Stamford LearnHub

A Project Submitted in Partial Fulfillment of the Requirements for the Degree of
Bachelor in Computer Science & Engineering

by

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Abstract

In the modern educational landscape, fostering a sense of community and providing comprehensive resources to students is essential. ”Stamford LearnHub” can foster a sense of community among students. They can interact, collaborate, and learn from each other, creating a supportive environment for education. Within the Stamford LearnHub ecosystem, users can connect with peers, interact, share updates,upload notes,thesis/project,share previous question,upload photos, and thoughts, fostering meaningful connections and friendships within the varsity student.In this website speciality is user have to login with their univarsity provided email address. By mandating university email addresses, the platform minimizes the risk of unauthorized access from individuals not affiliated with the university. It ensures that only verified students and faculty can access LearnHub.An integral aspect of Stamford LearnHub is its user-friendly blogging platform, which empowers users to create and share insightful articles, tutorials, and personal experiences. This not only enhances communication but also encourages knowledge sharing and intellectual growth among campus constituents. Stamford LearnHub here also students can access previous questions, which can be immensely helpful for exam preparation and understanding the format and types of questions asked in their courses. Students can upload their own projects, which can be an excellent way to demonstrate their skills and creativity, as well as receive feedback from peers or instructors. Idea sharing can encourage creativity and innovation. By allowing students to share their ideas, LearnHub can promote a culture of innovation and problem-solving. It may serve as a repository of educational resources, making it easier for students to find study materials and references for their courses. LearnHub can foster a sense of community among students. By having access to a variety of materials, including previous questions and projects, students can enhance their learning experiences and better understand their subjects. Through project sharing and idea sharing, students can receive constructive feedback, which can help them improve their work and learning outcomes. LearnHub promotes digital learning, which is especially relevant in today’s tech-savvy world. Students can access the platform from anywhere with an internet connection, making it convenient for learning and collaboration.

Approval

The Project Report "Stamford LearnHub" submitted by Faysal Ahmed ID: CSE 06908051, Tamima Binta Rahman ID: CSE 06908071 to the Department of Computer Science & Engineering, Stamford University Bangladesh, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science (Hons) in Computer Science & Engineering and approved as to its style and contents.

Board of Examiner's Name, Signature, and Date:

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Date:	Date:	Date:

Supervisor's Signature and Date:

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Towhidul Islam Robin

Date:

Declaration

We, hereby, declare that the work presented in this project is the outcome of the investigation performed by us under the supervision of Towhidul Islam Robin, Lecturer, Department of Computer Science & Engineering, Stamford University Bangladesh. We also declare that no part of this project and thereof has been or is being submitted elsewhere for the award of any degree or Diploma.

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Acknowledgments

We would like to express our appreciation to a number of people who helped us with our project research.

First and foremost, we want to start by expressing our gratitude to **Towhidul Islam Robin**, our project advisor, for his support, encouragement, and tolerance throughout the entire research process. He helped us a lot in many ways from beginning to ending. We got him whenever we needed help. His knowledge and suggestions were extremely helpful to us as we developed our concepts and improved our research strategy. Without his assistance and dedication, the project book would have never been perpetrated.

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Table of Contents

List of Figures

1 Introduction

The demand for inventive and inclusive digital solutions has grown in the constantly changing environment of higher education. As educational institutions work to support active campus communities and offer necessary resources, ”Stamford LearnHub” emerges as a trailblazing initiative ready to transform how we see academic life.LearnHub is an innovative online platform designed to cater to the diverse needs of university students across various departments such as Computer Science and Engineering (CSE), Electrical and Electronics Engineering (EEE), Microbiology, and many more. This platform serves as a comprehensive hub for educational resources, collaboration, and communication within the university community.This innovative platform expertly combines the most beneficial aspects of notes sharing,uploading book and project,important notice and academic knowledge sharing services that improves everyone's educational path. Stamford LearnHub envisions a world where campus life transcends the actual walls of academic institutions in this era of ubiquitous digital connectivity, allowing students to connect, cooperate, and study alongside one another virtually. Stamford LearnHub encourages a sense of community that transcends geographical boundaries by giving users the ability to make updates, share ideas, and connect meaningfully.Through its user-friendly blogging platform, which enables users to create, explore, and distribute insightful content, the initiative also stresses knowledge exchange and intellectual development.Requiring users to log in to LearnHub exclusively with their university-provided email addresses offers several security and privacy benefits for students. When communication occurs within LearnHub, it is more likely to remain within the university community, preserving students' privacy and reducing the risk of external parties accessing their messages or information. .

1.1 Objective

- Facilitate meaningful connections and interactions within the campus community by providing a user-friendly platform for students to connect, share updates,academic notes, and build relationships.

- Empower users to create and share educational content, including blogs, articles, tutorials, and personal experiences, to promote intellectual growth and collaborative learning among peers.

- LearnHub offers dedicated sections for different academic departments, ensuring that students can access content and resources tailored to their specific courses and subjects. This specialization fosters a sense of belonging and relevancy within each department.

- Student can use LearnHub as an official notice board to keep students informed about important announcements, deadlines, events, and other campus-related information. This centralizes communication and reduces the likelihood of students missing crucial updates.

1.2 Scope

- Users can login here only that email which university email adand manage personalized profiles with essential information, including contact details, academic affiliations, and interests.

- Provide users with the ability to post updates, photos, and videos, as well as like, comment on, and share posts, fostering a sense of community and engagement.

- Implement a user-friendly blogging system that allows users to create, edit, and publish articles, tutorials, and personal stories, facilitating knowledge sharing and intellectual growth.

