

**Recycle Bin: A Web Based Platform to Sell, Buy and Rent Used Products Left in
Good Condition**

BY

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled “Recycle Bin”, submitted by Rafi Bin Wores, ID No:183-15-11957 Student ID to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 01.24.2023.

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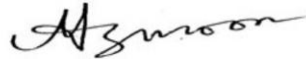
We hereby declare that, this project has been done by us under the supervision of **Ms. Samia Nawshin, Assistant Professor, Department of CSE Daffodil International University**. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

Recycle Bin is a part of the classifieds web application, means a place where people can buy, sell, and rent their goods or services. The main idea of this website is to provide people with used goods at a reasonable price, so that people who don't have enough money to buy brand new products because of the higher price can buy or rent them from Recycle Bin at a cheaper price, and it also helps those people who don't need the product any more they can sell or rent their goods rather than trashing them. Here, the main role will be played by the user. Because it is a C2C classifieds web application, where a user can be a seller or buyer. First user needs to log in to the website using their Gmail account. After logging in user needs to post an ad to sell or rent their used product. To sell or rent the product, the user needs to add product details, category, location, description, brand name, and seller contact details. If a user wants to buy or rent the product, then he/she needs to directly contact the seller through the Recycle Bin app or their given contact information. Admin will not get involved in any kind of buying or selling transaction. User can search for their desired product by providing the name or description. User can also find products by specifying a location or category.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Recycle Bin is a classifieds online platform that allows users to purchase, sell, or rent their items or services. Here, classified denotes a prototype based on which we want to develop a platform through which any internet-savvy individual may make additional money by selling or renting their old or excess merchandise rather than discarding it. There are several venues on which individuals may market their products nowadays. We are attempting to create a comparable platform where individuals may market their products and services. Also, for those who cannot afford brand-new products so they may get used products at a fair price.

Recycle Bin is not some regular classified application, it's more like a helping hand for people. For example, a person wants to be a photographer or developer but he/she don't have enough money to buy new computer or DSLR camera to start with. In that case Recycle Bin can help them, by using Recycle Bin then can either buy a used computer or camera or rent to start up his/her business. Because we introduce renting system for all kind of product. So, then people can rent a product for daily or monthly basis. It's helps reduce their startup or business initial cost.

When a student is considering a startup or company, money is one of, if not the primary, legitimate factor to consider. Student lacks sufficient funds for a company or startup. In this situation, individuals can rent or buy items from "Recycle Bin" to lower their initial outlay.

Recycle Bin is a free C2C (Consumer to Consumer) internet marketplace that lets individuals to purchase and sell things without the need for middlemen. With a straightforward registration procedure, both sellers and buyers may register themselves. Now, registered users may upload images of their items with their titles, descriptions, categories, and pricing. Buyers in need of the goods will search the platform, learn about the vendor, and connect directly with the seller, without the interference of a third party. They will engage in negotiations before concluding the deal.

1.2 Motivation

As we know Bangladesh Is a developing county, as a developing county many of our people cannot afford brand new product. This website for those people who can't afford brand new product so that they can buy or rent used product from others who don't need the product anymore. It is very common that after buying a product very often the product remains in a good condition even after we use it and many time we don't need that product anymore or we need to update our old item. So, rather than trash the item or destroying it, we can sell or rent the product. So someone else can use it.

1.3 Feasibility Study

The framework must pass the feasibility test. It assists in deciding whether or not to continue with the project. Possibility to focus on framework evaluations and suggestions about framework support. In layman's words, it is the assessment of the framework, and if the framework passes the evaluation, it is viable to proceed with the project, or we may say that the focus on attainability determines if the project is feasible.

Types of Feasibility Study:

- Technical Feasibility
- Economic Feasibility
- Legal Feasibility
- Operational Feasibility
- Scheduling Feasibility

Technology Feasibility: The creation of the "Recycle Bin" system is recommended using the easiest and simplest technology accessible, excluding sophisticated design. The system is well-equipped, with every gadget fitting in and being very user-friendly. This system was developed utilizing the computer language JavaScript, the MongoDB database, the Template Engine like (EJS) for the front-end, Node JS for the back-end, and Figma for the design.

Economic Feasibility: This evaluation often includes a cost/benefits analysis of the project, which helps businesses establish the feasibility, cost, and advantages of a project prior to allocating financial resources. For our project, we didn't cost anything, we design and build this application almost free of cost.

Legal Feasibility: This evaluation examines if any component of the proposed project violates applicable laws.

Operational Feasibility: This evaluation entails conducting a study to establish if and to what extent the organization's requirements can be addressed by finishing the project.

Scheduling Feasibility: This evaluation is the most crucial to the project's success; after all, a project that is not finished on time will fail.

1.3 Expected Outcome

Recycle Bin will be the best platform for a student or middle-class family. Because recycling allows people to sell or rent their products rather than throw them away. If anyone wants to start a new business, they can buy used products or rent products from Recycle Bin, lowering the initial cost of their venture. Also, people can start their businesses by Recycle Bin. In other countries, people can rent computers, so if anyone wants to start a business like that, they can start their business by using Recycle Bin platform.

1.4 Report Layout

Chapter 1: Represents a presentation of the Recycle Bin, motivation, aims and objectives, feasibility study, expected outcome, and report format.

Chapter 2: Describes the Recycle Bin's establishment, associated works, Comparative Studies, scope, and challenges.

Chapter 3: Describe Business model, Use case model, Data model, Analysis of requirement & Design requirement.

Chapter 4: Describe the Front-end design, Back-end design, User Experience, Interaction & Implementation requirements

Chapter 5: Describes Implementation of Database and Front-end design, Testing implementation & Test result and reports.

Chapter 6: Describes the Societal, Environmental, Ethical aspects.

Chapter 7: Describes the goal, limitation & future dilemma of project.

CHAPTER 2

BACKGROUND

2.1 Related Work

Several systems are already highly developed in an effective and sustainable manner to focus more on categorization topics such as employment, education, Business & Industry, and other items and services likely to be found on any classified advertising website.

In this section we'll be discussing about some of those application.

OLX: Olx.com one of the biggest classified advertisement platforms in the world. Olx was founded in 2005 and now olx serves more than 30 countries.

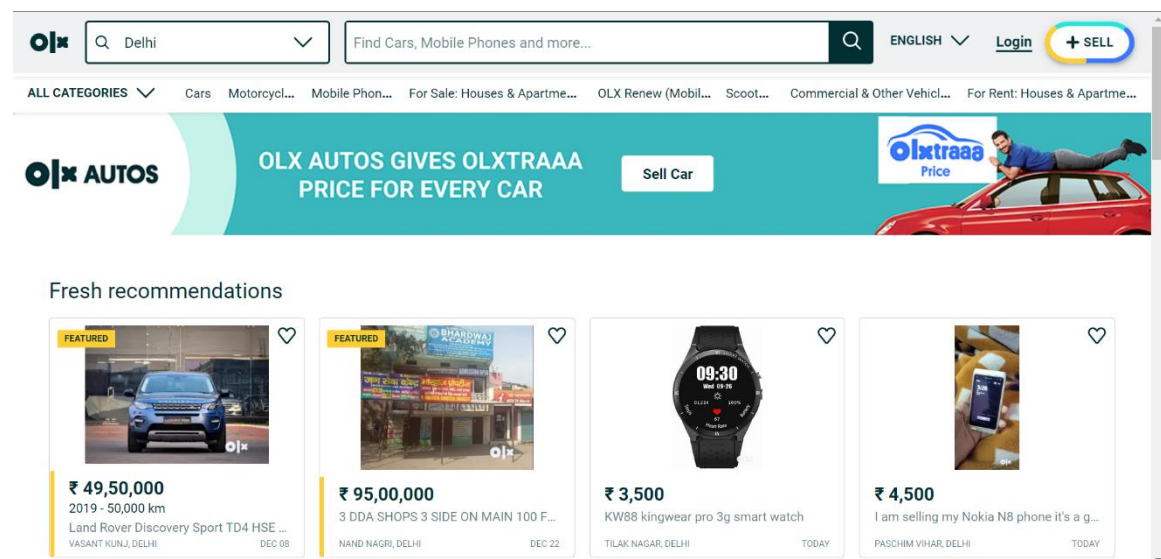


Figure 2.1: OLX website

Bikroy: Bikroy.com was formally introduced on 18 October 2012 in Dhaka during a press conference. Bikroy.com is the first Bangladeshi classified advertising website and the most viewed classified ads website in the nation.

