

Coursework Report

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Abstract

The Advanced Web Technologies Coursework is split into two parts - the Design and Implementation of a Web App. This report deals with the Design and Planning.

I aim to use Flask to create an interactive clone of an online marketplace site. The site will be inspired by Amazon, eBay, Gumtree and various other online marketplaces.

1 Introduction

1.1 Introduction

As the world changes, shopping is increasingly being done through various online platforms. I wanted to more closely understand the design behind online marketplaces and understand how they encouraged us to buy items. I thought this would be ideal to recreate, as I do the majority of my non-food shopping online.

I aim to adapt and find inspiration from current UI elements on various marketplace sites to suit my site design. I find the Amazon interface quite messy, however it's adequate for the number of services that Amazon provides.

2 Background Research

2.1 Introduction

I spent time researching to understand which aspects of my website would be most impactful, and the best way to present information. This research was directed towards both online marketplaces and general websites. I read various papers and sites to understand the key web development design principles for my project.

2.2 Research

I found that trust was repeatedly listed as one of the most important factors of an online shop, e.g. trust that products listed were as described and trust that customers could get a return if they weren't. If a user's trust of a website is low, they're less likely to make a purchase from the website. According to Ganguly (2010), "to operate a successful e-business, an online company requires a deep understanding of how trust is developed and how it affects purchase intention in online stores." [1]

For an online marketplace, Hasan (2016) states that key design features include information, navigation and visual components. He explains "these website design components offer

consumers the most visible and apparent features to interact with while using the website and upon which they form their perceptions and beliefs about their online experiences." [2] I have chosen to focus heavily on the navigation of the website and the visual components.

On navigation, Hasan (2016) also outlines that "simple and direct navigation" saves time and effort for users and makes shopping easier. [2] I've found Amazon quite confusing as they offer an ecosystem of services, so I hope to create a far more simple and easy-to-use site.

2.3 Summary

My three main objectives from my research are:

- To create a trustworthy site for the user
- To create a clear and visually pleasing website
- To create a simple navigation system

3 Features

3.1 Introduction

Sites that I have researched have been created and maintained by teams of professional software developers for years, so I've tried capture the key elements, while still remaining within scope. I split the elements into Basic and Advanced features, allowing me to add functionality to the site part by part, and ensure I can focus on the core elements before implementing more difficult features.

I aim to have all basic features completed by site completion. I also aim to have at least three of the Advanced features listed finished by the website's completion.

The features are as listed below:

Basic

- Website navigation
- Home page
- Login and sign-up functionality
- Items catalogue
- Editable profile features

Advanced

- Purchase and sale functionality
- Item search functionality
- Security logs

- Advanced item details
- Checkout functionality
- Seller API

3.2 Basic:

Clean and simple website navigation enables the user to effectively find content they're looking for. In the context of online shopping, easy and clear website navigation allows the user to find items they're looking to buy, and allows the site to sell more items.

A well designed home page should be the landing page for the user and provide a great first impression for the site. Since trust is key for an online marketplace, the home page will be key to gaining the trust of the user and providing a pleasant experience.

Simple login and sign-up functionality is an important step for the marketplace. Signing up and logging in should be simple and straightforward. It's not a part of the site users wish to spend a lot of time looking at, so provided it's pretty and functional, it's effective.

A catalogue of online items is the bread and butter of an online marketplace. Users need to be able to browse through items to select which items they want to buy.

Editable profile features are a critical component of an online marketplace. Users need to be able to enter their address to allow them to get deliveries, as well as provide other basic details.

3.3 Advanced:

Purchase and sale functionality is critical for the website, however it is a more difficult feature to implement. I hope to make all accounts buyer' and 'seller' accounts, allowing all users to buy and sell items online. If this feature remains unimplemented, dummy items will be on the site for users to buy.

Item search functionality is important to allow users to search for items to buy. Without the ability to search, the user needs to find an item through an alternate method, such as Amazon's 'Departments' or eBay's 'Categories'. If this feature remains unimplemented, there will be another interface in place to allow users to find items on the site.

Security logs are important for a website as they allow the web admin to track user activity. Ideally, the security logs are saved to the server and also saved externally, to prevent tampering with the logs on the site.

Advanced item details e.g. item rating, item comments, availability and key details are important to let users know what they're buying online. It gives users the ability to review items they have bought, which provides accountability for the seller. If this feature remains unimplemented, there will still be basic details available for each item.

