MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Project Report

on

E-COMMERCE FOR ECOBRICKS

Submitted By:

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0901CS191006

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Faculty Mentor:

Dr. Anjula Mehto, Assistant Professor CSE Department,MITS

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE
GWALIOR - 474005 (MP) est. 1957

MAY-JUNE 2022

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A project report submitted in partial fulfillment of the requirement for the degree of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

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CERTIFICATE

This is certified that **Abhishek Yadav** (0901CS191006) has submitted the project report titled E-commerce for Ecobricks under the mentorship of **Dr.Anjula Mehto**, in partial fulfilment of the requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering from Madhav Institute of Technology and Science, Gwalior.

anjula mehto

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CERTIFICATE

This is certified that **Anshul Sisodiya** (0901CS191020) has submitted the project report titled E-commerce for Ecobricks under the mentorship of **Dr. Anjula Mehto**, in partial fulfilment of the requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering from Madhav Institute of Technology and Science, Gwalior.

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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DECLARATION

We hereby declare that the work being presented in this project report, for the partial fulfilment of requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering at Madhav Institute of Technology & Science, Gwalior is an authenticated and original record of our work under the mentorship of **Dr.Anjula Mehto, Assistant Professor**,CSE

We declare that we have not submitted the matter embodied in this report for the award of any degree or diploma anywhere else.

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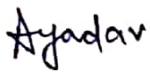
The full semester project has proved to be pivotal to our career. We are thankful to our institute, **Madhav Institute of Technology and Science** to allow us to continue our disciplinary/interdisciplinary project as a curriculum requirement, under the provisions of the Flexible Curriculum Scheme (based on the AICTE Model Curriculum 2018), approved by the Academic Council of the institute. We extend our gratitude to the Director of the institute, **Dr. R. K. Pandit** and Dean Academics, **Dr. Manjaree Pandit** for this.

We would sincerely like to thank our department, **Department of Computer Science and Engineering, for allowing** us to explore this project. We humbly thank **Dr. Manish Dixit**, Professor and Head, Department of Computer Science and Engineering, for his continued support during the course of this engagement, which eased the process and formalities involved.

We are sincerely thankful to our faculty mentors. We are grateful to the guidance of **Dr. Anjula Mehto,** Assistant Professor,CSE,for his continued support and guidance throughout the project. We are also very thankful to the faculty and staff of the department.



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ABSTRACT

The Internet has turned our existence upside down. The Internet has dramatically revolutionized many different fields. It has become a global means of communication in our everyday lives.A person sitting on his chair in front of a computer can access all the facilities of the Internet to buy or sell the products. In today's world the most important thing in human's life is time.Unlike traditional commerce that is carried out physically with effort of a person to go and get consumers for his product, our proposed system would made it easy for person to reduce physical work and to save time.The main objectives of our EcoBricKs Portal is to manage the details of Customers,companies,product quality,queries and purchase form.The project is totally built at the administrative end and thus only the administrator is guaranteed the access. The purpose of the project is to build an application program which would easily establish a connection between the customer and retailer.The main issue or problem faced by an individual who manufactures eco bricks at home is how to market them at a good price.Thus, we have evolved a website where the companies which purchases the eco bricks are registered with us on our website.Therefore, the individuals which would make an account or registered on our website can contact with different companies available on website. The manufacturers can easily sell their eco bricks by just filling a 'purchase form'(i.e.form containing personal details,price per eco brick,number of eco bricks etc) and they can also deal with different companies at the same time and can crack the best deal. Like all other web applications our website also has some drawbacks.The major drawback is different types of attacks(phishing attack,DOS(Denial of service)etc).But it is much more efficient and time saving as compared to the traditional system available and would encourage more people to manufacture eco bricks at their home, which would lead to reduction in plastic waste and help us to clean our environment.

सार:

इंटरनेट ने कई अलग-अलग क्षेत्रों में नाटकीय रूप से क्रांति ला दी है। यह हमारे दैनिक जीवन में संचार का एक वैश्विक माध्यम बन गया है। कंप्यूटर के सामने अपनी कुर्सी पर बैठा व्यक्ति उत्पादों को खरीदने या बेचने के लिए इंटरनेट की सभी सुविधाओं का उपयोग कर सकता है। आज की दुनिया में मनुष्य के जीवन में सबसे महत्वपूर्ण चीज समय है। पारंपरिक वाणिज्य के विपरीत,हमारी प्रस्तावित प्रणाली ने व्यक्ति के लिए शारीरिक श्रम को कम करना और काम करना आसान बना दिया है। समय बचाएं। हमारे इकोब्रिक्स पोर्टल का मुख्य उद्देश्य ग्राहकों, कंपनियों, उत्पाद की गुणवत्ता, प्रश्नों और खरीद फॉर्म के विवरण का प्रबंधन करना है। परियोजना पूरी तरह से प्रशासनिक अंत में बनाई गई है और इस प्रकार केवल व्यवस्थापक को पहुंच की गारंटी है। परियोजना का उद्देश्य एक एप्लिकेशन प्रोग्राम बनाना है जो आसानी से ग्राहक और खुदरा विक्रेता के बीच संबंध स्थापित कर सके। घर पर ईको ईंटों का निर्माण करने वाले व्यक्ति द्वारा सामना की जाने वाली मुख्य समस्या यह है कि उन्हें अच्छी कीमत पर कैसे बाजार में लाया जाए। इस प्रकार, हमने एक वेबसाइट विकसित की है जहां ईको ब्रिक्स खरीदने वाली कंपनियां हमारी वेबसाइट पर हमारे साथ पंजीकृत हैं। इसलिए, जो व्यक्ति हमारी वेबसाइट पर खाता या पंजीकृत करेंगे, वे वेबसाइट पर उपलब्ध विभिन्न कंपनियों से संपर्क कर सकते हैं। निर्माता आसानी से केवल एक 'खरीद फॉर्म' भरकर अपनी ईको ईंटें बेच सकते हैं (यानी व्यक्तिगत विवरण, मूल्य प्रति इको ईंट, ईको ईंटों की संख्या आदि) और वे एक ही समय में विभिन्न कंपनियों के साथ सौदा कर सकते हैं और क्रैक कर सकते हैं सर्वश्रेष्ठ सौदा। अन्य सभी वेब अनुप्रयोगों की तरह हमारी वेबसाइट में भी कुछ कमियां हैं। प्रमुख दोष विभिन्न प्रकार के हमले (फ़िशिंग हमले, डॉस (सेवा से इनकार) आदि) हैं। लेकिन यह उपलब्ध पारंपरिक प्रणाली की तुलना में अधिक कुशल और समय बचाने वाला है और अधिक लोगों को अपने घर पर ईको ईंटों के निर्माण के लिए प्रोत्साहित करेगा जिससे प्लास्टिक कचरे में कमी आएगी और हमें अपने पर्यावरण को साफ करने में मदद मिलेगी।

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1.1 Problem Statement : Web Application for solving problems of small scale Eco bricks manufacturers.

