DESIGN AND DEVELOPMENT OF A MOBILE APPLICATION FOR ONLINE LEARNING PLATFORM - OLP

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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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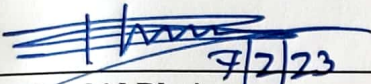Daffodil International University

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APPROVAL

This Project titled **"Design And Development Of A Mobile Application For Online Learning Platform - OLP"**, submitted by **Saiful Islam Shakil**, ID No: **191-15-12371**, 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 **04 Feb 2023**.

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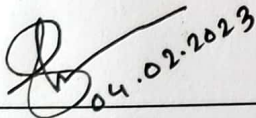Faculty of Science & Information Technology
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DECLARATION

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

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Finally, we must acknowledge with due respect the constant support and patients of our parents.

ABSTRACT

OLP is an online platform where students will get online open-source study materials and donate to develop this solution. Thus, students won't need to search on the internet and take the hassle to find out proper tutorials and solutions for their expected subjects. This application will act as a search engine and will provide the best-reviewed ebooks and videos for the students. It will save time in their study and will also be helpful for them. The app will focus on providing tutorials in Bengali. This app also intends to help students to find articles in different fields. The free-access articles can be saved in different folders and later those can be read and accessed easily. The platform will also offer a resource-sharing option.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

The project we are working on is an online learning platform. For providing easy access to learning, an android app will be developed. The app will offer tutorials, different courses, problem-solving forums, ebooks, mcq, and written exams giving opportunities. Students and teachers both can register themselves on this platform. Teachers can offer courses for students. Besides, students can take help one to one basis problem-solving sessions from different teachers. The app will provide diversified paths for learning. The app will contain both paid and free resources for different subjects. Besides, the problem-solving forum will be free for all upon registration for a time being.

1.2 Objective

This app will act as a search engine and will provide the best-reviewed ebooks and videos for the students. This will save time in their study and will also be helpful for them. The app will focus on providing tutorials in Bengali. This app also intends to help students to find articles in different fields. The free-access articles can be saved in different folders and later those can be read and accessed easily. The platform will also offer a resource-sharing option. Here, if somebody shares an important document or video, they will be given a premium subscription for limited days based on the shared content. The more important the shared content is, the more time they will get premium access. Through premium access, students can take help from one-to-one sessions for free for a single session from subject experts.

Besides, subject experts can offer an amount on their own need for solving the problem. The fee can be determined based on problems or based on time. In this process, this platform intends to work. The application will help students to learn easily and solve their particular problems. The app will earn from the subscription fees. Registration will be free for both the teachers and students. The teachers will be verified during registration from the website of their institutions.

1.3 Report Layout

Chapter 1: Introduction

This chapter explains the program's inspiration, motivation and goal.

Chapter 2: Background

Background information is very important and this chapter describe the background-related task like comparison with other projects and finds out the problem and difficulties of the project.

Chapter 3: Requirement Specification

Many key project requirements, including the use case model, business process modeling etc are discussed in this chapter.

Chapter 4: Design Specification

The design of the project is the main purpose of this chapter. The effective use of interaction design and user experience is very crucial, as this chapter explains in depth.

Chapter 5: Implementation and Testing

By using project screenshot, this chapter demonstrates the project's testing and implementation process. Any project's testing results and success after completion indicate whether it is ready to go live.

Chapter 6: Impact on Society and Sustainability

This chapter describes how online learning system can change the society by developing the skills of a learner and how our system impact on educational platform.

Chapter 7: Conclusion and Future Scope

This chapter discuss the limitation that every project has, how to get around them, and the potential extent of its future implementation

CHAPTER 2
BACKGROUND

2.1 Introduction

People are growing more dependent on online-based technology more and more. Therefore, we attempt to create an online mobile-based application according to the needs of students. This app can help them in their academic and professional life. It will provide all types of study materials, which will reduce the waste of money and searching time.

2.2 Related Works

There is no app like OLP. But some of the features of this application are partially similar to other online applications. Those are BYJU'S Learning, 10 Minutes School, Khan Academy and so on.

2.3 Comparative Studies

Generally, the software is created to obtain certain objectives. Some most comparable applications like this system are below-

TABLE 1: COMPARISON OF OLP AMONG OTHER SOLUTIONS

BYJU	OLP
▪ It's a mobile application mostly similar to our idea but they do not provide full free content. ▪ The contents they provide all are high school study material.	▪ We are providing full open-source and free study content. ▪ High school, college, and graduate all levels of study materials are included in this solution. ▪ Basically, we are focusing on programming, technology, and professional skill development-related content including video, audio, and written documentation.

10 Minutes School	OLP
- It's a web application providing English and high school study materials, and professional skill development. - But most of the contents are paid.	- We are providing full open-source and free study content. - High school, college, and graduate all levels of study materials are included in this solution. - Basically, we are focusing on programming, technology, and professional skill development-related content including video, audio, and written documentation.

Khan Academy	OLP
- A web application including only the study materials of the high school level. - Most of the tutorials and courses are paid.	- We are providing full open-source and free study content. - High school, college, and graduate all levels of study materials are included in this solution. - Basically, we are focusing on programming, technology, and professional skill development-related content including video, audio, and written documentation.

2.4 Scope of the Problem

It will be difficult to believe people in the application we have made. Because students and learners are already being tricked by some of them. The number of such online services is increasing day by day. So, it might be difficult to make people believe in our application.

