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An Undergraduate Project on Family Bazaar Ecommerce Website Development

By

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Summer, 2022

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September 14, 2022

Dissertation submitted in partial fulfillment for the degree of Bachelor of Science in Computer Science

Department of Computer Science & Engineering

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Attestation:

I am, Zahid Hasan Shuvo, hereby certify that none of the work that has been done in this report is plagiarized or copied from anywhere. Any resources used are mentioned in the reference section of the report. No help was asked for during the completion of the report from a third party organization except the one that I have worked for in the last 3 months as an intern.

For any information, my internship supervisor, Meftaul Haque Mishu, at my company, Millennium Information Solution Ltd, can be contacted on 01723466685

Sincerely

Shuvo

14th September 2022

Zahid Hasan Shuvo

Acknowledgment

First and foremost, I want to thank Almighty Allah for giving me the endurance and the courage to work hard even in this post pandemic moment. It is my privilege to have the opportunity to do Millennium Information Solution Ltd my internship. I want to thank all the people I'm doing my internship on.

I would like to express my deep appreciation to my internal supervisor, Bijoy Rahman Arif , Lecturer, School of Engineering, Technology and Science, Independent University, Bangladesh (IUB), for his invaluable directions, ongoing encouragement, constructive criticism and insightful advice while pursuing this internship and preparing this paper. It has been a great experience to work as an intern in a startup organization like Millennium Information Solution Ltd. I would like to express my gratitude to Millennium Information Solution Ltd firm for giving me a chance to work with them and for helping me work from home as well as giving me an opportunity to work at office to understand the office culture better and making the transition from a student to a software developer much smoother all during this intern time. I am also thankful to them for allowing me to gather information and helping me in every possible way in preparing the report. My endless thanks to Managing Director and CEO, Millennium Information Solution Ltd, for supporting me during my internship. I would like to thank all my college and co-developers, Mr. Babar, Mr. Mahbub of the development department at Millennium Information Solution Ltd, for guiding me and also giving me the chance to be familiar with the organizational environment and experiencing the procedures practiced at Millennium Information Solution Ltd. I believe that the experience that I have gained during the length of the internship program in this company should be vital for my future and career as a software developer.

Finally, I want to thank my parents and other family members for giving me their eternal support forever.

Zahid Hasan Shuvo

14th September 2022

Dhaka, Bangladesh

Letter of Transmittal

14th September 2022

Bijoy Rahman Arif

Internship Supervisor & Lecturer

Department of Computer Science and Engineering

School of Engineering, Technology and Sciences

Independent University, Bangladesh

Subject: Internship report on "Family Bazaar Ecommerce Website Development" for Millennium Information Solution Ltd.

Dear Sir,

With due respect and humble submission this is to inform you that I am student of computer science and engineering at independent university Bangladesh. It is my pleasure to submit to you my internship report on 'Web application for an Family Bazaar Ecommerce website development' for Millennium Information Solution Ltd. This report has been prepared based on my three – month internship at Millennium Information Solution Ltd and the project that I had been working on during that time. The purpose of this report was to fulfill the requirements of the bachelor's degree of Computer Science and Engineering and also to gain an insight on how the organizations are dealing with the post COVID-19 pandemic. I tried to give my best effort to make this report successful. It has been an instructive and knowledgeable experience for me to work along with development team in Millennium Information Solution Ltd. I would be happy if the report that I have created is able to serve its purpose. I am grateful to you for dedicating your valuable time, expertise, guidance and support. I have tried my best to complete the report appropriately as much as possible. I would be available to explain any kind of queries related with my report anytime.

I, therefore, pray and hope that you would like and grant my report and give me an access to go a long run.

Thank you.

Yours sincerely,

Zahid Hasan Shuvo

Evaluation Committee

Mohammad Motiur Rahman .

Signature

Mohammad Motiur Rahman .

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SABRINA ALAM .....

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Internal Examiner

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ed with CamScanner

Abstract

This is an internship report on the project that has been provided by Millennium Information Solution Ltd, as required by the Bachelor of Science (BSc) program in Independent University, Bangladesh. The objectives of the study are to analyze the different aspects of my internship at Millennium Information Solution Ltd, to distinguish and resolve problems that are associated with the given project “Family Bazaar Ecommerce Website Development”.

Internship is defined as the acquisition of practical information for various organizations contributes to the building of a connection between theory and practice information. It is very important because this is the first time as a student the ability to do something information from various organizations. When given in an internship at MISL, I had the opportunity to work and study with him a team of engineers. The purpose of this project was to create a web application using Angular framework with livewire technologies enabling the framework to have the ability to work in real-time basis. This report covers every project I learned during my study period. I had to complete my study periods before working on any project, and this time lesson, I was assigned to improve the landing page, dashboard, the action of different parts and certain background codes. It was almost like a skill check before one real shared project. Give me details and information I what I have gained and the work I can do as a qualified student at MISL, in this port. I have worked on an app website where most of my work involves development the whole place

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Chapter 1: Introduction

Development of Web applications is the method and practice of designing web applications and their functionality. A web application is a computer program that utilizes web browsers and web technology to perform tasks over the Internet. Millions of businesses use the Internet as a cost-effective communications channel. It lets them exchange information with their target market and make fast, secure transactions. However, effective engagement is only possible when the business is able to capture and store all the necessary data and have a means of processing this information and presenting the results to the user.

Web applications use a combination of server-side scripts (Spring Boot) to handle the storage and retrieval of the information, and client-side scripts (Angular) to present information to users. This allows users to interact with the company using online forms, content management systems, shopping carts and more. In addition, the applications allow employees to create documents, share information, collaborate on projects, and work on common documents regardless of location or device.

1.1 Background

In online marketing, e-commerce software on a web server that allows visitors to an Internet site to select items for eventual purchase, analogous to the American English term "shopping cart". The website allows online shopping customers to accumulate a list of items for purchase, described metaphorically as “placing items in the shopping cart” or “add to cart”. [2] Upon checkout, the website typically calculates a total for the order, including shipping and handling (i.e. postage and packing) charges and the associated taxes, as applicable. These web apps typically provide a means of capturing a client's payment information, but in the case of a credit card they rely on the software module of the secure gateway provider, in conjunction with the secure payment gateway, to conduct secure credit card transactions online. Although the simplest shopping carts strictly allow for an item to be added to a basket to start a checkout process, most shopping cart web app provides additional features that an Internet merchant

uses to fully manage an online store. Data (products, categories, discounts, orders, customers, etc.) is normally stored in a database and accessed in real time by the software. This project contains the model of the Online Shopping Cart system for everything in shopping store, including all the models used to specify and realize the IT system. The goal is to show the analyzing and designing a robust system that corresponds to the initial requirements.

1.2 Objectives

The objectives of Online Ecommerce are operational and financial. In operational, materials and stock should be available in sufficient amount whereas, in functional, the minimum working capital should be locked in. The objectives are as follows:

- To eliminate duplication in ordering stocks.
- To develop an easy-to-use web-based interface where users can search for products, view a complete description of the products and order the product.
- A search engine that provides an easy and convenient way to search for products specific to their needs. The search engine would list a set of products based on the search term and the user can further filter the list based on various parameters.
- Various kinds of goods can be placed in online shopping cart for sale and promotion of each and every good with the product description.
- To sell various goods and items to customers online by allowing customers to add item into the cart or to remove in the undesirable case.
- To ensure the quality of goods at reasonable prices.
- To facilitate furnishing of data for short and long-term planning with a controlled inventory.
- To supply the required material continuously.
- To maintain a systematic record of inventory.
- To make stability in price.

1.3 Scopes

- Determination of economic order quantity
- Formulation of policy
- Determination of lead time
- Effectiveness towards running of store
- Organization structure
- Determination of safety stock
- Minimum material handling and storage cost.