1.1.1 Introduction

Like much of the world, India is also struggling to dispose its growing quantities of plastic waste, given how ubiquitous it has become i.e. from our toothbrushes to debit cards.India generates close to 26,000 tonnes of plastic a day, according to CPCB(Central Pollution Control Board) estimate from 2012.Worse, a little over 10,000 tonnes of plastic waste remains uncollected.we are all aware of the dire state of plastic pollution happening in our oceans.Thus,we have to look for different solutions to save our environment from harmful effects of plastic waste.

In this scenario, Ecobricks can serve as one of the best options available to reuse the plastic waste.Eco Bricks are a sustainable way to reuse non-biodegradable plastic waste as plastic waste is regarded as a long-lasting and durable material. Hence, keeping plastic out of the ecosystem prevents the contamination of the environment.Eco Bricks are used to make many things such as furniture, walls and buildings. It allows communities and companies to get control of their plastic waste to create modular furniture, garden spaces, walls and even full-scale buildings.

But the main problem is how to build a channel which would lead to efficient buying and selling of Eco Bricks between consumer and manufacturer.As an responsible citizen,if a person is manufacturing eco bricks at his home to minimise the unwanted plastic waste,but now the problem is where would he sell those eco bricks to earn money.Therefore, we are implementing a website which would establish a efficient channel between seller and buyers.One is the company and another one will be the registered user. Both users and company need to register with basic registration details to generate a valid username and password. After the user logins, it can view all the company's names which are interested in buying eco bricks, that are recommended on the homepage compiled by the system. From the recommended companies, the user can even view further details of the company and then if interested in selling eco bricks, the user can notify the specific company about how much eco bricks is he willing to sell,at which price and other details by filling a form proposed by the system.Same functions are also available for a company login page.

1.2 Objective

The main aim of website development is to establish an efficient communication channel for buying and selling of eco bricks.The most successful websites are carefully optimized to achieve a high percentage of purchases.To achieve success we have to integrate all of the latest online closing & upsell techniques available which have been proven to increase the chances that a visitor will purchase.With the help of this site we have to encourage more and more individuals to make eco bricks and earn money by selling them online with the help of our site.This would lead to huge reduction in unwanted plastic waste and clean the environment.Also we would save a lot of time and energy of both consumer and retailer.

1.3 Existing System

This existing system of finding the buyers who could buy eco bricks has several disadvantages. It requires a lot of time and energy of both seller and buyer to identify themselves. It has lots of manual work. Since everyone is leading a busy life nowadays, time means a lot to everyone. It is less user-friendly. It is difficult to identify the company which would offer a great deal or we can say would offer a good price per brick..Moreover, in the traditional system the seller could not communicate with different companies at the same time.Thus this closes the opportunity to bargain for a better price.Manufacturer have to sell at the price fixed by the company.Thus, existing system has many disadvantages.

1.4 Proposed System

The proposed system helps in building a website which would make it easy for companies to easily contact the manufacturer for buying eco bricks. Unlike traditional commerce that is carried out physically with the effort of a person to go and search for someone who would buy his or her eco bricks, our website has made it easier for humans to reduce physical work and to save time. The basic concept of the application is to allow the manufacturer to easily sell eco bricks and consumers to easily buy ecobricks.

1.5 Feasibility Study

A feasibility study is a high-level capsule version of the entire System analysis and Design Process. The study begins by classifying the problem definition. Feasibility is to determine if it's worth doing. Once an acceptance problem definition has been generated, the analyst develops a logical model of the system. A search for alternatives is analyzed carefully. There are 3 parts to the feasibility study. They are :

1) Operational Feasibility
2) Technical Feasibility
3) Economical Feasibility

1.5.1 Operational Feasibility

Operational feasibility is the measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development.The operational feasibility assessment focuses on the degree to which the proposed development projects fits in with the existing business environment and objectives with regard to development schedule, delivery date, corporate culture and existing business processes.To ensure success, desired operational outcomes must be imparted during design and development. These include such design-dependent parameters as reliability, maintainability, supportability, usability, producibility, disposability, sustainability, affordability and others. These parameters are required to be considered at the early stages of design if desired operational behaviours are to be realised. A system design and development requires appropriate and timely application of engineering and management efforts to meet the previously mentioned parameters. A system may serve its intended purpose most effectively when its technical and operating characteristics are engineered into the design. Therefore, operational feasibility is a critical aspect of systems engineering that needs to be an integral part of the early design phases.

1.5.2 Technical Feasibility

This involves questions such as whether the technology needed for the system exists, how difficult it will be to build, and whether the firm has enough experience using that technology. The assessment is based on outline design of system requirements in terms of input, processes, output, fields, programs and procedures. This can be qualified in terms of volume of data, trends, frequency of updating inorder to give an introduction to the technical system.The application is the fact that it has been developed on windows XP platform and a high configuration of 1GB RAM on Intel Pentium Dual core processor. This is technically feasible .The technical feasibility assessment is focused on gaining an understanding of the present technical resources of the organization and their applicability to the expected needs of the proposed system. It is an evaluation of the hardware and software and how it meets the needs of the proposed system.

1.5.3 Economical Feasibility

Establishing the cost-effectiveness of the proposed system i.e. if the benefits do not outweigh the costs then it is not worth going ahead. In the fast paced world today there is a great need for online social networking facilities. Thus the benefits of this project in the current scenario make it economically feasible. The purpose of the economic feasibility assessment is to determine the positive economic benefits to the organization that the proposed system will provide. It includes quantification and identification of all the benefits expected. This assessment typically involves a cost/benefits analysis.

1.6 Software Requirement Specification

1.6.1 Hardware Requirements

The hardware requirements are the requirements of a hardware device. Most hardware only has operating system requirements or compatibility. For example, a printer may be compatible with Windows XP but not compatible with newer versions of Windows like Windows 10, Linux, or the Apple macOS.

Hardware Requirements

Number	Description
1	PC with 250 GB or more Hard disk.
2	PC with 2 GB RAM.
3	PC with Pentium 1 and Above.

1.6.2 Software Requirements

The software requirements are descriptions of features and functionalities of the target system. Requirements convey the expectations of users from the software product. The requirements can be obvious or hidden, known or unknown, expected or unexpected from the client's point of view.