2.5 Challenges

We have attempted to overcome several obstacles that we have encountered -

1. Since it is an online platform, a poor internet connection can be the main problem.

2. Our application has to be more carefully constructed so that it functions smoothly and is user friendly.

3. Making the system, students, and content providers' data properly secured.

4. The maintenance and privacy of database is one of the most difficult tasks.

CHAPTER 3
REQUIREMENT SPECIFICATION

3.1 Requirement Collection Analysis

Admin has the highest power and connects to all sections. After analyzing the data (study content) by Admin, it will be forwarded to the application to show directly otherwise deleted data. Consumers willgo through the contents, enroll, and watch courses and documentation anytime anywhere.
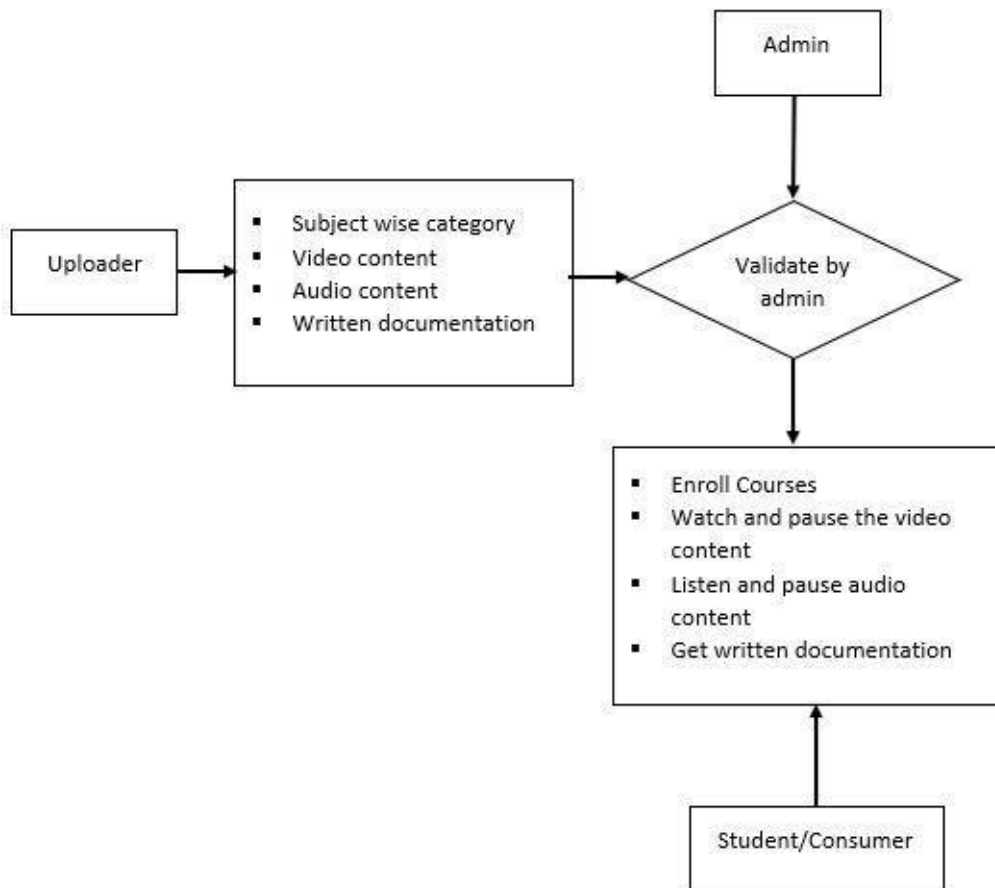

Figure 3.1: Requirement Collection Analysis

3.2 Use Case Modeling

A use-case model represents how various user types interact with the system to solve a problem.
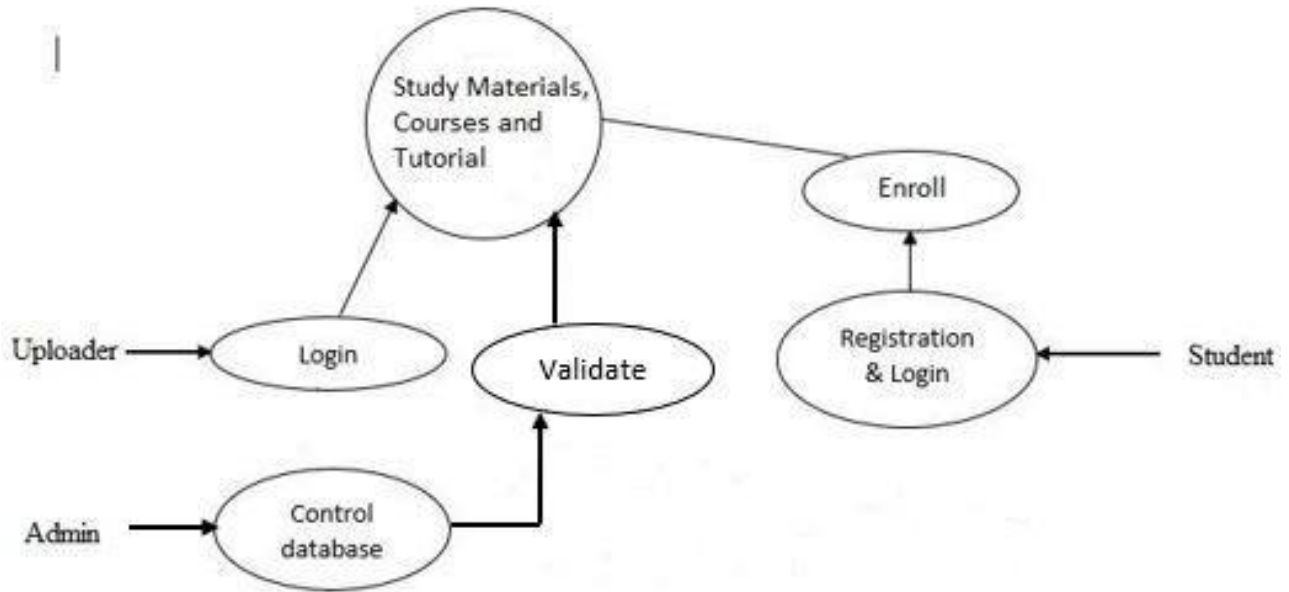