1.3 Motivation

Education thrives when information flows freely and ideas are shared. ”Stamford LearnHub” is motivated to empower users to become active contributors to this knowledge-sharing ecosystem. We believe that every individual possesses unique insights and experiences worth sharing, and we aspire to provide a platform where users can publish informational post,uploading notes,notice and articles to enlighten and inspire their peers.The transition from academia to the professional world can be daunting.By having access to a variety of materials, including previous questions and projects, students can enhance their learning experiences and better understand their subjects.Our mission is to connect students with a diverse array of career opportunities, facilitate skill development, and help them build the networks necessary for success in their chosen fields.This Project is motivated by the belief that diversity and inclusivity are the cornerstones of a thriving educational community. We are dedicated to providing

a platform where all voices are valued and heard, irrespective of backgrounds or viewpoints.We are inspired by the transformative impact this project can have on education and the broader academic community. With unwavering dedication, we look forward to realizing this vision and creating a more vibrant and connected campus environment for all. Together, we can make ”Stamford LearnHub” a hub of knowledge, networking, and information

1.4 Modules Overview

1.4.1 SignUp

In this system, user must fill up the registration form for their next steps. After successful registration, they can go for the next steps.

1.4.2 Login

In this system user can login after their right information.

1.4.3 Users

1. User can login
2. User can send friend request to another user. change
3. User can create ,edit post with text and image. text amge
4. User can create Blog post.
5. User can create advertisement post change
6. User can create Job post with job details. change
7. User can Upload Previous question.
8. User can Upload Thesis paper,Project.
9. User can create educational information post.

10. User can like, Comment in others post. change

11. User can bookmark post. change

12. User can books,notes.

1.4.4 Admin

1. Admin Sign in.

2. Admin Can Control All post.

3. Admin Add Notice Post.

4. Admin add Academice post

5. admin can add events
6. admin can add role
admin can assign roles*******
7. admin can add category
8.admin can add subject,department,
9.admin can add

2 Literature Review

The literature review shows that there is a strong body of evidence to support the use of community Building, blogging, enhanced Learning and repository of educational resources. The ”Stamford LearnHub” project is a promising initiative that combines the best of these technologies to create a dynamic and multipurpose academic informational network. The project has the potential to improve student engagement, learning outcomes, and social capital.

2.1 Background Study

The ”Stamford LearnHub” project is a promising initiative that aims to create a more connected and supportive campus community by providing a platform for students to share their thoughts and ideas, collaborate with each other, and connect with their classmates. The project combines the best of community building, blogging, enhanced Learning and repository of educational resources to create a dynamic and multipurpose campus social network.

The landscape of higher education is constantly changing, and students are increasingly using technology to learn and connect with each other. It encourages active participation and offers a space where students can connect, learn from one another, and showcase their academic work. This can contribute to a richer and more interactive educational experience for students within the university community.

The project faces a number of challenges, including securing funding, recruiting and training staff, developing and maintaining the platform, ensuring that the platform is secure and accessible to univarsity student user.However, the potential benefits of the project are significant, including increased student engagement, improved learning outcomes, stronger social capital, easier access to resources, increased opportunities for collaboration, and enhanced skill.

Overall, LearnHub’s primary goal is to promote a collaborative and knowledge-sharing environment for university students.[1]

2.2 Market Analysis

The ”Stamford LearnHub” project is a promising initiative that aims to create a more connected and supportive campus community by providing a platform for students to

share their thoughts and ideas, collaborate with each other, and connect with classmates. The project is to promote a collaborative and knowledge-sharing environment for university students The market size for the project is large and growing, with over 16 million students enrolled in colleges and universities in the United States. The competitive landscape is crowded, but the project is unique in that it combines the best of existing technologies into a single platform. The marketing strategy for the project will focus on promoting the platform to students at the target university or college. The project team will use a variety of marketing channels, including social media, email marketing, and word-of-mouth. The pricing strategy will be premium, with the platform free to use for basic features and users paying for premium features, such as ad-free browsing and access to premium content.

2.3 Necessity of Methodology

Methodology stands as an indispensable cornerstone in the realms of research, problem-solving, and systematic inquiry. Its necessity is manifold and paramount. Firstly, it furnishes a well-defined and structured approach, offering clear guidance on how to proceed, ensuring that the entire process is conducted in an orderly and systematic manner. Without a methodology, there is a risk of chaos, inefficiency, and haphazard decision-making.

Methodology plays a pivotal role in enhancing the validity and reliability of outcomes. It meticulously outlines the procedures, tools, and instruments to be employed, thereby reducing the likelihood of errors, biases, or inconsistency in data collection and analysis. This adherence to a structured process elevates the credibility of the results, essential in scientific research and beyond.

Methodology encapsulates ethical considerations and safeguards, which are of paramount importance. It ensures the protection of the rights, dignity, and well-being of participants or stakeholders. In a world increasingly concerned with ethical principles and responsible practices, a robust methodology is indispensable for maintaining ethical integrity.

2.4 Summary

Online system software are most efficient in all over the world. Last few years statistics says that this sector has good growth rate. So that we concern about the thing and people facilities run the system. It will be helpful and time consuming our daily academic life.

3 Development Tools

In this chapter, we describe the tools that have been built into the project. In this project, we used React,Material-UI,Bootstrap for front-end implementation and integrating with a back-end using Node.js, Express js and a database system MongoDB.