Software Requirements

Number	Description	Type
1	Operating System	Windows XP / Windows
2	Language	Node Js
3	Database	MySQL
4	IDE	Visual Code
5	Browser	Google Chrome

Chapter 2 : LITERATURE REVIEW

A literature review in a project report is that section which shows the various analyses and research made in the field of your interest and the results already published, taking into account the various parameters of the project and the extent of the project.It is the most important part of your report as it gives you a direction in the area of your research. It helps you set a goal for your analysis - thus giving you your problem statement. Thus, different researches or article published includes :

2.1 Dzyabura et al. (2016)

Dzyabura et al. improved and built a new data fusion model that improved upon the reliability of the online ratings data to predict offline preferences. They demonstrated that large discrepancies existed between the online and offline partworths when consumers evaluated products physically versus online. Since collecting large amounts of data offline is time consuming and extremely expensive, large online data sets can be combined with small offline data sets to better estimate offline preferences (up to 25% improvement).

2.2 Elizabeth Goldsmith and Sue L.T. McGregor (2000)

Elizabeth Goldsmith and Sue L.T. McGregor (2000) analyzed the impact of E Commerce on consumers, public policy, business and education. A discussion of public policy initiatives, research questions and ideas for future research are given.

2.3 Jackie Gilbert Bette Ann Stead (2001)

Jackie Gilbert Bette Ann Stead (2001) reviewed the incredible growth of electronic commerce (Ecommerce) and presented ethical issues that have emerged. Security concerns, spamming, websites that do not carry an "advertising" label, cyber squatters, online marketing to children, conflicts of interest, manufacturers competing with intermediaries online and "dinosaurs" were discussed.

2.4 Green and Rao (1971)

Green and Rao (1971) which enables us to elicit targeted responses by subjects about specific features of a product. Over time, this method has been tweaked and improved upon by numerous researchers, thus making the rank, ordering and choice elicitation tasks an effective tool for any marketing research study. Professor of Marketing at Columbia University, Oded Netzer advanced the techniques developed by Rao et al. by identifying and addressing the gaps in traditional preference elicitation and estimation models. Specifically, Netzer focused on addressing three components of preference measurement: 1) the problem that the study intends to address, 2) design and approach of the data collection study and preference measurement task, 3) advanced preference estimation models.

Chapter 3 : DETAILED DESIGN

3.1 Software Development Life cycle Model

The software development life cycle model selected for the project development is "Iterative Waterfall Model".

3.1.1 Iterative Waterfall Model

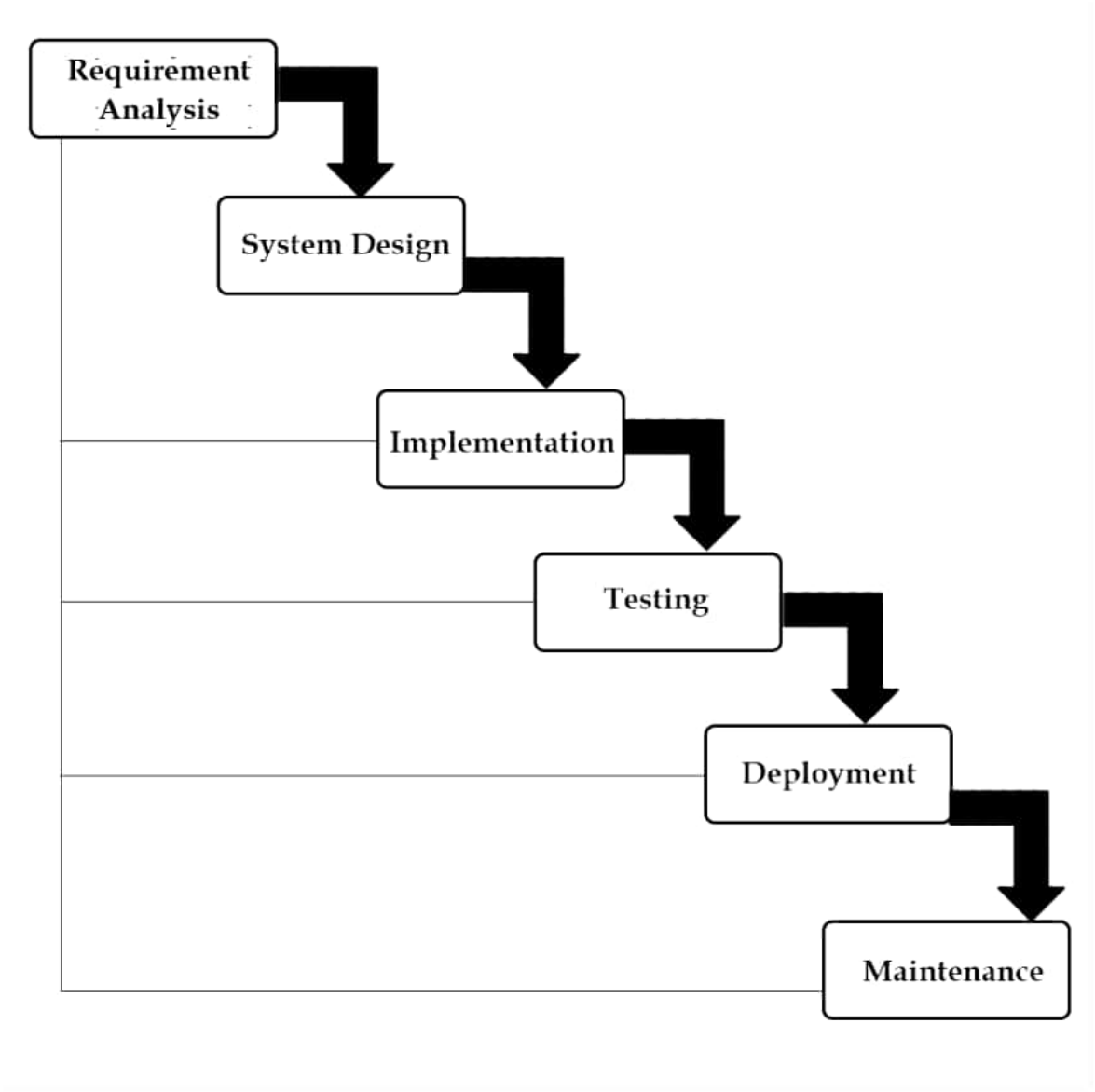

fig.3.1 Iterative Waterfall Model

In the Iterative model, the iterative process starts with a simple implementation of a small set of the software requirements and iteratively enhances the evolving versions until the complete system is implemented and ready to be deployed.