Figure 3.2: Use Case Modeling

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3.3 Logical Data Model

The database depicted in the image below of the logical data model, where all the data must remain, will be responsible for the current moment. The app will receive data from the database.
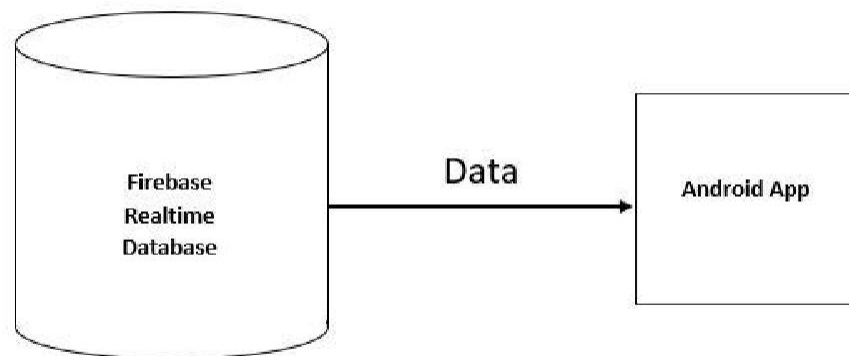
Figure 3.3: Logical Data Model

3.4 Design Requirements

Design requirement is very important task for mobile application. The user is drawn to use it. Therefore, in order to finish the design, we needed the right mobile application design skills. We needed to understand the various computer programming languages and other design applications like AdobeXd and Photoshop to accomplish this. Market research is an excellent design component.

CHAPTER 4
DESIGN SPECIFICATION

4.1 Front-End Design

One of the best features of software that interacts with people directly is the front-end design. In light of this, we developed a user-friendly and smooth design. Everyone can use this application without any difficulty. We employ some front-end technology to create this fantastic application. Those are AdobeXd, Photoshop as tools, and XML as coding for the design.
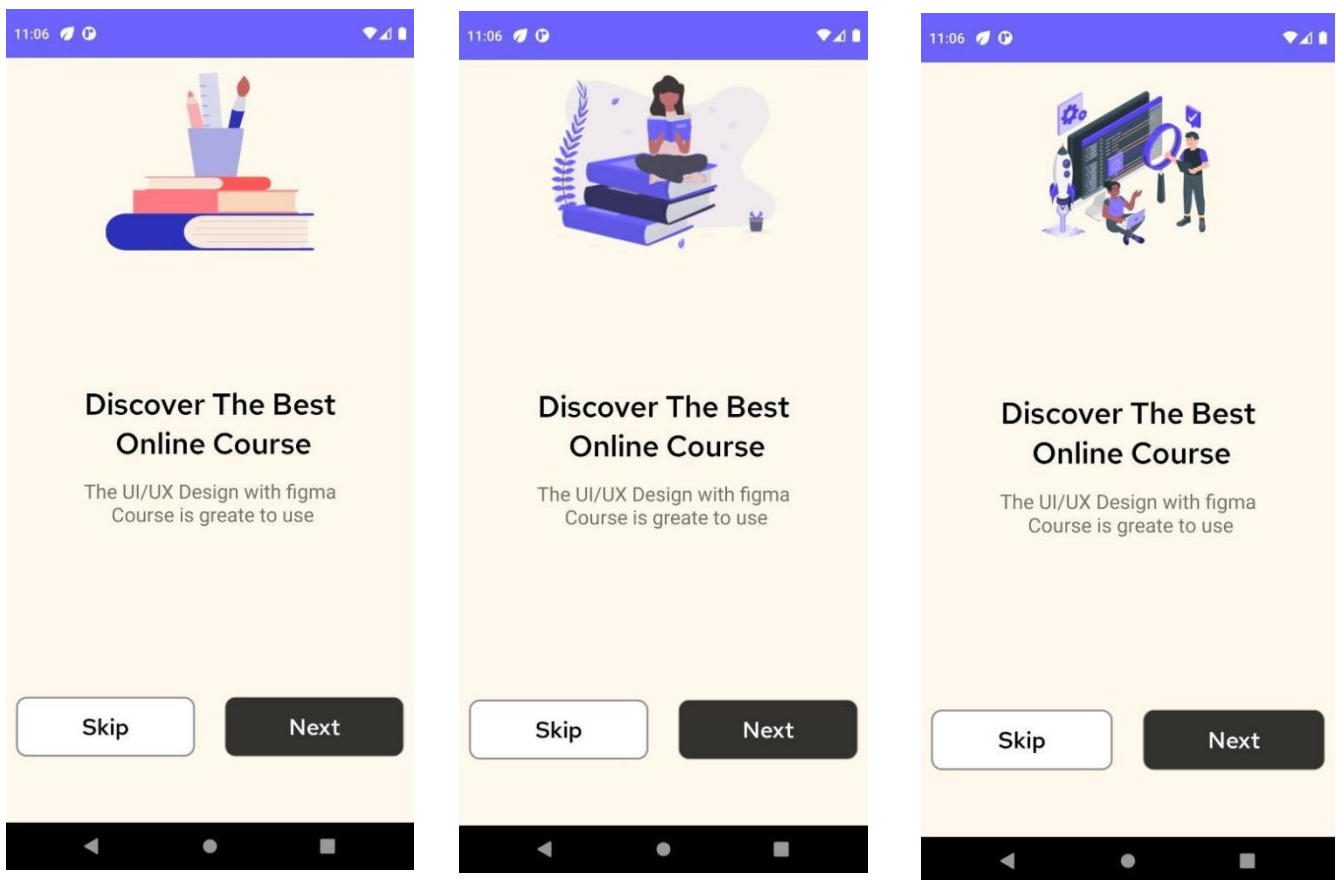

