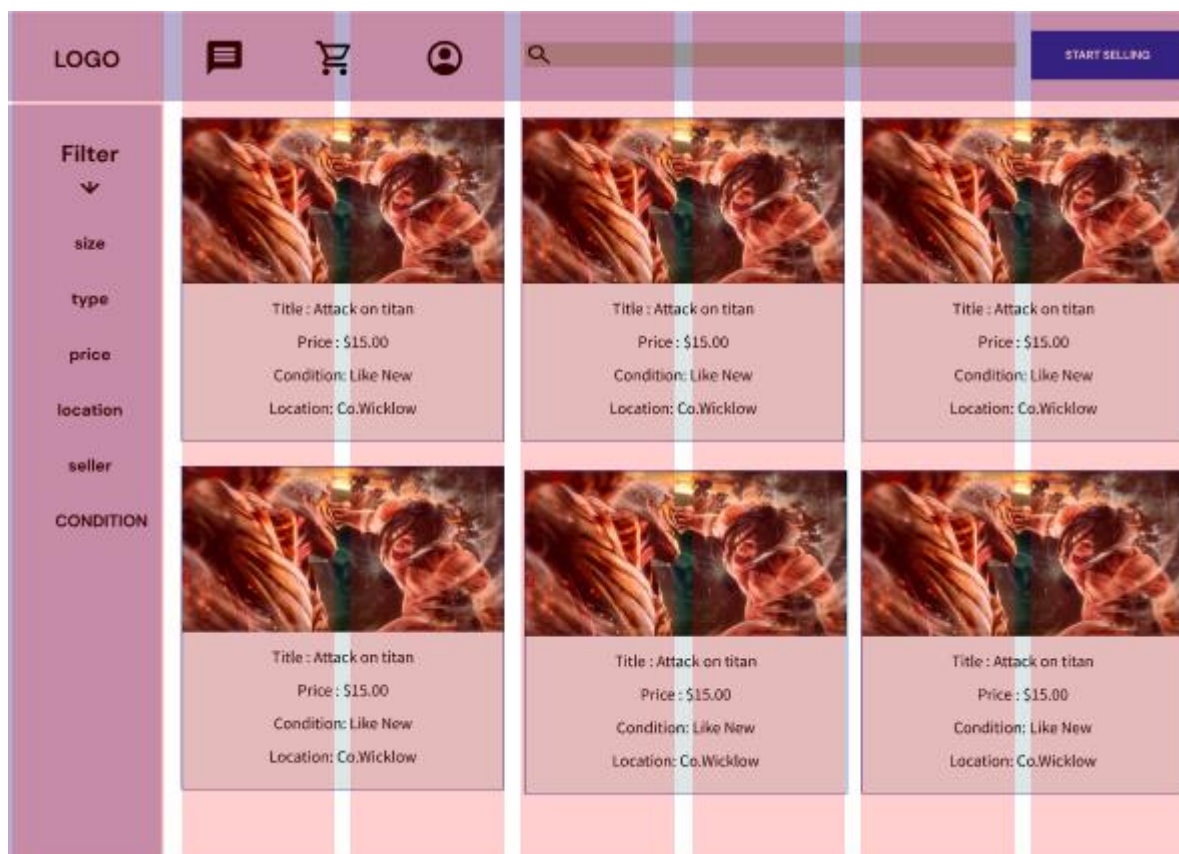
Here are three iterations of my components.



I placed my chosen component as I thought it was the most visible and easy to read for the user.