Chapter 2: Literature Review

The literature review of the report is based on the ideas, theories and methodologies used to make the application. On this literature review, different aspects of the application such as the market analysis both for local and global markets, similarities and new functionalities included in this application will be thoroughly discussed. The report will also discuss relevant published journals, newspaper articles and research papers in this section.

The purpose of literature review is to identify need for additional research (justifying your research) Identify the relationship of works in context of its contribution to the topic and to other works. Place your own research within the context of existing literature making a case for why further study is needed.

2.1 Relationship with Undergraduate Studies

Literature review is a short summary of a studies paper primarily based at the same subject matter. It encompasses numerous varieties of books, papers, article, and so on. which means it is basically explains the modern-day look at with the vital records that might be useful for the ongoing venture of that equal subject matter. Similarity with the undergraduate education:

- **Web application (CSE309):** The following system is a web-based application system. This means that this course is the main course that helped me and will throughout my entire internship. This course taught me how build a web application from scratch. “Gossip” web application uses most of the concept from this course.
- **Database management system (CSE303):**The following web application requires database to store and manipulate various types of important data that is needed to run the application. This course helps me to design the entity relation diagram (ERD) and enhanced entity relation diagram (EERD), relational

database and, if needed, normalize the relational schema to simplify the database and make it more efficient

- **Object oriented programming (CSE213):** To build the database, the data first need to be created. And this is done with the concept of object-oriented programming. CSE213 or Object-oriented programming is a course that teaches students how to create data types (classes) and use inheritance, polymorphism, etc. to implement real world system into efficient programming. This course taught me how a user can become a datatype and use inheritance to build multiple users that fall under the same type of users. Also how to implement each type of users' ability as method of a class.

2.2 Related Works

Amazon- Amazon.com's product lines available on its website include several media (books, DVDs, music CDs, videotapes and software), apparel, baby products, consumer electronics, beauty products, gourmet food, groceries, health and personal-care items, industrial & scientific supplies, kitchen items, jewelry, watches, lawn and garden items, musical instruments, sporting goods, tools, automotive items, and toys & games In August 2019, Amazon applied to have a liquor store in San Francisco, CA as a means to ship beer and alcohol within the city.

- **eBay**- eBay is a popular online shopping platform that is one of the top eCommerce sites in the world. Buyers can use the site for free, but sellers must pay to post their things with a limited number of free auctions and to sell them. eBay is a consumer-to-consumer (C2C) and business-to-consumer (B2C) online marketplace where consumers can buy and sell a wide range of products and services. It is one of the largest worldwide online markets, with over 900 million active members.

- **Smart IP&O-**Smart Software offers Smart IP&O, an integrated set of native web applications for demand planning, inventory optimization, and supply chain analytics. It provides a single, easy to use, easy to scale, easy to collaborate, environment with robust inventory and forecast modeling. Our implement one, implemented for all approach means you can address a discrete set of needs initially and add new apps when ready without additional implementation costs.
- **Alibaba**- Alibaba is a worldwide eCommerce organization and retail platform that operates in both the business-to-business (B2B) and business-to-consumer (B2C) markets. Exporters from China and other nations may connect with customers from over 200 countries through the platform. Trade agencies, wholesalers, merchants, manufacturers, and SMEs involved in the import and export sector are common purchasers. Merchants can sell various items such as books, jewelry, gadgets, apparel, food, and much more on this platform.
- **QuickBooks Desktop Enterprise**- QuickBooks Enterprise is an end-to-end accounting software that can grow with your business. It provides all the tools your business needs, yet is easy to use. You can organize your books, manage inventory, track sales, and even run payroll, but at the fraction of the cost. With QuickBooks Enterprise, you save thousands of dollars a year vs. comparable solutions. Powerful and flexible, it also comes in editions designed to fit your specific needs. Take a free test drive today.

Chapter 3: Project Management

To start a project, every company has to create a timeframe through which every aspect of the project has to be determined, planned and execute according to this plan or schedule. This works as a guideline for the company to track the progress of the project and to make sure the smaller goals and deadlines have been met. A guideline with diagrams is shown in the next figures mainly through the Work Breakdown Structure, Gantt chart and Database design.

3.1 Work Breakdown Structure (WBS):

Breaking work into smaller tasks is a common productivity technique used to make the work more manageable and approachable. For projects, the **Work Breakdown Structure (WBS)** is the tool that utilizes this technique and is one of the most important project management documents. It singlehandedly integrates scope, cost and schedule baselines ensuring that project plans are in alignment. A good WBS is simply one that makes the project more manageable.

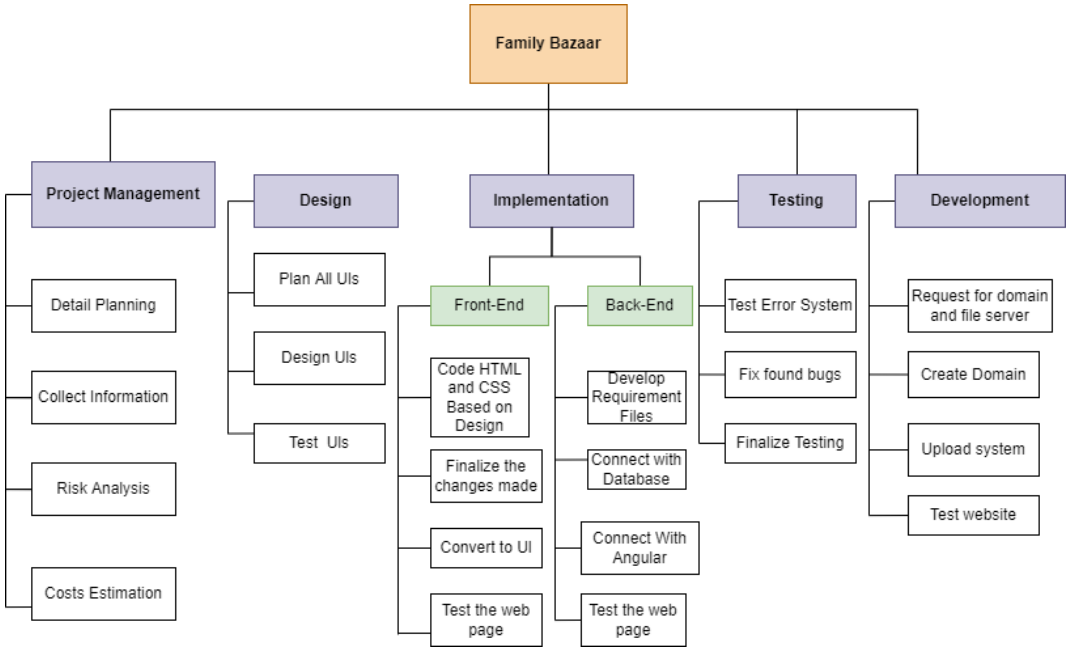


Figure 3.1: Work Breakdown Structure

3.2 **Process/Activity wise Time Distribution**

The time allocation for the 3 months project is shown on a chart using the critical path method. The critical path is the longest sequence of activities in a project plan which must be completed on time for the project to complete on due date. An activity on the critical path cannot be started until its predecessor activity is complete; if it is delayed for a day, the entire project will be delayed for a day unless the activity following the delayed activity is completed a day earlier.

