

Efficient Note Sharing Model for Collaborative Learning

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Abstract- This paper presents a novel knowledge-sharing platform designed to facilitate collaborative learning among students. Unlike existing platforms, our application prioritizes content validity and credibility by incorporating a content verification process. We aim to provide students with a trustworthy resource for accessing study materials. This manuscript outlines the platform's key features and addresses plagiarism and copyright concerns. Additionally, we emphasize the unique aspects that set our application apart from other content-sharing platforms.

Keywords- Notes Sharing, API

- Category (i.e. Notes, Assignments, Lab work, etc.)
- Degree (i.e. B.Tech., B.Sc., B.com., etc.)
- Year/Semester
- File Type (Image, Video, Document)
- Upload File
- Visibility (If a student is wishing to share the notes with his/her own institute students, then he/she has the feature to select the visibility of the notes.)
 - Everyone
 - Institute

1. METHODOLOGY

Students often face problems while collecting notes and it interrupts their learning process. Our application will provide a platform for the students where they can explore notes, assignments, previous year papers, etc. according to their preferences. Students can share their notes/materials (both handwritten and in document - PPT, PDF, DOC, etc. format) which students from any branch or semester can access for free. We have created an efficient note sharing application which students who are willing to share notes for any subject/s.

We assume that our application will be mostly used by students. So, they have to prefer an institutional email for registration (Gmail can be considered in case the student has no institutional email). The student will have to upload the student ID card for verification. He/She is only eligible to use the application after verification and validation. Our team will manually verify the student Id ensuring no fake users will be able to use the app. After the valid verification of the student, he/she can upload the notes by clicking on the upload button if he/she wants to share their resources in any format and contribute to his/her fellow students. Here, students have to upload the following details for sharing notes –

- Topic name
- Name of Author
- Subject

To ensure the credibility of users, we require students to register using their institutional email addresses. In cases where students lack institutional emails, Gmail can serve as an alternative. Additionally, students must upload their student ID cards for verification. Only after successful verification and validation by our team can users access the application. This process safeguards against fake users and ensures the integrity of the platform.

Apart from uploading notes, a student can access the notes of any subject through this app. The students who upload their notes are thankful for sharing their study material with other students so that it can help them in internal or external exams or any other purpose. We will award such students who share their notes with some amount of credits that would contain some extra features and advantages for them.

The students accessing the notes can like the content, which will help other students know how helpful the content is. Filtering using this Like parameter would be beneficial for accessing the best-quality notes most liked by students. They can also download them according to their preferences and view them in the application itself or in their file manager.

1.1 Features of proposed model

A. Search

Searching is the most convenient feature that users

like to use for saving time. We have also added a search field in our application through which student can search the notes easily by typing the subject name that he/she wants the notes for.

B. Likes and Views

We have provided the user with a like option for all the files of notes. Any user would like to access the most liked and viewed notes, hence this feature would be helpful for their excellent learning. Likes and views will be displayed on the home page with each note file.

C. Filtering

A user has two options for filtering the notes -

- Based on Likes and views - (Here user will be able to find the notes preferably more liked or more viewed.)
- Based on Visibility - (Here user will be able to find the notes either uploaded by its own institute or by everyone.)

D. Content Verification and trustworthiness

Ensuring the credibility of shared content is paramount. Therefore, we have implemented a content verification process. Before sharing, students' notes undergo a review by domain experts or professionals. This verification step is pivotal in maintaining the trustworthiness of our platform. Only after verification are the notes disseminated to other students. This approach instills confidence in the reliability of the shared materials.

E Distinctive Advantages

One might question why our application stands out amid existing content-sharing platforms. Our platform offers several unique advantages:

- Comprehensive Resource Sharing:** Students can share a wide range of materials, including notes, assignments, lab work, and more, promoting diverse educational resources.
- Fostering Collaborative Learning:** By accessing content shared by peers, students engage in collaborative learning, facilitating a more holistic understanding of subjects.
- User Engagement:** With features like likes, views, and filtering, users can easily discover the most valuable and popular content, enhancing their learning experience.
- Institute-Specific Sharing:** Our platform caters specifically to students within their own institute, promoting a sense of community and trust among users.

F. Addressing Plagiarism and Copyright Concerns

We are fully aware of the importance of addressing plagiarism and copyright issues. To tackle these challenges, our platform incorporates the following measures:

- Content Verification:** Our rigorous verification process helps prevent the sharing of plagiarized or copyrighted materials.
- Reporting Mechanism:** Users can report instances of plagiarism or copyright infringement, and our team will promptly address these concerns.
- User Education:** We are committed to educating our users about the significance of respecting copyright and intellectual property rights.