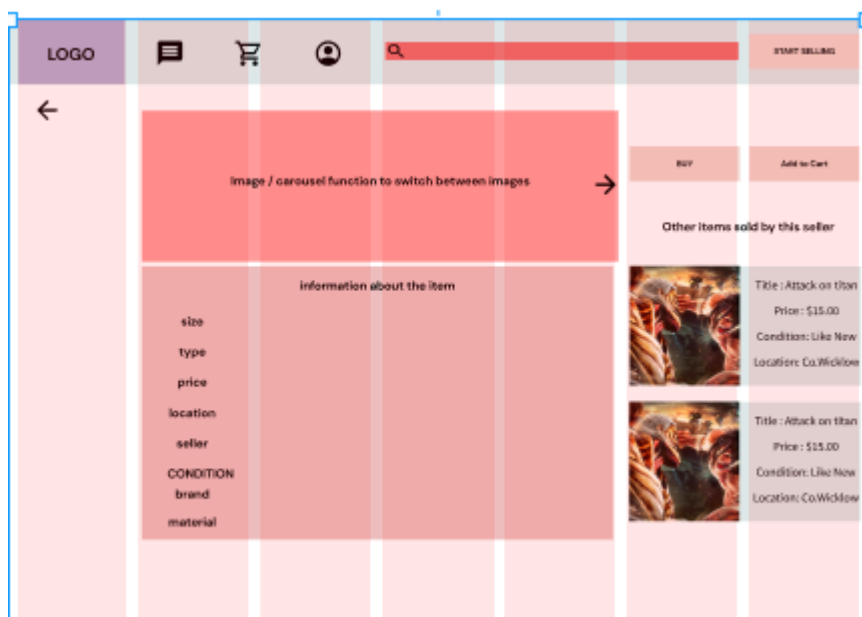


I then added my chosen color to help me visualize the application.



Once the user clicks on anything on the page it will bring them to the login/ sign up page will be a basic Laravel registration page including some other details. However, if they are logged in already it will bring them straight to the view page.

This is the first iteration of my view page however I preferred the layout of the second iteration.





I used the smaller components to place them into the view page which shows other items the seller is selling. From this page the user can either add to cart and continue shopping or go straight to the sell which would be a simple payment form where a confirmation is sent out after, and the item is deleted from the database.

## 5 Database Design

In this section I will be describing how the database will have a role in my business and state the reporting requirements of the business which they must execute. I will then display the dataset and business rules. Using Draw.io I will be showing an Entity Relationship Diagram (ERD) to visualize the relationship between the entities. Then finally I will provide the data dictionary the business will begin with.

### 5.1 Description

The business deals with an online marketplace that helps parents find baby clothes and accessories. I would need a database to store customer information and products. Once a customer buys a product it will be deleted from the database. Customers would have to complete a registration form which holds their information within the database for them to be able to buy or sell products.

## 5.2 Business Reporting Requirements

1. Customers must be able to create read update and delete their ads.
2. Customers can view other customers products which are being sold.
3. Customers must be able to buy other products which deletes the ad from the database.
4. Customers must be able to filter baby products materials.
5. Certain Roles limit users' access.
6. Admins can update any customers product or delete them.
7. Customer must be able to filter through attributes of the products.

## 5.3 Textual Representation of Dataset

**Product** (id, name, description, price, image1, image2, image3, user\_id, condition\_id, category\_id, size\_id)

**User** (id, fName, lName, email, address1, address2, address3,)

**Role** (id, name, description)

**Size** (id, ageRange)

**Category** (id, name)

**Condition** (id, type)

**Material** (id, name)

**User\_role**(id,user\_id,role\_id)

**Material\_product** (id, product\_id, material\_id)

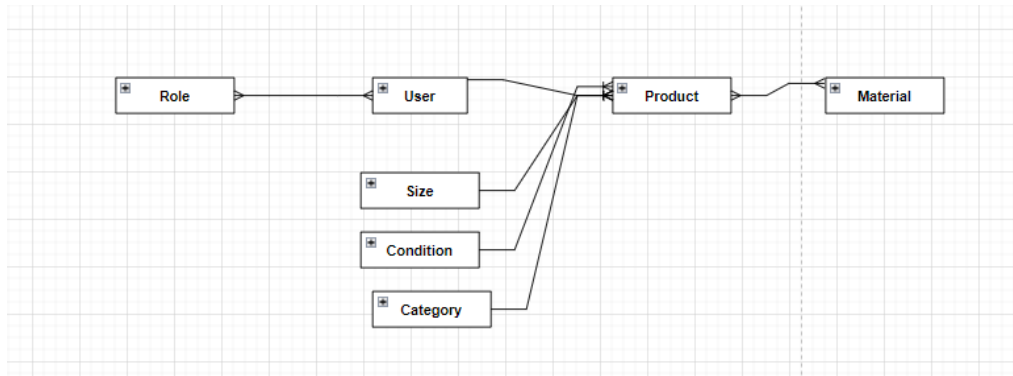
## 5.4 Business Rules

- A **Customers** has many **Products**.
- A **Product** belongs to one **Users**.
- A **Product** has many different **materials**.
- A **material** has many different **Products**.
- A **User** can have a multiple **Role**.
- A **Role** can have many different **Users**.