Figure 4.1: Front-End Design.

4.2 Interaction Design and UX

We made an effort to simplify the UX design for our project. Because we researched on the internet and visit various blogs and websites, we figured out that more engagement in the application makes the user experience difficult. So, we made our application design as simple as possible.
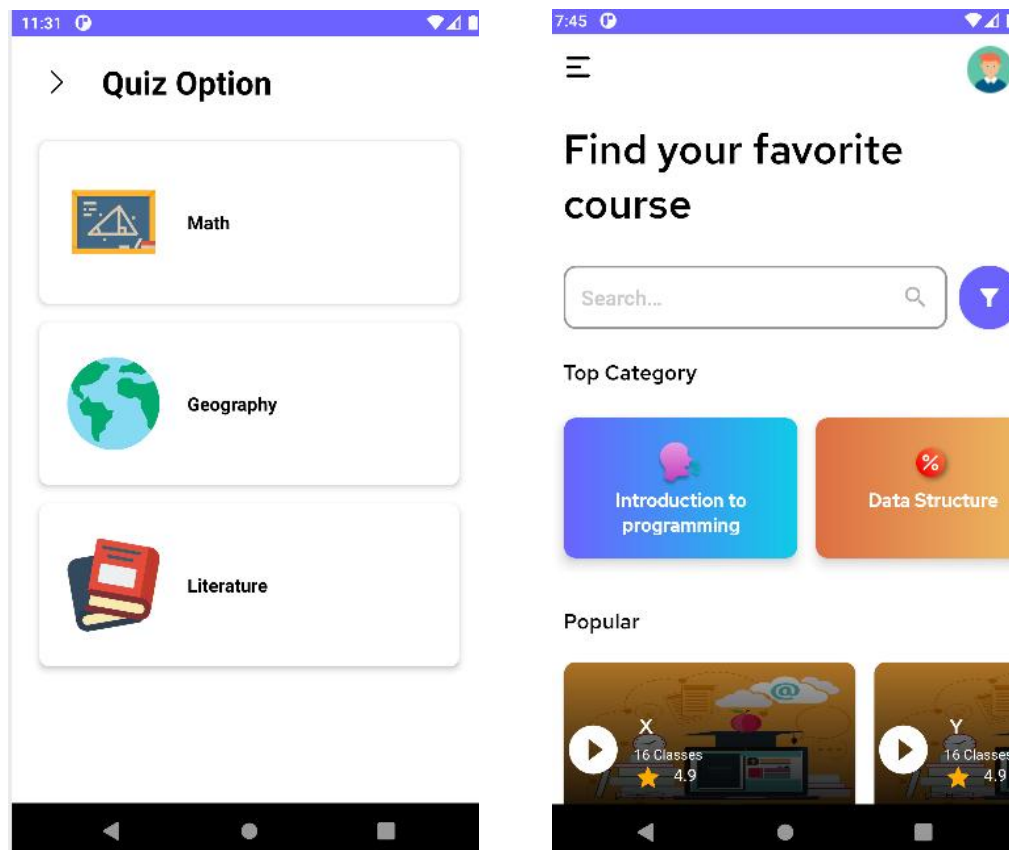

Figure 4.2: Interaction Design and UX

4.3 Back-End Design

Back-end in software development essentially refers to server side rendering. Backend programming typically consists of three components: an application, a server, and a database. We used Firebase Realtime Database for the database, and we also developed Java, Firebase Cloud Messaging, and Android Networking frameworks as back-end technologies.

4.4 Implementation Requirements

Since it was our first project including a social educational service application, we had to learn a lot of new technologies and devote a significant amount of time to meeting all the requirements.