Iterative Waterfall Model is selected due to following reason :

- Requirements were very well documented, clear and fixed.
- Technology was adequately understood.
- Simple and easy to understand and use.
- There were no ambiguous requirements.
- Easy to manage due to the rigidity of the model. Each phase has specific deliverables and a review process.
- Clearly defined stages.
- Well understood milestones.Easy to arrange tasks.

3.2 Requirement Analysis

Requirement analysis is the most important and fundamental stage in project development.

- ☐ Functional Requirements
  - ☐ User login and signup
  - ☐ Give various account management option to user
  - ☐ Personal profile management
  - ☐ Purchase Form
  - ☐ Mobile-friendly website
  - ☐ Query submission Form
  - ☐ Customer support
- ☐ Non Functional Requirements
  - ☐ Error handling
  - ☐ Reliability
  - ☐ Easy to use
  - ☐ Fast response
  - ☐ Security
  - ☐ Accuracy

3.3 Design And Planning

The design phase in SDLC plays a crucial role in the Mobile App Development industry. Here, the system is designed to satisfy the identified requirements in the previous phases. Later, they are

transformed into a System Design Document that accurately describes the system design, and you can use it as an input to system development in the next phase.SDLC deliverables help the State agencies successfully plan, execute, and control IT projects by providing a framework to ensure all the project aspects are consistently and adequately defined, planned, and communicated.

Once the requirement analysis is done the next step is to clearly define and document the product requirements and get them approved.Here, we clearly define the requirements of the sites and what features it will provide like in our project main features include purchase form(i.e. If any individual or company is interested in buying the bricks then he/she would send purchase form which contains information like how many bricks required, at what price, and other personal details.), query form (i.e. if the consumer or buyer has some query then he/she can notify the problem in query form),login/registration page etc.Design of the website must be user friendly.

3.3.1 Objectives

Successful completion of the SDLC Design Phase comprises of :

- Transformation of all the requirements into detailed specifications covering all the aspects of the system.
- Planning and assessment for security risks.
- Approval for progressing to the development phase.

3.3.2 Goals

Its primary purpose is to transform all the requirements into complete, detailed system design specifications.Once your design is approved, the Development Team begins development work.In the design phase, one or more designs are created to achieve the project result.

3.3.3 Tools Used

Depending on the project subject, the design phase products include flow-charts, sketches, site trees, HTML screen designs, photo impressions, prototypes, and UML(use case diagram,class diagram etc) schemas.

UML Diagrams included in Design Phase are :

3.1 UseCase Diagram

Use-case diagrams describe the high-level functions and scope of a system. These diagrams also identify the interactions between the system and its actors. The use cases and actors in use-case diagrams describe what the system does and how the actors use it, but not how the system operates internally.

fig.3.2 UseCase Diagram

3.2 Class Diagram

Class diagrams are the blueprints of your system or subsystem. You can use class diagrams to model the objects that make up the system, to display the relationships between the objects, and to describe what those objects do and the services that they provide. Class diagrams are useful in many stages of system design.

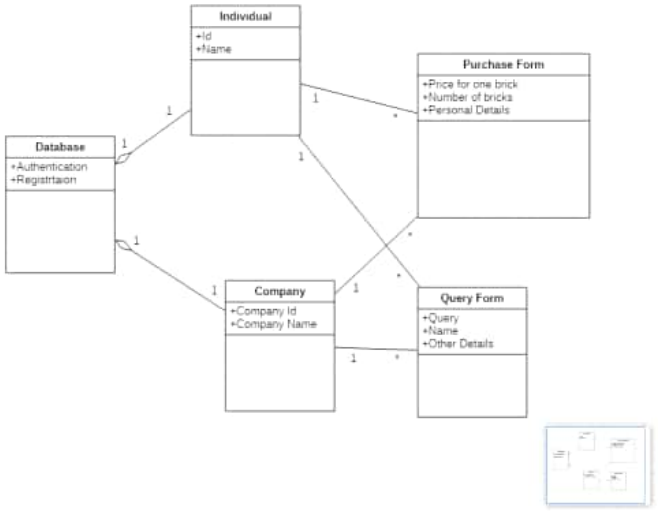

fig.3.3 Class Diagram

3.3 Sequence Diagram

A sequence diagram shows the sequence of messages passed between objects. Sequence diagrams can also show the control structures between objects. For example, lifelines in a sequence diagram for a banking scenario can represent a customer, bank teller, or bank manager.

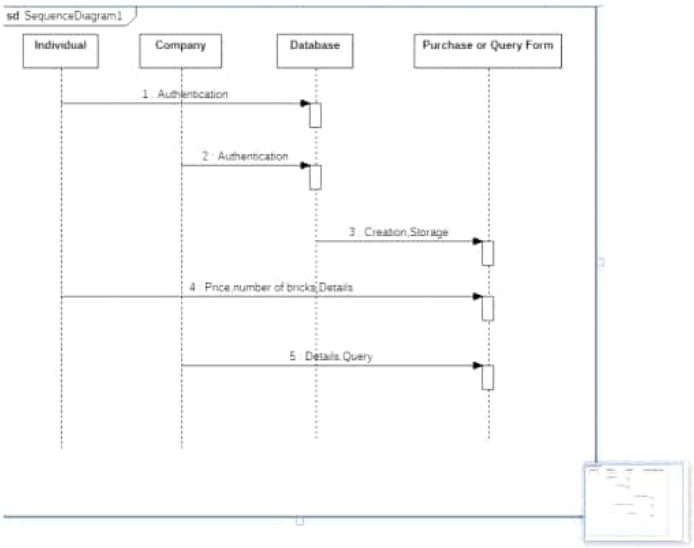

fig.3.4 Sequence Diagram

3.4 Data Flow Diagram

Data flow diagrams visually represent systems and processes that would be hard to describe in a chunk of text. You can use these diagrams to map out an existing system and make it better or to plan out a new system for implementation.

