DIU QUESTION BANK ANDROID APPLICATION

BY

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

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APPROVAL

This Project titled "DIU QUESTION BANK ANDROID APPLICATION", submitted by MD SHIAM SHAH to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 24.01.2024.

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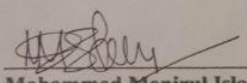

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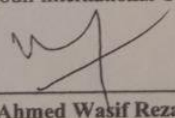

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DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Mr. Abdus Satter, Assistant Professor, Department of CSE** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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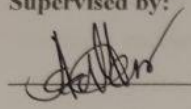

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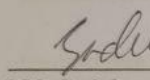

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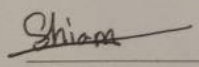

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ABSTRACT

The DIU (Daffodil International University) Question Bank app offers a comprehensive platform for students to enhance their academic preparation and excel in their studies. With a meticulous curation of questions spanning various subjects such as mathematics, physics, chemistry, biology, computer science, literature, history, and more, the app aims to be the ultimate resource for exam success. To harness the full potential of the app, students are required to register by providing essential information such as Name, ID, Email, and password. Upon logging in, students are greeted with a user-friendly interface on the Home page, offering a range of options. These include guidance on app usage, the ability to save important content, information about the app, contact details for support, a page reload option, subscription for updates, and a secure logout feature. The heart of the app lies in the Question Bank section, where students can delve into a vast array of carefully selected questions. Each question is designed to challenge understanding, reinforce key concepts, and thoroughly prepare students for examinations. The Exam Questions subsection further allows students to tailor their practice by selecting the Semester, Department, and Year for which they need questions. Solutions, Hand notes, and slides provide additional support, ensuring a holistic learning experience. The E-Library section serves as a digital repository of books and study materials. Students can filter resources based on Semester, Department, and Year, and a save functionality enables the convenient storage of PDFs and files for future reference. The My Saves feature offers a centralized hub for students to easily locate and access their saved books and questions. In essence, the DIU Question Bank app is more than a repository of questions; it is a tool that recognizes the significance of thorough preparation and views practice as the key to success. Whether students are preparing for semester exams, competitive entrance tests, or simply seeking to expand their knowledge, this app stands as their indispensable companion on the journey to academic excellence. The app's commitment to organization, user-friendliness, and comprehensive content ensures that students can navigate seamlessly, maximizing their preparation efforts and achieving their academic goals.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

Welcome, students, to the DIU (Daffodil International University) Question Bank app—an invaluable companion on your academic journey. Dive into a world of knowledge and preparation crafted exclusively for you. As students, we understand the demands and challenges of academic life. The DIU Question Bank app is not just an app; it's a gateway to success, tailored to meet your unique needs and aspirations. Whether you're aiming to ace semester exams, conquer competitive entrance tests, or simply enhance your understanding of various subjects, this app is designed with you in mind. Registration is your first step towards unlocking the full potential of this resource. Provide your essential details—Name, ID, Email, and set a password to embark on a seamless learning experience. The Home page serves as your command center, offering a range of options at your fingertips. Navigate effortlessly through sections such as "How to Use," providing guidance on maximizing the app's features. "Saves" empowers you to bookmark essential questions, e-books, and files, ensuring quick access when you need it most. Explore details "About" the app's mission and find a direct channel to "Contact" us for any assistance. Refresh your experience with the "Reload Page" option, stay updated by "Subscribing," and seamlessly end your session with "Logout." In the Question Bank section, students can explore a diverse array of questions meticulously organized by subject, including mathematics, physics, chemistry, biology, computer science, literature, and history. Each question is chosen to challenge your understanding, reinforcing key concepts essential for your examinations. Navigate through the Exam Questions section by selecting your Semester, Department, and Year. Uncover additional resources such as Solutions, Hand notes, and slides, providing a comprehensive approach to your studies. Delve into the E-Library section to access a rich collection of digital books and study materials. Filter resources based on your Semester, Department, and Year, and utilize the "Save" functionality to store PDFs and files for future reference. "My Saves" consolidates your saved books and questions in one location, streamlining your review process. The DIU Question Bank app is more than an interface; it's a philosophy. We believe in the power

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of thorough preparation and understand that practice is the key to your success. So, students, as you embark on this academic journey, let the DIU Question Bank app be your trusted companion, guiding you toward excellence and achievement. Happy studying!

1.2 Motivation

In the journey of academic pursuits, students encounter numerous challenges and hurdles that may seem daunting at times. However, it's imperative to recognize that each obstacle is an opportunity for growth and development. As students, you are the architects of your own destinies, shaping your futures with every decision and effort you put forth. The path to success is not always smooth, and there will be moments when the weight of responsibilities feels overwhelming. During these times, remember that challenges are the stepping stones to achievement. Embrace them, for they are the crucibles in which resilience and strength are forged. Education is not merely a destination; it's a continuous journey of discovery and self-improvement. Every lesson learned, every question explored, and every problem solved contributes to your intellectual arsenal. You are not just accumulating knowledge; you are honing your skills to become adept problem solvers, critical thinkers, and contributors to the world around you. In the realm of academia, perseverance is your greatest ally. The late-night study sessions, the revisions, and the moments of uncertainty are the threads that weave the fabric of your success. It's essential to view setbacks not as failures but as temporary roadblocks redirecting you towards a more enlightened path. As students, you possess the incredible power to transform challenges into opportunities. Your curiosity is the compass guiding you through the uncharted territories of learning. Don't be afraid to venture beyond your comfort zones, for it is at the edge of familiarity that true growth occurs. In the pursuit of knowledge, remember that every subject is a universe waiting to be explored. Approach your studies with a sense of wonder and enthusiasm. The more you immerse yourself in the intricacies of your chosen field, the more you will discover the beauty and complexity inherent in every discipline. As you navigate the academic landscape, keep in mind that success is not defined solely by grades or accolades. It is the culmination of your efforts, your passion for learning, and your commitment to continuous improvement. You are not just students; you are architects, explorers, and creators of a future shaped by your dedication and resilience.

So, forge ahead with unwavering determination, embrace the challenges that come your way, and let the pursuit of knowledge be your guiding light. Your journey as students is a remarkable odyssey filled with opportunities for growth, and the destination is a future where your potential knows no bounds.

1.3 Objective

Embarking on your academic journey demands resilience and dedication, students. In the face of challenges, remember that your potential is limitless, waiting to be unearthed through persistent effort and commitment. The path to success may be lined with hurdles, but these are stepping stones to your aspirations. Embrace each trial as an opportunity to grow, for within the crucible of challenges, your strength is forged.

I. Endless Possibilities: Amidst the sea of questions and books lies a treasure trove of knowledge, waiting to be discovered. Each question you tackle and every page you turn is a step toward unlocking the boundless potential within you.
II. Mastery Through Practice: The art of mastering subjects lies not in the passive consumption of information but in the active pursuit of understanding. Practice transforms theory into proficiency, turning the abstract into the attainable.
III. Aim for Excellence: Strive not just for passing grades but for excellence. The journey of academic pursuit is not a sprint but a marathon. It is in your consistent effort, unwavering focus, and the pursuit of excellence that you carve your path to success.

As students, you possess the innate ability to conquer challenges and emerge triumphant. Embrace the learning process, relish the journey, and let your academic endeavors become the catalyst for your personal and intellectual evolution. The road ahead may be challenging, but it is through your unwavering determination that you will navigate it with resilience and emerge victorious.

1.4 Expected Outcome

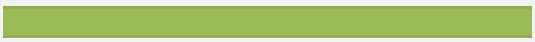
Upon registering and exploring the DIU Question Bank app, students will discover a wealth of curated questions spanning diverse subjects, fostering a robust preparation

for examinations. Navigating through the user-friendly interface, students can easily access and select questions that cater to their specific needs, reinforcing key concepts and challenging their understanding. The organized categorization allows seamless exploration of exam questions, hand notes, slides, and e-library resources. By utilizing the app's functionalities, students can efficiently filter and access relevant materials by selecting their Semester, Department, and Year. The 'Save' feature empowers students to bookmark and revisit important questions, PDFs, and books, creating a personalized repository in the 'My Saves' section for convenient future reference. The app's comprehensive nature ensures that whether preparing for semester exams or competitive entrance tests, students have a go-to tool for enhancing their knowledge base. In essence, the expected outcome for students is an enriched learning experience, where the DIU Question Bank app becomes an indispensable companion in their academic journey, fostering thorough preparation, reinforcing understanding, and ultimately contributing to their success in examinations.