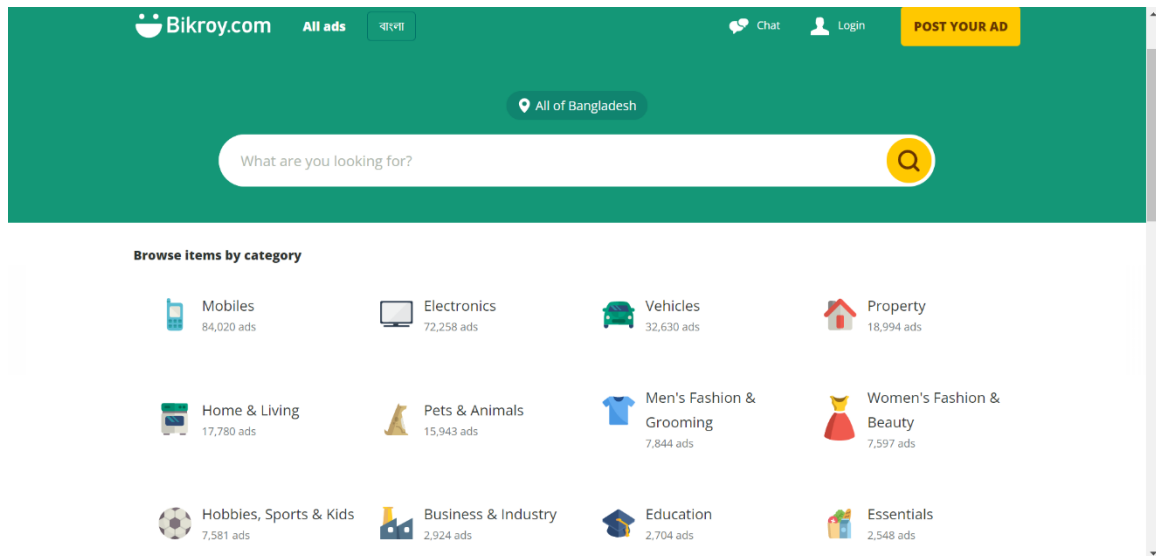


Figure 2.2: Bikroy website

2.2 Comparative Analysis

All of these platforms (bikroy.com, olx.com, and the classified advertising group on Facebook), along with many more that are yet to come, we hope, and those systems will achieve the greatest possible results when it comes to constructing huge communities. In order to maintain a competitive position in the industry, recycling is going to need to implement some kind of marketing plan that is competitive. In today's environment, having a marketing plan helps to maintain a firm competitive and unique in the market. This is not a reality that is inherent to the commercial arena. Additionally, users of our program have the ability to rent anything, including sofas, cameras, and furniture—something that is not available on any other platform. People are only able to rent houses, offices, and storage units by utilizing the website bikroy.com. Recycle Bin gives individuals a helping hand in getting their businesses off the ground, and people may also get their businesses off the ground by renting out furniture or electronic goods using our platform.

2.3 Scope of the Problem

The Node.js version and all other packages used by our application are often changed, and library files and code are periodically deprecated, which may pose a problem. However, if we regularly update our application, we can cure and avoid this issue.

2.4 Challenges

Due to the new platform, severe repercussions, and user demands, it is never easy to maintain effective social awareness on the Internet. Several outcomes are under consideration, but they all rely on the environment or culture in which we exist.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Business Diagram Model

Diagrams of business models give a visual representation of our business process. In addition, business process mapping, tools, and other courses construct the protocol for the whole production process and staff onboarding. Detailed business diagrams define the objectives of all system stakeholders.

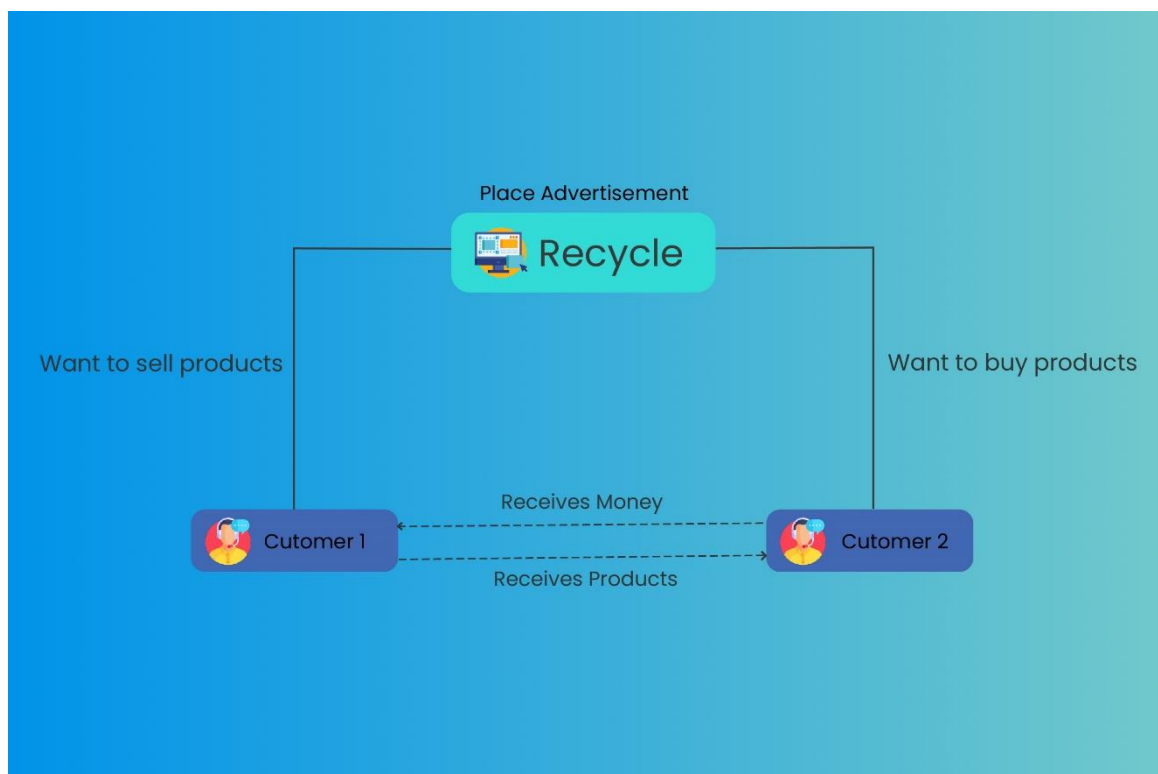


Figure 3.1: Business diagram model

3.2 Requirement Collection and Analysis

Visual Studio Code

Visual Studio Code is a lightweight but powerful source code manager that runs locally on your computer and is available for Windows, macOS, and Linux. It has built-in support for JavaScript, TypeScript, and Node.js, as well as a plethora of extensions for several languages and runtimes (such as C++, C#, Java, Python, PHP, GO, and.NET). This relies on the Electron framework, which is used to develop Node.js Web apps that leverage the Blink layout engine. It is a "free editor" that assists programmers with writing code, debugging code, and correcting code using IntelliSense; it identifies incomplete snippets. Here, we may use several extensions, like Python Notebook, Auto Complete Tag, Live Sass Compiler, Git Extension Pack, Extension Pack for Java, and Live Share Extension, among others. Visual Studio Code delivers minimal help to developers.

Now I'll discuss some great Visual Studio Code features. These are listed as below:

- **Multiple programming languages supported:**
supports several programming languages. Previously, designers needed Web-Support, a replacement manager for several languages, but now it has verified multilingual support. This also suggests that, in the event of a defect or cross-language reference, it will notice it and be able to quickly differentiate it.
- **Cross-Platform Support:**
Typically, editors are used to assist Windows, Linux, or Mac computers. Nevertheless, Visual Studio Code is cross-platform. Therefore, it can manage each of the three steps. Similarly, the code addresses each of the three phases; before, open-source and restricted programming codes appeared as something else.

- **Extensions:**
Tap the Extensions icon in the Activity Bar instead of VS Code or the View: Extensions command (Ctrl+ Shift+ X) to see the Extensions window. This will list the most popular VS Code extensions available on the VS Code Marketplace.
- **In Build Terminal:**
A particular activity, in-built terminal, or control center provides the client with the support necessary to avoid being in the midst of two displays for comparable tasks the bulk of the time.
- **Git Support:**
We can grab resources from the git repository and vice versa; the code can also be saved. Pulling resources involves copying the code from the git repository and afterwards modifying it.
- **Commenting:**
This is a common trait, however a lot of languages no longer support it. Commenting on the code assists the individual in remembering or tuning in to the desired sequence.

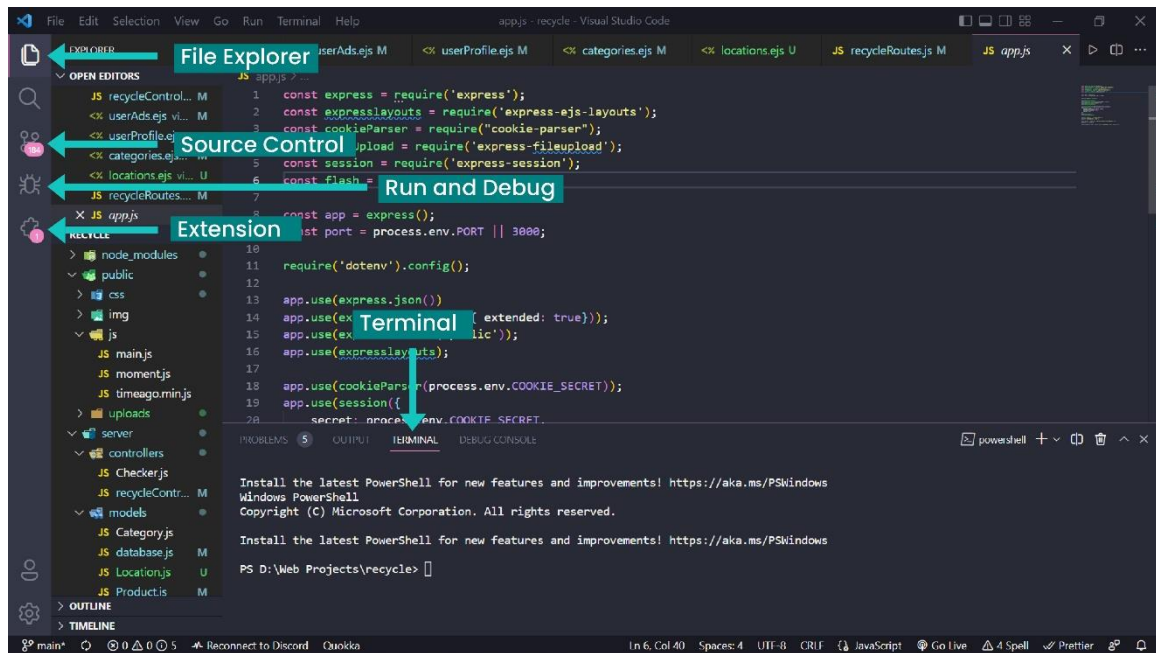


Figure 3.2.1: Visual Studio Code Interface

MongoDB

MongoDB is a document-oriented NoSQL database used for massive data sets. Instead of standard relational database tables and rows, MongoDB employs collections and documents. In MongoDB, documents include key-value pairs, which are the fundamental units of data. This product was created by MongoDB Inc.