3.1 React js

React JS is an open-source JavaScript library that is used for building user interfaces in a declarative and efficient way. It is a component-based front-end library responsible only for the view layer of an MVC (Model View Controller) architecture. React is used to create modular user interfaces and it promotes the development of reusable UI components that display dynamic data.[2]

3.2 Node js

Node.js (Node) is an open source, cross-platform runtime environment for executing JavaScript code. Node is used extensively for server-side programming, making it possible for developers to use JavaScript for client-side and server-side code without needing to learn an additional language. Node is sometimes referred to as a programming language or software development framework, but neither is true; it is strictly a JavaScript runtime.[3]

3.3 How Does Node js works?

A Node application runs in a single process. Node does not create a new thread for every request, as is often the case with traditional server-side programs. In this way, a Node server can handle thousands of concurrent connections without having to contend with thread concurrency issues or the overhead multithreading brings. Node.js is event-driven and runs asynchronously. Code written for the Node environment does not follow the traditional model of receive, process, send, wait and receive found in other systems. Instead, Node implements an event loop that processes incoming requests as they stack up in the event queue, handling small requests one after the other without waiting for responses

3.4 Material UI change

Material UI is an open-source React component library that implements Google's Material Design. It includes a comprehensive collection of prebuilt components that are ready for use in production right out of the box. Material UI is beautiful by design and features a suite of customization options that make it easy to implement your own custom design system on top of our components.[4]

3.5 Express js change cancle

Express is a minimal and flexible Node.js web application framework that provides a robust set of features for web and mobile applications.

3.6 MongoDB MSSQL server

MongoDB is a document-oriented NoSQL database used for high volume data storage. Instead of using tables and rows as in the traditional relational databases, MongoDB makes use of collections and documents. Documents consist of key-value pairs which are the basic unit of data in MongoDB. Collections contain sets of documents and function which is the equivalent of relational database tables. MongoDB is a database which came into light around the mid-2000s.[5]

3.7 Tools and Technology change this

The development process involves utilizing react and bootstrap frameworks for front-end implementation and integrating with a back-end using Node js Express js and a database system MongoDB. The project employs Material UI to ensure better design and enhanced code quality. Additionally, the use of authentication and authorization mechanisms helps secure user data and interactions.

Software Requirement

Programming Language: React,Material-UI,Bootstrap,Node.js, Express js

Platform: VS Code Microsoft visual studio

Database: MongoDB MSSQL

4 Analysis And Design

4.1 Requirement Analysis

Requirements analysis (requirements engineering) is the process of determining user expectations for a new or modified product. It is usually a team effort and demands a variety of human soft skills, such as critical thinking, communication and judgment.

Requirements analysis is a common and essential concept in software development and software project management. At the start of every software project, the project team must understand, finalize and document the features and functionalities required of the end product. These required features and functionalities are often called functional specifications, and the process of determining and understanding them is called requirements gathering and analysis.

Requirements must be quantifiable, as detailed as possible and relevant to the end product. In addition, they should be clearly documented so the development team has clear expectations and understands required specifications from the beginning.

4.2 System Design

System Design is the process of designing the architecture, components, and interfaces for a system so that it meets the end-user requirements. System Design for tech interviews is something that can't be ignored! Almost every IT giant whether it be Facebook, Amazon, Google, Apple or any other ask various questions based on System Design concepts such as scalability, load-balancing, caching, etc. in the interview. This specifically designed System Design tutorial will help you to learn and master System Design concepts in the most efficient way from basics to advanced level. System design refers to the process of defining the architecture, modules, interfaces, data for a system to satisfy specified requirements. It is a multi-disciplinary field that involves trade-off analysis, balancing conflicting requirements, and making decisions about design choices that will impact the overall system.

4.3 MVC Pattern

The Model-View-Controller (MVC) is an architectural pattern that separates an application into three main logical components: the model, the view, and the controller.

Each of these components are built to handle specific development aspects of an application. MVC is one of the most frequently used industry-standard web development framework to create scalable and extensible projects.

The separate code layers of Model View Controller are:

- Model:It represents the business logic and the data of an Application. It also consists of the business logic - local and remote data source, model classes, repository.

- View:The View component is used for all the UI logic of the application. For example, the Customer view will include all the UI components such as text boxes, dropdowns, etc. that the final user interacts with.

- Controller: Controllers act as an interface between Model and View components to process all the business logic and incoming requests, manipulate data using the Model component and interact with the Views to render the final output. For example, the Customer controller will handle all the interactions and inputs from the Customer View and update the database using the Customer Model. The same controller will be used to view the Customer data.

4.4 Use Case Diagram

A use case diagram is a graphic depiction of the interactions among the elements of a system. A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. In this context, the term "system" refers to something being developed or operated, such as a mail-order product sales and service Website. Use case diagrams are employed in UML (Unified Modeling Language), a standard notation for the modeling of real- world objects and systems.