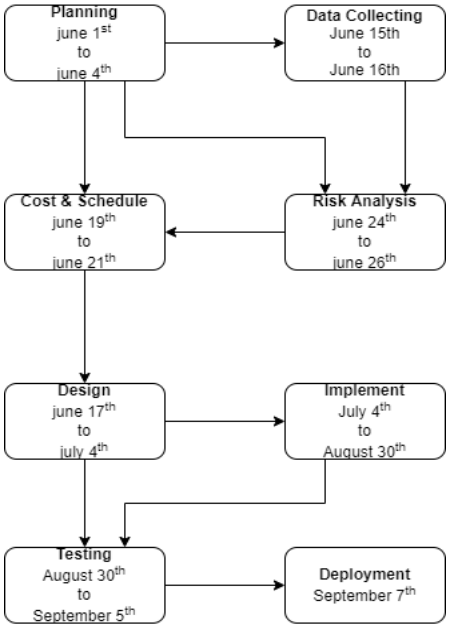
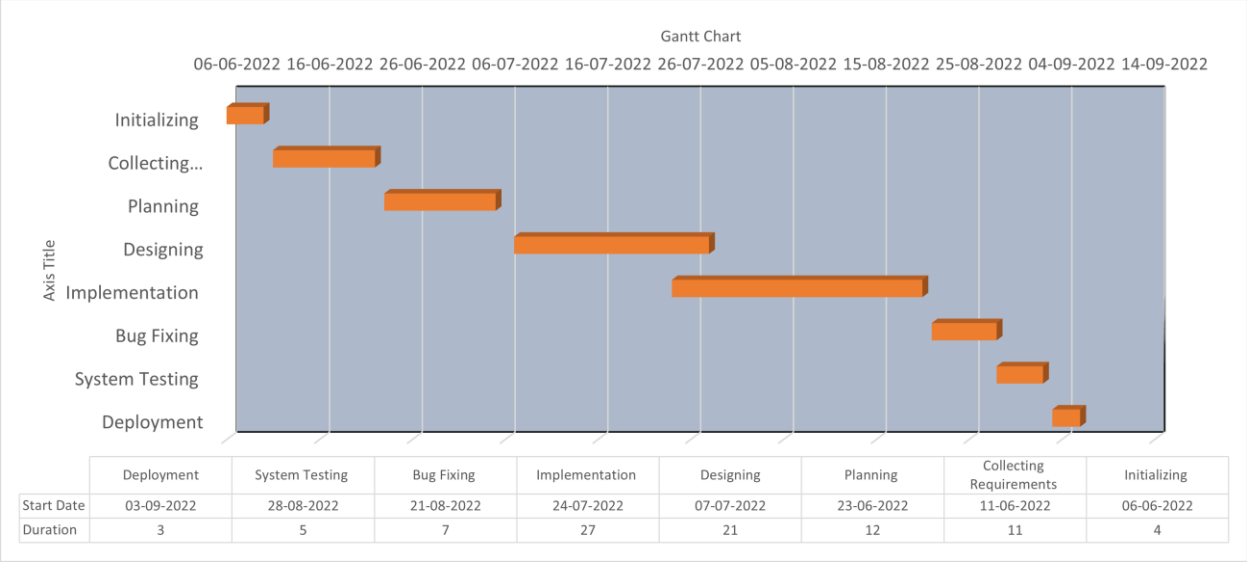


Figure 3.2: Critical Path

3.3 Gantt Chart

A Gantt chart is a project management tool assisting in the planning and scheduling of projects of all sizes, although they are particularly useful for simplifying complex projects. Project management timelines and tasks are converted into a horizontal bar chart, showing start and end dates, as well as dependencies, scheduling, and deadlines, including how much of the task is completed per stage and who is the task owner. This is useful to keep tasks on track when there is a large team and multiple stakeholders when the scope changes.



	Deployment	System Testing	Bug Fixing	Implementation	Designing	Planning	Collecting Requirements	Initializing
Start Date	03-09-2022	28-08-2022	21-08-2022	24-07-2022	07-07-2022	23-06-2022	11-06-2022	06-06-2022
Duration	3	5	7	27	21	12	11	4

Figure 3.3: Gantt chart

3.4 Process Wise Resource Allocation

For this project, the developers are considered as the primary resource followed by the computers used in the office, the servers (VPS) required for the deployment of the project. Every employee of the company is considered a resource; hence everyone has assigned a particular assignment with certain deadlines, all of which collaborated to the entire production of the project. Following are the details of every step of the project.

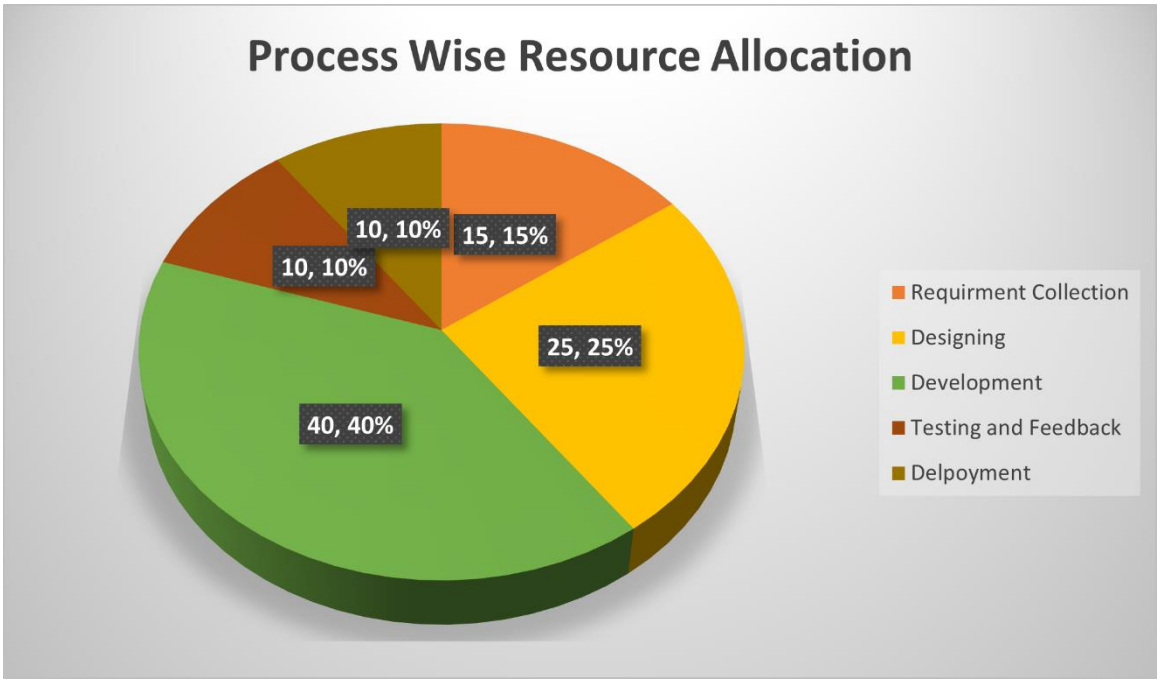


Figure 3.4: Process Wise Resource Allocation

1. **Initializing**: This is the first period of the project, where the idea of the project was presented by the senior developer of the company. Since this was an in-house product, no delay was made and the paperwork for the project was started.

2. **Requirement Analysis**: During the first few weeks the developers discussed the entire requirements for the completion of the project. For example, Computer specifications, software/tech to be used to build the application, features and developers required.

3. **Planning**: In this section of the development process, the developers and the engaged in hours of discussion of how this project should be built from top to bottom, the approaches to be taken, creating smaller goals and setting deadlines for them.

4. **Design**: In this phase few graphic designers were hired for designing the web pages of the application as well as the management team started working on the high level and low-level diagrams for the project in order the get the bigger picture on sight.

5. **Implementation**: At this stage, the designs for the web pages were complete and the developers started working on writing the code for the front end and backend of the application, while the management team kept regulating whether all the deadlines were maintained.

6. **Testing**: Testing started as soon as a feature was added to the site. Hence simultaneously the testing was being carried out by the developers. At the end of the implementation phase unit testing for the application started.

7. **Deployment**: After the testing was truly completed, the team realized that it was behind schedule. For deployment, a VPS (Virtual Private Server) and a domain was bought to deploy the application on a live server.