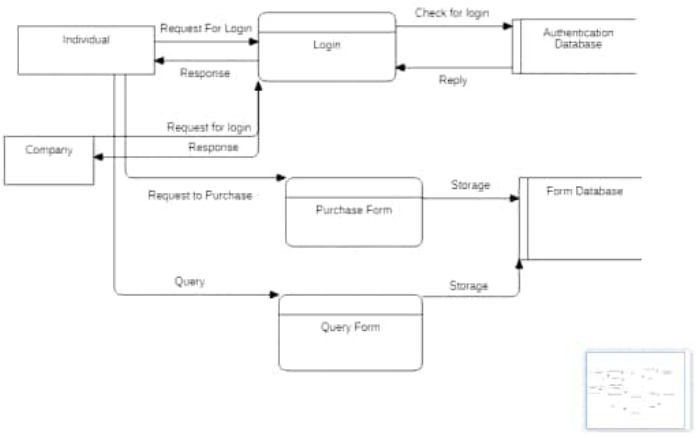

fig.3.5 Data Flow Diagram

Chapter 4 : IMPLEMENTATION AND TESTING

4.1 Implementation

The implementation phase mainly includes the coding part, this is the phase where major development of a project takes place. Once the design and functioning was clear the next step was to start implementing what we have designed so far. First we implemented the back end of our project and then the front end.First we designed the login and registration page for our website which would help in the authentication process.Then we implemented the home page of our website then the query and purchase form.Also, the major part of the project is database connectivity.In our project, for the database(for running our queries) we have used MySQL(pgAdmin4).

4.1.1 : Front End

4.1.1.1 HTML

Hypertext Markup Language (HTML) is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript. Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages.

HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by tags, written using angle brackets. Tags such as <img /> and <input /> directly introduce content into the page. Other tags such as <p> surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page.

4.1.1.2 CSS

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language like HTML.CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.CSS is designed to enable the separation of presentation and content, including layout, colours, and fonts.This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, and reduce complexity and repetition in the structural content.

CSS information can be provided from various sources. These sources can be the web browser, the user and the author. The information from the author can be further classified into inline, media type, importance, selector specificity, rule order, inheritance and property definition. CSS style information can be in a separate document or it can be embedded into an HTML document. Multiple style sheets can be imported. Different

styles can be applied depending on the output device being used; for example, the screen version can be quite different from the printed version, so that authors can tailor the presentation appropriately for each medium.The style sheet with the highest priority controls the content display. Declarations not set in the highest priority source are passed on to a source of lower priority, such as the user agent style. The process is called cascading.one of the goals of CSS is to allow users greater control over presentation. Someone who finds red italic headings difficult to read may apply a different style sheet.

4.1.1.3 JavaScript

JavaScript is a high-level, interpreted scripting language that conforms to the ECMAScript specification. JavaScript has curly-bracket syntax, dynamic typing, prototype-based object-orientation, and first-class functions.Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web.JavaScript enables interactive web pages and is an essential part of web applications. The vast majority of websites use it,and major web browsers have a dedicated JavaScript engine to execute it.As a multi-paradigm language, JavaScript supports event-driven, functional, and imperative (including object-oriented and prototype-based) programming styles. It has APIs for working with text, arrays, dates, regular expressions, and the DOM, but the language itself does not include any I/O, such as networking, storage, or graphics facilities. It relies upon the host environment in which it is embedded to provide these features.

Initially only implemented client-side in web browsers, JavaScript engines are now embedded in many other types of host software, including server-side in web servers and databases, and in non-web programs such as word processors and PDF software, and in runtime environments that make JavaScript available for writing mobile and desktop applications, including desktop widgets.

4.1.2 Back End

4.1.2.1 Node Js

Node.js is an open-source and cross-platform JavaScript runtime environment. It is a popular tool for almost any kind of project. Node.js app runs in a single process, without creating a new thread for every request. Node.js provides a set of asynchronous I/O primitives in its standard library that prevent JavaScript code from blocking and generally, libraries in Node.js are written using non-blocking paradigms, making blocking behaviour the exception rather than the norm.

4.1.2.2 MySQL

MySQL is an open source relational database management system (RDBMS) based on Structured Query Language (SQL). It is one part of the very popular LAMP platform consisting of Linux, Apache, My SQL, and PHP. Currently My SQL is owned by Oracle. My SQL database is available on most important OS platforms. It runs on BSD Unix, Linux, Windows, or Mac OS. Wikipedia and YouTube use My SQL. These sites manage millions of queries each day. My SQL comes in two versions: My SQL server system and My SQL embedded system.

RDBMS TERMINOLOGY

Before we proceed to explain the MySQL database system, let's revise a few definitions related to databases.

- Database: A database is a collection of tables, with related data.
- Table: A table is a matrix with data. A table in a database looks like a simple spreadsheet.
- Column: One column (data element) contains data of one and the same kind, for example the column postcode.
- Row: A row (= tuple, entry or record) is a group of related data, for example the data of one subscription.
- Redundancy: Storing data twice, redundantly to make the system faster.
- Primary Key: A primary key is unique. A key value cannot occur twice in one table. With a key, you can find at most one row.
- Foreign Key: A foreign key is the linking pin between two tables.
- Compound Key: A compound key (composite key) is a key that consists of multiple columns, because one column is not sufficiently unique.
- Index: An index in a database resembles an index at the back of a book.
- Referential Integrity: Referential Integrity makes sure that a foreign key value always points to an existing row.

4.2 Testing

As I followed the iterative model for development the testing and development were done simultaneously . Only after one part was working properly then I moved to design the next one .After the coding was completed the final testing was done and the project was functioning properly as planned.For final testing we approached different methods like :

4.2.1 Unit Testing

In computer programming, unit testing is a software testing method by which individual units of source code, sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures, are tested to determine whether they are fit for use. Intuitively, one can view a unit as the smallest testable part of an application. In procedural programming, a unit could be an entire module, but it is more commonly an individual function or procedure.

In object-oriented programming, a unit is often an entire interface, such as a class, but could be an individual method. Unit tests are short code fragments created by programmers or occasionally by white box testers during the development process. It forms the basis for component testing.

4.2.2 Integration Testing

Integration testing (sometimes called integration and testing, abbreviated I&T) is the phase in software testing in which individual software modules are combined and tested as a group. It occurs after unit testing and before validation testing. Integration testing takes as its input modules that have been unit tested, groups them in larger aggregates, applies tests defined in an integration test plan to those aggregates, and delivers as its output the integrated system ready for system testing.The purpose of integration testing is to verify functional, performance, and reliability requirements placed on major design items. These "design items", i.e., assemblages (or groups of units), are exercised through their interfaces using black-box testing.

4.2.2.1 Purpose

The purpose of integration testing is to verify functional, performance, and reliability requirements placed on major design items. These "design items", i.e., assemblages (or groups of units), are exercised through their interfaces using black-box testing, success and error cases being simulated via appropriate parameters and data inputs. Simulated usage of shared data areas and inter-process communication is tested and individual subsystems are exercised through their input interface. Test cases are constructed to test whether all the components within assemblages interact correctly, for example across procedure calls or process activations, and this is done after testing individual modules, i.e., unit testing.