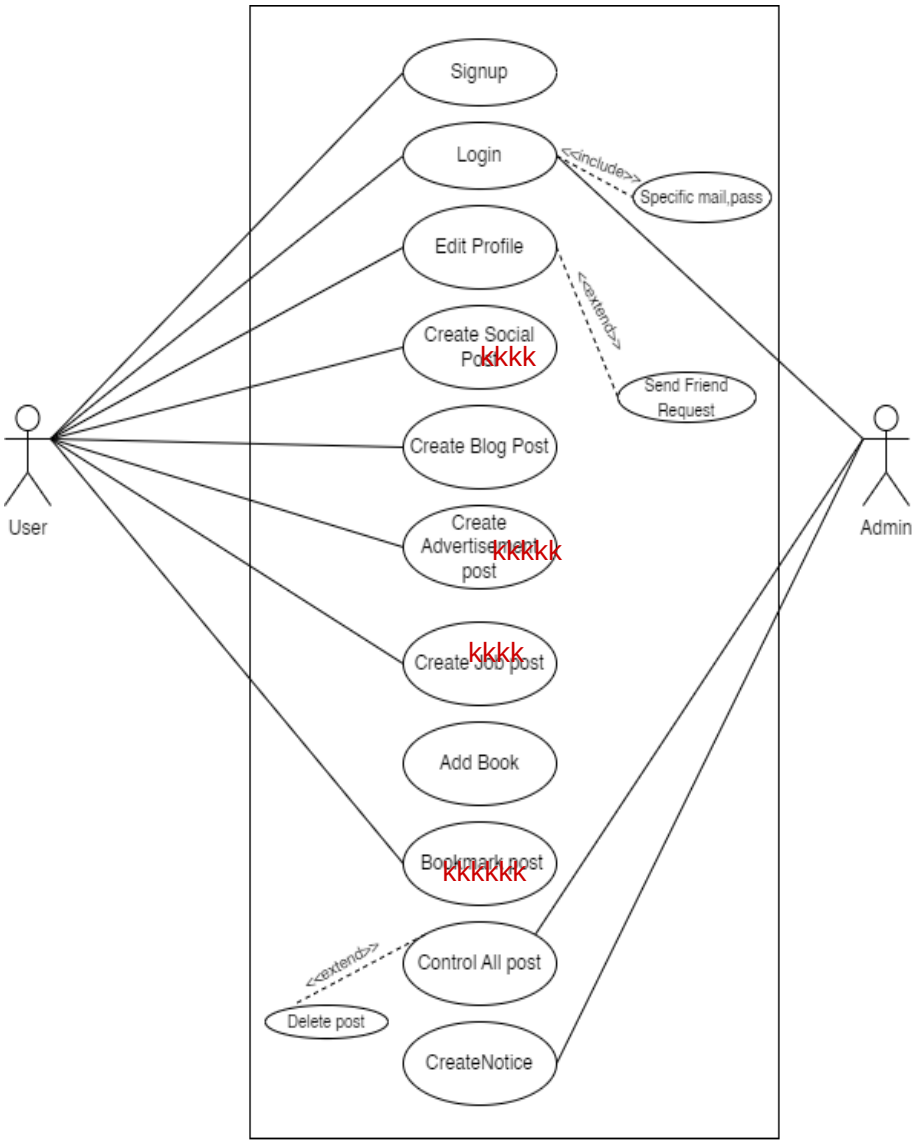

Figure 4.1: Use case diagram

4.5 Flowchart

A flowchart may be a diagram that describes a process or operation. It includes multiple steps, which the method ”flows” through from start to end. Common uses for flowcharts include developing business plans, defining troubleshooting steps, and designing mathematical algorithms. Some flowcharts may only include a couple of steps, while others are often highly complex, containing many possible outcomes. Flowcharts typically use standard symbols to represent different stages or actions within the chart.

For example, each step is shown within a rectangle, while each decision is displayed during a diamond. Arrows are placed between the various symbols to point out the direction the method is flowing. While flowcharts are often created with pen and paper, there are several software programs available that make designing flowcharts especially easy.