1.5 Project Management and Finance

These sample questions cover various aspects of project management, including project scope, planning, scheduling, risk management, stakeholder management, project methodologies, communication, procurement, and project closure. They are designed to assess students' understanding of key concepts, principles, and best practices in project management. Remember to align the questions with the specific curriculum and syllabus of DIU to ensure relevance to the students' studies. I have not received any external grant to complete the project. So far the project has been completed with my own funds. When I start the project, I divide the work into several parts and complete the project. Many problems and challenges were faced while completing this project. Whenever I faced any problems and challenges, I discussed them with my supervisor and solved the problem successfully.

1.6 Report Layout

Time	Week 1&2	Week 2 3	Week 4&5	Week 6&7	Week 8-10
Task					
Planning					
Documentation of the Project					
Database Design					
Coding Part					
Merge both Frontend and backend					
Final Testing					

CHAPTER 2
BACKGROUND STUDY

2.1 Preliminaries/Terminologies

Preliminaries in project management encompass essential costs crucial for project completion yet not visibly integrated into the final structure. These costs, distinct from those tied to the project's execution schedule, play a pivotal role in ensuring the successful realization of the endeavor. They often include foundational elements such as permits, feasibility studies, safety measures, and administrative overhead. Despite being indirect contributions to the physical build, preliminaries are indispensable for project viability and adherence to regulatory standards. Addressing legal and administrative requirements, securing necessary approvals, and implementing safety protocols constitute integral components of preliminary costs. Acknowledging the significance of preliminaries is paramount, as they lay the groundwork for a project's success, providing the necessary framework and compliance measures that contribute to the overall efficiency and sustainability of the completed endeavor.

2.2 Related Works

The development of the "DIU Question Bank App" involved a meticulous selection of both back-end and front-end technologies, ensuring a seamless and efficient implementation of website functionalities tailored to the academic context. The following technologies were strategically chosen for their compatibility and effectiveness in delivering the desired user experience:

I. Live MCQ: A platform offering Multiple Choice Questions (MCQs) for diverse subjects, catering to students seeking interactive learning and test preparation.
II. All University Question Bank: A comprehensive repository of questions spanning various universities, providing a one-stop resource for exam preparation and academic success.
III. Job Question Bank: Focused on employment exam preparation, this platform offers a curated collection of questions designed to enhance skills and knowledge required for job assessments.

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IV. Medha-BCS Preparation Guide: Tailored specifically for BCS (Bangladesh Civil Service) exam preparation, Medha serves as a comprehensive guide with curated materials and insights for success.

V. Bank Exam Preparation App: Geared towards banking exams, this app offers a specialized set of questions, study materials, and resources to aid individuals preparing for bank-related competitive exams.

These platforms collectively contribute to a diverse ecosystem of educational resources, offering specialized content for different academic and professional pursuits. Whether students are preparing for university exams, job assessments, or specialized exams like BCS, these tools aim to provide valuable support and guidance in their respective domains.

2.3 Comparative Analysis

Live MCQ stands out as an invaluable platform, immersing learners in a dynamic realm of real-time engagement and assessment, spanning a diverse array of topics and subjects[1]. The All University Question Bank, on the other hand, emerges as a towering edifice of knowledge, offering a sweeping panorama of questions that collectively form a sturdy foundation for a comprehensive and holistic academic preparation[2]. Turning the spotlight to the Job Question Bank, this resource carves its niche by delving into the intricacies of employment assessments, meticulously aligning its content with the pragmatic demands of real-world job requirements[3]. Meanwhile, the Medha-BCS Preparation Guide, akin to a precision tool, precisely hones its focus on propelling individuals towards triumph in the intricate realm of BCS exams, ensuring a preparation that is both targeted and bespoke[4]. Not to be outdone, the Bank Exam Preparation App, with its sleek mobile format, not only serves as a beacon for those eyeing the banking sector but also injects an element of flexibility into the learning equation. Each of these resources, akin to distinct gems in a treasure trove, brings forth a unique value proposition. In the grand tapestry of exam preparation, depending on the nuanced aspirations of each learner, a judicious amalgamation of these tools may well unveil a well-rounded approach to conquering the academic frontier. Imagine the synergy of All University Question Bank and Live MCQ, creating

a kaleidoscope of versatility for grappling with general topics, while the Job Question Bank meticulously attends to the specificity of job-centric needs. Specialized exams like BCS and bank examinations find their match in the targeted and finely crafted content of Medha-BCS and the Bank Exam Preparation App[5], respectively.

2.4 Scope of the Problem:

The formidable scope of the undertaking encompasses a meticulous and all-encompassing analysis of the multifaceted challenges intricately woven into the development and implementation tapestry of the DIU (Daffodil International University) Question Bank app. To unravel the complexities and ensure a triumphantly seamless execution, it is imperative to methodically dissect the project into layers of intricate detail and nuance. At the forefront of this analytical odyssey lies the user registration process, a critical juncture demanding scrupulous examination to guarantee a flawlessly orchestrated onboarding experience. The Home page functionalities, akin to the nerve center of user interaction, beckon for a thorough evaluation encompassing navigation guides, subscription mechanisms, and logout options, all orchestrated to orchestrate optimal user engagement and satisfaction.

I. Venturing into the sanctum of the Question Bank section, a stratified dissection is indispensable. Subject categorization, an intricate dance of taxonomy, must be meticulously examined. Question selection mechanisms, akin to the meticulous curation of an intellectual treasure trove, warrant scrutiny. Additional resources, including solutions and hand notes, introduce an added layer of complexity that demands thoughtful consideration and integration.
II. Equally labyrinthine is the E-Library section, a digital repository demanding a nuanced dissection. The filtering mechanisms for educational resources, the functionality of saving materials for future reference, and the overarching accessibility for users comprise a triad of intricacies that necessitate meticulous examination to ensure a user-friendly and resourceful experience.

In the final act of this analytical saga, the My Saves feature takes center stage. This critical component necessitates dedicated attention to ensure not only the efficient and seamless saving of materials but also the judicious and user-friendly retrieval of these

stored gems. Through this systematic and thorough peeling apart of layers, the objective is not merely to scrutinize each component in isolation but to discern the intricate web of functionalities, interdependencies, and overall coherence. The ultimate goal is to weave a tapestry for the DIU Question Bank app that stands as a paragon of robustness, user-centric design, and an unparalleled repository of educational wealth.

2.5 Challenges:

The development and maintenance of the DIU Question Bank app present several challenges that demand considerable effort and ingenuity to overcome. Firstly, ensuring a seamless and secure user registration process demands robust cybersecurity measures to protect sensitive student information. Managing and organizing a vast array of questions, solutions, hand notes, slides, and e-library resources requires a meticulous categorization system to provide users with efficient navigation. Additionally, maintaining an up-to-date question bank with relevant content for various semesters, departments, and years poses an ongoing challenge, demanding a constant effort in content curation. Three pivotal challenges within this scope include:

I. Data Security: Safeguarding user data during registration and ensuring privacy.
II. Content Curation: Continuous efforts to curate and update a diverse range of study materials.
III. User Experience Optimization: Striving to enhance the app's usability for a seamless educational experience.

Addressing these challenges is integral to the success of the DIU Question Bank app, ensuring it remains a reliable and effective tool for students' academic endeavors

CHAPTER 3
REQUIREMENT SPECIFICATION

3.1 Business Process Modeling

Business process modeling and notation (BPMN) is a graphical depiction of business processes in a business process model. BPMN is frequently used for business process planning, execution, documentation, and control. The BPMN model is used to explain the entire process in this application. Here's how it works:

- Start: User registration for app access.
- Locate: Retrieve and display real-time questions.
- Show: Display questions on an intuitive interface.
- Interact: Manage user interface interactions.
- Update: Handle question availability and status.
- Prefer: Accommodate user preferences.
- End: Conclude the user's interaction.