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CHAPTER 5
IMPLEMENTATION AND TESTING

5.1 Implementation of Database

The design and implementation of a database are key components of every software application that stores data. We used Firebase Database for our project, a NoSQL database hosted in the cloud that enables developers to store and sync data between users in real time. For its data model, the database stores far too much information.
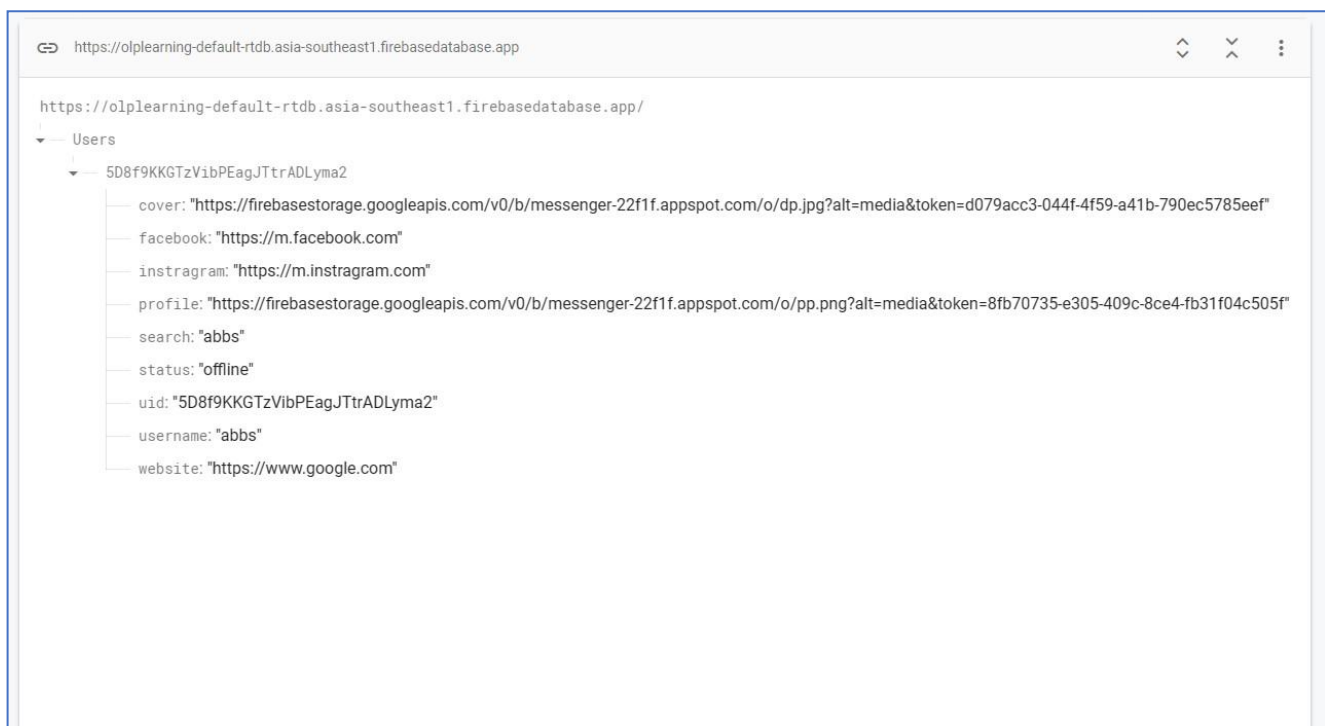

Figure 5.1: Database Implementation

5.2 Implementation of Front-end Design

Given how it is presented to users, front-end design is crucial. Developing a design for an application, we always have to keep in mind that the front-end must be user-friendly and smooth. It is really challenging to make the ideal design that appeals to everyone.

Sign-up view

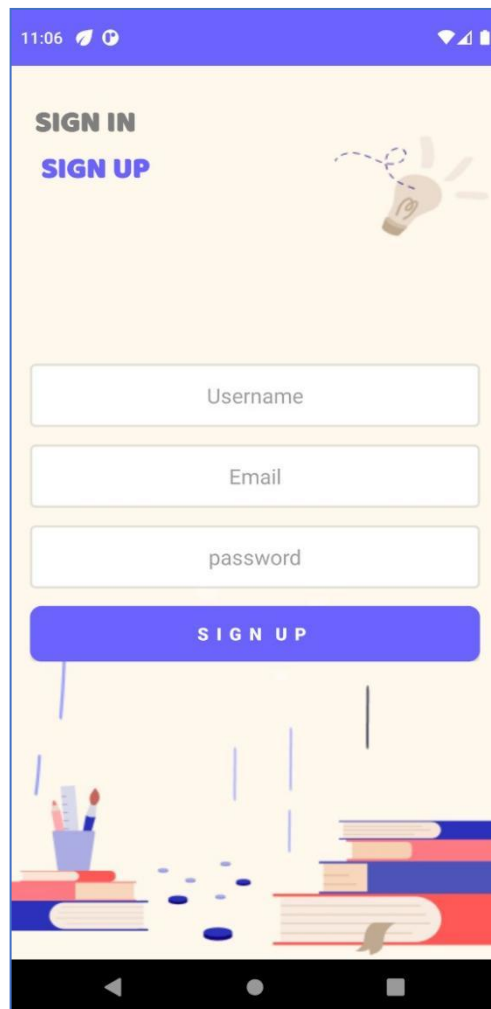Signup contains user information, a sign-up, and a sign-in button.