3.5 Estimated Costing

Table 3.1: Cost Estimation table

Requirements	Quantity	Amount (BDT)
Salary Payments (3 months)	1	24000
Computers (desktop)	1	30000
Printer	1	8000
Electricity Bill (3 months)	1	3600
Domain/Server/Hosting	1	1500
Desks	1	1800
Internet Bill (3 months)	1	3600
Subtotal	**-**	**82500**

Chapter 4: Methodology

Successful projects are managed well. To manage a project efficiently, the manager or development team must choose the software development methodology that will work best for the project at hand. All methodologies have different strengths and weaknesses and exist for different reasons. For this project the at Millennium Information Solution Ltd team has used, like most modern applications, the agile software development life cycle. Other methodologies include:

- Waterfall
- Prototyping
- Iterative and Incremental Development
- Spiral Development
- Rapid Application Development
- Kanban methodology
- Extreme programming (XP) methodology
- Adaptive project framework (APF) methodology.
- Lean methodology.

Chapter 5: Body of the Project

5.1 Work Description

This is my own project. “Family Bazar” is a web application which will be a ecommerce store for different type of products. This application will be used by the general customer and the admin stuffs of to manage the products and other management. In the system, Users will visit into a specific URL and will be able to find universal homepage where they can view the products list with different categories. They can add products from the home page. After adding products into cart items, they can check their cart items in the cart option. They can review and finalize their order there. At the bottom, there will be a checkout and place order button. After placing the button an ID will be generated automatically. All available Products in homepage will be viewed and controlled dynamically by a custom admin panel which is created using Spring boot & MySQL database. The admin login section will be redirected through a secret URL which will bring the user to the admin home page. After successful admin login, Admin can add different products and can be able to make significant changes like update, delete, active or inactive any products through their specific home page. Any changes made by the admin will be visualized on the home page of users. The application will be handled by Spring boot as backend and frontend as Angular framework. All the requests would be developed like GET/POST/DELETE/PUT. Every day a target of the tasks to be completed throughout the day would have been appointed to me, and at the end of the work day those targets needed to be fulfilled and explained properly.

5.2 Requirement Analysis

5.2.1 Rich Picture

The rich picture is a graphic tool that creates cartoon-like depictions of organizational problem scenarios. Usually in the framework of a workshop, knowledge is collected from various stakeholders and opposing opinions. His soft system method uses a rich picture as one of the three key tools, although he insists that it cannot be structured. Many analysts like the rich picture tool, but it has come under growing fire over time for lacking grammar, structure, and standards.

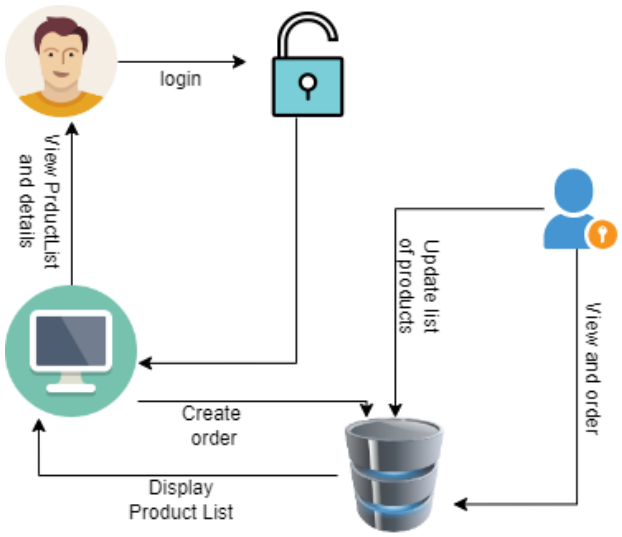


Figure 5.1: Rich Picture

5.2.2 Functional and Non-functional requirement

Functional requirements are product features that programmers must include to allow users to do their duties. Non-functional requirements are those that define criteria rather than specific behaviors that can be used to evaluate how a system performs. Functional requirements, which outline certain behavior or functions, are contrasted with them. Below are included both the system's functional and non-functional requirements.

Functional Requirements:

- When a user registers the database will store the data.
- When a user tries to login, it will validate if the email and the password is correct or not.
- User will be redirected into the specific homepage after login.
- Users can search for their desired product from the product list.
- Product should be arranged by categories on the homepage.
- All the categories should be shown on the homepage.
- User can add their desired products to cart.
- User can edit the quantity of a cart item.
- User can review and delete a cart item.
- Users have to login before checkout if they are not logged in.

Non-Functional Requirements:

- The application will be user-friendly and intuitive for the easy access of the users.
- The application will be maintained regularly so that, it doesn't become slow or any bug fixes.
- A system is most preferable when it is reliable, that is, the availability of the system is important. Therefore, the application will be built to make it as much reliable as possible.
- The system can be accessed from devices like smartphones and an aesthetically similar web Application for computers will be developed.
- The system will be secured and personal information like the user's phone numbers, the email address will be safe.

5.3 System Analysis

5.3.1 Six Element Analysis

Table 5.1: Six Element Analysis Table

Process	Human	Non-Hardware	Hardware Computing	Software	Database	Communication Network
Log In/Sign Up	Users enters phone No and password	NID number when register	Keyboard, Mouse and Computer	Web Browser	Stores register data and retrieves login data(MySQL)	Internet
View product list	Users	N/A	Keyboard, Mouse and Computer	Web Browser	Stores data and retrieves data (MySQL)	Internet

View product details	User	N/A	Keyboard, Mouse and Computer	Web Browser	Stores data and retrieves data (MySQL)	Internet
Search Product	User	N/A	Keyboard, Mouse, printer and Computer	Web Browser	Stores data and retrieves data (MySQL)	Internet
Add to cart	User	N/A	Keyboard, Mouse and Computer	Web Browser	Stores data and retrieves data (MySQL)	Internet
Add final order	User	N/A	Keyboard, Mouse and Computer	Web Browser	Stores data and retrieves data (MySQL)	Internet

5.3.2 Feasibility Analysis

Feasibility is defined as the practical extent to which a project can be performed successfully. To evaluate feasibility, a feasibility study is performed, which determines whether the solution considered to accomplish the requirements is practical and workable in the software. Feasibility study is carried out based on many purposes to analyze whether software product will be right in terms of development, implantation, contribution of project to the organization etc. There are different types of feasibility studies that are conducted such as:

- **Technical Feasibility:** In Technical Feasibility current resources both hardware, software along with required technology are analyzed and assessed to develop project. Questions such 'Is the application upgradable?', 'Technical capabilities and skills of the developers?' are answered in this section. For these current applications the scalability depends on the number of users of the application, since it is a module-based application any addition of a module can easily be added or removed if required. A downside of the program is that the application has become very technical, therefore non-technical users might have a harder time to understand the program completely.

- **Operational Feasibility:** It assesses the extent to which the required software performs a series of steps to solve business problems and user requirements. This feasibility is dependent on human resources (software development team) and involves visualizing whether the software will operate after it is developed and be operative once it is installed. The major users of the application are the freelancers, one of the most critical barriers is the language barrier, the application is developed completely in English, hence without understanding the language it should be harder for the user to guide through the program specially in the rural parts of the country.

- **Economic Feasibility:** Economic analysis is the most frequently used method for evaluating the effectiveness of the candidate system. More commonly known as cost/benefit analysis& the procedure is to be determining the benefits and sayings that are expected from a candidate and compare them with costs. If benefits outweigh costs& then the decision is made to design and implement the system. A system financial benefit must exceed the cost of developing that system. i.e., a new system being developed should be a good investment for the organization. Economic feasibility considers the following:

1. The cost to consider a full system investigation.
2. The cost of hardware and software for the class of application.
3. The benefit in the form of reduce cost or fewer costly error.
4. The cost if nothing changes (i.e., The proposed system is not developed)

The proposed “Family bazar store” is economically feasible because

1. The system requires very less time factors.
2. The system will provide fast and efficient automated environment instead of slow and error prone manually system, thus reducing both time and manpower spent in running the system.
3. The system will have GUI interface and very less user-training is required to learn it.
4. The system will provide service to view various information for proper managerial decision making.