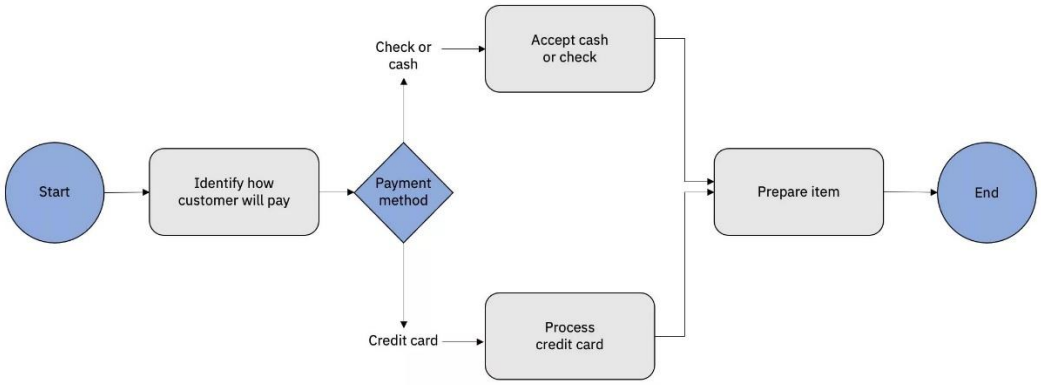

Figure 3.1 Business Process Model

3.2 Requirement Collection and Analysis

I focused on a few requirements for my Android application, such as defining the software requirements, modeling, finding difficulties, constructing a context diagram, and finalizing the requirements.

Functional Requirements:

Table 3.2.1: User Management Functional Requirements.

Requirement Category	Requirement Function	Requirement Description
User Interaction	Register	User must register to use this application.
	Login	User needs to login to get the documents from the application
	Logout	User can easily logout from the application after getting desire service.

Table 3.2.2: Admin Management Functional Requirements

Requirement Category	Requirement Function	Requirement Description
Admin Management	Log In	Admin needs to login into the application.
	Perform Update	Admin has the access to add, delete and update questions, solutions, hand notes, slides.
	Monitoring	Admin can monitor the whole system within this application

Non-Functional Requirements:

Performance:

- The app shall load within 3 seconds to ensure a seamless user experience.
- It should support concurrent user sessions, accommodating at least 1000 users simultaneously.

Security:

- User data, including registration details and saved content, shall be encrypted using industry-standard protocols.
- The app will implement secure authentication mechanisms, such as two-factor authentication, to protect user accounts.

Reliability:

- The system should have an uptime of 99.9%, minimizing disruptions during critical study periods.
- Regular automated backups will be performed to ensure data recovery in case of system failures.

Data Integrity:

- All user-generated content, including saved files and questions, should be stored without data corruption.
- The app will employ checksums and data validation mechanisms to maintain data integrity.

Scalability:

- The system must scale effortlessly to accommodate an increasing user base without compromising performance.
- It should support future updates and expansions to include additional subjects and resources.

Usability:

- The user interface shall be intuitive and accessible, catering to users with diverse technological proficiencies.
- The app should provide clear instructions on how to use features and navigate through the content.

Compatibility:

- The app will be compatible with popular browsers (Chrome, Firefox, Safari) and mobile devices (iOS, Android) for a versatile user experience.
- It should adhere to accessibility standards to cater to users with disabilities.

Maintainability:

- The system architecture and codebase will be well-documented to facilitate future updates and maintenance.
- Regular code reviews and optimization processes will be in place to ensure sustainable performance.

Regulatory Compliance:

- The app shall comply with relevant data protection regulations, ensuring the privacy and confidentiality of user information.

- Accessibility standards, such as WCAG, will be followed to meet legal and ethical guidelines.

These non-functional requirements collectively aim to enhance the overall performance, security, and usability of the DIU Question Bank App, ensuring a reliable and efficient study tool for students.

3.3 Use Case Modeling and Description

The use case model for the "DIU Question Bank App" provides a comprehensive overview of user interactions and system functionalities, illustrating the key objectives and actions required to fulfill them. Serving as a roadmap for design, this model ensures a user-centric approach, addressing a range of user scenarios and pathways within the app. By incorporating this use case model, the "DIU Question Bank App" is designed to efficiently solve academic challenges, catering to the needs of students and learners. The system not only facilitates exam preparation but also offers a user-friendly experience, enhancing overall satisfaction. This approach results in a versatile app that accommodates various study preferences and requirements, making it an invaluable tool for academic success within the Daffodil International University community.

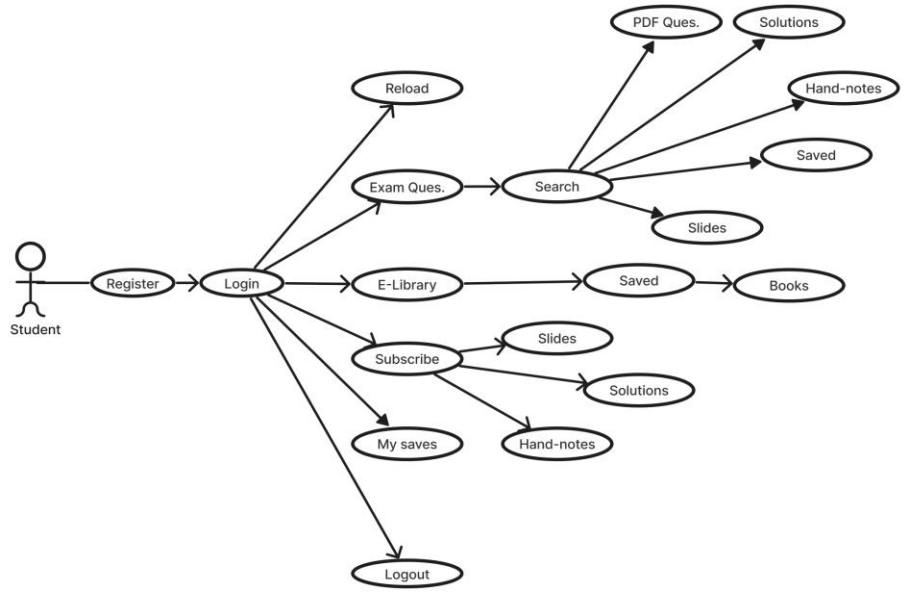

Figure: 3.3 Use Case Diagram for Student

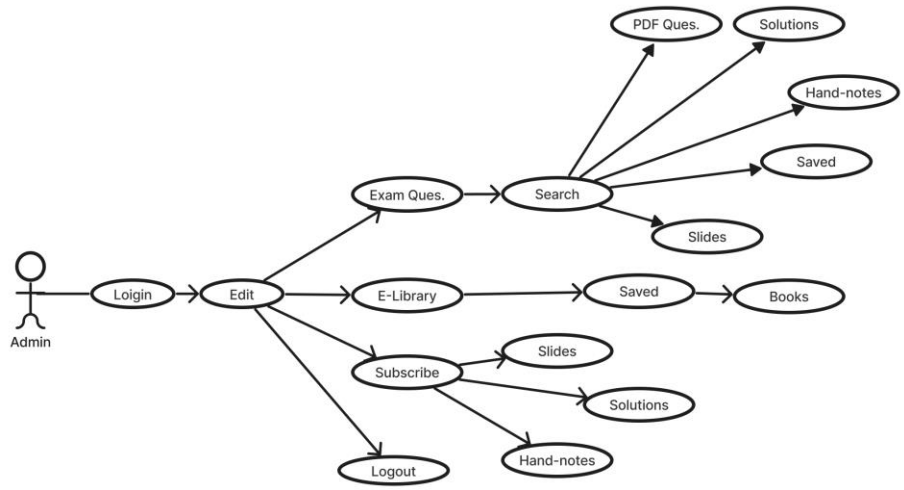

Figure: 3.4 Use Case Diagram for Admin

3.4 Design Requirement

DIU Question Bank App	Description
Home Page	The home page will serve as the central hub, featuring sections such as "How to Use," "Saves," "About," "Contact Us," "Reload Page," "Subscribe," and "Logout" for a seamless user experience. The design will prioritize simplicity, intuitiveness, and easy navigation.
User Registration	Users will be required to register with their Name, ID, Email, and set a secure password to access the full functionality of the app. Registration information will be securely stored, adhering to privacy and data protection standards.
Question Bank Section	Questions will be categorized by subjects, including mathematics, physics, chemistry, biology, computer science, literature, and history. Users will be able to select the Semester, Department, and Year to access relevant exam questions. Additional resources like Solutions, Hand notes, and slides will be available for comprehensive preparation.
E-Library Section	The E-Library will host digital resources, including books and study materials. Users can filter content based on Semester, Department, and Year. A "Save" functionality will allow users to store PDFs and files for future reference.
My Saves	A dedicated section where users can easily access and manage their saved books and questions.
Contact Us	A direct communication channel for users to reach out to website administrators or consultants for inquiries, support, or feedback throughout the knowledge exchange process. Ensures seamless communication between farmers and relevant stakeholders, fostering collaboration and community engagement.