Checkout functionality is key for an online marketplace as it allows users to purchase items. I aim to have the ability to checkout by website completion. The checkout feature should be a step-by-step straightforward process which is simple to follow. If the feature remains unimplemented, there will be a dummy 'checkout' feature.

An API which can be called by the seller to provide basic details account details would be useful to allow the seller to more closely track their sales. Additional support for sellers would incentivise more sellers to use the site, if they can more easily track sales and income. Further information on the API will be provided in a later section.

4 Site Organisation

4.1 Introduction

A big question for online marketplaces is how users will find items for sale. The usual answer is a mix of search and browsing. As many items are added, the website needs to scale and ensure new items are being added to appropriate categories, appropriate categories are being added for the items and that new items can be found via. search. I aim to use a mix of category and search capability.

4.2 Category

I plan to have the seller add the category at the time of placing the item on the site. This ensures that the item is placed correctly on the site, as the seller has no incentive to put a wrong categorisation on the item, since it makes it harder to find. I also plan on having a report function on items, which allow users to report an item if it's incorrectly categorised.

Since the scale of the site will be small, I plan on having a few categories on the site to mock-up the functionality for a full site.

4.3 Search

Efficient searching through databases and item collections can be difficult to scale. Additionally, searching for the most popular and most appropriate search results can be a challenge. Amazon suggests various 'departments' to search in, if you enter a vague result, which limits the search to a specific department and item.

Since the scale of the site will be small, I plan on having a search function that provides all search results *like* the searched item.

4.4 Site Navigation

My Navigation tree (Appendix A) aims to make the majority of pages accessible from a drop-down menu. This ensures that navigation can be completed mostly from a single screen and allow users to find the correct menu in time.

5 User Interface

5.1 Introduction

The user interface of an online marketplace is extremely important, as stated above in the background research. I aim to talk about various aspects of my user interface in this section.

5.2 Site Header

The header is vital to the UI, as it provides a lot of the

interaction and basic navigation for the site. I've tried to create a header (Appendix B), which provides access to most aspects of the site.

The design behind the header, is to offer a simple drop-down menu and search bar to allow the user to access key resources. The complexity of the checkout system is hidden behind the cart, which provides an overview of the current order total.

6 Data Storage

Data will be stored on the server in various forms. I plan to use MongoDB for data retention for my site. Data being saved will include:

- Customer data
- Item data
- Sales
- Security logs

6.1 Customer Data

Customer data is required for an online marketplace. The data required for the customer data includes the data requested on the registration form (Appendix C). I also aim to save profile images in the customer database.

6.2 Item Data

Item data required for the site is shown in various pages across the site (Appendix D, Appendix G Appendix F, Appendix E). Item data will also be stored about item rating, comments and quantity available.

6.3 Sales

Sales data is primarily for 2 uses: tracking previous purchases for buyers, and to allow the API to provide sales data for sellers. It will store information regarding the volume and value of sales, with a breakdown for each order.

6.4 Security Logs

Security logs would be part of the 'Advanced' site features. I aim to have the sales logs available live to an admin of the site, and persist on the server to allow future access to logs.

7 Site API

As one of the Advanced functionalities, I have listed a seller API. I aim on having an API which allows sellers to pull basic information off the site, enabling them to track their selling on the site.

These would include:

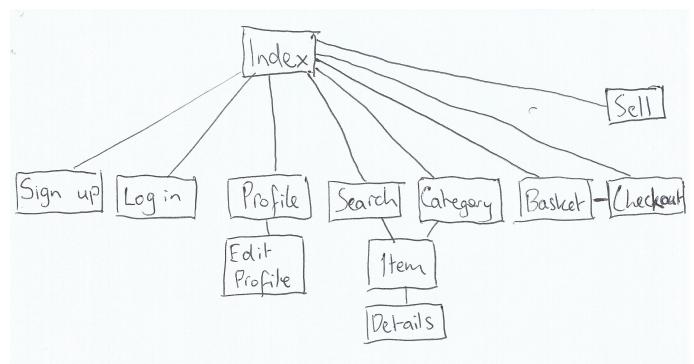
- Value of sales in the last week
- Number of sales in the last week
- Value of sales in the last month
- Number of sales in the last month