5.3.3 Problem Analysis

Problem solving involves thinking and understanding. Although it may seem easy, identifying a problem can be a challenging process. One of the main problems is dealing with them top with a variety of changes in technology day by day. Troubleshooting is an act of to explain the problem; to find the cause of the problem; identification, prioritization, and choosing alternative solutions; and apply the solution. And so is the congress gaining additional needs is important

Solutions of a problem can be found by using the following methods:

- **Define the problem:** Check the situation to focus on the problem, not just its symptoms. Practical ways to solve problems include using flowcharts identify the expected process steps and cause-effect diagrams to be defined and analyze the causes. The sections below help explain how to solve important issues steps. These measures support the involvement of interested parties, the application of facts knowledge, expected comparisons and realities, and a focus on the causes of a problem.
- **Evaluate and select an alternative:** Skilled problem solvers use a series of considerations when choosing the best option.
- **Implement and follow up on the solution:** Leaders can be called guide others to use the solution,” sell” the solution, or facilitate implementation with the help of others. Involving others in use is an effective way to gain acquisition and support and reduce resistance to subsequent changes.

5.3.4 Effect and Constraints Analysis

A constraint is a restriction on the degree of freedom a company can have in providing a solution. Constraints are effectively global requirements, such as limited development resources or a decision by senior management that restricts the way the development team develop a system. Constraints can be economic, political, technical, or environmental and pertain to project resources, schedule, target environment, or to the system itself. Users will log in or register to place their product order through the web application by adding products to their individual carts. According to the agreement with the owner, product lists will be shown, and users will be able to place orders based on other criteria. The 'Family Bazaar' will help users to buying various type of products in a single place and this virtual store's operations run smoothly and efficiently. The administration will notify the returnable item in accordance with the rules and restrictions.

5.4 System Design

5.4.1 UML Diagrams

Integrated Modeling Language (UML) is a common, evolving target language, which exemplifies the field of software engineering aimed at providing quality. how to detect system configuration. Any complex system is better understood to make drawings or pictures. These drawings have a better effect on us understanding. If we look around, we will see that paintings are not a new concept, but it is widely used in different ways in different industries.

Use Case Diagram: A use case diagram describes how to use it charges were made. Other drawings are recommended for that, like a work sketch. A working case diagram should describe the desired function of the system and associate it with the use of cases and characters. Thus it can represent the existing ideas of the system and how it is interpreted in a different way - only then can the needs be fully understood.

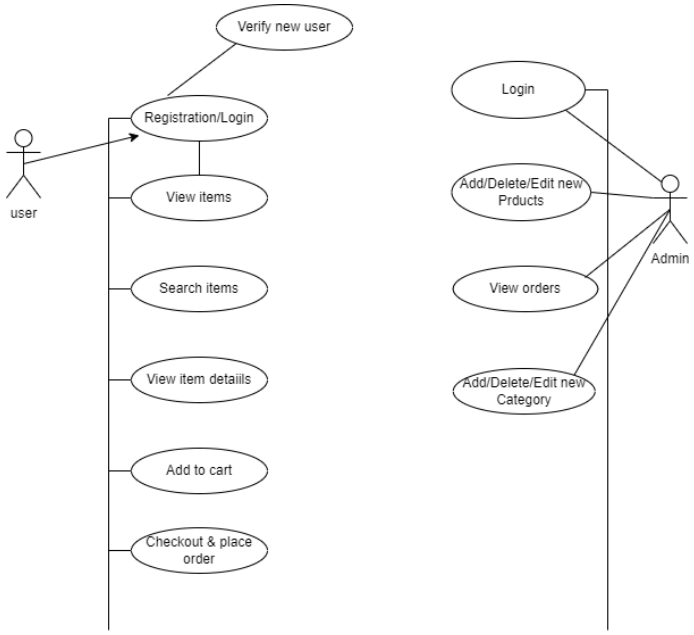


Figure 5.2: Use case Diagrams

Activity Diagram: In UML, an activity diagram provides a view of the behavior of a system by describing the sequence of actions in a process. Activity diagrams are like flowcharts because they show the flow between the actions in an activity; however, activity diagrams can also show parallel or concurrent flows and alternate flows. In activity diagrams, you use activity nodes and activity edges to model the flow of control and data between actions. The activity diagrams of" Family Bazaar" are given below:

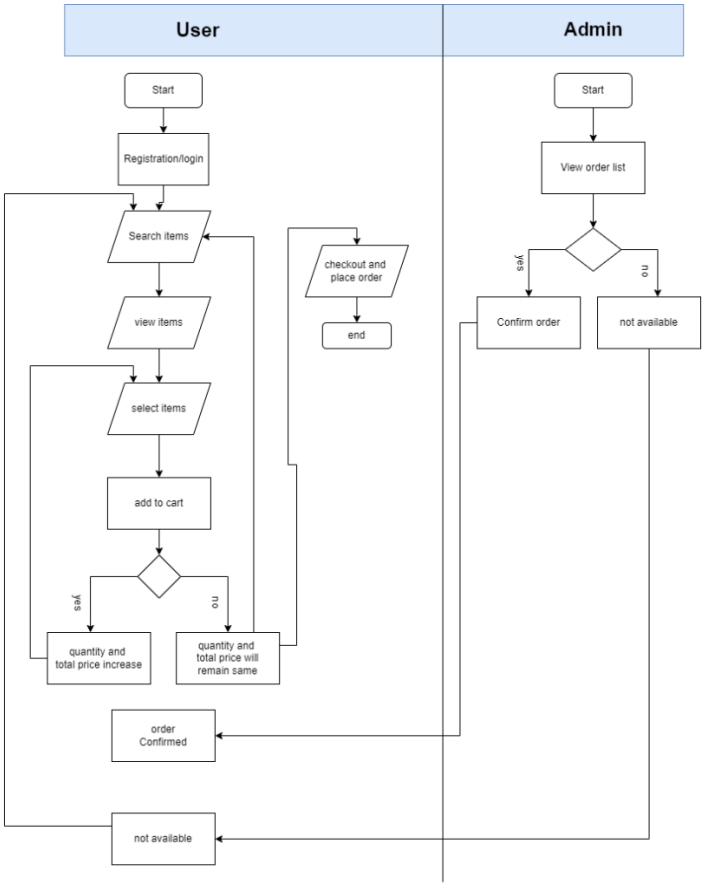


Figure 5.3: Activity Diagrams

Entity Relationship Diagram: An Entity Relationship (ER) Diagram is a form of flowchart that shows the relationships between "entities" like people, things, or concepts within a system. ER Diagrams are most frequently used in the disciplines of software engineering, business information systems, education, and research to build or troubleshoot relational databases. They are also known as ERDs or ER Models, and they use a predetermined collection of symbols to represent the interconnectedness of entities, relationships, and their qualities. These symbols include rectangles, diamonds, ovals, and connecting lines. They have verbs for relationships and nouns for entities, mirroring the grammatical framework.

5.4.2 Architecture

For developing this application, the Single Page Application or (SPA) was used. A single-page application (SPA) is a web application or website that interacts with the user by dynamically rewriting the current web page with new data from the web server, instead of the default method of the browser loading entire new pages. In a SPA, all necessary HTML, JavaScript, and CSS code is either retrieved by the browser with a single page load or the appropriate resources are dynamically loaded and added to the page as necessary, usually in response to user actions. The page does not reload at any point in the process, nor does it transfer control to another page (Flanagan, 2006). For the development JavaScript framework Angular was used for the front end and Spring framework of Spring boot was used for the backend. As for the database called MySQL was used.