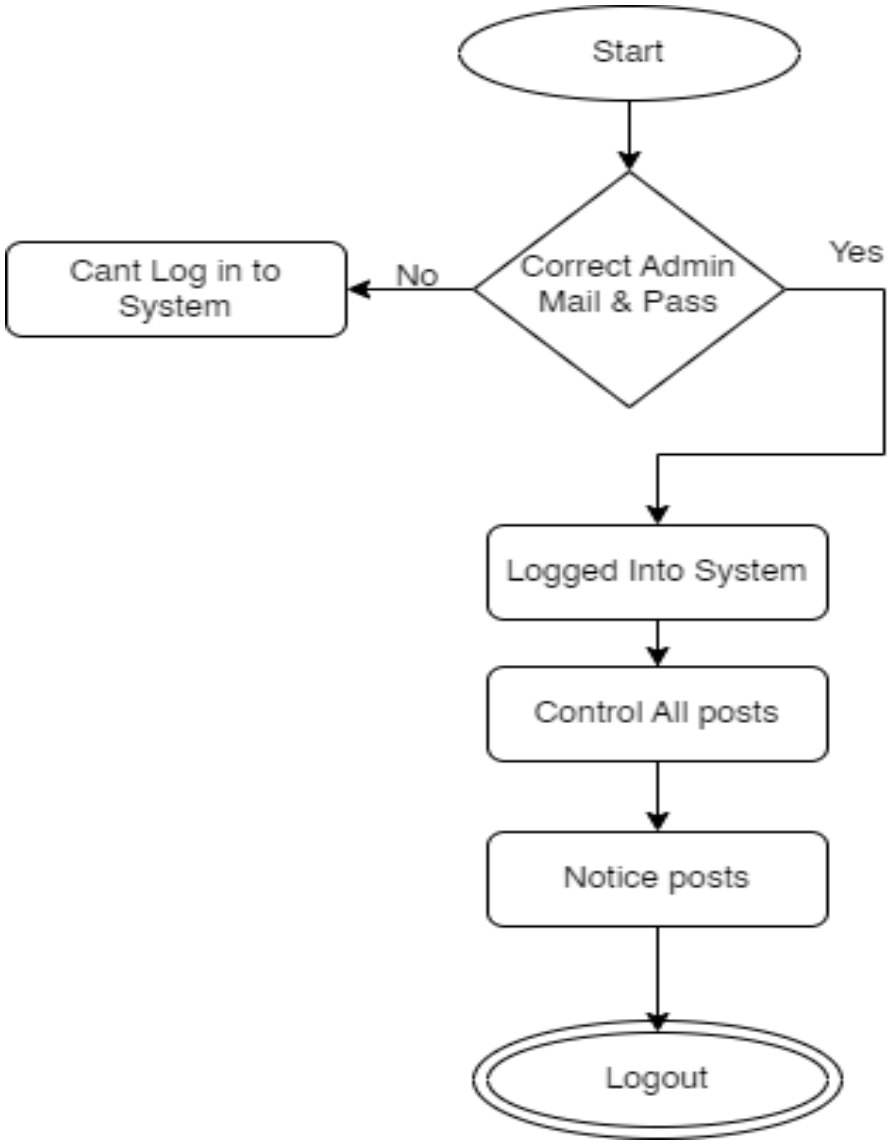

Figure 4.2: Admin Flowchart

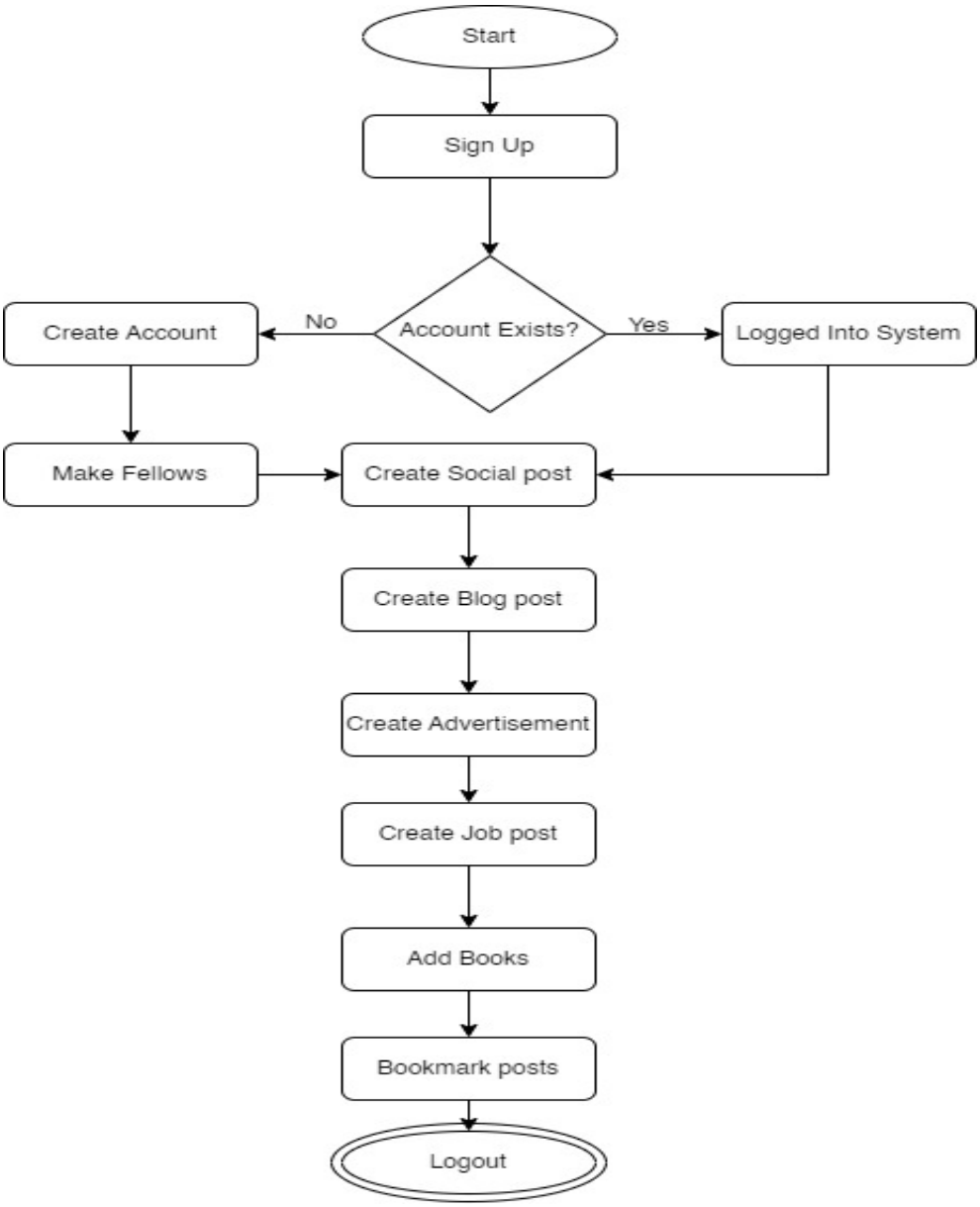

Figure 4.3: User Flowchart

4.6 Data Flow Diagram

A data flow diagram is that the start line of the planning phase that functionally decomposes the wants specification. A DFD consists of a series of bubbles joined by lines.The bubbles represent data transformation and therefore the lines represent data flows within the system. A DFD describes what data flow instead of how they're

processed, so it doesn't hardware, A data-flow diagram (DFD) is a graphical representation of the "flow" of data through a DFDs can also be used for processing (structured design). A data flow diagram (DFD) is a significant modeling technique for analyzing and construct ng information processes. DFD means an illustration that explains the course or movement of data during a process. DFD illustrates this flow of data during a process supported by the inputs and outputs. A DFD is often mentioned as a Process Model. The data flow diagram is a graphical description of a system's data and how to Process transform the data is known as Data Flow Diagram (DFD). Unlike details flow chart, DFDs don't supply detail descriptions of modules that graphically describe a system's data and the way the info interact with the system.

4.6.1 0-level DFD

A Level 0 Data Flow Diagram (DFD) is the highest-level diagram in the DFD hierarchy and provides a broad overview of the system or project. It represents the system as a single process and illustrates the interactions between external entities, major processes, data stores, and the data flows among them. Level 0 DFDs are typically used to capture the most fundamental and abstract view of a system. Here are the primary components you would find in a Level 0 DFD

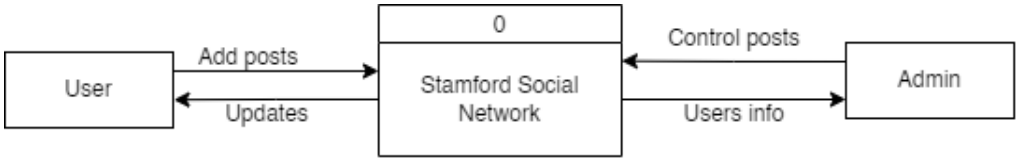

Figure 4.4: DFD Level 0 Diagram

4.6.2 1-level DFD

A Level 1 Data Flow Diagram (DFD) is a visual representation used in systems engineering and software development to illustrate the high-level processes and data flows within a system or a project. It provides a simplified overview of the system, showing major processes and the flow of data between them. Level 1 DFDs are typically used to depict the most fundamental processes and data flows in a system. Here's a breakdown of the key components you might find in a Level 1 DFD.