3.5 Activity Diagram

The DIU (Daffodil International University) Question Bank app streamlines exam preparation with a user-friendly interface. After a simple registration process, students gain access to a diverse array of meticulously curated questions spanning subjects like mathematics, physics, and literature. The app offers a dedicated Exam Questions section where students can select their Semester, Department, and Year, supplemented by Solutions, Hand notes, and slides. The E-Library section provides a digital repository of books and study materials, allowing students to save PDFs for future reference. The My Saves feature centralizes saved content for convenient review. Home options include guides, contact details, and a logout feature. With a focus on comprehensive

preparation and the belief that practice is key to success, the DIU Question Bank app is the ultimate tool for academic excellence.

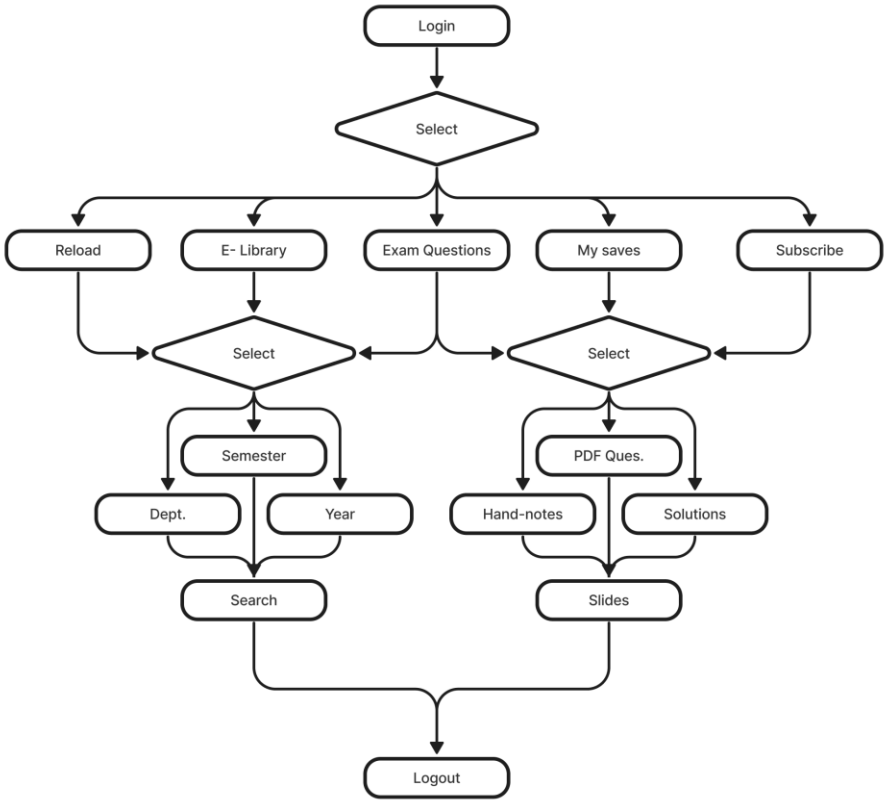

Figure: 3.5 Activity Diagram of DIU Question Bank

3.6 Flow Chart

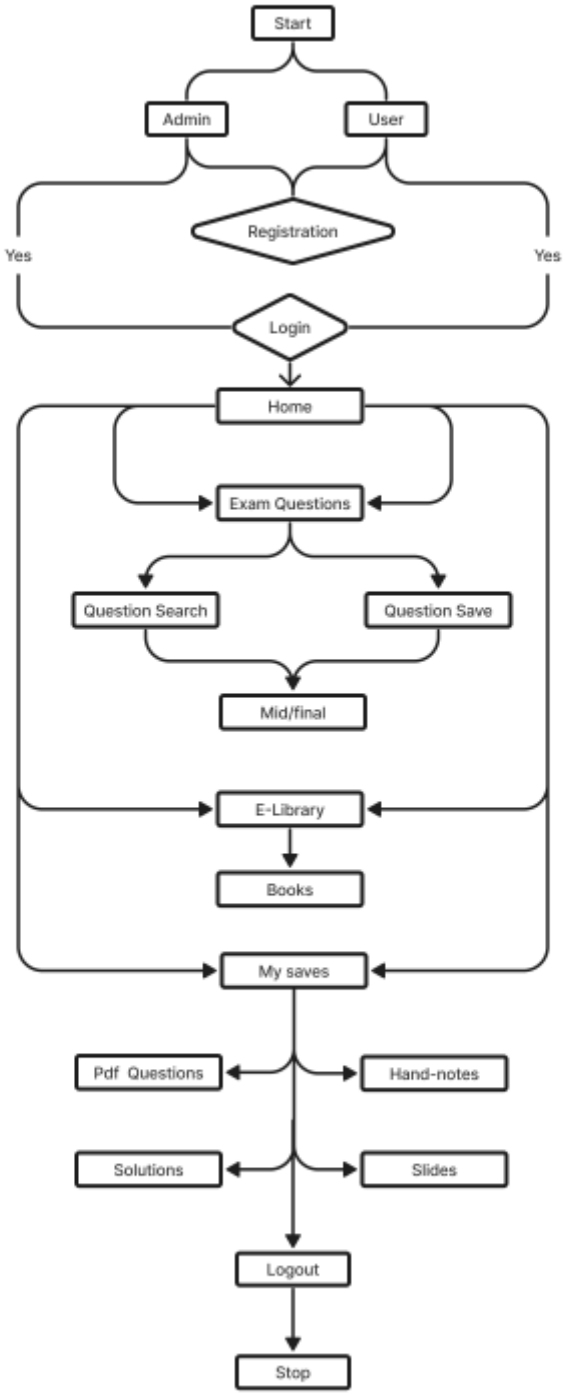

Figure 3.6 Flow Chart

3.7 UML Diagram

In crafting the DIU (Daffodil International University) Question Bank system, UML diagrams play a pivotal role in visually depicting its structure, behavior, and interactions. Commonly employed diagrams like class diagrams establish data architecture, while use case diagrams provide a user-centric view of functionalities. Sequence diagrams detail dynamic interactions, and activity diagrams model workflow processes. If needed, deployment diagrams showcase the system's physical setup, and state machine diagrams capture behavioral aspects. These visual representations are essential for understanding and communicating the DIU Question Bank system's design, ensuring a streamlined and effective educational tool for students.

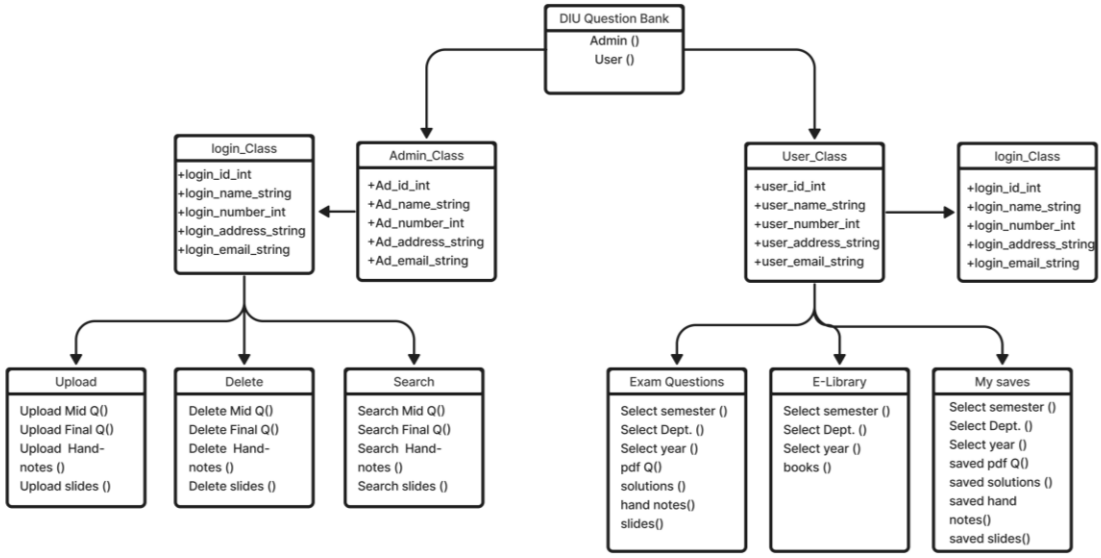

Figure 3.7 UML Diagram

CHAPTER 4
DESIGN SPECIFICATION

4.1 Front-End Design

Figure 4.1 Splash Page.