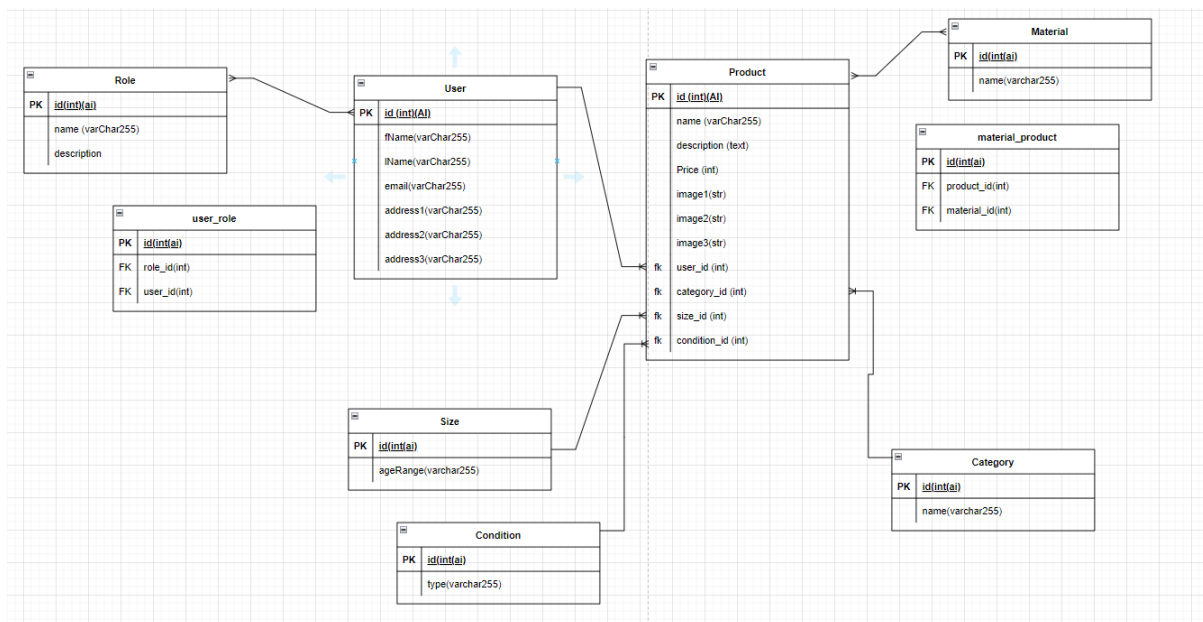


- A **Product** has one **category**, **condition**, and **size**.
- **Category**, **condition**, and **size** have many different **products**.

## 5.5 Entity Relationship Diagram



## 5.6 Tables



## 5.7 Database Dictionary

Table	Attribute	Datatype	Range	Required	PK/FK	FK Ref Table
Role	id	int	AI	YES	PK	
Role	name	varChar	255	YES		



Role	description	varChar	255	YES		
User	id	int	AI	YES	PK	
User	fName	varChar	255	YES		
User	lName	varChar	255	YES		
User	email	varChar	255	YES		
User	address1	varChar	255	YES		
User	Address2	varChar	255	YES		
User	Address3	varChar	255	YES		
Product	id	int	AI	YES	PK	
Product	name	varChar	255	YES		
Product	description	text	n/a	YES		
Product	price	int	11	YES		
Product	Image1	varChar	255	YES		
Product	Image2	varChar	255	YES		
Product	Image3	varChar	255	YES		
Product	User_id	Int		Yes	FK	User
Product	Condition_id	Int		YES	FK	Condition
Product	Category_id	Int		Yes	FK	Category
Product	Size_id	Int		Yes	FK	Size
Size	id	int	AI	YES	PK	
Size	ageRange	varChar	255	YES		
Condition	Id	Int	AI	YES	PK	
Condition	Type	Varchar	255	YES		
Category	Id	Int	Ai	Yes	Pk	
Category	Name	Varchar	255	yes		
Material	Id	Int	Ai	Yes	Pk	
Material	Name	Varchar	255	Yes		
User_role	Id	Int	Ai	Yes	Pk	
User_role	User_id	Int		Yes	Fk	User
User_role	Role_id	Int		Yes	fk	Role
Material_product	Id	Int	ai	Yes	Pk	

Material_product	Material_id	Int		Yes	Fk	Material
Material_product	Product_id	int		yes	fk	product

## 6 System Design/ Architecture Overview

### 6.1 Introduction

In this section I will be discussing the internal functionality of Laravel and how I will be implementing this framework. Laravel is a PHP framework, the version I will be using is Laravel Framework 10.1.4. It will need Composer, Node and PHP to be able to run Laravel. The benefits of Laravel are its built-in authentication and it is very flexible with coding. I am very familiar with its directory structure which has database, resources, storage, routes, bootstrap, and app which I will be using the most to build my site. I will discuss models, controllers, authentication, routes, and the template engine.