2007 marked the beginning of MongoDB development by 10gen as a component of a planned platform as a service solution. In 2009, the company transitioned to an open-source development model, with the company providing industrial support and other services.

MongoDB is a global employer with headquarters in New York City, United States, and Dublin, Ireland, International.

MongoDB Features

- Each database is comprised of collections containing files. Each record is distinguishable in a multitude of areas. The size and content of each file may vary from one another.
- The record format more closely resembles how programmers build classes and objects in their respective programming languages. Frequently, developers would assert that their classes do not consist of rows and columns, but rather have a clean structure with key-value pairs.
- The facts version of MongoDB simplifies the representation of hierarchical relationships, arrays, and other complicated structures.
- Scalability – MongoDB environments are incredibly scalable. Companies all across the world have reported clusters, with some of them comprising 100 nodes or more with hundreds of thousands of database files.

Now I'll explain why we should begin utilizing MongoDB, which is listed below:

MongoDB enables discipline, a range of queries, and searches using simple expressions. In addition to returning specified document fields, queries may also contain user-defined JavaScript functions. Additionally, queries may be programmed to return to a random pattern of results for a defined duration.

Indexing:

Fields inside a MongoDB report may be indexed using both main and secondary indexes.

Replication:

MongoDB provides a high degree of availability with duplicate units. A replica set has at least two copies of the facts. Any member of the duplicate set may assume the position of main or secondary replica at any moment. All writes and reads are performed at the number one reproduction by default. Secondary replicas maintain a copy of the original.

Details on the principal use of built-in replication. When a number one copy is sold In the event that this fails, the replica set frequently performs an election to determine which of the secondary components should become the main. Optionally, secondaries may be used to investigate operations, although the facts are invariable by default.

Load Balancing:

MongoDB may operate on several servers, distributing the load or replicating data to protect the device in the case of hardware failure.

File Storage:

MongoDB may be utilized as a file system, known as Grid-FS, to store documents across several workstations with load balancing and data replication capabilities.

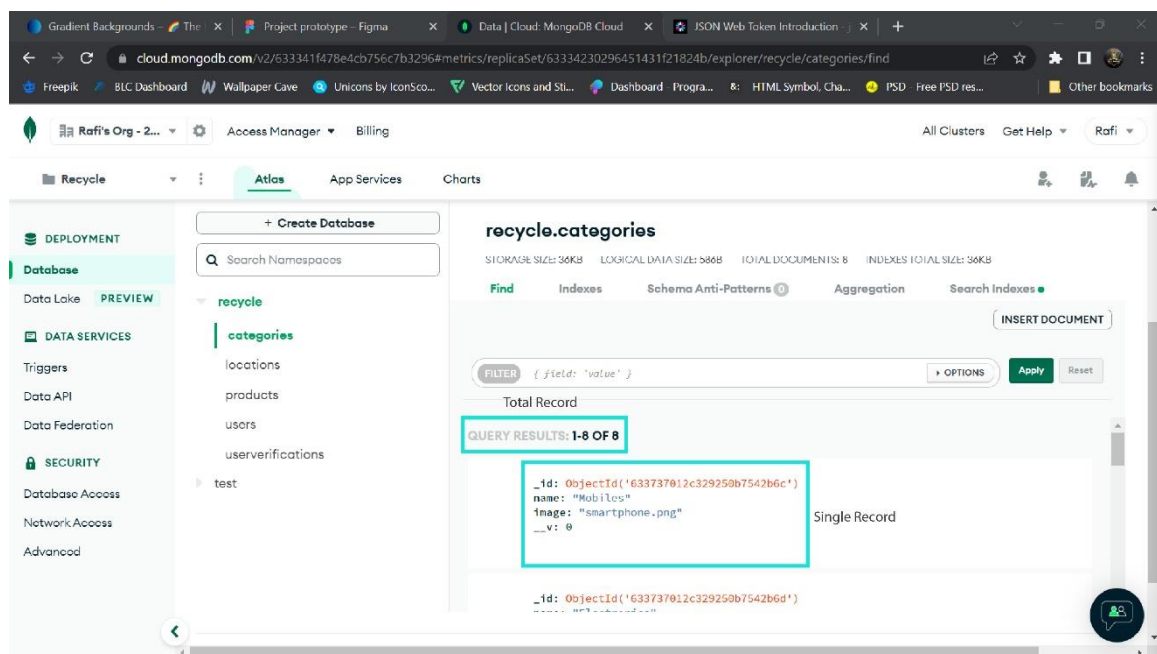


Figure 3.2.2: Interface of MongoDB

3.3 Use Case Modeling and Description

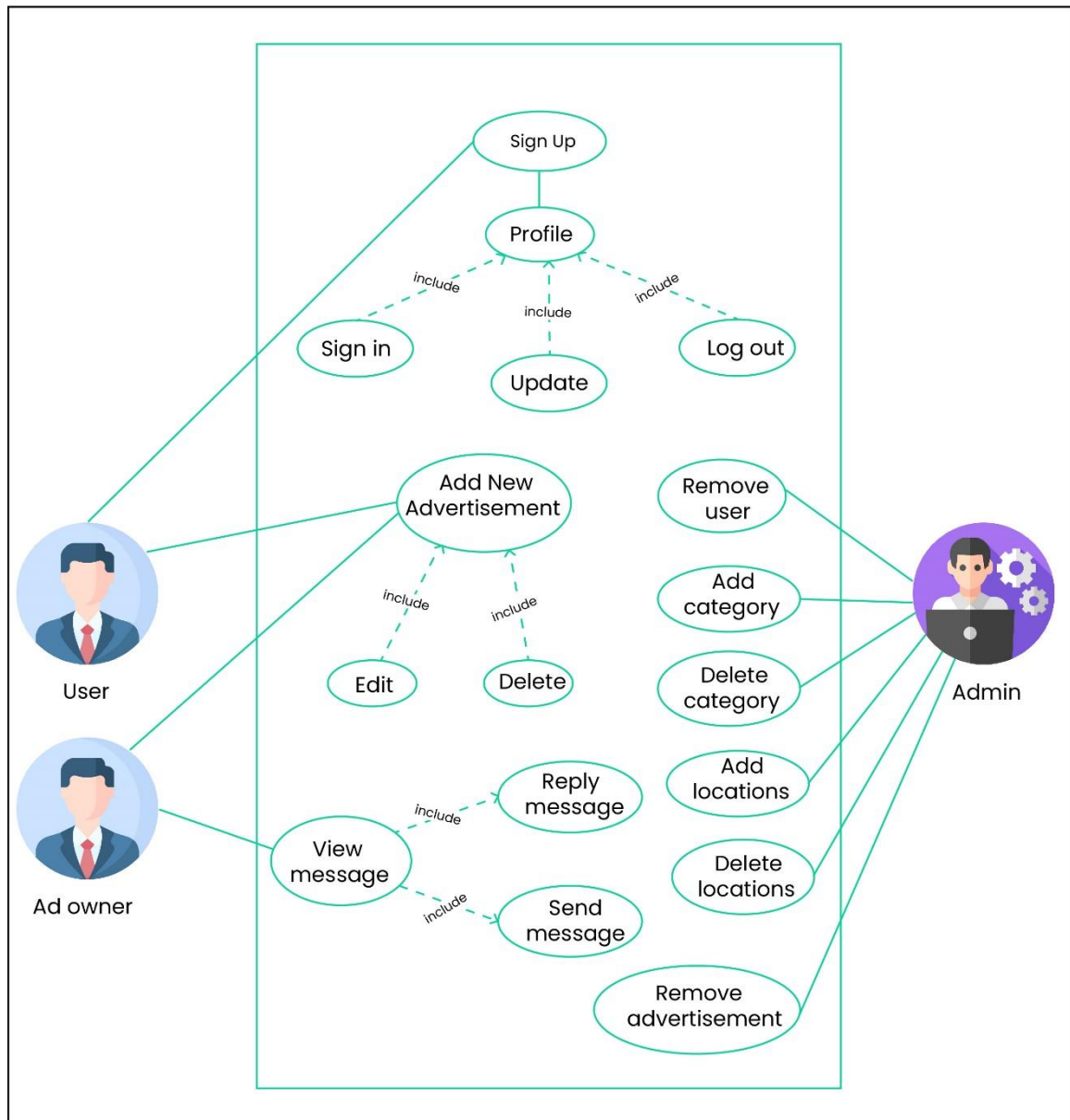


Figure 3.3: Use Case Model Diagram

Use-case graphs in UML represent the behavior of a system and help to determine its needs. Use-case diagrams clearly illustrate a structure's capabilities and degree. Similarly, these graphs depict the link between the structure and its performance.

<p>Use Case: Sign up or log in</p> <p>Actors: User, Admin</p> <p>Type: Primary</p> <p>Description: If any person whether user or admin wants to access this application</p> <p>Uses: Log in</p> <p>Extends by: None</p> <p>Extends: None</p>
<p>Use Case: Profile</p> <p>Actors: Admin, User</p> <p>Type: Primary</p> <p>Description: User has profile section with all relevant figure and admin has the dashboard as well.</p> <p>Uses: Admin, User</p> <p>Extends by: None</p> <p>Extends: Update, Delete, Log out</p>
<p>Use Case: Advertisement</p> <p>Actors: User, Admin</p> <p>Description: User has the access of post ads but those projects controlled by admin.</p> <p>Uses: User create projects & admin can delete those ads if anything wrong with ad.</p> <p>Extends by: None</p> <p>Extends: None</p>
<p>Use Case: Conversation</p> <p>Actors: User</p> <p>Description: If any user wants to buy any product, then they can chat with post owner.</p> <p>Uses: User.</p> <p>Extends by: None</p> <p>Extends: None</p>

Table 3.3: Use case model description

3.4 Class diagram

Class diagrams are static diagrams. Using a class diagram, the static view of an application was depicted. With its support, many application characteristics may be defined, illustrated, and documented. Additionally, it was beneficial for developing application executable code.