Figure 5.2.1: Sign-up view

Login view

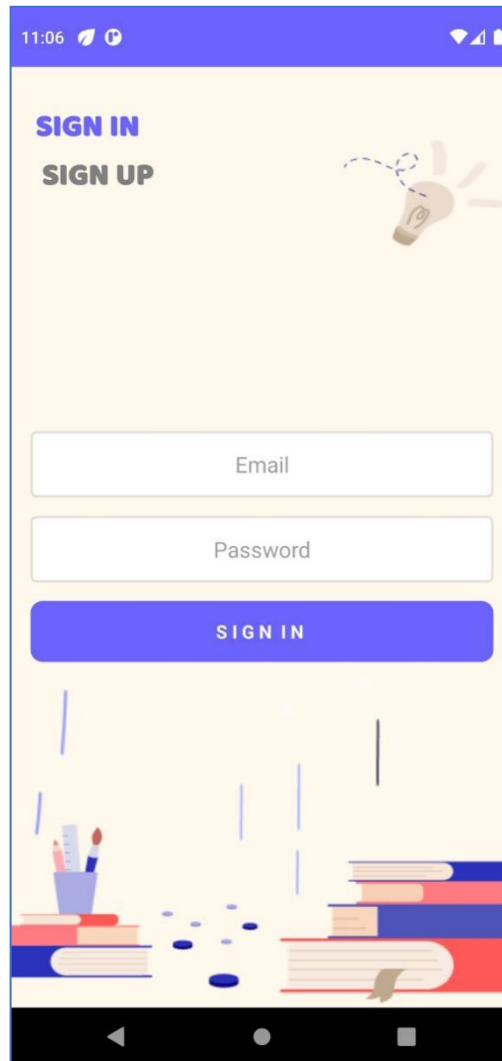In this login section, the user will log in to the app with an email and password.

Figure 5.2.2: Login view

5.3 Testing Implementation

Dashboard

Users can search subject tutorials by filtering topics and categories. Topics according to subjects and recent popularity are included in this page.
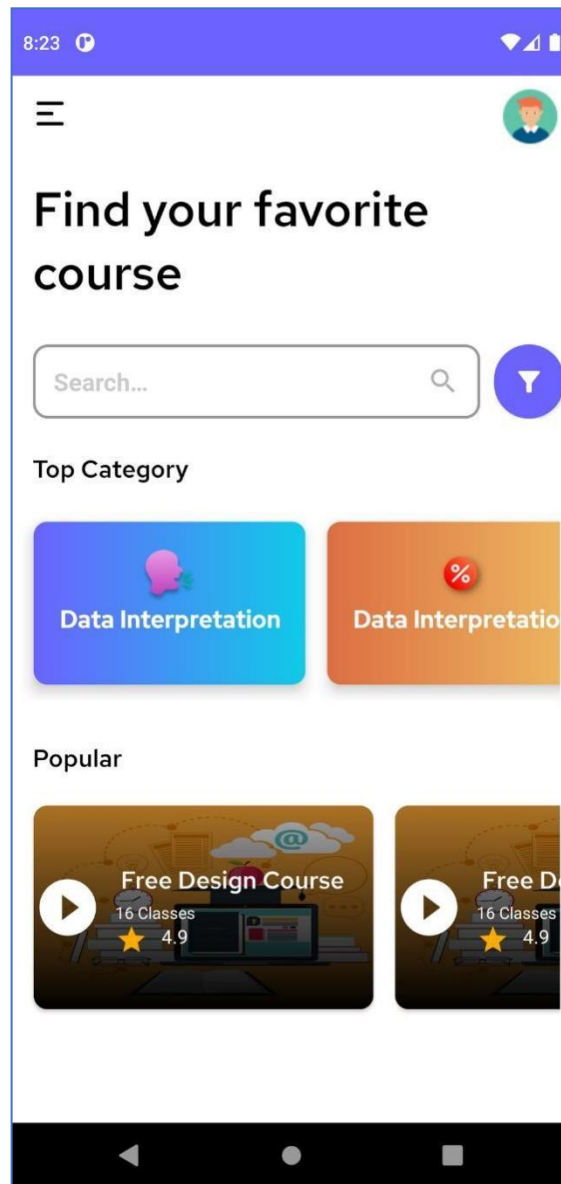

Figure 5.3.1: Dashboard

Course Material

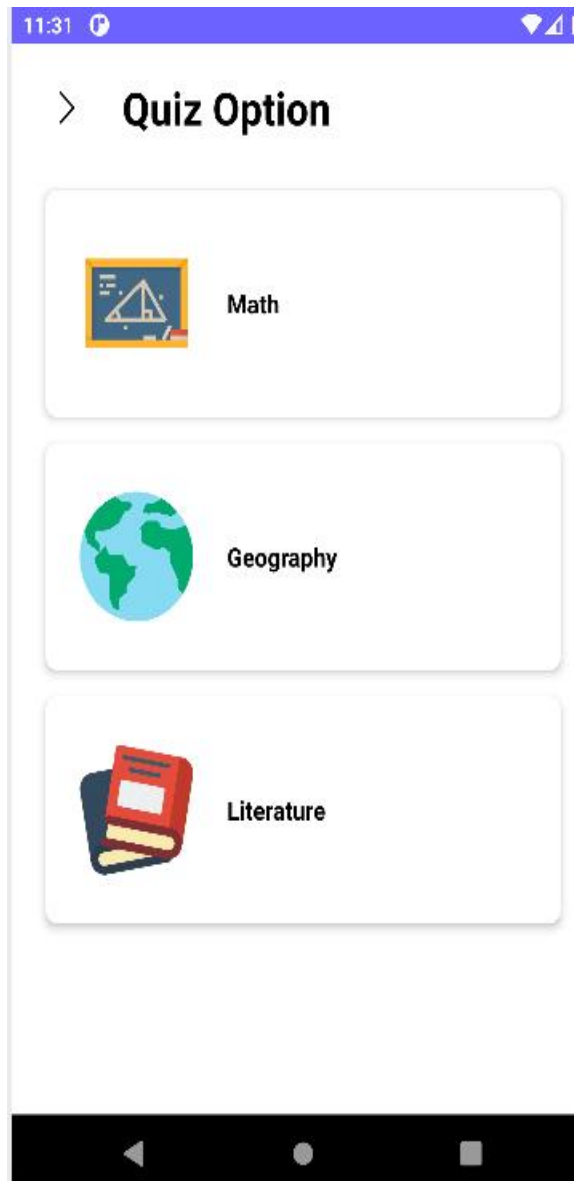Tutorials of a specific course.