- Number of items on sale
- Market value of items on sale

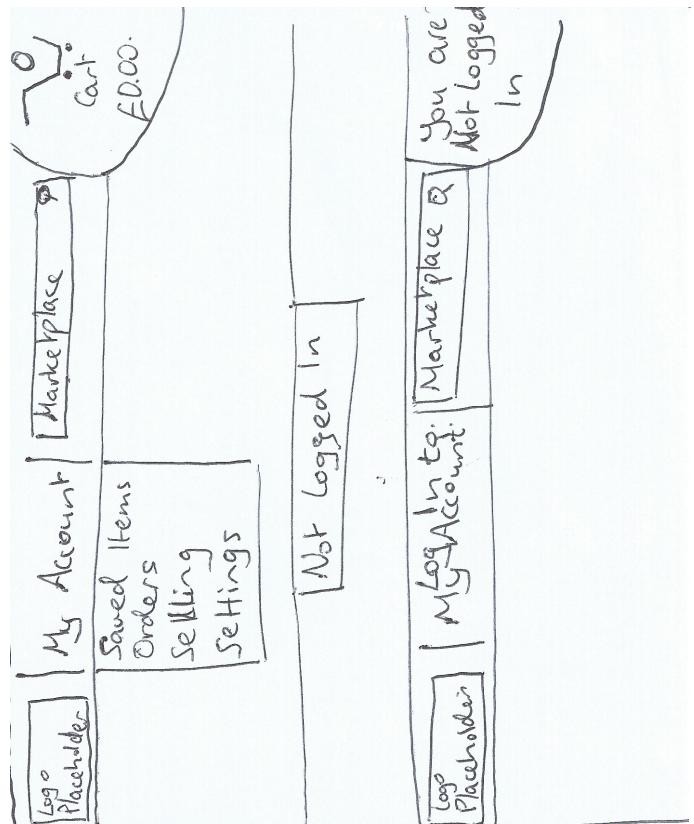
The value/number of sales tracked in the last week and in the last month allow users to check the total revenue over the period, while number of items on sale and value of items allow them to see their current offerings on the marketplace.

Appendices

A Navigation Tree



B Site Header



C Login Form

Log in Page.

<input type="button" value="Log In ."/>
<input type="button" value="Register ."/>

Username :	<input type="text"/>
Full name	<input type="text"/>
Email Address	<input type="text"/>
Password	<input type="password"/>
Confirm Password	<input type="password"/>
Date of Birth	<input type="text"/>
Address	<input type="text"/>
Postcode	<input type="text"/>

D Orders Page

Orders Header.

Order #3!	
Item 1: <input type="text"/> F Amount	Item #4: <input type="text"/> F Amount
Item 2: <input type="text"/> F Amount	Item #5: <input type="text"/> F Amount
Item 3: <input type="text"/> F Amount	F Total.
<hr/>	
Order #2!	
Item 1: <input type="text"/> F Amount	
Item 2: <input type="text"/> F Amount	
Item 3: <input type="text"/> F Amount	F Total
<hr/>	
Order #1!	
Item 1: <input type="text"/> F Amount	
Item 2: <input type="text"/> F Amount	
	F Total

E Sales Page

Selling.

Item 5	Item description
Total	Quantity
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
Item 4.	Item description
<input type="text"/>	<input type="text"/>
Item 3	Item description
<input type="text"/>	<input type="text"/>
Item 2	Item description
<input type="text"/>	<input type="text"/>
Item 1	Item description
<input type="text"/>	<input type="text"/>

F Saved Items

Registration Form

<input type="checkbox"/>	Saved Item 3. <input type="text"/> F Total.	<input type="text"/> Item description	<input type="button" value="Remove from saved items"/>
<input type="checkbox"/>	Saved Item 2. <input type="text"/> F Total.	<input type="text"/> Item description	<input type="button" value="Remove from saved items"/>
<input type="checkbox"/>	Saved Item 1. <input type="text"/> F Total.	<input type="text"/> Item description	<input type="button" value="Remove from saved items"/>

G Marketplace Search

Marketplace Search

<input type="checkbox"/>	Item found 3. <input type="text"/> F Total.	<input type="text"/> Item description	<input type="button" value="Add to order"/>
<input type="checkbox"/>	Item found 2. <input type="text"/> F Total.	<input type="text"/> Item description	<input type="button" value="Add to order"/>
<input type="checkbox"/>	Item found 1. <input type="text"/> F Total.	<input type="text"/> Item description	<input type="button" value="Add to order"/>

References

- [1] B. Ganguly, S. B. Dash, D. Cyr, and M. Head, "The effects of website design on purchase intention in online shopping: the mediating role of trust and the moderating role of culture," *International Journal of Electronic Business*, vol. 8, no. 4-5, pp. 302–330, 2010.
- [2] B. Hasan, "Perceived irritation in online shopping: The impact of website design characteristics," *Computers in Human Behavior*, vol. 54, pp. 224–230, 2016.