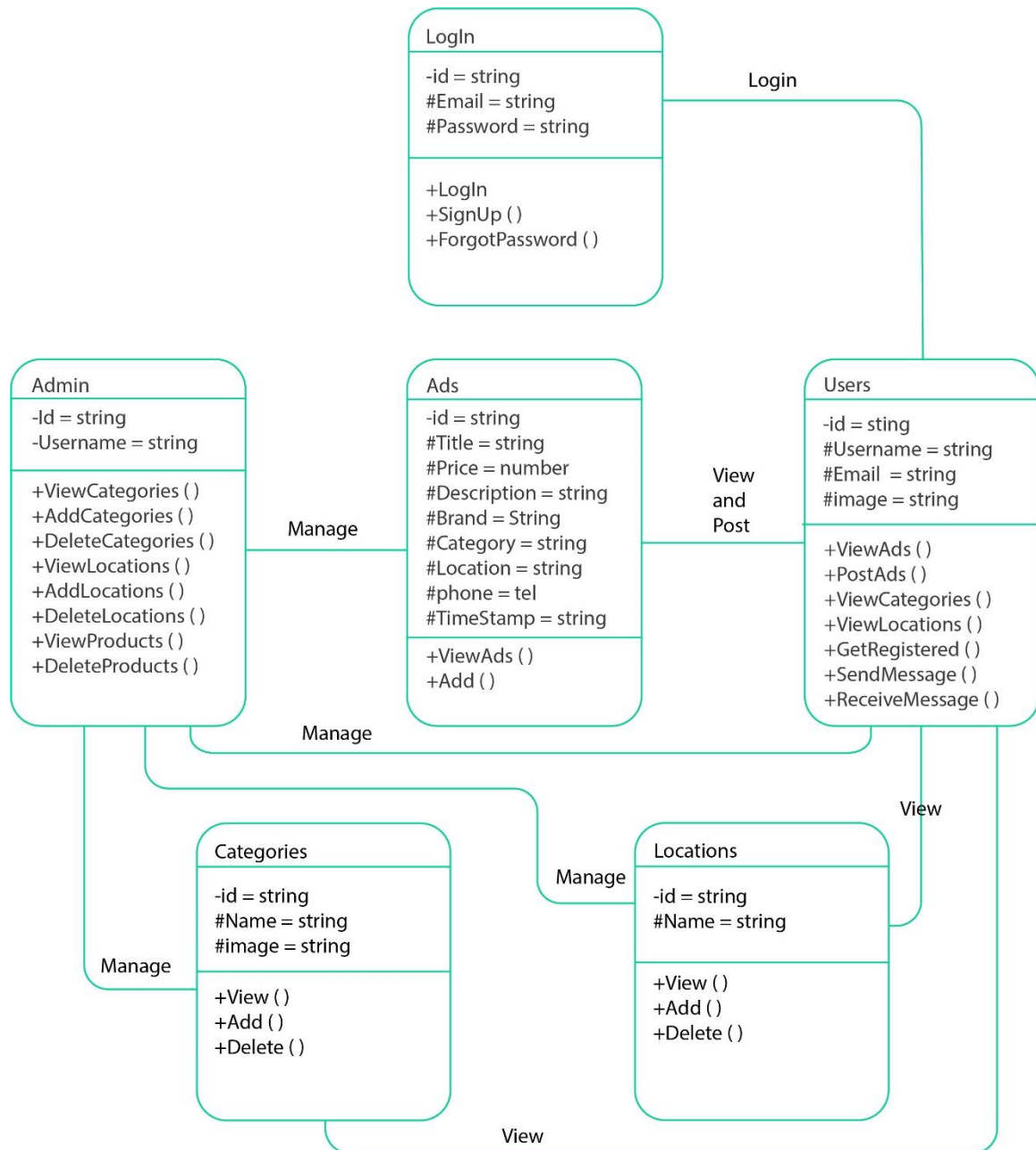


Figure 3.4: Class Diagram

3.5 Entity Relationship diagram

A reasonable information model describes the structure of information components and their relationships. There are complexities in the execution of the information that exist outside of the real information repository. The practical information model functions as a data diagram.

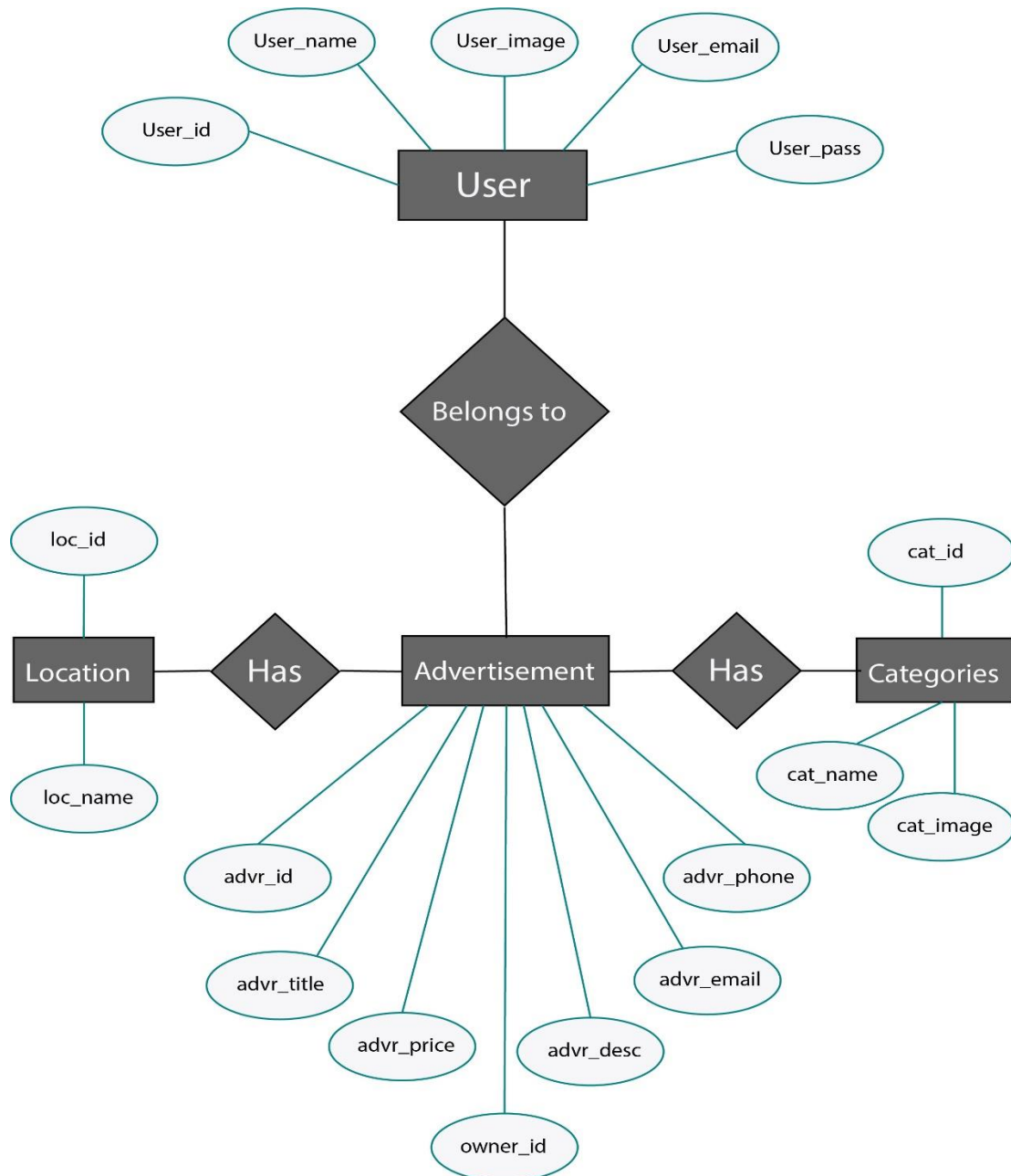


Figure 3.3: Entity Relationship Diagram

3.6 Design Requirement

System architecture is a potential solution where we can determine how each section should function or develop because, in order to maintain a system like this, it is necessary to have proper documentation describing which things function in which ways, modify them as needed, and then proceed with development.

System architecture would be a possible solution where we can figure out every part by part each section should how to work or develop because now a days maintain a system like this you need proper documentation describing which thing works on which way, modifying them if necessary and then go for developing.

We have separated each area, such as the admin panel, individual user viewpoint, and database, according to its contents and interrelationships. In addition to the aforementioned, which layer includes which specification? Because, as we have previously indicated, the system was developed using an agile methodology, which is an iterative approach to project management and software development that enables organizations to provide value to their customers more quickly and with less mental strain.

We believe that because it will be an eco-friendly system, it should be rendered in a productive manner, and based on the architecture below, it helps us constantly think about what we're trying to do or what our first steps should be, as it will change throughout the development process; by comparing it to the architecture below, we can gain a better understanding of the business model, use case model, or logic data model.