Chapter 5 : FINAL ANALYSIS AND DESIGN

5.1 Results

The final overview of our Eco Bricks Website looks like this :

5.1.1 Home Page

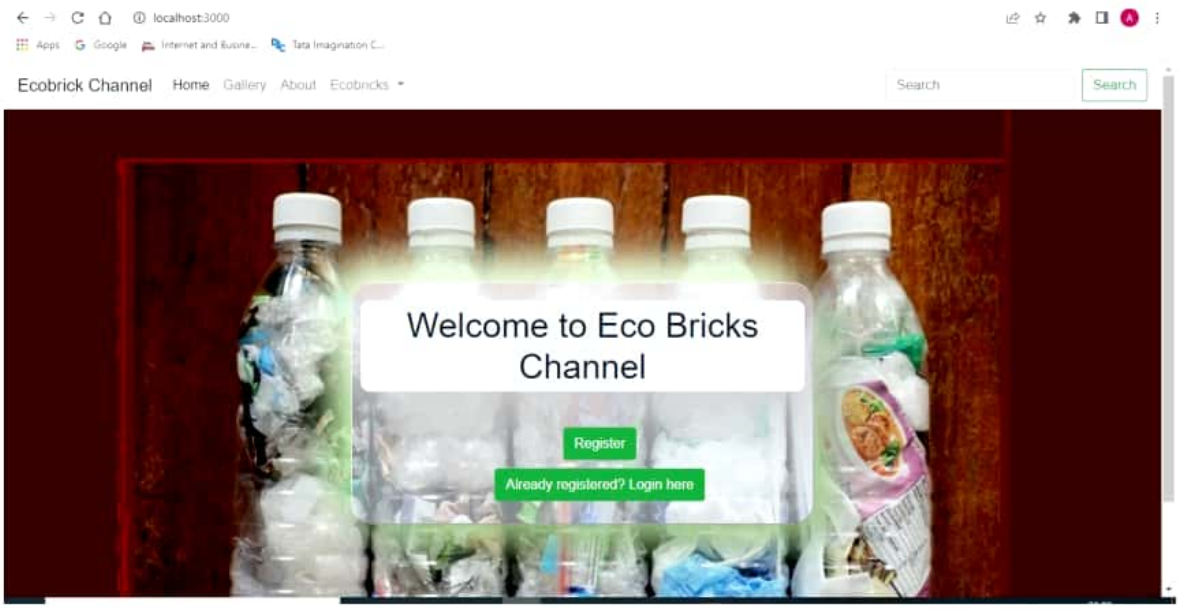

fig.5.1 Home Page

5.1.2 Registration Page

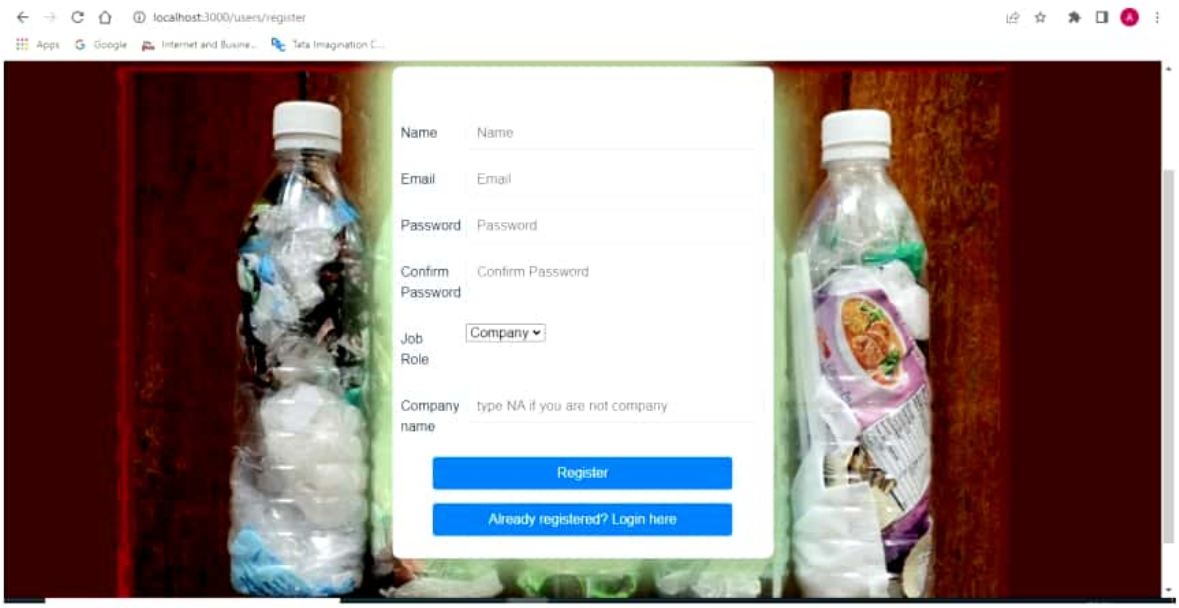

fig.5.2 Registration Page

5.1.3 Login Page

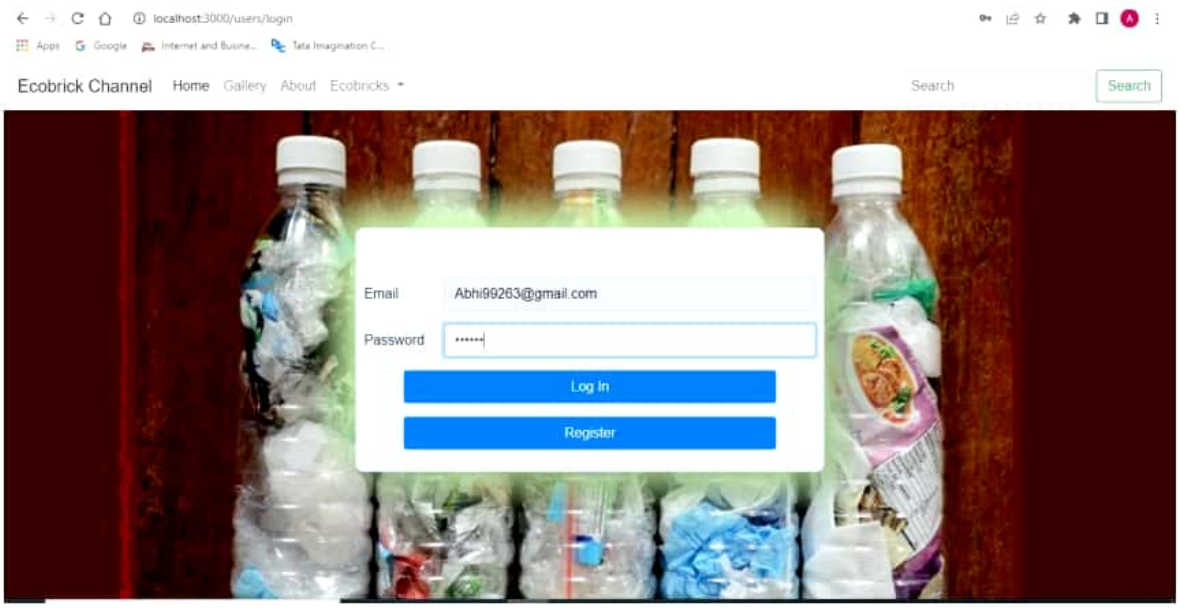

fig.5.3 Login Page

5.1.4 Dashboard

5.1.4.1 Individual Login Dashboard

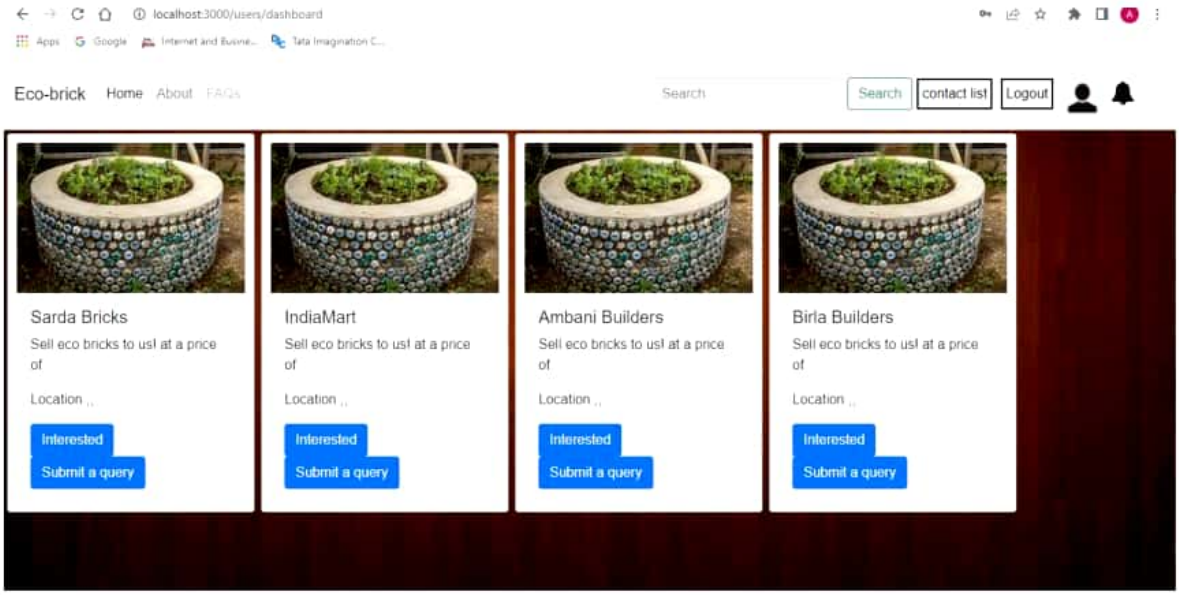

fig.5.4 Individual Login Dashboard

5.1.4.2 Company Login Dashboard

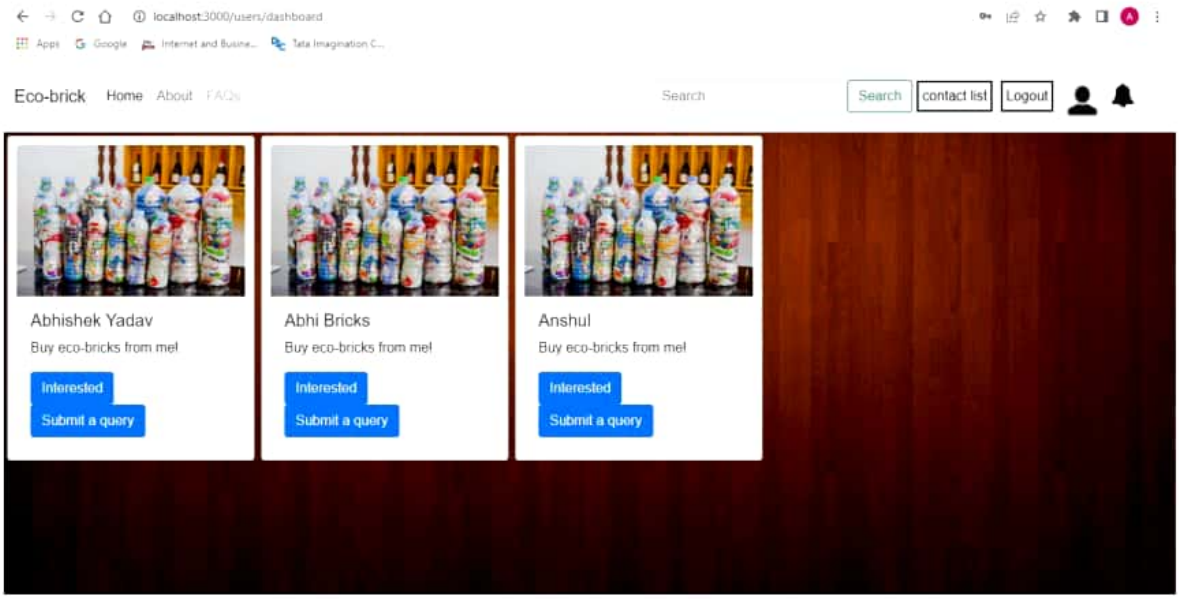

fig5.5 Company Login Dashboard

5.1.5 Purchase Form

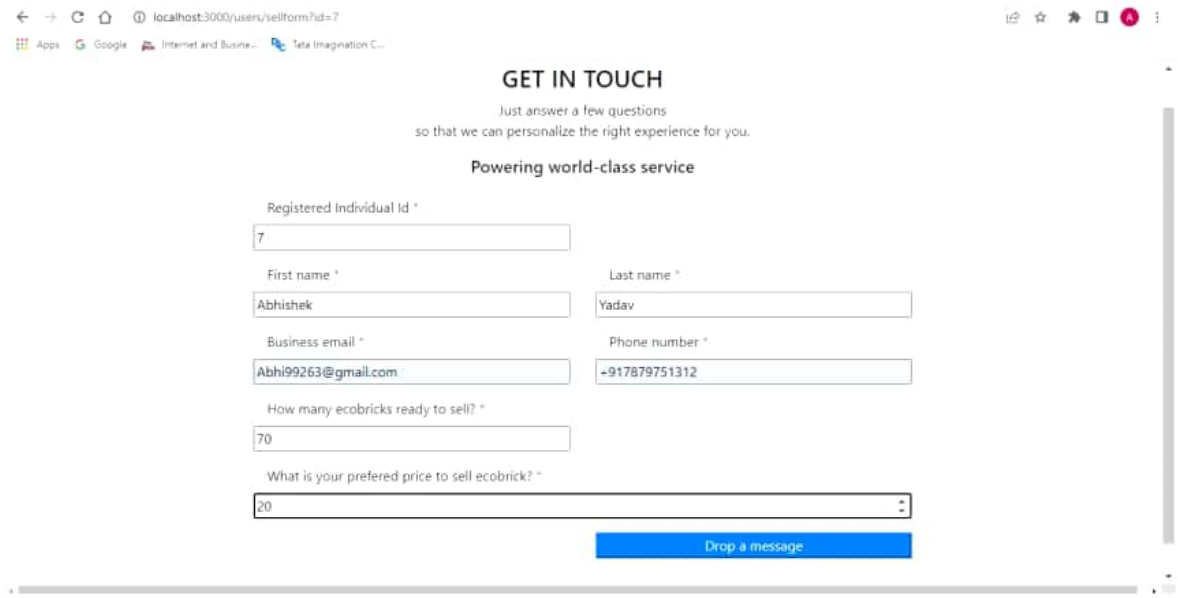

fig.5.6 Purchase Form

5.1.6 Query Form

fig5.7 Query Form

5.1.7 Notification Bar

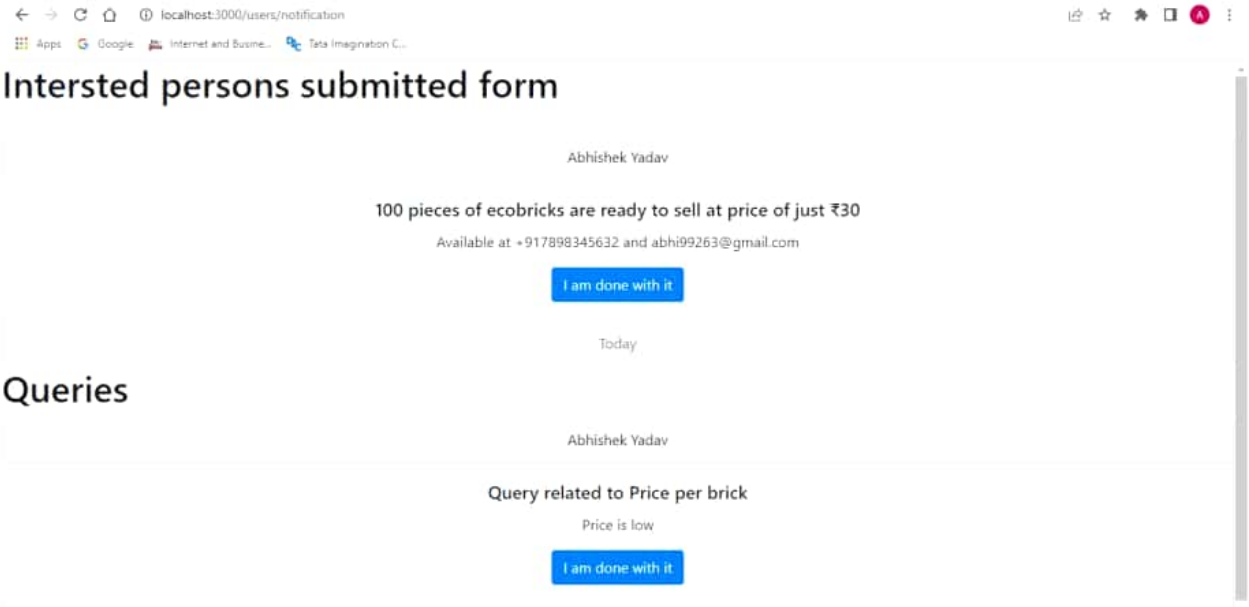

fig5.8 Notification Bar

5.2 Applications

1) The existing system of finding the buyers who could buy eco bricks has several disadvantages. It requires a lot of time and energy of both seller and buyer.Thus, here we have developed a user friendly website,where by just sitting at home the manufacturer can crack deals and buyers would get the best quality eco bricks.

2) On our website, sellers can bargain for the price per eco brick and can accept the best offer (among all the offers which have been offered by different companies).