Figure 5.3.2: Course Material

Written Documentation

A course can contain written documentation and practical tasks.
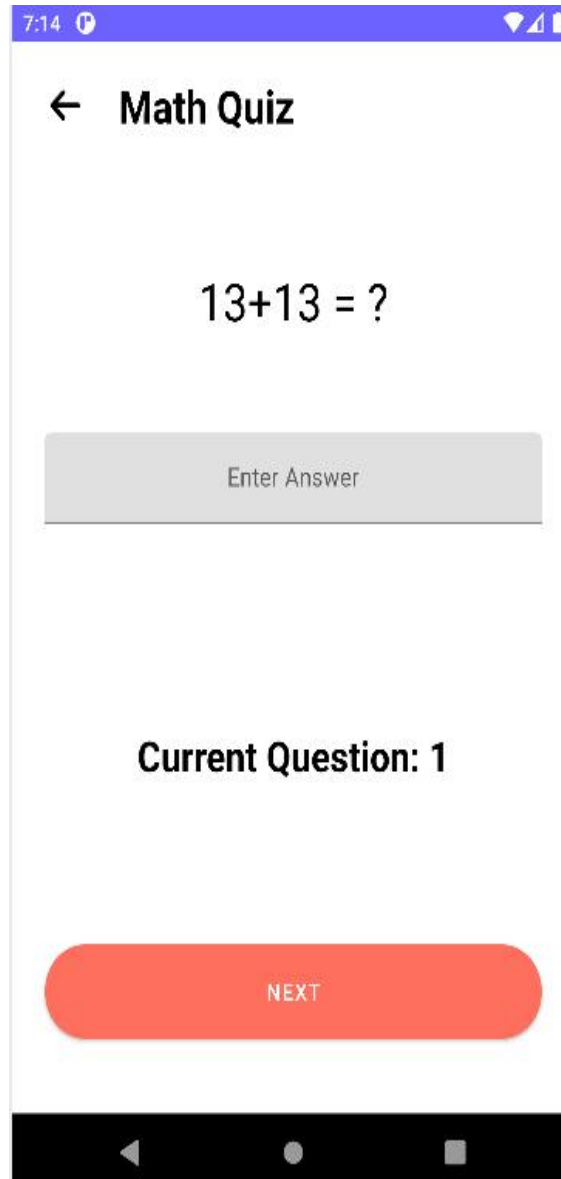

Figure 5.3.3: Written Documentation

Audio Tutorial

Audio tutorials can also be included in a course. Users can pause the audio and listen later from where they ended.
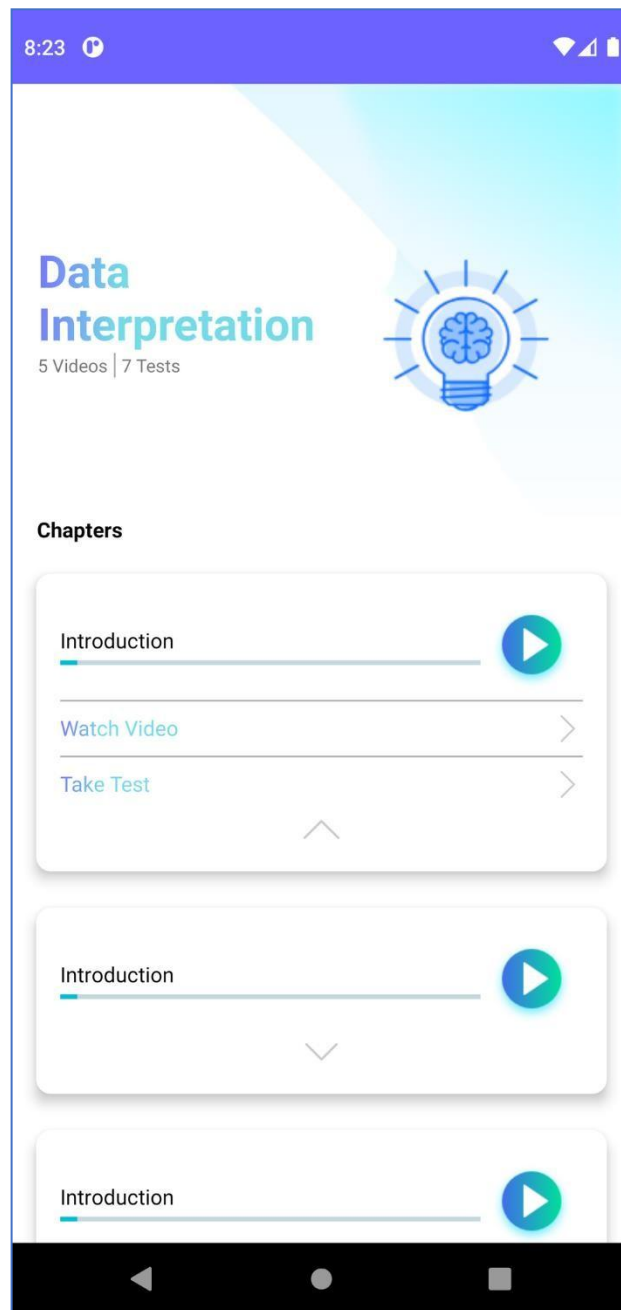