In Figure 4.1- the Splash Page serves as the app's welcoming home screen, employing an aesthetically designed splash skin. During the initial loading period, users are presented with the app's logo, creating a visually engaging experience that persists until the designated time elapses, seamlessly guiding them to the main home page.

Login:

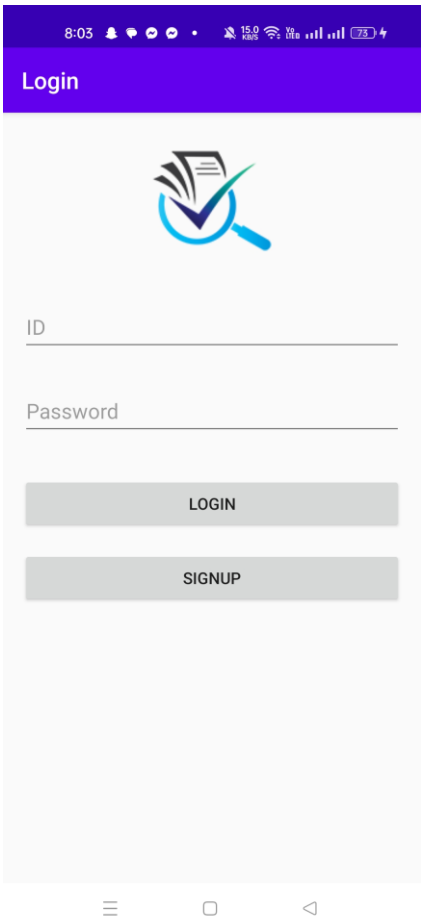

Figure 4.2 Login page

In Figure 4.2 - Login Page the DIU Question Bank app's login page provides a secure gateway for students to access its rich academic resources. With a streamlined interface, users can effortlessly enter their credentials, including ID and password, ensuring a seamless and protected login experience. Once logged in, students gain instant access to a diverse array of meticulously curated questions and e-library materials to enhance their exam preparation and academic success.

Home page:

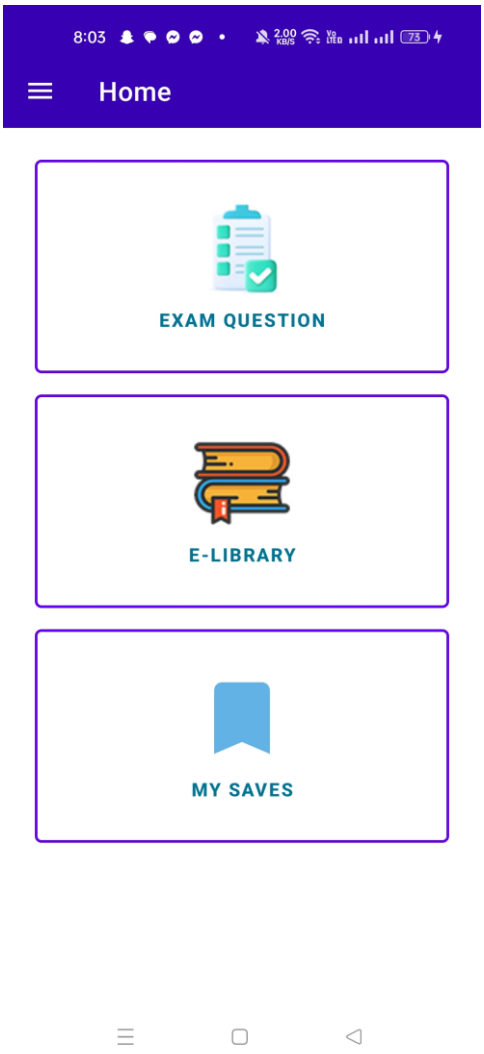

Figure 4.3 Home page

In Figure: 4.3 Home page - The DIU Question Bank app's home page serves as a gateway to a wealth of academic resources. Students are welcomed with a user-friendly interface, offering options to explore a curated collection of questions spanning diverse subjects, access an e-library with digital resources, and utilize features such as saving essential files and subscribing for updates. The organized categorization ensures easy navigation, making the home page a central hub for streamlined exam preparation and knowledge enhancement.

Specification of services:

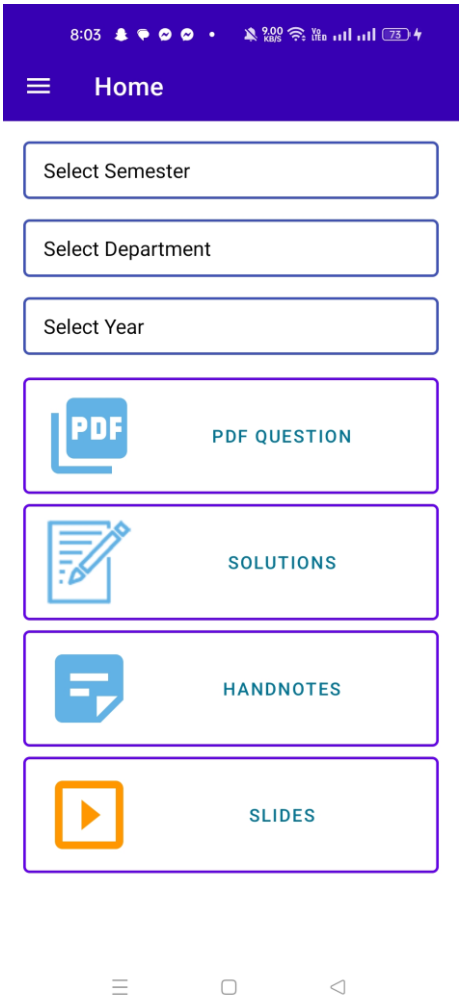

Figure 4.4 Specification of services

Within Figure 4.4 - The DIU Question Bank app offers a seamless registration process, enabling students to access a diverse range of exam questions and an extensive e-library. With a user-friendly interface, the app allows users to save and organize their preferred materials, providing a tailored and efficient study experience. The Specification of services includes a comprehensive array of subjects, intuitive navigation, and a centralized "My Saves" feature for personalized and convenient exam preparation.

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User Authentication Page:

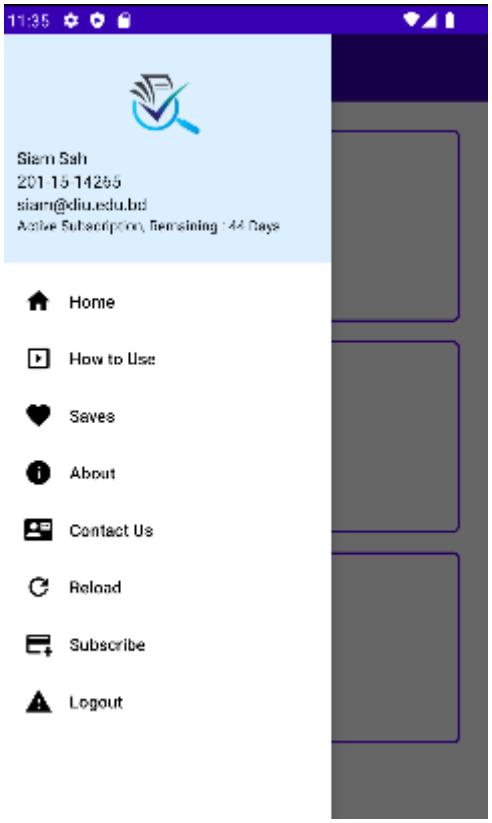

Figure 4.5 User Authentication Page

In Figure 4.6 the User Authentication Page serves as the gateway to the DIU Question Bank app, ensuring a secure and personalized experience. Students initiate their journey by registering with essential details, including Name, ID, Email, and password. This authentication process not only safeguards user accounts but also establishes the foundation for accessing the rich academic resources within the app.