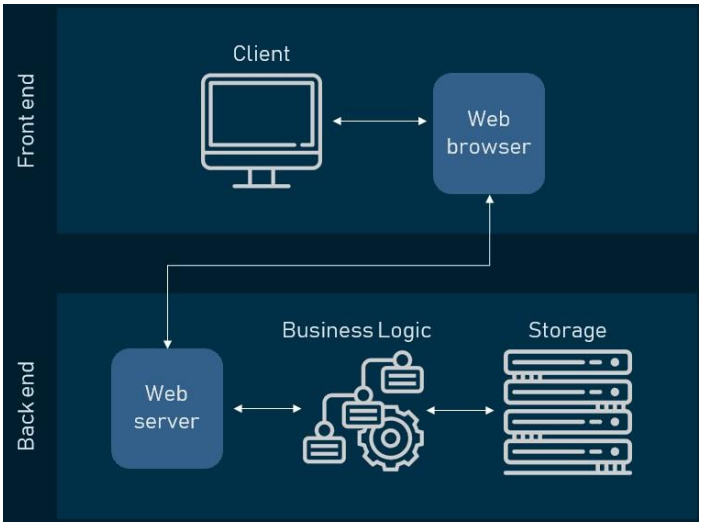


Figure 5.4: Architecture

5.5 Implementation

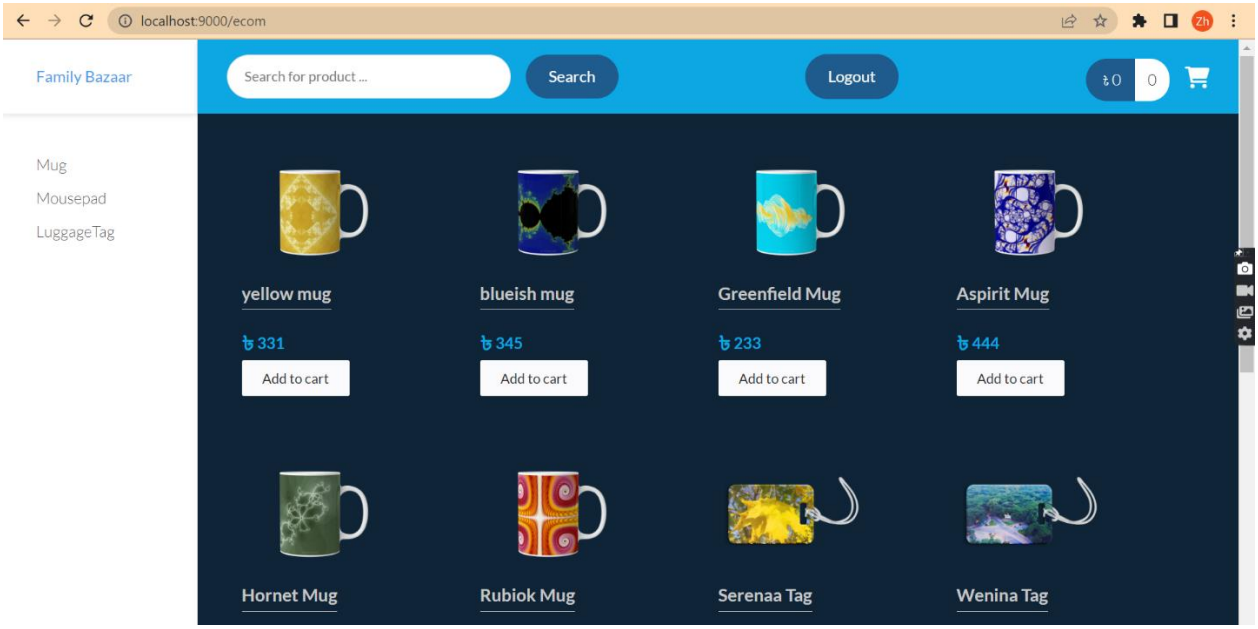


Figure 5.6: Homepage

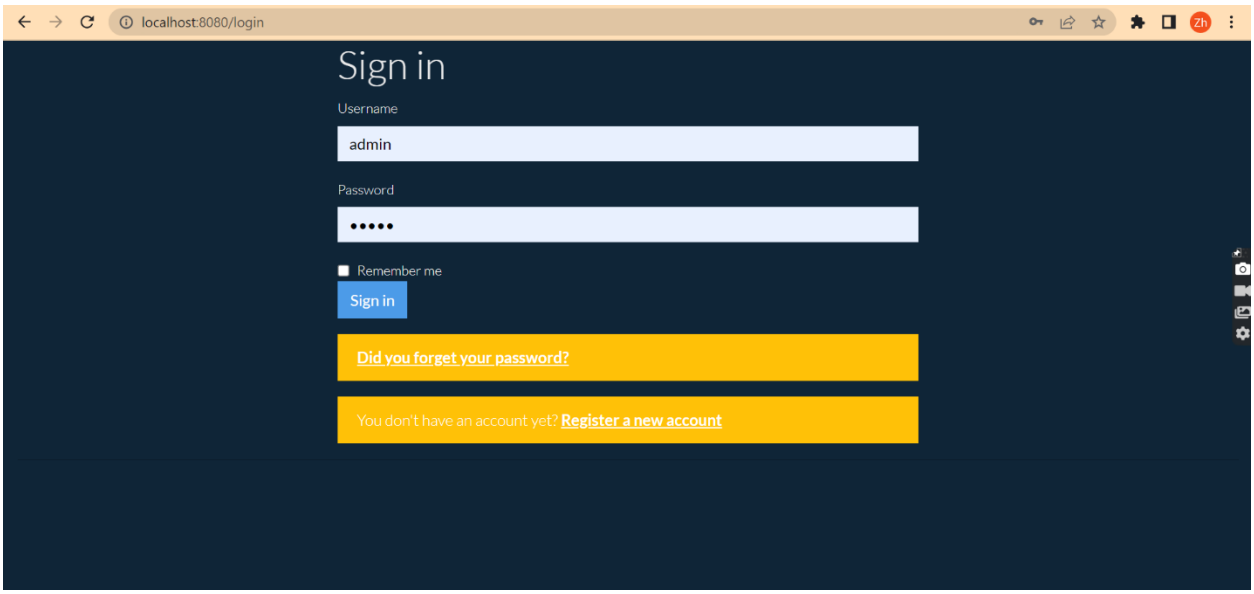


Figure 5.7: Login



Figure 5.8: Registration Page

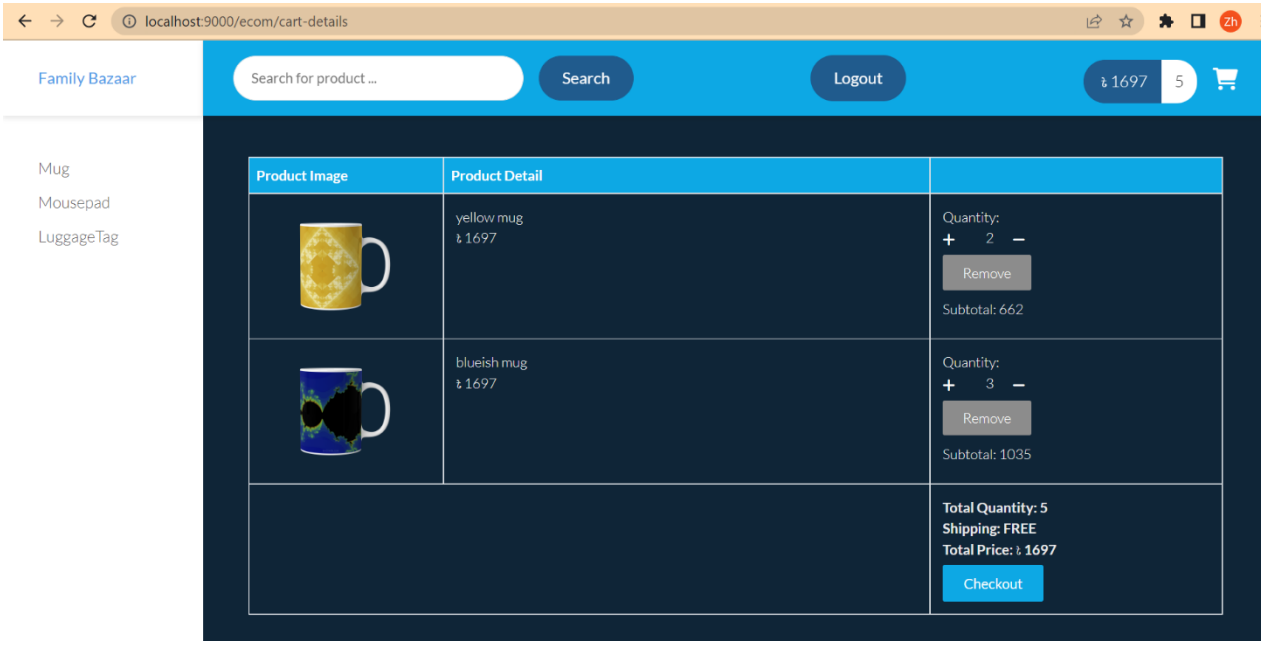


Figure 5.9: Cart Page

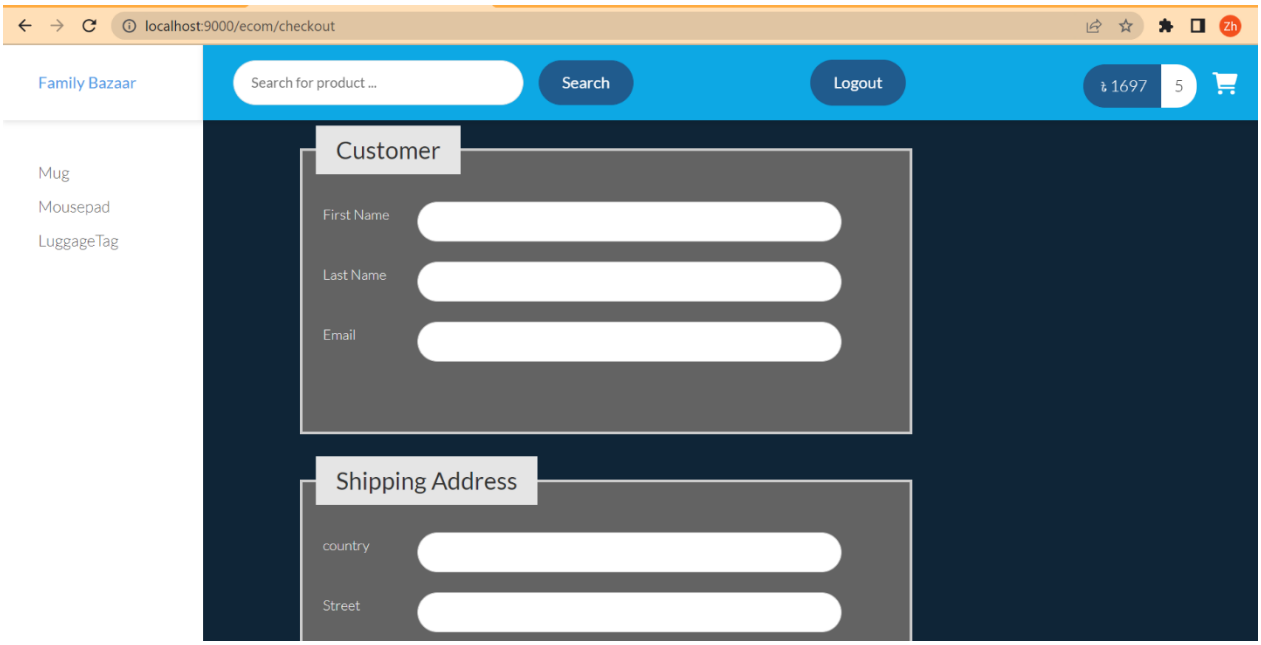