### 6.2 Model View Controller

The Model is responsible for connecting the controller with the database. The Models folder will have different entities which I will hold in my database and describe their relationship within each model. For example, Product Entity will hold all the attributes and add the relationship which would look like HasMany->Customers then refer the model it will be connecting to.

The View is responsible for the front-end templates which are called blade templates. This is what the user will be able to view. Any sort of actions will be dealt with the Controller.

The Controller would gather these actions from the view page and send a different route if necessary or do other functions. The Controller would be connecting the model to display the database in the view.

### 6.3 User Authentication

User Authentication will be done using Breeze. Breeze is an extension which implements authentication.

The welcome view page will show my applications main page, once the user clicks on any component it will bring them to the user registration page. Each new user will have a role of user where admins will be preinstalled using the model.

Once this authentication is achieved it will bring the user back to the main view where they can now have full accessibility to buying or selling products.

## 6.4 Routing

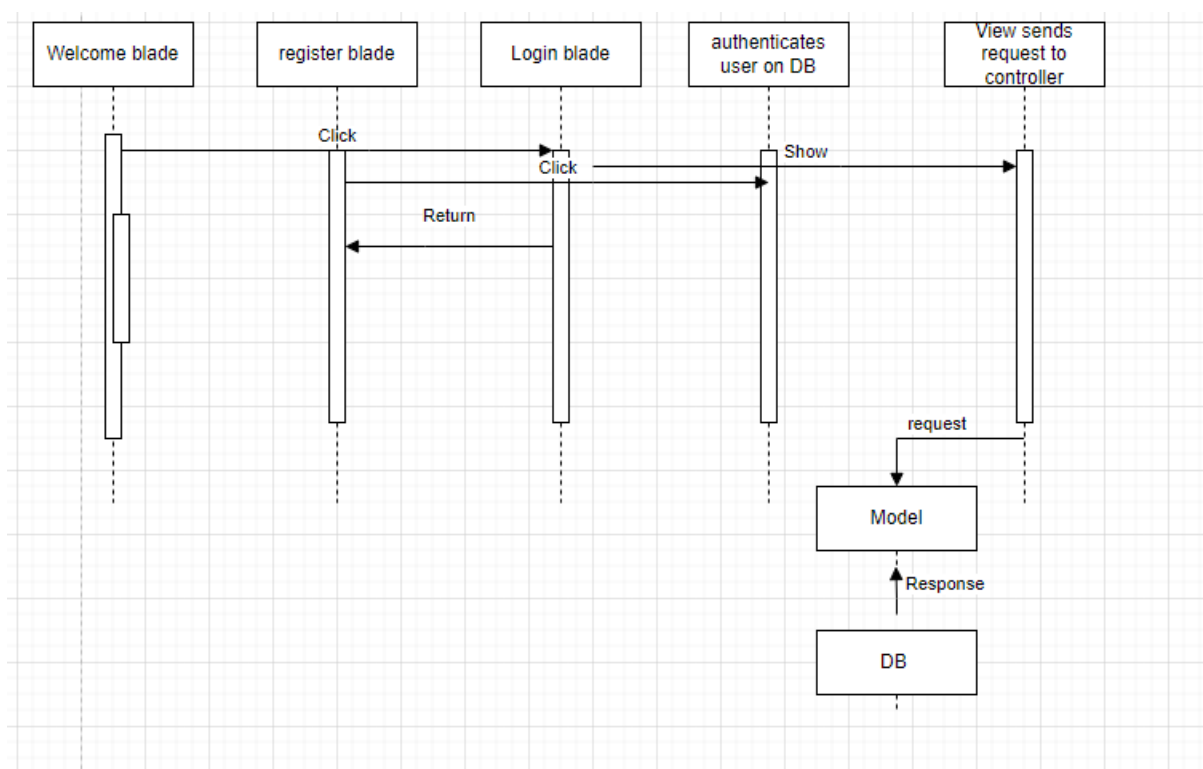
Routes will be dealt in the routes folder under web.php. Here I will declare all the routes for each controller and define where to find these controllers. Within each controller it will hold different routes which are appropriate for that controller.