4.2 Back-End

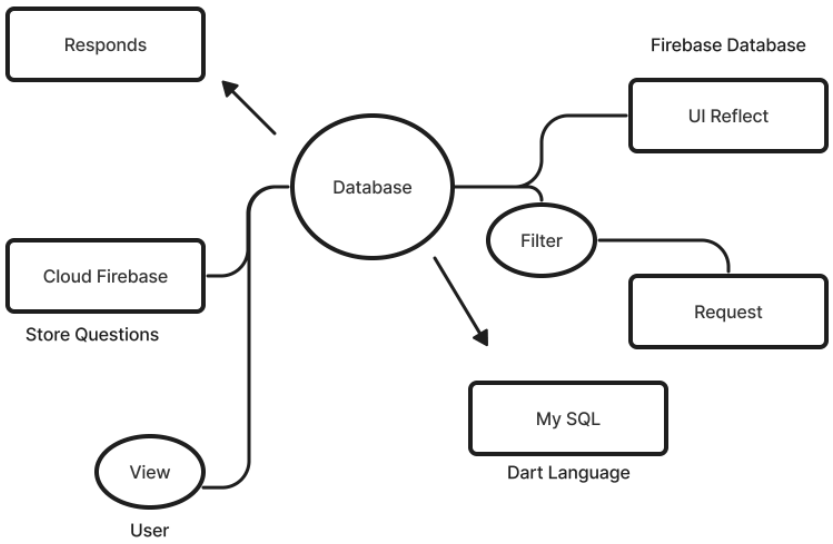

Figure 4.6 QB Architecture

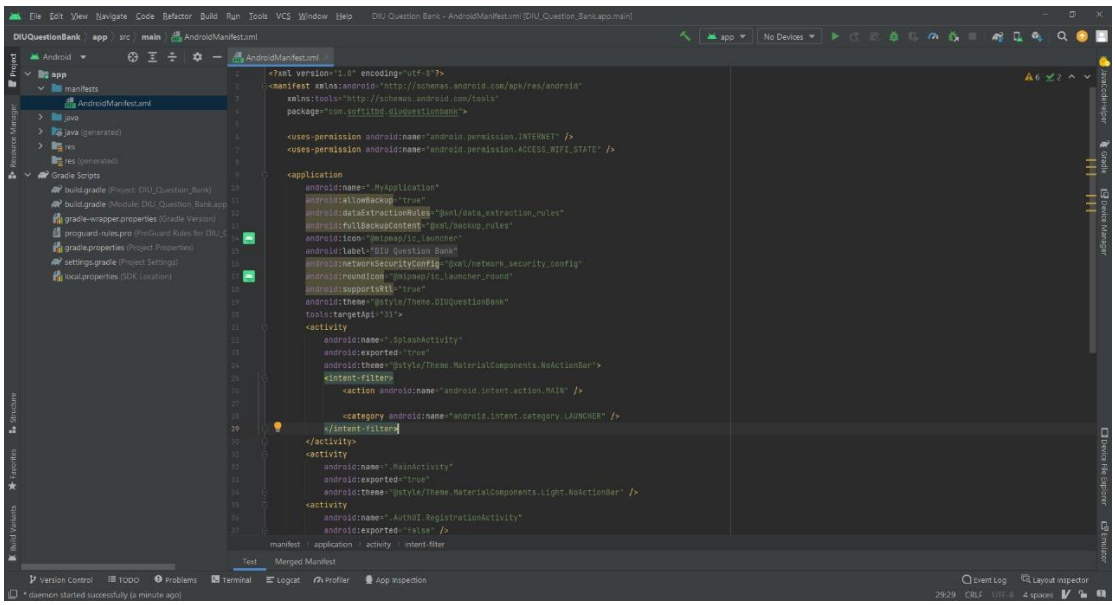

Figure 4.7 Arduino Manifest

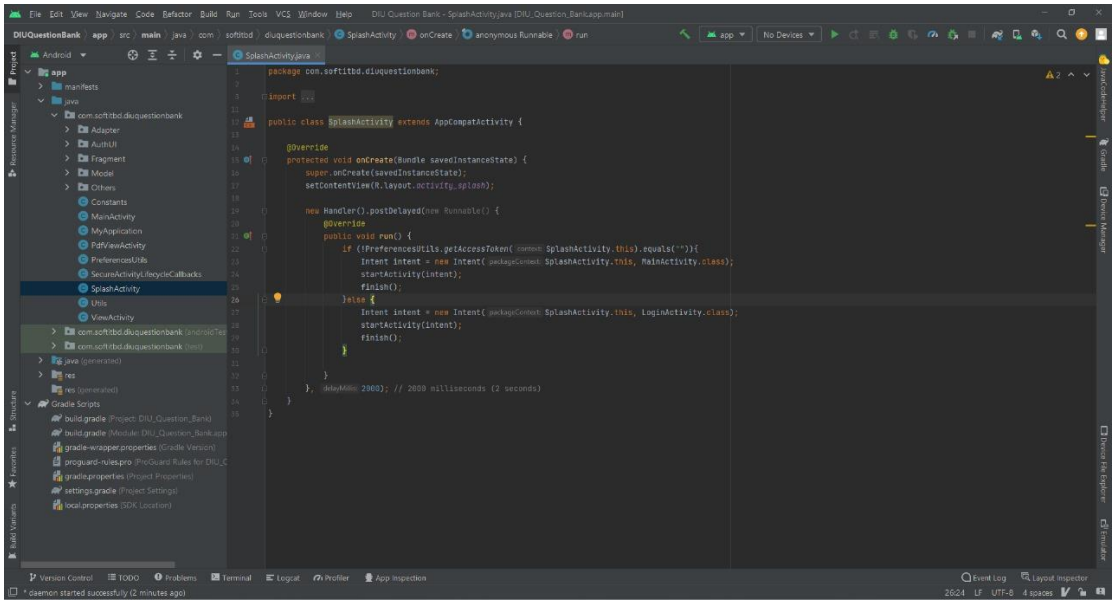

Figure 4.8: Splash Activity

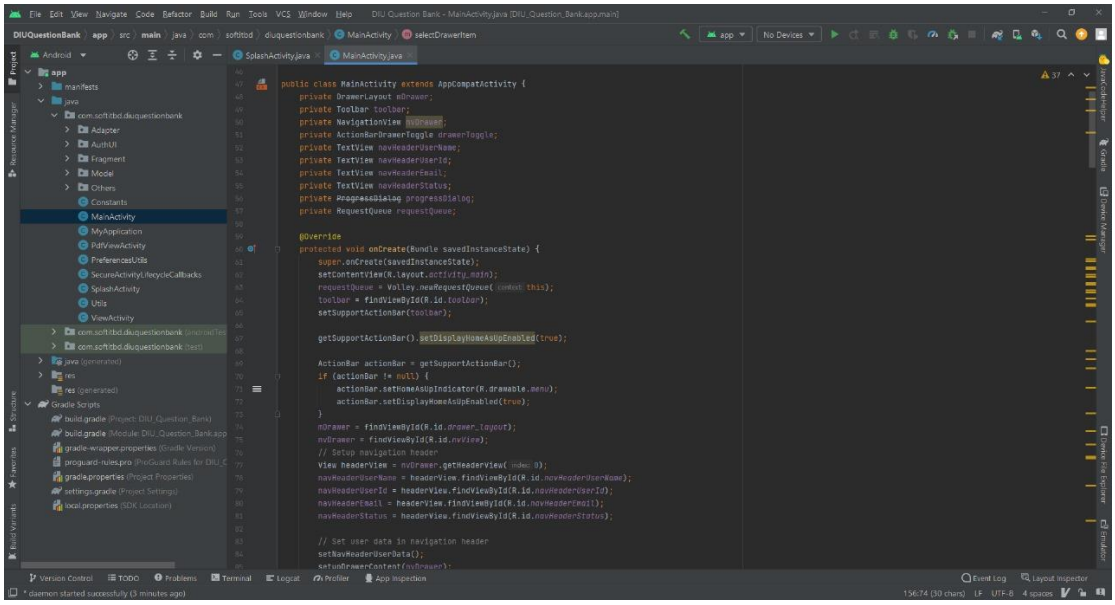

Figure 4.9 Main Activity

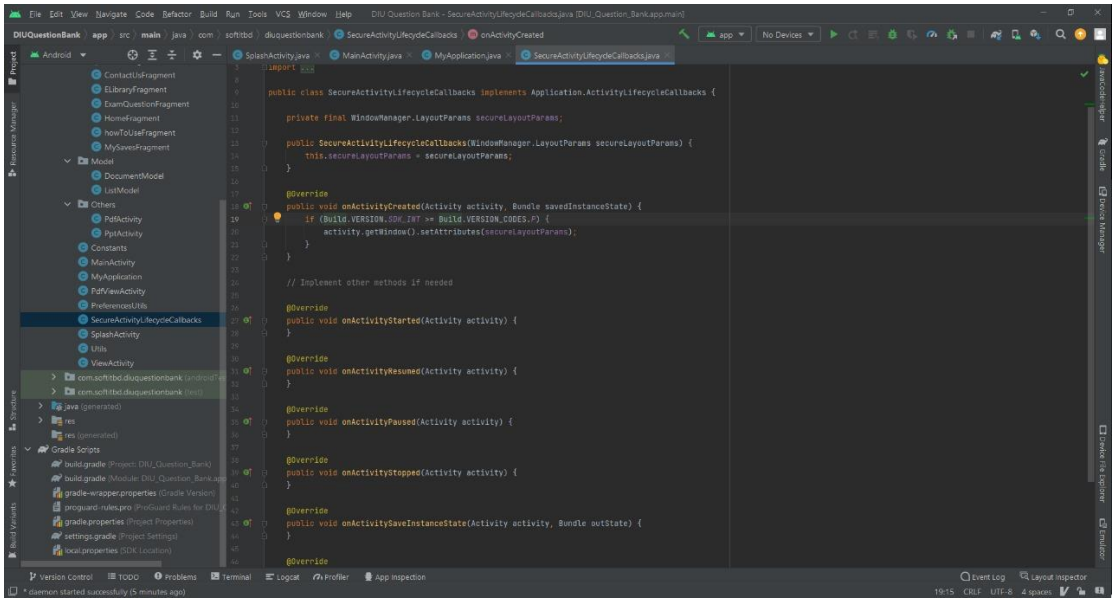

Figure 4.10: Security Activity

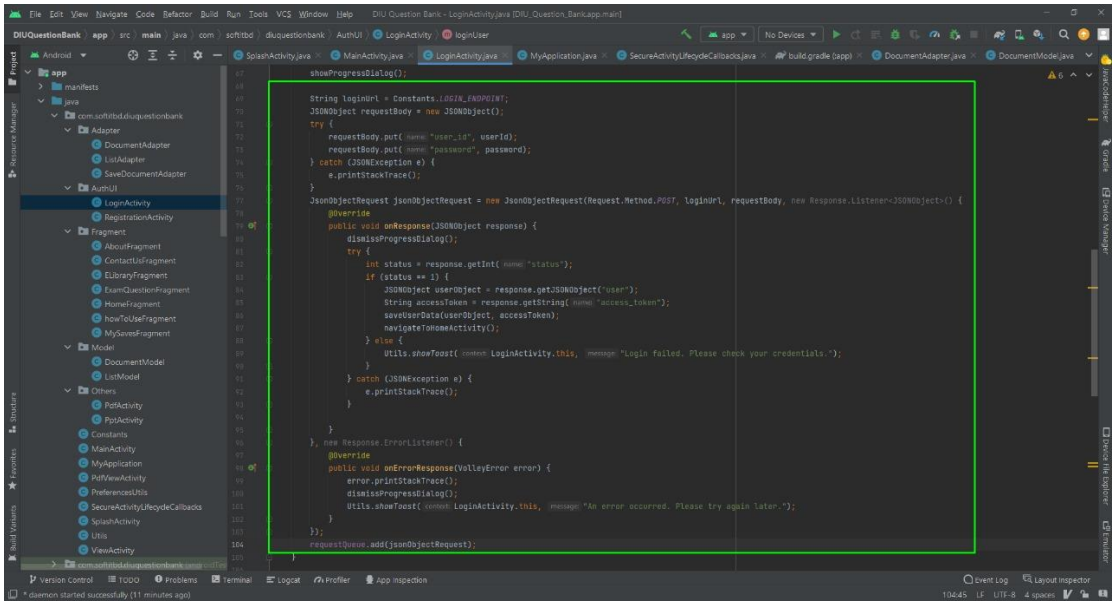

Figure 4.11 Login Activity

4.3 Interaction Design and User Experience (UX)

The interaction design and user experience (UX) of the DIU (Daffodil International University) Question Bank app are meticulously crafted to provide students with a seamless and intuitive learning journey. The registration process is designed to be straightforward, requiring essential information for a quick and hassle-free sign-up. Upon logging in, the home page welcomes users with a clean and organized layout, offering clear navigation to essential features. The "How to Use" guide ensures that students can effortlessly familiarize themselves with the app's functionalities, making it accessible to users of all technical backgrounds. The "Saves" feature empowers students to bookmark and revisit important questions, books, or files at their convenience, promoting a personalized and efficient study experience.

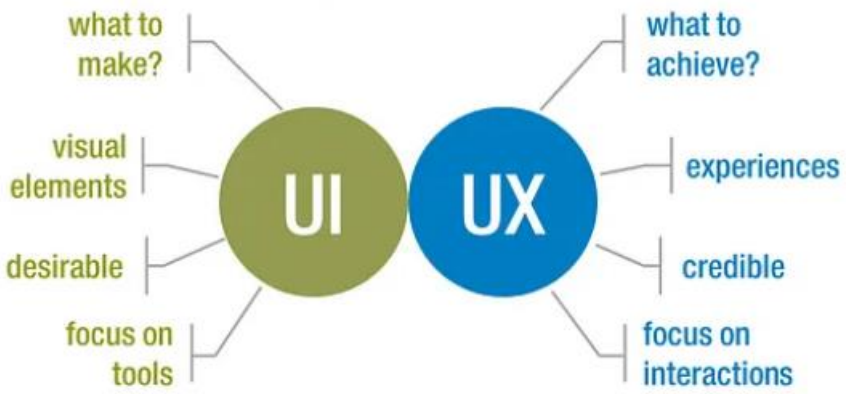

Figure 4.12 Interaction Design and User Experience (UX)

The categorization of questions by subject, along with the ability to filter resources in the Exam Questions and E-Library sections by semester, department, and year, reflects a user-centric approach, tailoring content to individual needs. The "My Saves" section serves as a centralized hub for users to retrieve their saved materials, promoting organization and ease of access. The overall user interface is designed to be user-friendly, allowing students to navigate through the app seamlessly, emphasizing a positive and productive user experience. The app's core philosophy, emphasizing the significance of thorough preparation and practice, is embedded in every aspect of the interaction design, ensuring that students feel empowered and supported in their academic journey.

4.4 Implementation Requirements

Successfully Implemented Features in DIU Question Bank App:

I. User Registration, Login, Logout: Users can register with their Name, ID, Email, and password. Secure authentication for user login and logout.
II. Provider Login, Logout: Authentication for providers to log in and log out securely.
III. Admin Login, Update, Monitor, and Logout: Admin functionalities include login, updating app content, monitoring user activity, and secure logout.
IV. User-Friendly Interface: The app features an intuitive and organized interface for easy navigation.
V. Question Bank Section: Categorized questions covering various subjects for academic preparation. Options to filter questions based on Semester, Department, and Year.
VI. E-Library Section: Digital library with books and study materials. Filters for content based on Semester, Department, and Year.
VII. My Saves: Users can save and easily access their selected books and questions.
VIII. Security Measures: Implementation of Firebase authentication to ensure user data security.
IX. Notification Subscription: Option for users to subscribe for updates and notifications.
X. Continuous Improvement: App designed with scalability in mind for future updates and enhancements.

By adapting the successful features from the original application and aligning them with the objectives of the DIU Question Bank app, you can create a robust platform for academic preparation without the bus and location-related elements.

CHAPTER 5
IMPLEMENTATION AND TESTING

5.1 Implementation of Database

The DIU Question Bank app relies on the MySQL open-source database management system for storing and managing all uploaded questions. MySQL's open-source nature allows for free utilization, modification, and distribution, contributing to its widespread popularity. The database stores a vast array of questions meticulously curated for academic preparation. With a large and active community of users, developers, and contributors, MySQL ensures robust support and continuous improvement. Admin login credentials are securely configured, providing specific access to the database for monitoring and updating app content. The app's seamless integration with MySQL enhances data management, ensuring a reliable and scalable foundation for the DIU Question Bank platform.