Figure 5.10: Checkout Page

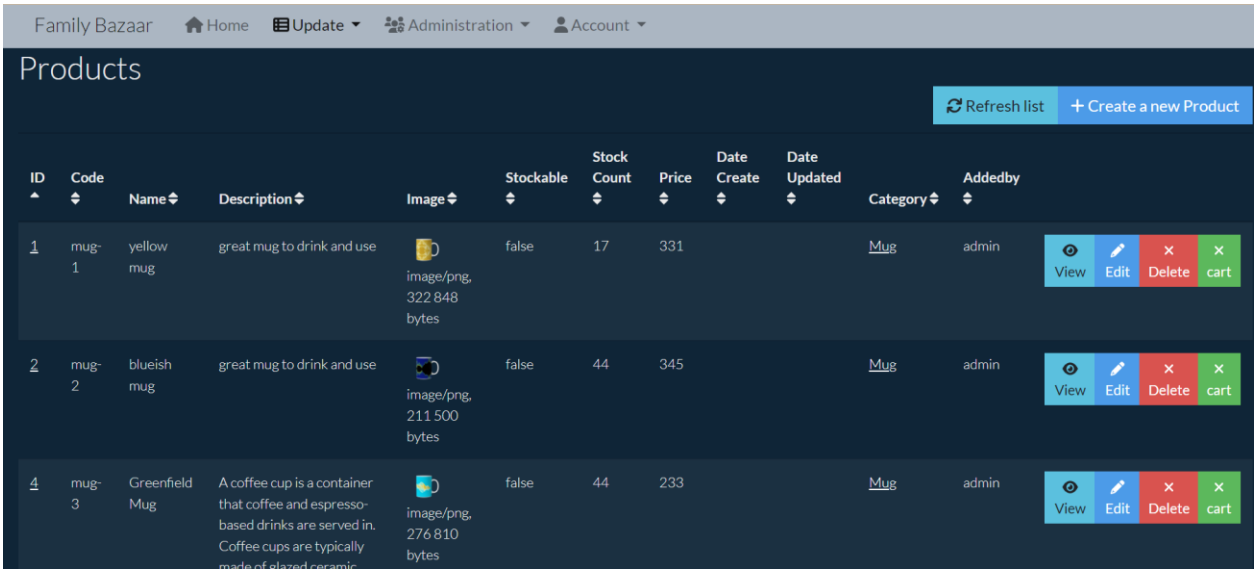


Figure 5.11: Admin Product list Page

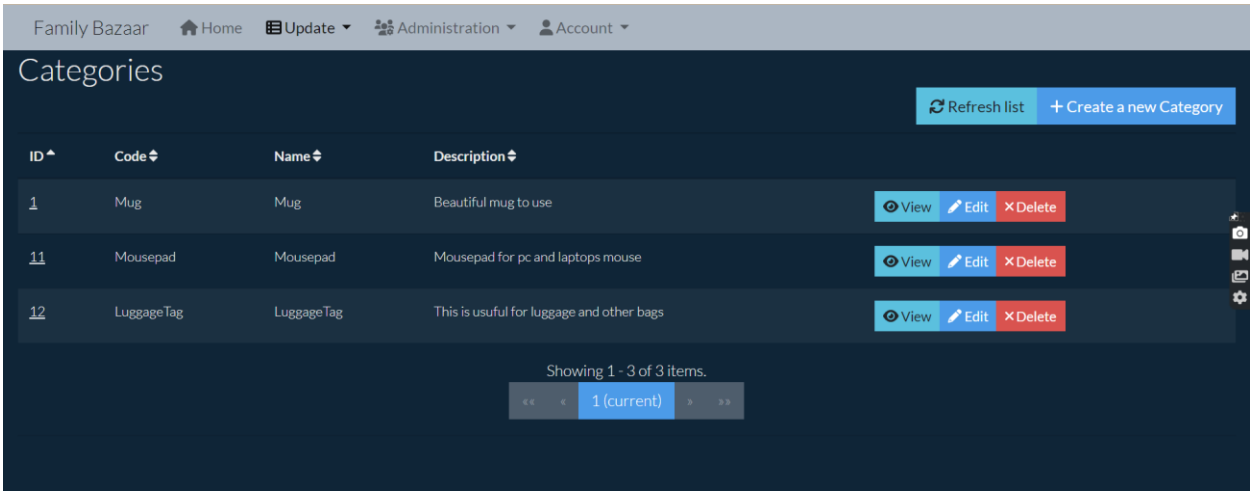


Figure 5.12: Admin category Page

5.6 Testing

5.6.1 Input

The following table shows the processes and the fields required for the inputs of the corresponding process.