## 6.5 Templating

Blade is very simple and is driven by inheriting templates. All blade templates files will be used with .blade.php at the end of each file. Example, create.blade.php. They are very effective when using them to inherit navbars or footers. For example, I had extended/ inherited the app.layouts blade to each of my files as It contained the nav and footer.

```
@extends('layouts.app')
```

Sequence diagram to show how a user gets from welcome page to index of products and what happens.



## 7 Testing

### 7.1 Introduction

In this section I will be discussing a how I took a range of tests which included functional testing and user testing.

Functional testing looks at the software part where the systems functions are tested. These tests can be on Login/register, navigation, crud, or algorithms if the test is based on the requirements of the app. The test is the outputted as true or false, if the output is true, it indicates that software function is working.

User testing depends on the user experience of the website and how easy to use it is. User testing is important and feedback from the testers is necessary to help build the design and allow the site to be as simple as possible.

### 7.2 Functional Testing

In this section I will discuss and show several tests which I had done using the black box method. My tests included login/registration of users, navigation to different pages for different users, and CRUD functionality of a product.

#### 7.2.1 Login/Registration

Test No	Description of test case	Input	Expected Output	Actual Output	Comment
1	testAdminCanLogin	New user information, with a response of login and response of redirect to home	Successful login with redirect to home of admin	"home is not defined" Fail	The system didn't know the role of the user which didn't know which home it has

					to redirect to
2	testAdminCanLogin	New user information, with role attached and response of login and response of redirect to home	Successful login with redirect to home of admin	Successful login with redirect to home of admin, Pass	Now that I attached the role the system knows which home to redirect to
1	testCustomerCanLogin	New user information, with role attached and response of login and response of redirect to home	Successful login with redirect to home of admin	Successful login with redirect to home of customer, Pass	There was no fails as i knew what to do from the previous test but to change the role.

### 7.2.2 Navigation

Test No	Description of test case	Input	Expected Output	Actual Output	Comment
1	testAdminToShowpage	Response of admin/products/12	Response status 200	Fail, not authorised	I don't have a user to go through the page which gave me a error 404
2	testAdminToShowpage	Response of login and redirect to home, Response of admin/products/12	Response status 200	Response status 200	Added in a user which allowed me to navigate through the site

1	testCustomerToSellPage	Response of login and redirect to home,Response of customer/products/create	Response status 200	Response status 200	I understood what to do from the previous test so had no errors
1	testCustomerToBuy	Response of login and redirect to home,Response of customer/products/3/buy	Response with status 200	Response with status 200	

### 7.2.3 CRUD

Test No	Description of test case	Input	Expected Output	Actual Output	Comment
1	testProductCreation	New product create, assert it has that data	True the data exists	Error no product in database	After an hour I realised I didn't have a save method on my create
2	testProductCreation	New product create, assert it has that data	True the data exists	True the data exists	Product was being created in DB
1	testProductDeletion	Create new product assert it is there then delete and assert it is not there	True the data existed and true that it now is deleted and doesn't exist	True the data existed and true that it now is deleted and doesn't exist	Luckily I had no errors with this test
1	testProductUpdate	Create a new product, create a second product update the first product	Success, product updated successfully and no sign of the other	Fail on transferring data to product	I couldn't manage to figure out this test and decided to

		with the second data and assert it has the first	product information		leave it as a failure
1	testReadData	Reads the second id of products and asserts if condition_id is equal to 1 on that product	Return with true as each product has a condition_id of 1 as its seeded	Return with true	This test would not work if I change the data on my site or change the seeder.

#### 7.2.4 Discussion of Functional Testing Results

My tests provided me with information that my website was functional and worked properly. The main tests for me were the login in tests as I have two different roles set as many to many relationships and a user cannot get to a page if it is not set a role. After the first fail of the login/registration it helped me figure out an error I was having with registration.

```

PASS Tests\Unit\ExampleTest
✓ that true is true

PASS Tests\Feature\LoginTest
✓ admin can login

PASS Tests\Feature\CLoginTest
✓ customer can login

PASS Tests\Feature\ExampleTest
✓ the application returns a successful response

PASS Tests\Feature\NavigationTest
✓ admin to show page
✓ customer to sell page
✓ customer to buy

PASS Tests\Feature\ProductTest
✓ product creation
✓ product deletion
✓ read data

Tests: 10 passed (23 assertions)
Duration: 0.80s

```

From the image we can see that the tests were successful and were carried out rapidly. However, if I try to run the test again it will give me a fail on the two logins as it trying to register a user under the same email address as one that was previously created.