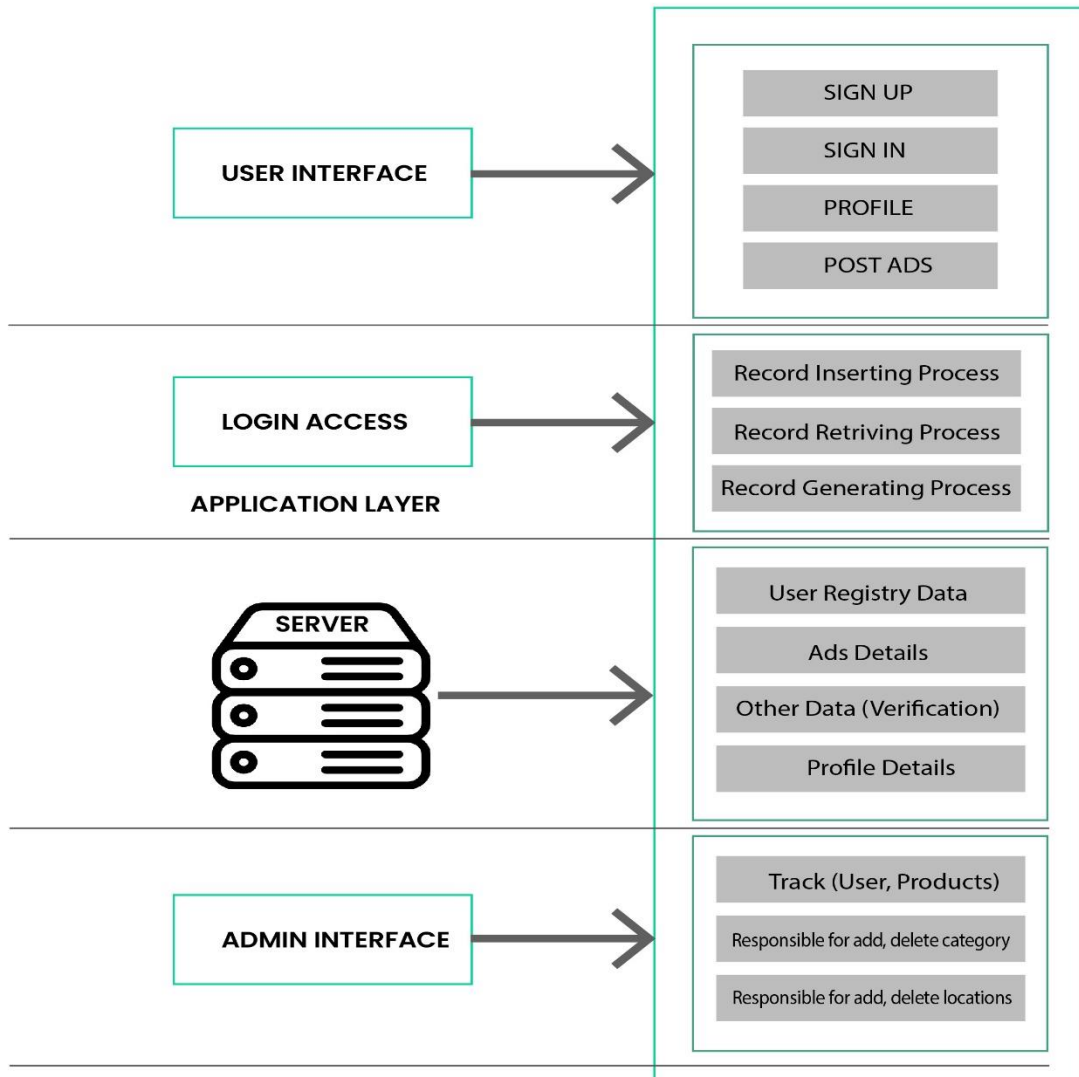


Figure 3.6: System Architecture of Recycle Bin

When it comes to the reliability of this ecosystem, we've paid close attention to every detail; with an emphasis on effective materiality, we've taken the following tack:

- User-friendly design. When building our system, we should keep our users first in mind.
- A emphasis on speed, engaging material, calls to action, and absolutely enticing visuals
- Device responsiveness and an emphasis on SEO

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

The front end is a crucial component of every website for two reasons: the visual design and the user interaction. Normal front-end design development includes wireframes (which outline user flow), prototypes (functioning samples of the site), and testing, which is also essential.

Transform a Dynamic website into a user-friendly application (website with dynamic content that shifts in response to user input and the wide range of features available on the site's back end). The framework of "Recycle Bin" is described in detail below.

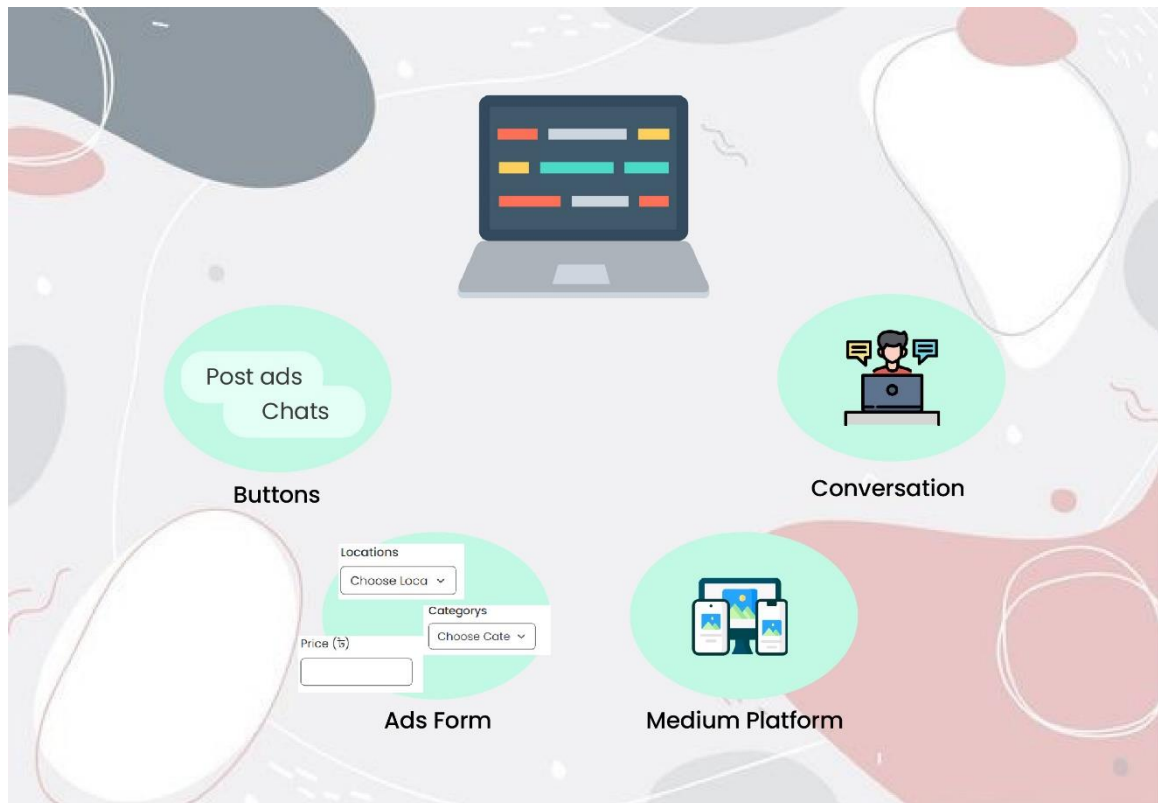


Figure 4.1: Interface of front-end design

We've outlined four aspects to cover the front-end view of our application, such as when a user wants to publish an ad (button in the picture above) and must complete the necessary formalities or procedures before the media platform shows the data. Before purchasing any thing, it is rather essential to have a dialogue with the vendor.

4.2 Back-end design

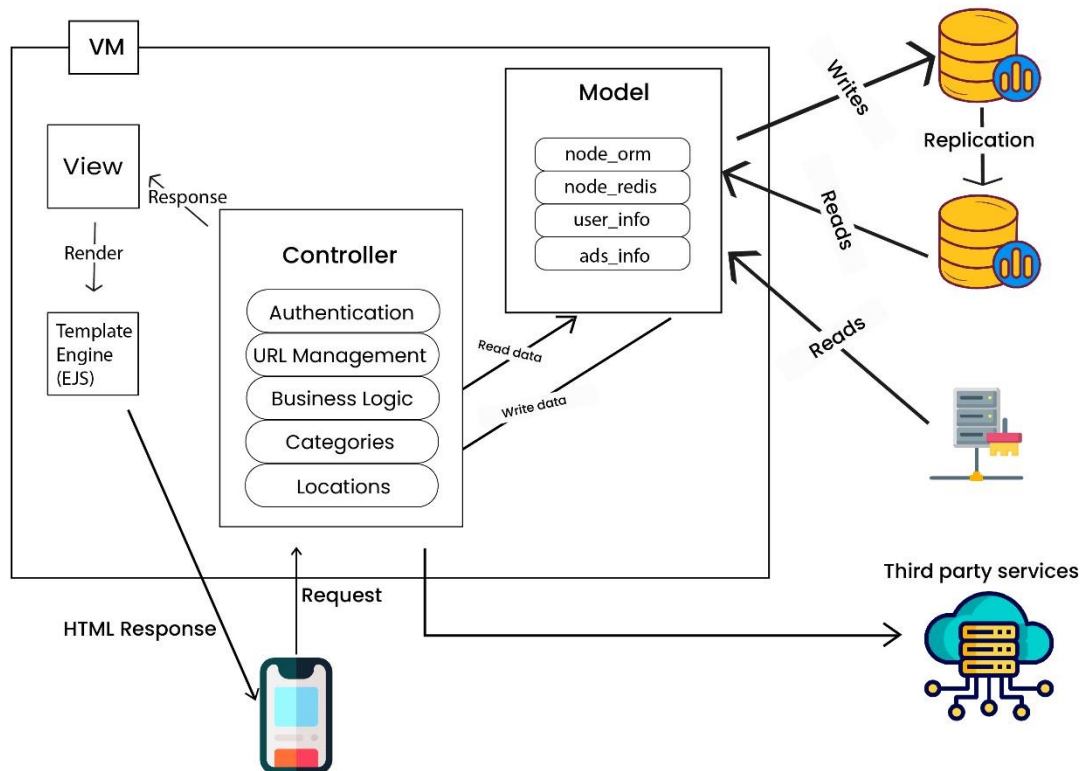


Figure 4.2: Back-end design architecture

Regular users seldom interact with the software that makes up a website's backend, but this is its "brain" and "connectors" to the front end's functionality and infrastructure are essential.