Table 5.2: Input table with their fields

Process	**Fields(Types)**
Sign Up	User Name – String Email Address – String Password-String
Sign In	Username – String Password – String
Cart Item	Unit Price – String Quantity-Number Product-Object
Order	Order No – Number Cart Item -Array

Transaction	Name – String Payment method – String Address – String status – String Amount – Number Billing address-Array shipping address-Array
Products	Products ID – String Products Name – String Description – String Date Created – Date Stock – Number Price – String Category-String

5.6.2 Output

Table 5.3: Output table with process

Process	Output
Sign Up	On Success – Alert Message: "New User Added Successfully" On Failure – Error shown under the field's input
Sign In	On Success – Alert Message shown "Login is Successful" and redirect to user Homepage On Failure – Error shown under the field's input
Cart	On Success – Cart status Successfully On Failure – Cart status will not be updated
Transaction	On Success – Alert Message shown "New Invoice Added Successful" and redirect to Invoice Table On Failure – Error shown under the field's input
Products	On Success – Alert Message shown "New Products Added Successful" and redirect to Products Table On Failure – Error shown under the field's input

5.6.3 Test Case

Test Case No	Scenario	Test Steps	Test Data	Expected Results	Result
T-01	Registration	Enter Valid username and email and password in input field and press the Registration button	Username, email and password	Redirect to Login page	Stores register data and retrieves login data (MySQL)
T-02	Login	Enter Valid username and password in input field and press the login button	Username and password	Redirect to home page	Login successfully
T-03	View and add item to cart	Scrolling down the cursor in the user homepage. Search the desired product and press add to cart button.	Desired product name	Cart-status will be updated	As expected

T-04	Check Cart details page	View cart and make required changes and save	N/A	Product Quantity and Product price will be updated	As expected
T-05	Checkout	Go to the cart page click on the checkout button.	N/A	Show a alert that checkout done successfully	As expected
T-06	Logout	Press the logout button	N/A	Redirect to the Home page	Logout successfully

Chapter 6: Results & Analysis

Thinking After performing all the test cases, I came up with the following outcomes, which indicate how the app performs in various situations. To avoid bugs when the application is in live mode, proper and thorough testing is important. Approval is the process of ensuring that the developed system meets all the requirements. The main goal of software testing is to find defects in the application. Testing methodologies were used to justify all test cases. The results of a few tests are shown below:

Registration with empty field: If any of the registration fields were left blank, it will ask you to complete that field if it is required. It will also notify you that the email format is invalid if the email is invalid.

Login with the wrong credentials: If the email is invalid, it will notify you that the email format is incorrect. If both the email and the password are entered, but one of them does not match the database, it will show a message that "Something went wrong, the credentials do not match our record." If all the provided credentials are correct, it will redirect to the specific user's dashboard.

Product showcase: After successful login, the user dashboard will appear for each specific user as follows, showing the product (in our case food products). There are also several sections for categorizing such as Mug, Luggage tag, Mousepad and others.

Product details page: The user dashboard displays all the available products which are managed dynamically from the admin panel. By clicking on each individual product, the user will be taken to the product's specific details page. They can also add the item from the details page.

Cart and product selection: When a user selects a product and clicks the "Add to cart" button, it will appear in the cart section. Once you've completed the selections, you'll be able to check out and place an order. An ID will be generated according to the products requested when the order is placed.

Admin section for Adding product and order management: We will create a custom admin portal for dynamically managing different catering items from the backend. similar URL will redirect to the admin login page before that. If the login credentials do not match, the page remains unchanged with the message "Username or password is invalid." After a successful admin login, the user will be redirected to the admin's dashboard, where they can make any necessary changes to the category lists, such as creating, updating, deleting, and managing orders.

Chapter 7: Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

In the project profession, sustainability is a business approach that balances the environmental, social, and economic components of project-based work to meet present stakeholder needs without compromising or overburdening future generations. Project sustainability was one of the main focuses when the Family Bazaar was planned. General users can easily use this site to buy their daily needs and other products. It will be better for the users to buy products from within a few clicks and get products into home within a few hours. The main goal was to buy product from home that would fulfill all their requirements.

7.2 Social and Environmental Effects and Analysis

Digital storage: Digital manufacturing and information transfer could remove warehouses and enable on-demand production. The public may not be aware of this, but warehouses can have an impact on the environment. Freight trucks driving to and from warehouses can damage pavement and roads, emit noise pollution, use enormous amounts of land, and pose a risk to traffic safety.

Transportation emissions: Administration can conduct business without physically commuting thanks to Family bazaar business models. By minimizing your organization's dependency on transportation, you can lessen your organization's carbon footprint, which is caused by a significant number of harmful emissions and pollution. Additionally, this businesses model will help to reduce their carbon footprint even more if they permit staff to work from home.

7.3 Addressing Ethics and Ethical Issues

A great deal of work has been done to make sure that the user data provided is secured. A lot of experts has been involved during and after the final completion of the project just to look into the security issues of the application. Certain guidelines from institutions such as from NHL guideline trustee committee is and will be followed. The application makes sure that the passwords set by the users are hashed and unavailable to others other than the admin.

Chapter 8: Lessons Learned

8.1 Problems Faced During this Period

Through my process of making this application I faced a lot of problems. Understanding the initial requirement was difficult for me because, as an intern, I needed to first learn how and what they were working on. The folder structure they used and how they wrote their code.

Adapting to New Technologies: They had preferred frameworks, so I had to study some of them before I could start working.

Keeping up to Speed: As it was my first time, learning new technologies and putting them to use was a slow process for me initially

Identifying and Fixing Bugs: It was difficult to identify a bug at first because the frameworks were unfamiliar to me. however, some bugs take a long time to identify and fix.

8.2 Solutions of those Problems

Adapting to New Technologies: After my office hours were over, I went home every day and learned Laravel technology at night in order to keep up with my internship work. This project would not have been completed if I hadn't put in those extra hours.

Keeping up to Speed: My work speed was slow because I was learning new technologies and applying them to a realworld project. I was able to enhance my speed with regular effort.

Identifying and Fixing Bugs I learnt how to properly debug as well as some quick and easy debugging techniques from the senior developers.

Chapter 9: Future Work & Conclusion

8.1 Future Works

This are the list of features that could be added in the application:

Mobile Application We could also develop a mobile application for Android/iOS. It will make the work more convenient and easier for everyone.

Add New features on texts: there will be a new option as User profile, adding user profile picture and other things for the user.

Improve UI: Make the UI more user friendly.

8.2 Conclusion

This report is based on the project of “Family Bazaar Ecommerce development” for the company Millennium information solutions ltd. The report goes through all the intricate details of the project from the conceptual level to the functional level and the design patterns. Although the project will be incomplete during the creation of the report, but most of the functionalities should in the application. The report also explains the sustainability and the methods where the application should bring in money for the company.

Throughout the internship period, working on this project has made me realize a few things. It has made me realize how diverse, competitive the real corporate world is. It has made me feel to make an actual difference in the real world. As an undergraduate student, it is really tough for any student to have an actual taste of how the real companies of the world works. But to actually live it for 3 months was a unique experience and hopefully will be the start of my journey into the corporate world as a developer.

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An Undergraduate Internship/Project on

Family Bazaar Ecommerce Website Development

Zahid Hasan Shuvo

Student ID:1731526

Summer, 2022

Consent Form

The student modified the internship final report as per the recommendations made by his/her academic supervisor and/or panel members during final viva, and the department can use this version for archiving.

On recommendation of the board

বিজয় অরফন September 27, 2022

(Signature of the Supervisor)

Bijoy Rahman Arif

Department of Computer Science & Engineering

Independent University, Bangladesh

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