I wish that I could have got my product update to work however, I kept getting myself into errors and couldn't figure them out in such a short period of time.



### 7.3 User Testing

Due to lack of time, I didn't have time to create a heatmap as I planned to do on Maze. I instead decided to carry out my user Testing on family members and friends. I set them a list of tasks where I placed a timer and seen how many mis clicks, they were doing to achieve their task. They gave me feedback on what I could improve on as well.

1. **Task1: Create an account.**
2. **Task2: Find the cheapest Product.**
3. **Task3: View the product.**
4. **Task4: Buy this product.**

**user 1 -> Brother (18)**

**Time:** 3:38 seconds

**Misclicks:** 1 -> pressed the highest to lowest rather than lowest to highest.

**Feedback:** You could have made the filter a little bit bigger because it was hard to see exactly what was written on the drop boxes.

**User 2 -> mother (42)**

**Time:** 4:54 seconds

**Misclicks:** 2 -> pressed on login rather than register, clicked on add to basket.

**Feedback:** Should make the login/register button bigger to see where it is. Why have the add to basket there if the button has no functionality.

**User 3 -> Friend (21)**

**Time:** 3:14 seconds

**Misclicks:** 1 -> clicked on the body of the card where the link is in the image.

**Feedback:** Site seems to be fairly user friendly. Could maybe add the link to the whole card rather than just the image.

### 7.4 Conclusion

Overall, I am happy with the results of both sets of tests. The functional testing allowed me to see if all necessary functionality within the system was working which it was as all apart for the update of products within the crud tests. The user testing allowed me to see if my site was user friendly and if it was easy to maneuver though my site. User testing feedback allowed me to change certain things for the site to be more user friendly. However, if I had more time, I would have tried to get more user testing to give me a wider range of feedback to work off.

## 8 Project Management

### 8.1 Introduction

In this section I will discuss how the project was managed where I explain my project phases and go through the requirements and design, I implemented. I then show a Gantt chart to show my progress and show how long each section took me.

### 8.2 Project Phases

#### 8.2.1 Requirements

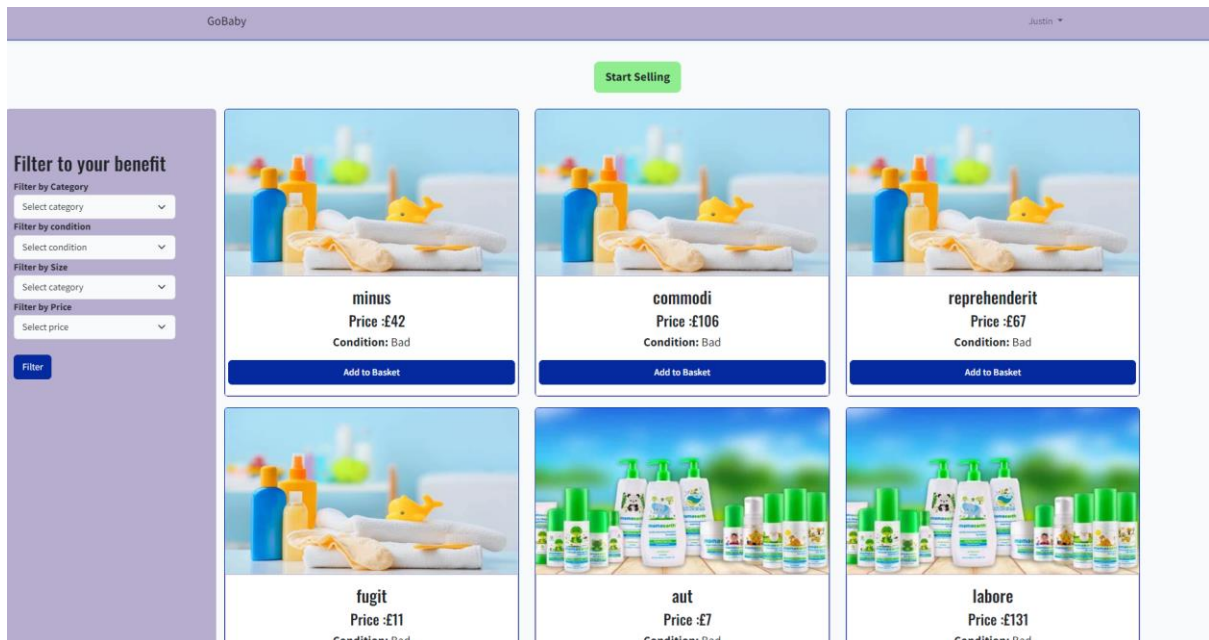
I implemented all my business requirements for my project. I succeeded with most of my requirements. Customers can only create new ads but can't update or delete their own products. Customers can view all products on the database and are able to buy other products from the database. Users can filter through different variables to limit their search. Only Admins can delete and update all products.