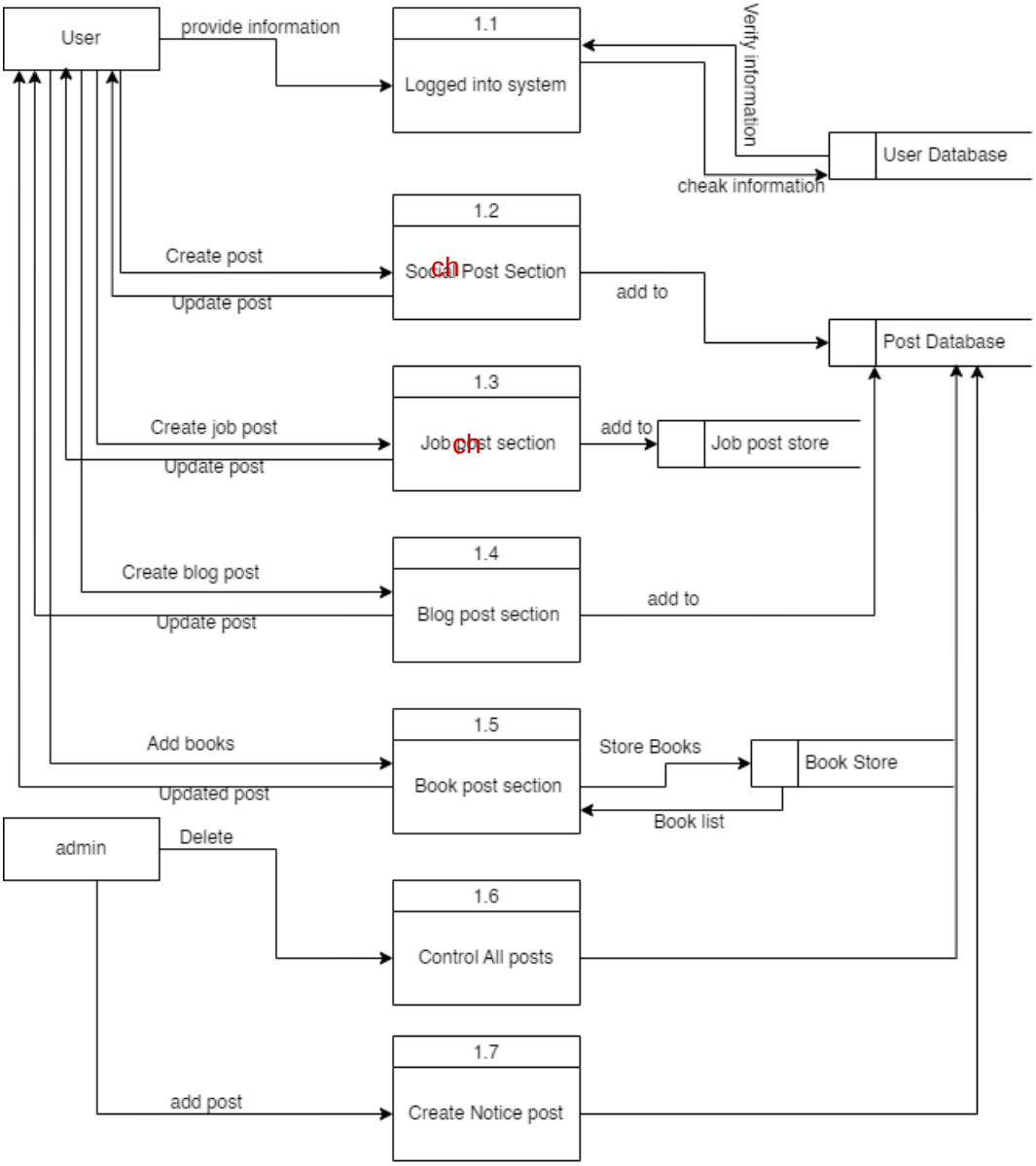

Figure 4.5: DFD Level 1 Diagram

4.7 ER Diagram

An entity-relationship diagram (ERD) is crucial to creating a good database design. It is used as a high-level logical data model, which is useful in developing a conceptual design for databases. An entity is an aerial-world item or concept that exists on its own. Entities are equivalent to database tables in a relational database, with each row of the

table representing an instance of that entity. An attribute of an entity is a particular property that describes the entity. A relationship is an association that describes the interaction between entities. Cardinality, in the context of ERD, is the number of instances of one entity that can or must, be associated with each instance of another entity. In general, there may be one-to-one, one-to- many, or many-to-many relationships.