G. Grammar and Language Refinement

We acknowledge that the manuscript requires comprehensive language and grammar refinement. We will conduct a thorough review to enhance readability and ensure clarity throughout the document. Our platform aims to revolutionize collaborative learning by providing students with a trustworthy platform for sharing and accessing educational materials. By addressing plagiarism and copyright concerns and offering unique features tailored to the institute, we strive to create an essential tool for students to enhance their learning and productivity.

1.2 Flowchart

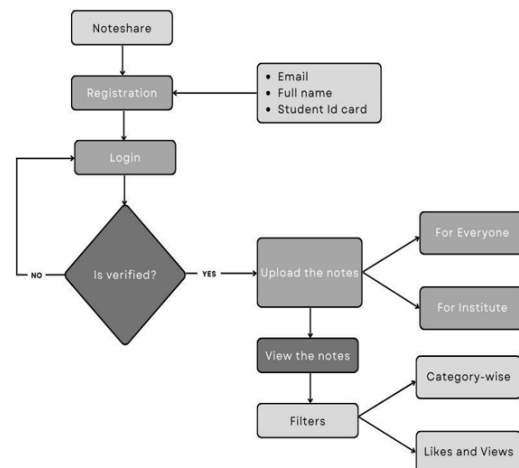


Figure 1: Flowchart of working model

2. EXISTING SYSTEMS

There are some traditional ways student use to share the notes among their friends and classmates such as hardcopy of note provided by faculties and respective subject teachers or students need to find the notes on different websites available on internet either individually or collaboratively [1].

As a Highly effective instructional method, collaborative learning is widely used in the classroom, but its potential is often underutilized [2]. For this reason, it is important to identify the factors underlying effective collaborative learning.

The COVID-19 epidemic has significantly impacted the educational system and has emerged as a global health concern [3]. As a result, digital documents and online learning platforms were used to deliver learning approaches. In these situations, using a single platform for collaborative learning was the most efficient approach to exchange the notes that the students had taken [4].

On tests of recalling course material, the group of students outperforms individual note-takers. There is a vacuum in the literature regarding how the quality of the notes collected and how note-quality can affect student performance can be compared between collaborative and individual note-sharing [5].

3. PROPOSED WORK

The aim of this research is to design and implement a mobile application which is able to enhance the essential learning of students via notes-sharing. The User-experience and interface is very simple and decent so that easy to navigate from one to another page and to understand the working of the application.

We have developed this application using Dart language with flutter framework. Google's portable UI toolkit, Flutter, allows developers to create stunning natively built applications from a single codebase for desktop, mobile, and the web. Flutter is utilised by developers and businesses worldwide and is compatible with current code. The widgets of flutter are materialistic that made our application look very clear and real. With features like fast rendering, a flexible layout system, and fluid animations, our application runs smoothly with high-end visuals that users will definitely like.

A wide variety of programming tools, including interfaces, collections, classes, dynamic and optional typing, are supported by the open-source programming language Dart. To incorporate all the logical notions and make our application more interactive, we employed dart in our application. The Dart typing system is highly adaptable, allowing the usage of a dynamic type together with runtime checks, which might be helpful for code that has to be particularly dynamic or during experimentation.

We used the package FilterList for the homepage that contains filter section for filtering the notes. FilterList is a flutter package which provides utility to search/filter on the basis of single/multiple selection from provided dynamic list. We used material icons in our app. To use this class, we set uses-material-design: true.

For this app, Firebase authentication is used. You may incorporate safe authentication into your new

or current Flutter application using a variety of tools and techniques provided by Firebase Auth. You will frequently need to know your user's authentication status, such as whether they are logged in or out, which Firebase can simply handle. We can use these three methods for authentication –

- authStateChanges()
- idTokenChanges()
- userChanges()

Through this, we are managing the registration and login activity of the user and authenticating the user with valid email.

We have provided some application screenshots here for the reference:

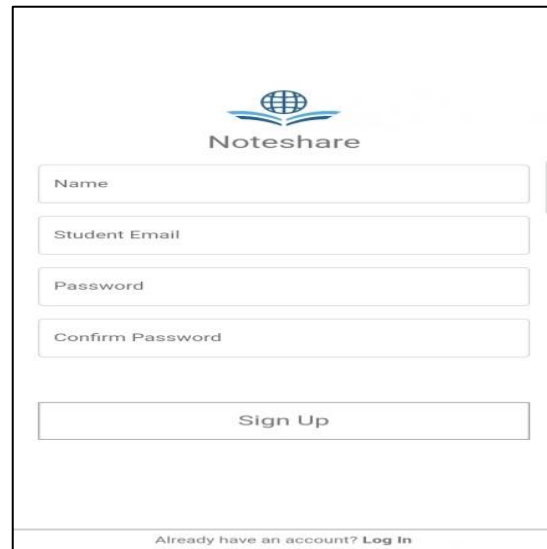


Figure 2(a): SignUp Page

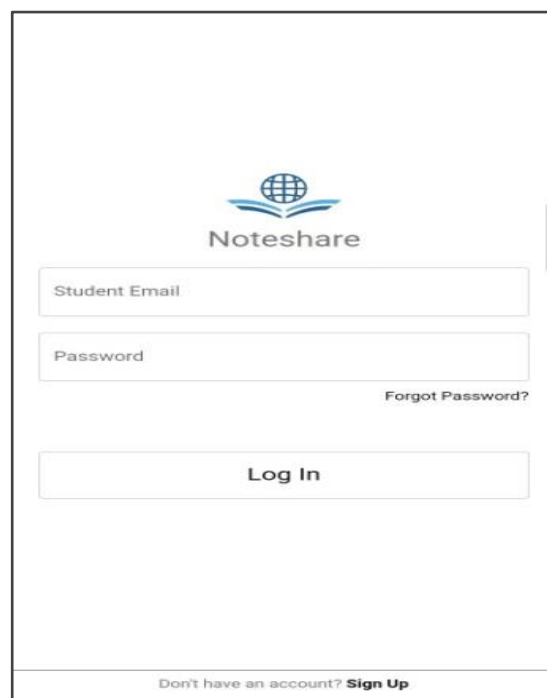


Figure 2(b): Login Page

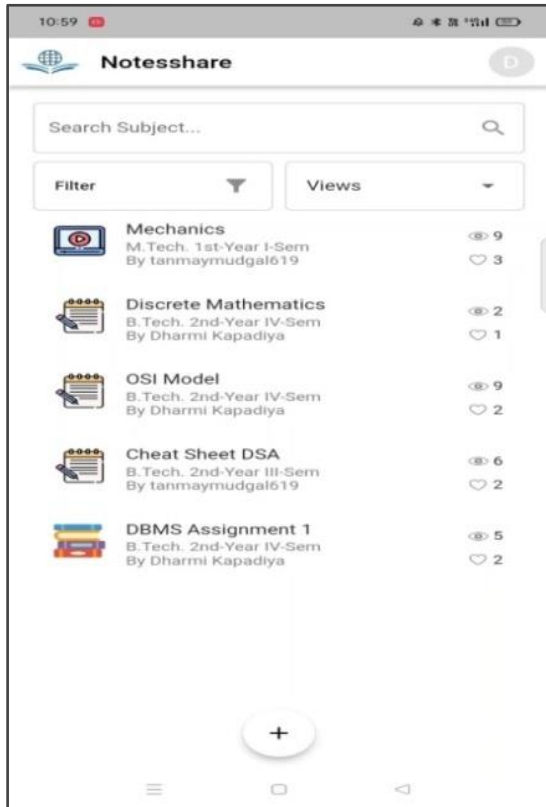


Figure 2(c): Home Page

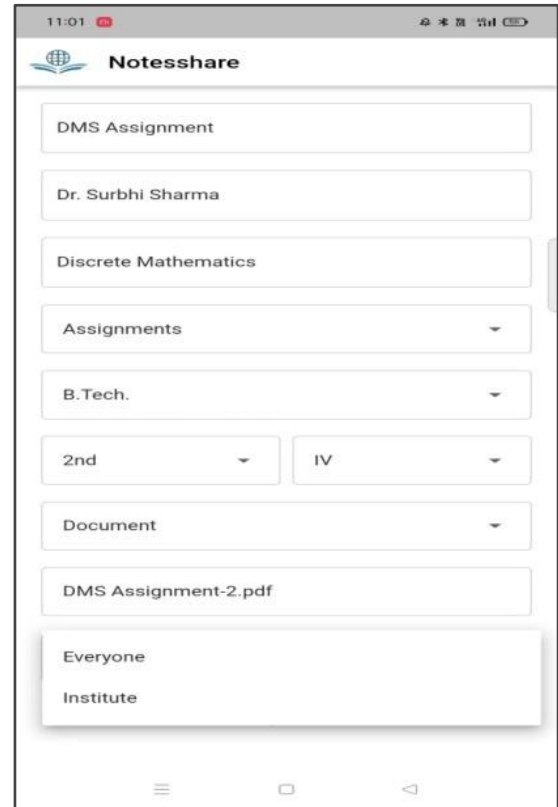


Figure 2(e): Add Notes

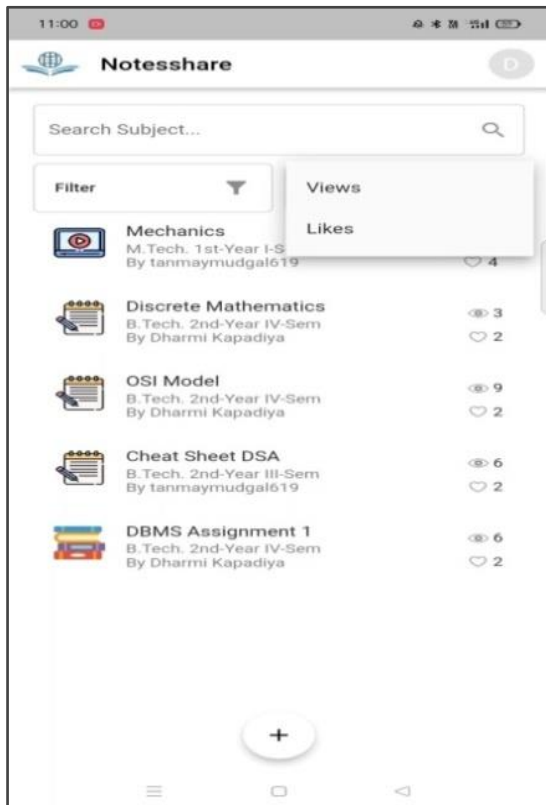


Figure 2(d): Home Page

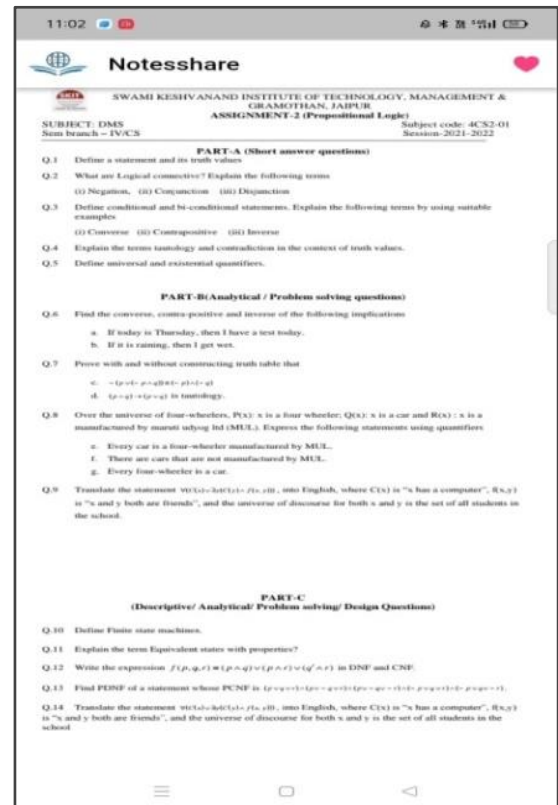


Figure 2(f): View Notes

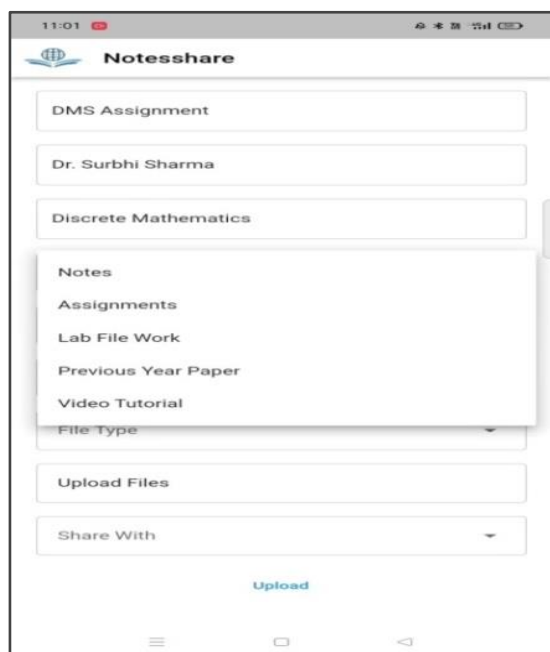


Figure 2(g): Types of Notes

4. SOFTWARE SETUP AND TECHNOLOGY

For the implementation of the above idea in the form of an application we have used the following technologies:

- Flutter - framework
- Dart
- GetX for state management
- Packages:
 - advance_pdf_viewer
 - video_player
 - file_picker
- Firebase for authentication
- Firestore for storage

5. RESULTS

All features of the application are implemented and tested. Many students have registered on the application and uploaded notes of a particular subject setting its visibility public. It was successfully uploaded on the application and can be viewed by all the students. We are trying to reach

the maximum number of students.

We will first make aware the students of our college of this particular application and tell them the benefits and working of the app. This will enhance the reach of our application at ground level and gradually, we will connect to the schools, other colleges, universities, academic institutions, etc. This will result in an essential tool for the students to enhance their learning and be more productive.

6. CONCLUSION

Our application aims to educate the students by providing the study material according to their requirements and to provide the notes maximum number of students to get academic benefits by learning collaboratively.

It will also provide exposure to the students who are not able to afford the expensive books and notes that they can find here by exclusively sharing with other students. This application will help to improve the educational background of the students.

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