In my opinion I succeeded with my business requirements and developed a functional website for both admins and customers apart from getting my add to basket function to work.

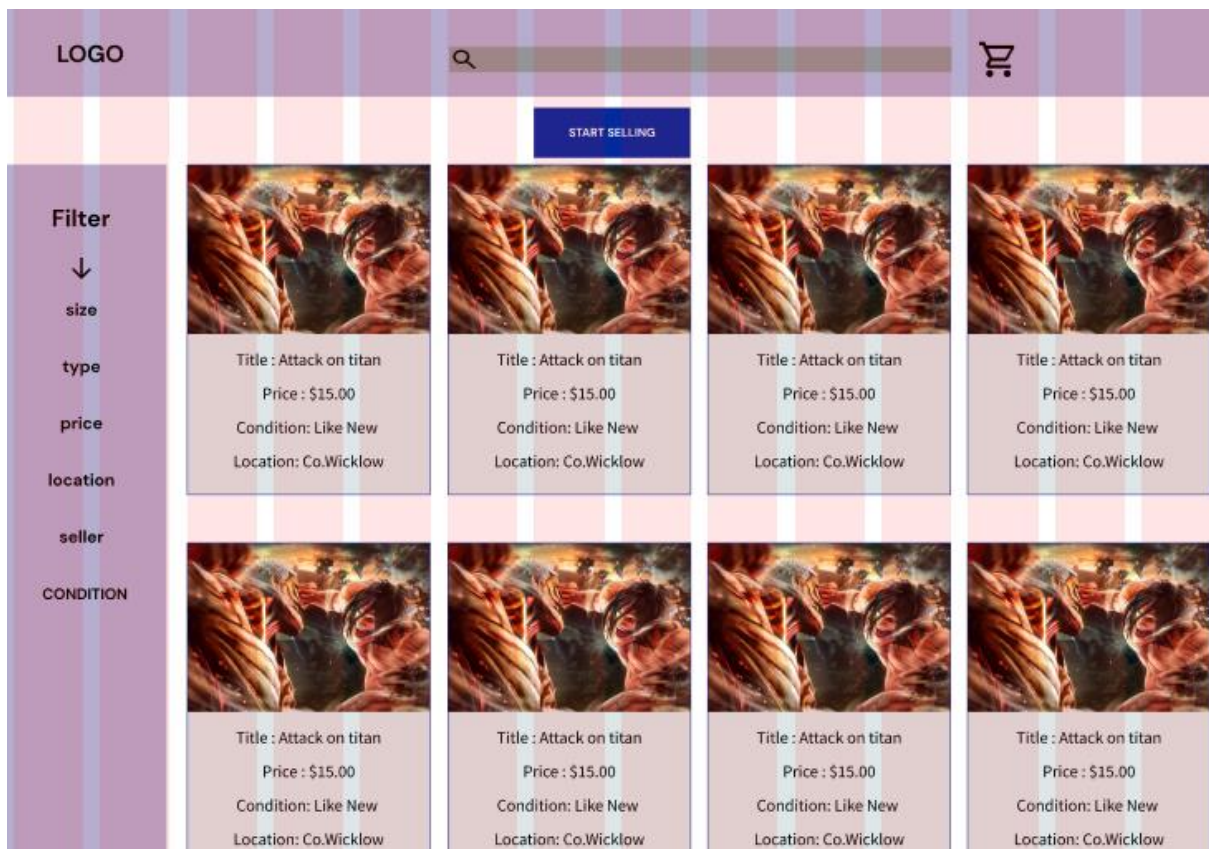
#### 8.2.2 Design

In figma I created my iterations of wireframes. In Miro I had researched fonts and colours to my preference. I then implemented the layout in my app and added my fonts and colours in to app.scss in the sass folder to change bootstrap within my site.