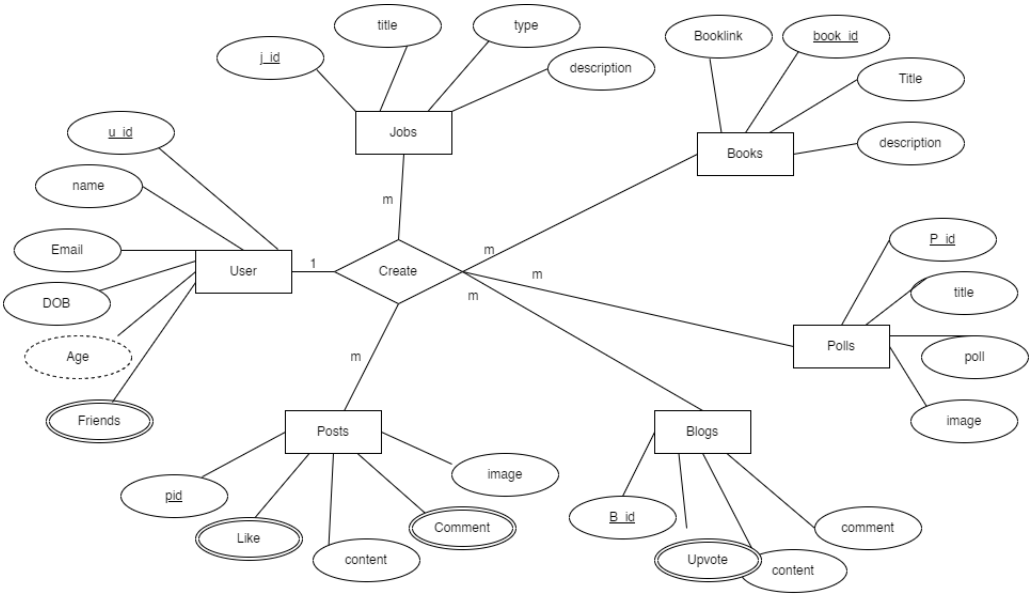

Figure 4.6: ER Diagram

5 System Implementation

In this chapter, we will run the project and test the application. The outcome of testing will be provided to verify the application's ability and quality.