3) With the help of our website, we can encourage more individuals to manufacture eco bricks at home and connect with different companies on our website to sell them.This would help in reduction of plastic waste and make our environment clean.

4) No Geographical limitation, tap the global market from day one.

5) Speed up the buying process and save time for customers.

5.4 Limitations

1) Since, here we are only developing a system to establish a connection between sender and buyer but we have to also develop an effective payment system (i.e. online payment system) which would help to do online payments.

2) Like all other websites on the web, our website is also prone to different attacks like phishing attacks, DOS(denial of service attacks),replay attacks etc.

3) Consumer Uncertainties.

Chapter 6 : CONCLUSION AND FUTURE SCOPE

6.1 Conclusion

In today's world the most important thing is time.Thus, businesses must always strive to create the next best thing that consumers and retailers will want because consumers continue to desire their products, services etc. to continuously be better, faster, and cheaper and retailers or manufacturers want the best price for their products. In this world of new technology, businesses need to accommodate the new types of consumer needs and trends because it will prove to be vital to their business' success and survival.The main aim is to find the best person who could give good quality and price for the desired products.From the inception of the Internet,the possibilities have become endless for both businesses and consumers. Creating more opportunities for profit and advancements for businesses, while creating more options for consumers. And our eco bricks website helps us to solve all the issues addressed above in a much efficient and faster way(i.e. it saves our time,offers the best deal,best quality of product,query submission if any etc).However, just like anything else, our proposed eco bricks system has its own disadvantages including consumer uncertainties,attacks etc.but nothing that cannot be resolved or avoided by good decision-making,better technical approach and business practices.

6.2 Future Scope

1) We will try to incorporate payment system (which would includeall the payment option like phone pay,google pay,card payment etc).

2) We would deploy our website on the internet using heroku app or some other software.

3) We will try to build our proposed website for other products as well.

References

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3. https://nodejs.org
4. https://www.geeksforgeeks.org/nodejs/