#### 8.2.3 Implementation

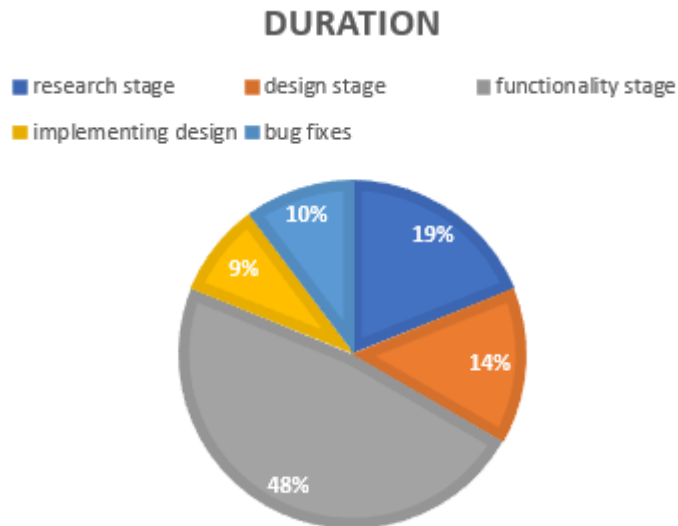


Here is a screenshot of my chart where will be showing a part of my requirements, we can see that a customer can start selling which is creating a new product to the database. We can also see the fully functioning filter function on the left hand of the screen. Comparing my site to the iterations we can see that my design is almost identical apart from the basket icon, search bar and the colour of my start selling button which I decided to change as green would push customers to sell products as the colour green usually indicates good or go.



### 8.2.4 Time Usage

Here is a Pie Chart of how long each section took me.



## 8.3 Project Management Tools

### 8.3.1 GitHub

GitHub is an extension which gives control and collaboration that allows developers to store, manage, and share their code with others. I would have tried to have daily commits to see progress in my code and allowed me to store this code online which is easily accessible from any device which sees my profile as my repository was public and allows anyone to view my code. I would have missed a few days of commits and would have more commits on some days than others.

## 9 Reflection

### 9.1 Your views on the project

In my view the project went quite well. I had my business requirements completed with my design matched to the initial design I created in my research/design section. I completed most of my functionality requirements which I was pleased about and wouldn't have changed anything about my layout or design. I had trouble at the start of the project with implementing Enums for the first time in my Laravel project where after hours on end I tried to showcase and use these Enums from MySQL where I soon learned that Enums were not compatible enough with MySQL and I had to restart my project by changing the Enums into one to many. Knowing this or figuring it out sooner would have me more time to develop the project further within different areas.

### 9.2 How could the project be developed further?

If I had more time, I would have implemented the rest of my functionality requirements such as implementing search, basket and gamification aspect when buying products. I would have liked to create a more statistical page for the admin as well. The main thing I would have developed further would have been the user testing by having more tests with a scenario rather than set out tasks and potentially using some sort of heat map to track each users clicks.

### 9.3 Assessment of your learning.

Over the course of this project, I learned more about the bootstrap design where I implemented a fun functionality which was the built in carousel function where I had to overcome problems with scaling my images to make them look acceptable within this function. Within Laravel I was already quite familiar with the framework and was able to implement the filter which I couldn't get my head around at the start but once I manage to do the filter by price, I was about to add more filtering options within this filter form.

### 9.4 Completing a large software development project

The main thing I learned about this large software project was how to combine bootstrap with Laravel and creating my very first fully functioning website which had front-end development and back-end development done. It made me aware that I enjoyed doing the back end of the project more rather than the front-end as I do not see myself as a good ux

designer however, most design in my opinion could look good to one person but not good to another.

### 9.5 Technical skills

I developed many skills while creating this project. I got to understand the language and libraries of both Laravel and bootstrap more, I implemented design patterns and principles which I learned before. I became faster and more consistent when overcoming an error which would mean that my problem-solving skills had improved with my knowledge from testing and debugging the project if I ran into any errors, especially with my crud functionality.

### 9.6 Further competencies and skills

Some other skills which had improved during the development of this project would be project-management skills as I had created a timetable for myself to complete each goal of the project. For example, I had covid and had to put in more work to get myself back on track then during my first week of easter I had not taken a day off doing the project where I had myself nearly finished but then caught a bad case of the flu which had prolonged my work, but I had done enough work the week before I wasn't stressed about finishing it.

Even though this was an individual project, my colleagues and I developed communication skills where we could help each other while coming across the same error. This way we built a strong relationship within and outside the classroom.

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