5.1 NewsFeed Page:

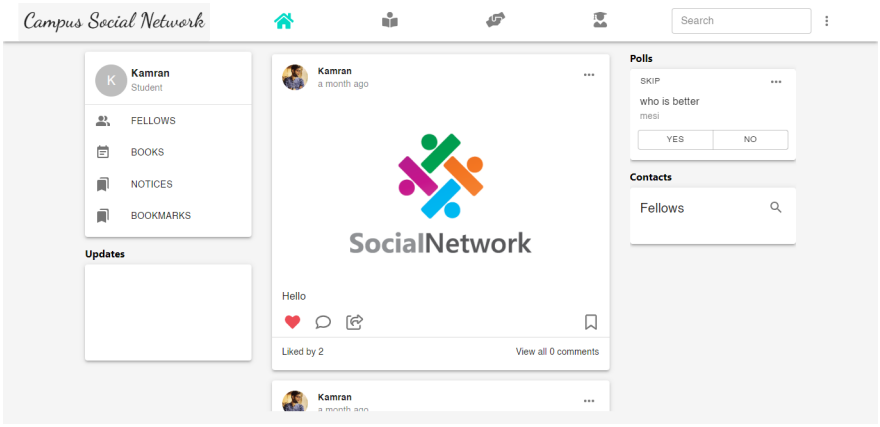

Figure 5.1: NewsFeed

5.2 Profile Page:

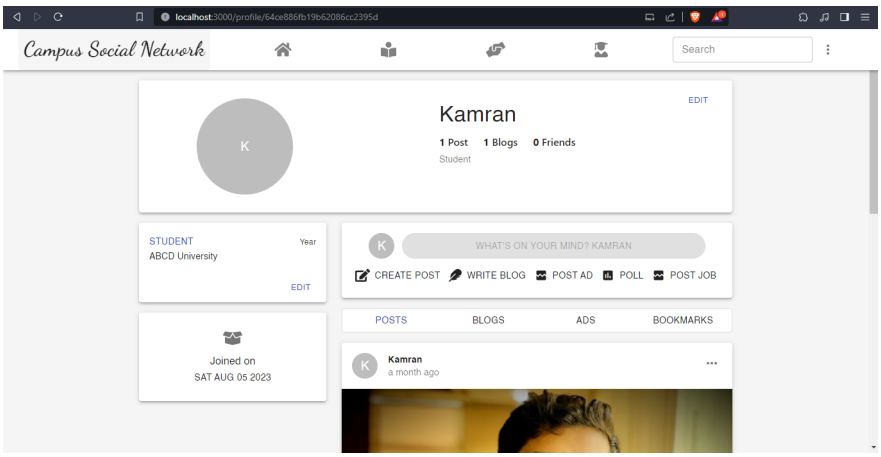

Figure 5.2: Profile Page

5.3 Add Post Page:

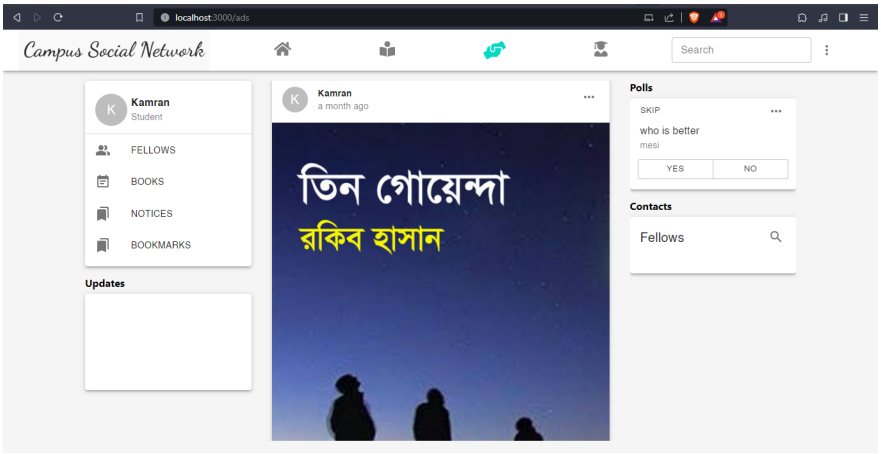

Figure 5.3: Ad Page

5.4 Job Section Page:

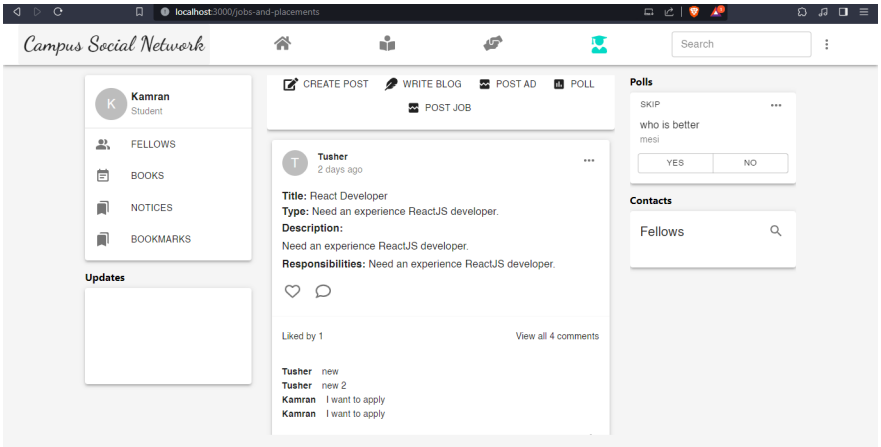

Figure 5.4: Job Section Page

5.5 Bookmarks

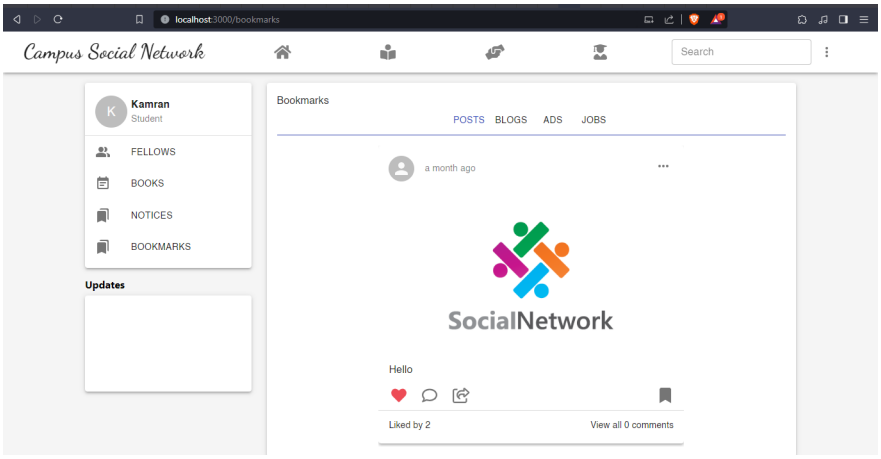

Figure 5.5: User Menu

5.6 Admin Feed :

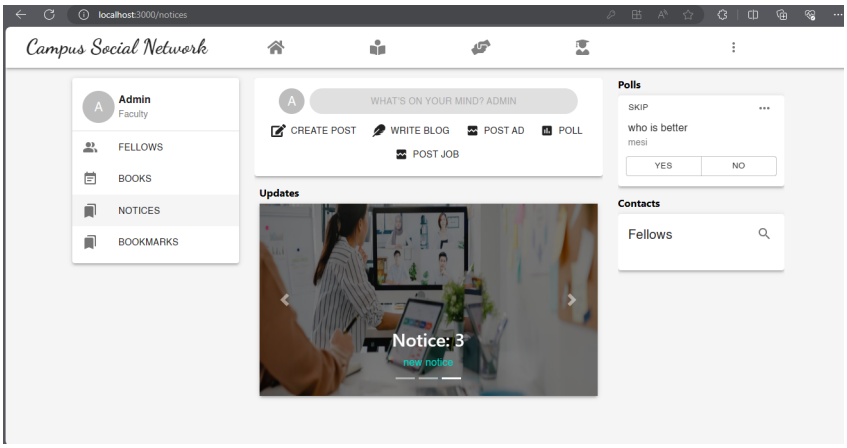

Figure 5.6: Admin Feed

6 Conclusion

LearnHub enables students to create and publish educational posts. These posts can cover a wide range of topics, including research findings, articles, project updates, and other educational content. It encourages students to engage in discussions and share their knowledge with others.

The project has the potential to increase student engagement, improve learning outcomes, and strengthen social capital.The platform encourages collaborative learning and information exchange among students. They can work together on projects, share ideas, and engage in discussions, creating a sense of community within the university. LearnHub serves as a central repository for educational resources, making it easier for students to find relevant materials for their courses and assignments.

When users are required to log in using their university-provided email addresses, it ensures that only individuals associated with the university can access the platform. This verification helps maintain the platform's integrity and relevance for the university community.Requiring university-provided email addresses can deter individuals from creating fake or duplicate accounts on the platform, helping to maintain the authenticity of the user base.

In summary, LearnHub is a versatile online platform that empowers university students by offering department-specific resources, collaborative tools, and a central hub for educational materials and communication. Its advantages include improved collaboration, convenience, access to diverse resources, efficient exam preparation, streamlined communication, and community building, all contributing to an enhanced learning experience.

6.1 Limitations

Limitations of the Stamford LearnHub Project:

1. The project team will need to take steps to ensure that the platform is secure and that user privacy is protected. This includes implementing appropriate security measures, such as data encryption and user authentication, and having a clear privacy policy in place.

2. There are a number of existing social media platforms, blogging platforms, job placement services, and digital libraries that can be used by students, professors,

and staff. The project team will need to find ways to differentiate the ”Stamford LearnHub” platform from these competitors.

6.2 Future Works

There are several areas of potential future work for this system that can be improved.Here are some examples :

1. Expand the platform to include other features: The project team can expand the platform to include other features that are relevant to the needs of the students, professors, and staff at the institution. For example, the platform could be expanded to include a virtual campus map, a directory of student organizations, and a forum for discussion. virtual whiteboard for collaboration problem-solving

2. Develop a mobile app for the platform: The project team can develop a mobile app for the platform to make it more accessible to users. This would allow users to access the platform from their smartphones and tablets, which would be especially helpful for students who are on the go.

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