Everything that isn't directly related to the front end (the interface the user interacts with) is handled by the back end design. You may more easily interact with the display and

business layers thanks to the supplied APIs, building libraries, and utilities. The design was also crucial in the early stages of the system's development. The aforementioned process stream is dedicated to developing the "Recycle Bin".

4.3 Interaction Design and User Experience (UX)

Collaboration setup is a crucial aspect of the vast User experience (UX) planning umbrella. It is a simple phrase to comprehend, yet too complex to be reduced. Typically, when individuals discuss interface design, they are referring to software applications or websites. The purpose of user interaction design is to allow the user to accomplish their goal in the most efficient manner possible.

Typically, we believe that there is a substantial overlap between collaboration and UX design, but the majority of the experience requires cooperation planning, and UX design is more than just communication: it includes client research, creating a client profile (why and how they use the product), conducting client testcases, and of course usability testing etc. Important perspective that should be considered while comprehending the design and usability.

This is vital to consider in designing a system like a classified application, in order to attract as many people as feasible, and to determine what interactions are required to accomplish one's objective. Before developing a strategy that translates into interactions for "Recycle Bin", we have to do research to determine what the users' objectives are.

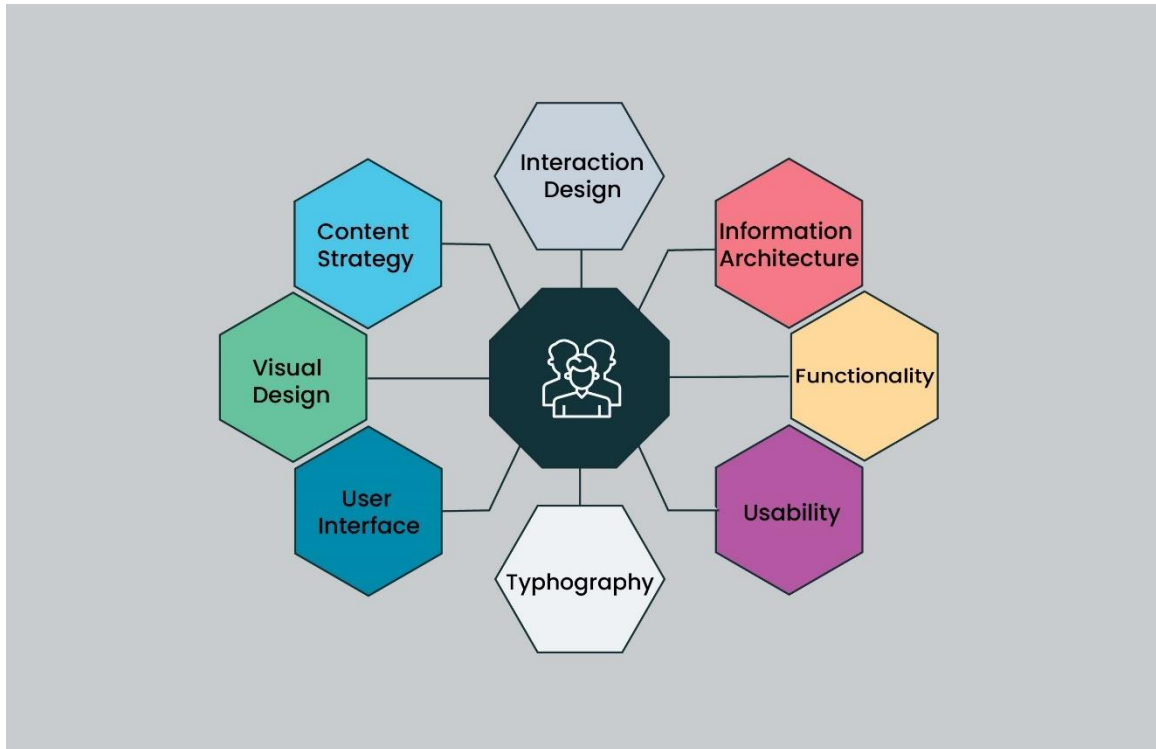


Figure 4.3: User experience design

4.4 Implementation Requirements

Implementation is the execution or application of a strategy, technique, or any arrangement, idea, model, decision, or process for carrying out anything. Thus, execution is the strategy that must be followed for anything to really occur. Among these procedures are the following:

- Investigating prerequisites.
- Establishment, design, customization, testing, running.
- System incorporations, client preparing.
- Conveyance and making changes.

Depending on the product or system, implementation strategies may vary, however here we will concentrate on the following elements:

- **Goal.** This is the desired end outcome of the project.
- **Objectives.** These actions, activities, and milestones must be attained to accomplish the final objective.
- **Scope statement.** The project scope defines the project's bounds and describes what the team will and will not undertake. Here, we are defining the scope of Recycle Bin.
- **Resource & Risk analysis.** The team will be accountable for implementation and risk assessment to detect possible issues.
- **Timeline.** A timetable provides the anticipated completion dates and timings for each milestone. This may be shown using project management tools and designs such as a Gantt chart, workflow diagram, business model, or architecture.

Table 4.4: Specific options for implementation requirement analysis

Requirements	Functions
Measurability	Capture the notion behind the "Recycle Bin" service level characteristics.
Extensibility	<ol style="list-style-type: none"> 1. Bring the notion of depiction from its fundamental configuration to particular nonexclusive conceptions. 2. Identify the procedure of distinct assistance sending and transport models.
Information Hiding	Capture the concept of the Cloud administrative coordination or item we're attempting to construct for service bundles.
Conceptualization	UML & OWL
Comprehensibility	Capture the understandability of service portrayal by using distinct representations of each type throughout project development.
Deployment Symmetry	Understand the concept of Abstract Service in Administration Module.
Execution Resilience	Understand Fault, Preconditions, and Postconditions

CHAPTER 5

IMPLEMENTATION AND TESTING

It is essential to note that the planning and development of this project was entirely based on the collection of data from existing frameworks, concepts, and hypothetical circumstances.

5.1 Implementation of Database

Database implementation is the most frequent method for providing a data set's point-by-point information model. The valid information model (Figure 3.3) provides all the consistent and real plan choices and actual stockpile boundaries anticipated to generate a plan in an information definition language that can be used to generate a data set. A fully credited data model has distinct characteristics for each kind or component. The phrase data base layout may be used to describe the organization of several structural components. However, the term informational collection execution can also be used to refer to the overall process of planning, including not only the basic data structures but also the designs and questions used as part of the overall informational index application within the informational collection organization system (DBMS).

A data architecture should provide unbiased information principles for each of its information frameworks as a vision or model of the potential interactions between those information frameworks. Information coordination, for example, should be governed by information engineering principles since information combination needs information partnerships across at least two information frameworks.

The following data types are applicable to its column and parameter declarations.

Keys for String, Integer, Boolean, Double, Arrays, Timestamp, Object, Null, Date, Binary.

Here is an overview of the collection or table that is being considered for the system.

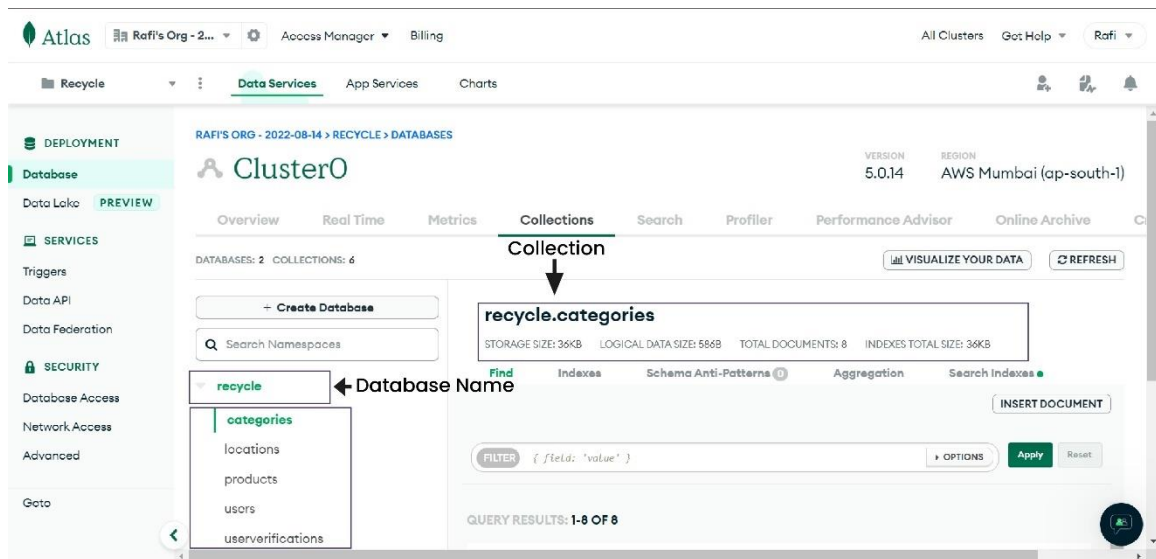


Figure 5.1: Structure of the Recycle Bin database

Here categories table structure shown below:

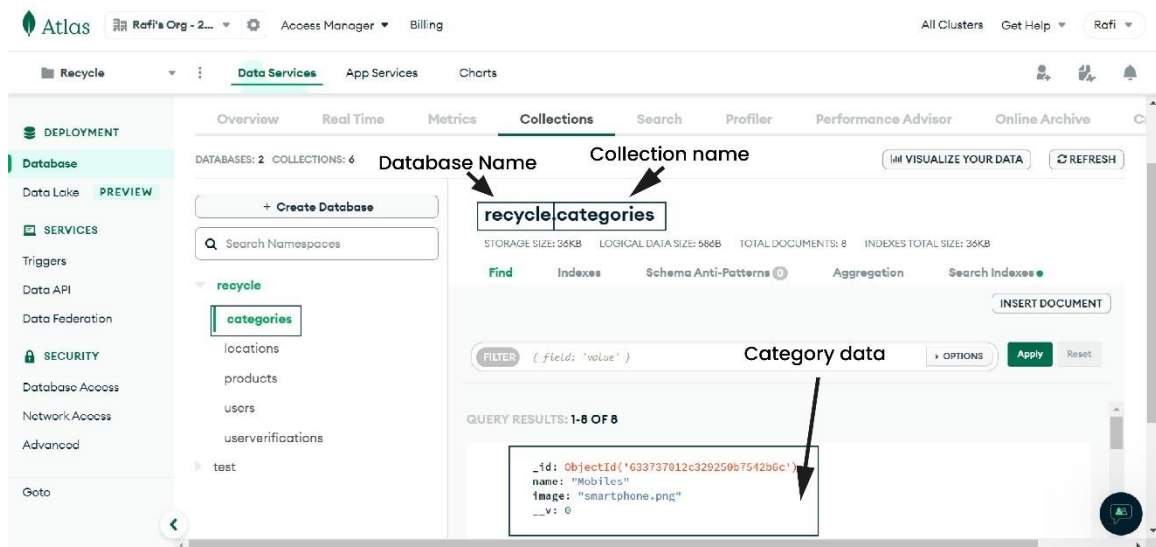


Figure 5.2: Structure of the categories collection

5.2 Front-End Design Implementation

The images below depict the project vision. Capture a picture of what you see on your mobile device in addition to your desktop and how to utilize it.

Homepage: In this system, when someone visit the website he/she see the navbar first that have some useful features and after that we have our category section and also we have arranged all advertisement in a card-like format, so that when a user visits this site, he or she would see new ads shown as follows:

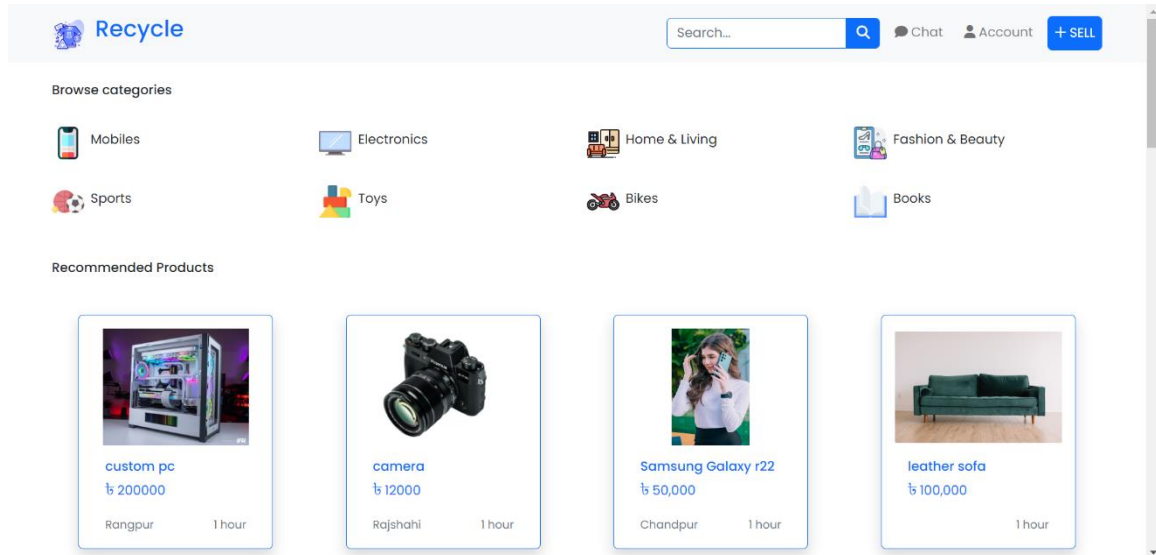


Figure 5.3: Homepage Design

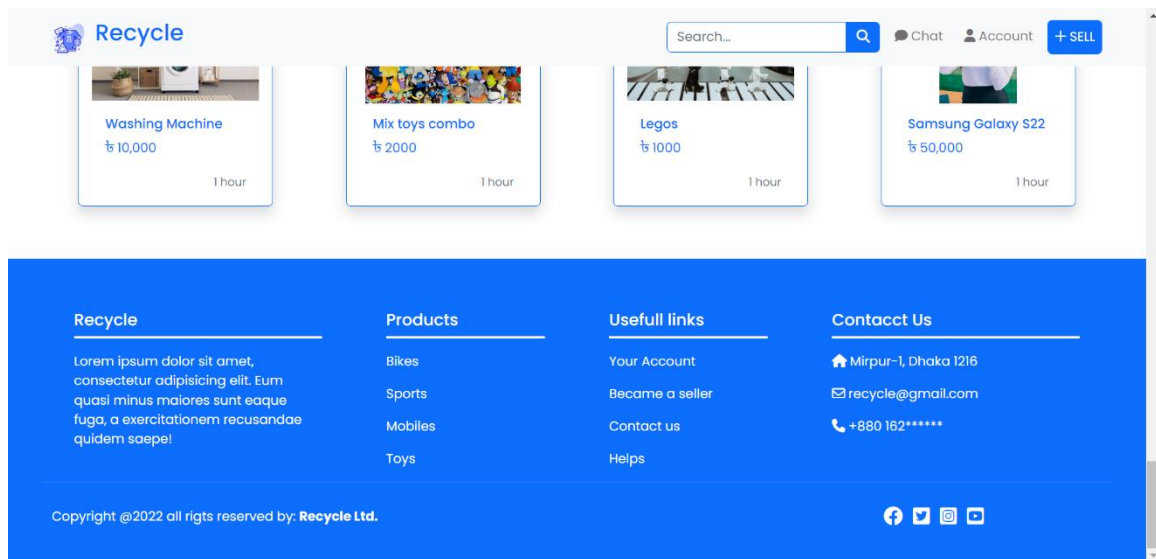


Figure 5.4: Footer Design

Other than, people can find product by product category and location.