Figure 5.3.4: Audio Tutorial

Video Tutorial

Video tutorials can also be included in a course. Users can pause the audio and listen later from where they ended.
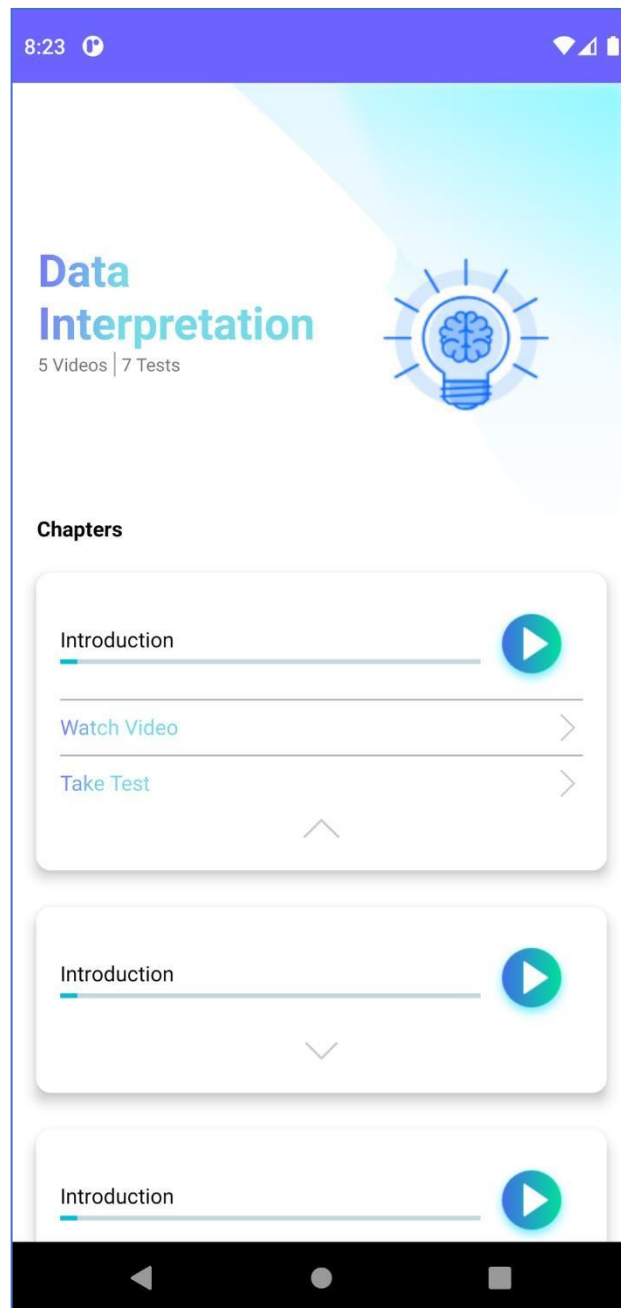

Figure 5.3.5: Video Tutorial

CHAPTER 6

IMPACT ON SOCIETY, ENVIRONMENT, SUSTAINABILITY

6.1 Impact on Society

The strategy of online learning is beneficial for everyone. At first glance, this might seem like hyperbole. However, in reality, virtual learning is just that effective. Online learning primarily serves the benefits to the students or learners that are far more wide-reaching.

Our digital learning platform can improve the performance of individuals, and society by promoting vital, modern skills, such as networking, professional collaboration, technology, and research.

6.2 Sustainability

The concept of sustainability provided the foundation for the debate that followed in order to establish a shared understanding of the objectives and results of this project. OLP online learning platform is considered sustainable when all three of these conditions are met:

● A complete educational environment involving information and communications technology has been developed and implemented within courses and virtual training.

● The teaching concept, design, system, or resources of OLP have proven potential.

● Maintenance, usage, and further development of this software solution do not remain dependent on individuals, to the extent that, if the involvement ceased, future prospects would not be compromised.

CHAPTER 7
CONCLUSION AND FUTURE SCOPE

7.1 Discussion and Conclusion

The world is changing every time. And we have to compete with this running world proportionally so we want to contribute to digitalizing this world. Because of this, we chose to work this project which can help students when they are in need of their study materials. So, we have developed an android application that will help students to get the materials related to their academic course through the app. Professionals can also be helped by learning skills from this solution all as open source. The content uploader will upload a video, audio, or written documentation. Then our admin panel will go through the contents and review them if the contents are suitable for the learners according to modern professional and academic needs. All of these will reduce students' waste of time and money.

7.2 Scope for Further Development

Due to the limitation of paid data server, we couldn't develop a large database for our application. In the future, we like to add more features on our application. We think by adding more features in our application it will make our application more resourceful, interesting and indefatigable. Those features are –

- Develop online education and professional training session.
- Develop an eco system through web application to maintain the server and the app.
- Publish it the updated app on different platforms.

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