5.2 Implementation of Front-end Design

The front-end design of the DIU Question Bank app is built upon a foundation of HTML and CSS technologies. The Manage Categories feature is designed to allow users to perform actions such as creating, editing, and deleting categories. The flowchart outlines steps for displaying existing categories, enabling users to select a category for modification, and executing the requested action. Error handling is integrated with decision points and actions to manage potential errors during processes like authentication, ensuring a smooth user experience. Looping and branching constructs are implemented for tasks involving repetition or decision points. For example, if a user wishes to search for additional questions after viewing initial results, the flowchart incorporates a loop back to the search step. Flow control is represented by arrows, indicating the sequential flow between steps and decision points. The flowchart concludes with a "Stop" symbol, signifying the completion of the process or system. This visual representation facilitates a clear understanding of the DIU Question Bank app's logical flow, interactions, and functionality. The use of HTML and CSS technologies ensures a user-friendly and responsive front-end design, contributing to an intuitive and efficient user experience.

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5.3 Implementation of Back-end Design

Below are the technologies that we have used for the back-end design of our system. Question Management: The back end should provide functionality to manage questions, including creating, editing, and deleting questions. This involves implementing CRUD (Create, Read, Update, Delete) operations on the question data stored in the database. The back end should also handle the organization and categorization of questions to make it easier to retrieve and present them to users. User Management: A question bank system typically includes user management features to handle user accounts, authentication, and authorization. The back end should provide the necessary APIs or services to register new users, authenticate them, and manage their permissions and roles. This ensures that only authorized users can access and modify the question bank.

I. MySQL
II. Java (Android)
III. Php (Web Admin)

CHAPTER 6
IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY

6.1 Impact on Society

The DIU (Daffodil International University) Question Bank app stands as a catalyst for positive societal impact through its multifaceted contributions to education. By offering a centralized repository of meticulously curated questions and e-library resources, the app transcends geographical and socio-economic barriers, fostering enhanced educational access for students across diverse backgrounds. Its user-friendly interface not only empowers users with technological literacy but also encourages collaborative learning within a supportive community. Moreover, the app's emphasis on challenging questions and comprehensive study materials contributes to academic excellence, bridging educational disparities and instilling a culture of lifelong learning. As students engage with the platform, they not only prepare more effectively for exams but also cultivate critical thinking skills. The app's provision of open communication channels ensures a responsive and evolving educational tool, while its virtual community-building aspects extend the sense of academic belonging beyond physical campus boundaries. In essence, the DIU Question Bank app emerges as a transformative force, positively influencing the educational landscape and contributing to the holistic development of individuals within society.

6.2 Impact on Environment

Shifting to a digital question bank at DIU offers several straightforward environmental benefits. First, it cuts down on paper usage by eliminating the need for printing and distributing paper-based questionnaires. This move not only saves trees but also lessens the environmental impact linked to paper production, like deforestation and water usage. The digital platform, while requiring energy for servers, is still notably more energy-efficient than traditional paper-based systems. DIU can further enhance this efficiency by using energy-efficient servers, optimizing code, and choosing eco-friendly data centers. Moreover, going digital reduces waste generation by doing away with paper questionnaires and answer sheets, typical culprits of substantial waste in traditional assessments. The lower carbon footprint of digital platforms is another plus,

minimizing emissions associated with paper transportation, production, and disposal. Sustainable infrastructure practices, like using energy-efficient servers and cloud services prioritizing renewable energy, can be part of DIU's approach. Additionally, the digital platform encourages virtual collaboration and communication, reducing the need for physical meetings and cutting down on travel-related emissions. Embracing online platforms for collaboration aligns with DIU's commitment to minimizing its environmental impact. In essence, the shift to a digital question bank not only streamlines academic processes but also aligns with sustainable practices for a greener future.

6.3 Ethical Aspects

Protecting the privacy of students and faculty is a top priority in the DIU Question Bank. Stringent measures are in place to safeguard personal information and comply with data protection laws. Users' consent is sought for the collection, use, and storage of their data. Robust security measures are implemented to prevent unauthorized access and maintain the confidentiality of sensitive information, including exam questions and answer keys. To uphold academic integrity, a culture against cheating, plagiarism, and unauthorized sharing is fostered. Clear policies are communicated, and access controls are in place to prevent misuse. Users have control over their data, with options to manage privacy settings, opt-out, and request data removal. Data collected from the question bank is used ethically and responsibly. Analytics and insights aim to improve the system and enhance learning outcomes while preserving the anonymity and confidentiality of users. Adequate support and training are provided to ensure users understand ethical guidelines and responsible usage. Education on rights, responsibilities, and ethical considerations associated with the system is shared with students, faculty, and administrators to promote responsible and ethical use of the DIU Question Bank.

6.4 Sustainability Plan

To enhance energy efficiency in the DIU Question Bank, the platform and infrastructure are optimized for minimal energy consumption. This involves utilizing energy-efficient servers and data centers, incorporating measures like server consolidation, virtualization, and power management techniques. Exploring cloud computing and virtualization technologies further aids in resource optimization, reducing energy

consumption, and lowering hardware requirements, contributing to a smaller carbon footprint. Prioritizing green hosting services that use renewable energy sources, such as wind or solar power, aligns with environmentally responsible practices. Embracing a paperless approach within the question bank operations by encouraging digital submissions and implementing electronic workflows reduces paper consumption and waste generation. Efficient data management practices are implemented to optimize storage and reduce the need for additional hardware. Regular audits assess sustainability performance, monitoring energy usage, server efficiency, and other metrics. The insights gained guide data-driven decisions and corrective actions, ensuring progress toward sustainability goals. Collaboration with external organizations and sustainability-focused initiatives facilitates the exchange of best practices and access to resources. Seeking partnerships with technology providers and hosting companies that prioritize sustainability reinforces the commitment to environmental values. The DIU Question Bank is committed to an eco-friendly approach through energy-efficient practices and collaborative efforts for sustainable development.

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CHAPTER 7
CONCLUSION AND FUTURE WORK

7.1 Discussion and Conclusion

The introduction of a question bank at Daffodil International University (DIU) brings about several advantages and considerations for the university community. This project delves into interaction design, user experience, societal impact, environmental concerns, and ethical aspects. The key findings highlight the positive impact on learning outcomes, teaching effectiveness, and academic integrity. Transitioning to a digital platform not only benefits the environment by reducing paper usage but also underscores the importance of safeguarding privacy and ensuring fairness. The discussion underscores the significance of user-centric design for a smooth user experience, emphasizing ongoing evaluation and improvement for long-term success and sustainability. In conclusion, the DIU question bank has the potential to enhance the learning and teaching experience, promoting sustainability and ethical practices. The focus on user-centered design, accessibility, and data protection creates a user-friendly and responsible platform. The positive societal impact includes improved learning outcomes, academic integrity, and support for inclusive education. Environmental benefits, such as reduced paper consumption, align with DIU's commitment to sustainability. The ethical considerations, including privacy protection and responsible data usage, reflect the university's values and contribute to a fair and transparent assessment system.

7.2 Scope for Further Developments

The DIU (Daffodil International University) Question Bank app exhibits substantial potential for further developments aimed at enhancing the overall user experience and expanding its functionality. Future updates could focus on refining the question bank by continuously adding high-quality questions across various subjects and levels of difficulty, ensuring that it remains a dynamic and comprehensive resource for students. Additionally, the app could incorporate features such as real-time quizzes, progress tracking, and performance analytics to provide users with personalized insights into their academic strengths and areas needing improvement. Collaborations with faculty members and experts could contribute to the continuous enrichment of the app's

content, ensuring its alignment with evolving educational standards. Integration with emerging technologies, such as artificial intelligence or machine learning, could enable personalized question recommendations based on individual learning patterns. Furthermore, the development of a community forum or collaborative study groups within the app could foster a sense of shared learning and peer support. As the educational landscape evolves, the DIU Question Bank app has the potential to adapt and innovate, becoming not just a question repository but a holistic academic companion for students on their learning journey.

Reference:

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DIU QUESTION BANK

ORIGINALITY REPORT

7%	6%	0%	4%
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