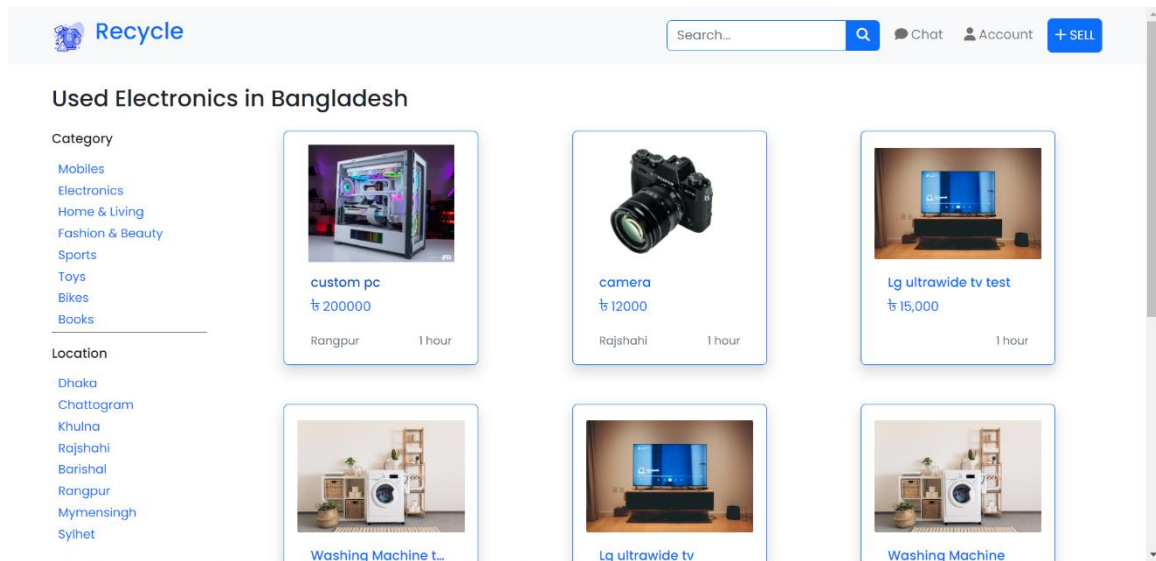


Figure 5.5: Category View

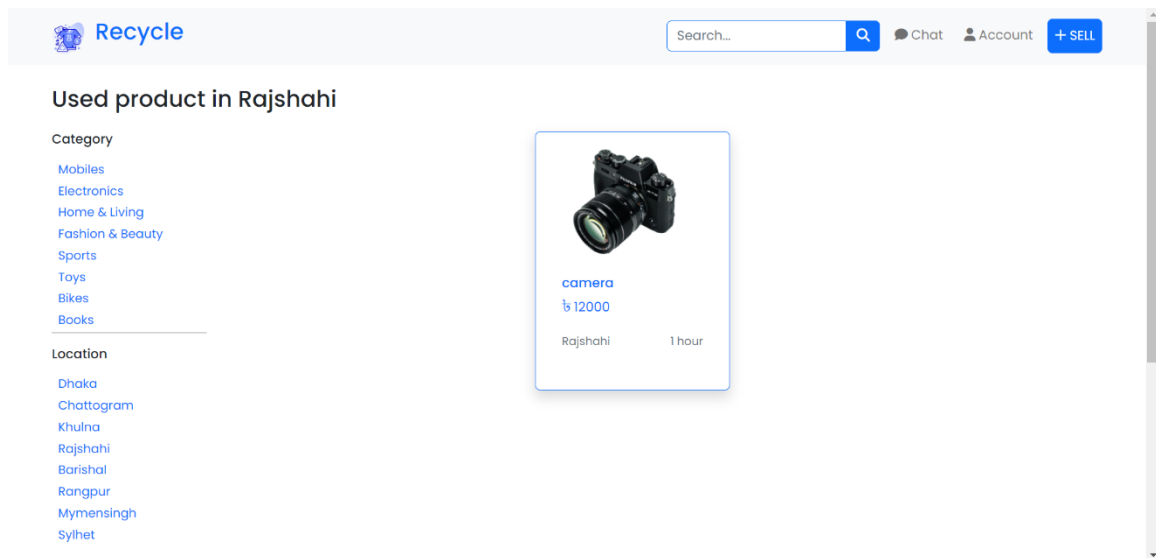
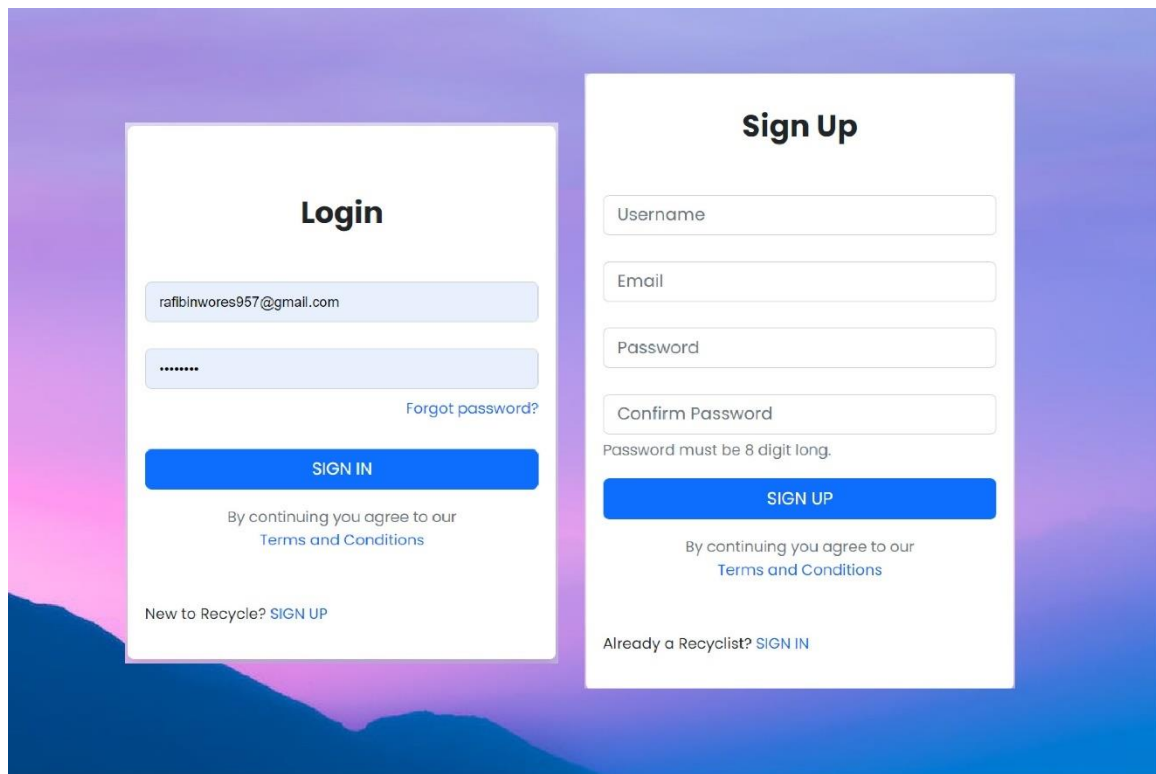


Figure 5.6: Location View

Log In & Registration Form: After filling the registration form a confirmation mail will be sent in the given email and he/she needs to verify themselves before login.



The image displays two side-by-side forms on a purple and blue gradient background. The left form is titled "Login" and contains a text input field with the email "rafbnwores957@gmail.com", a password input field with masked characters "*****", a "Forgot password?" link, a blue "SIGN IN" button, and a link for "New to Recycle? SIGN UP". The right form is titled "Sign Up" and contains input fields for "Username", "Email", "Password", and "Confirm Password". It includes a note "Password must be 8 digit long.", a blue "SIGN UP" button, and a link for "Already a Recyclist? SIGN IN". Both forms include a "By continuing you agree to our Terms and Conditions" statement.

Figure 5.7: Login & Registration

Advertisement: There are certain requirements when a user wants to create a post, user cannot directly post any ads first he/she needs to create an account with some of his/her information for posting anything.

Fill The Form

Categorys
(Choose Category)

Locations
(Choose Locations)

Ad Title
()

Brand
()

Price (₳)
()

Description
(Include condition, features and reason for selling)

Add up to 4 photos

Choose File No file chosen

Choose File No file chosen

Choose File No file chosen

Choose File No file chosen

Contact Details

Name
Rafi Bin Wores

Email
rafibinwores2203@gmail.com

Add phone Number
()

+ Add

I have read and accept the Terms and Conditions.

Post ad

Figure 5.8: Ads form

5.3 Testing Implementation

This project was evaluated based on the following criteria:

Functionality Test: The initial part of the testing process is to ensure the functionality of the web application. Functional testing examines the database connection, all web page links, cookies, and forms used for submitting and/or retrieving user information, among other things.

Accuracy Test: It is one of the fundamental requirements for programming development. Every component of the program must operate correctly and accurately.

Compatibility Test: During this step, we must conduct the browser compatibility test to ensure that the application displays properly across many browsers. The mobile browser compatibility test, as its name indicates, is intended to validate that the application appears appropriately on mobile browsers.

Performance Test: After completing compatibility test and we confirm that our application is functional and responsive, we need to check our application can handle heavy loads. It also includes testing our app under normal and peak loads as well as different internet speed.

Security Test: Once development is complete, we need to security test our web application. This form of testing employs a variety of techniques to identify the app's flaws and repair them as much as feasible.

5.4: Compatibility test result & report

Device Name	Screen Size	Test	Result
iPhone 12 pro	6.6 inch	Yes	Okey
Pixel 5	6 inch	Yes	Okey
Samsung Galaxy S20 Ultra	6.9 inch	Yes	Okey
LG 22MK600M-B	21.5 inch	Yes	Okey
Dell U2520D	25 inch	Yes	Okey
DCL DC4103G	15.5 inch	Yes	Okey

Table 5.4: Compatibility test report table

CHAPTER 6

IMPACT ON SOCIETY AND ENVIRONMENT

6.1 Impact on Society

These days, smartphones are an integral component of our routines and activities. Internet access is available to each and every user of a smartphone. Because of this, a platform such as this has a significant effect on the way we go about our everyday lives. We are able to assist the users of our web application in both the purchasing of the things they want at a reduced cost as well as the selling of the products they no longer need.

6.2 Impact on Environment

Platforms like Recycle Bin may have a substantial effect on the environment. As we see a rise in all forms of e-waste, we must take action. E-waste refers to any abandoned electrical or electronic equipment. This encompasses both functional and nonfunctional goods that are thrown away. Our application may contribute to the reduction of e-waste by promoting the prolonged use of electronic devices. Therefore, when consumers begin purchasing secondhand electronics, manufacturing will drop, which is beneficial for the environment. And it is applicable to all types of businesses.

6.3 Ethical Aspects

In order to utilize this application, users must exchange data. We will keep all data confidential, and we do not divulge any information. When creating this program, we took all ethical factors into account. We do not utilize any dark patterns, authorization is only requested when necessary.

CHAPTER 7

CONCLUSION AND FUTURE SCOPE

7.1 Discussion & Conclusion

Recycle Bin is a classified advertising program that offers users with an effective platform for posting their advertisements. When a system prioritizes the user's viewpoint, the platform is very user-friendly and sustainable. This is our little attempt, made with the desires of individuals who seek a certain product in mind. I think this will be an improvement in the area of categorized web apps and a beneficial learning opportunity for the current and future generations.

7.2 Scope for Further Developments

- Adding more features like subscription, Shearing, wish listing, and promote ads.
- Numerous interface configuration updates will be performed.
- Adding badges system for loyal users.
- Developing a more optimized advertisement form so that when a user provides product details, it can predict the price for the user.

REFERENCE

- [1] Learn about Visual Studio Code, available at, <https://code.visualstudio.com/docs>, last accessed on 2-01-2023.
- [2] MongoDB, available at, <https://en.wikipedia.org/wiki/MongoDB>, last accessed on 2-01-2023.
- [3] Node.js, available at, <https://en.wikipedia.org/wiki/Node.js>, last accessed on 2-01-2023.
- [4] EJS, available at, <https://ejs.co/#about>, last accessed on 22-11-2022.
- [5] Express.js, available at, <https://en.wikipedia.org/wiki/Express.js>, last accessed on 02-01-2023.
- [6] Node-mailer, available at, <https://nodemailer.com/about/>, last accessed on 02-01-2023.
- [7] HTML, available at, <https://en.wikipedia.org/wiki/HTML>, last accessed on 31-12-2022.
- [8] CSS, available at, <https://en.wikipedia.org/wiki/CSS>, last accessed on 31-12-2022.
- [9] JavaScript, available at, <https://en.wikipedia.org/wiki/JavaScript>, last accessed on 31-12-2022.
- [10] Learn About classified ads application, available at, <https://madavi.co/what-is-classified-advertising/>, last accessed on 02-01-2023 at 06:15pm.
- [11] Bikroy.com, available at, <https://bikroy.com/bn>, last accessed on 05-01-2023 at 11:25pm.
- [12] Olx.com, available at, <https://www.olx.com/>, last accessed on 05-01-2023 at 11: 28pm.

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