The Design of an Android-Based Mobile Application for Book Sharing

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Abstract – When it comes to basic rights, education is one of the most important ones. Education is necessary regardless of where you were born or where you grew up. In this era when communication is developing rapidly, it is high time to ensure that education reaches everybody's doorstep. There is a saying ‘knowledge increase by sharing but not by saving’. And to share knowledge, book is the best thing to share. But sharing a book is not always convenient and sometimes annoying too as many of those people never return these books. This paper presents an online platform for sharing knowledge or more elaborately to share and rent books and a platform to discuss books. The motto of the proposed model is to reduce the problem of sharing the book and also to build a community of book readers. This system is a platform for anyone who has a book and is not using it right now and would like to share the books with someone who currently needs it. In this developing country, to buy a book is costly and as people normally keep the book idle after reading; so it is better to share or sell the book to someone who may need it. So, the main theme is, 'maximum use of the book, minimum use of money'. The proposed model uses the basis of regular social transactions and comprises them into a business model. It mainly focuses on the customer to the customer business model and creates a patronizing and adjuvant platform for both the user and providers. It depicts the challenges related to starting a new platform, identifying the right people, creating and interacting with people and developing a business model in a developing country. The proposed model is deployed on an android app by which the user will connect. Some key features are unique login, wallet system, my desk, location of a user, chatting between users, etc.

Keywords: books, android, java, firebase, chatting, location, book sharing

1. INTRODUCTION

Many students go through a very busy time every year to find the textbook they need at the beginning of the new semester. Those reference books are very important for any student, but these books are very difficult to find or pretty expensive (Muzumdar, 2012). So, a lot of students choose to borrow those books from libraries, seniors, classmates, friends, or anyone in their community. Also, it is not always easy to find a book within their connection. As there is a scarcity of libraries, almost all the time they put in a long queue, which might take a long time to wait for the book they want to read. This system is quite riotous during exam time (Carbaugh & Ghosh, 2005).

The existing system of sharing or renting a book is very anarchical. The process is offline and if they want to use the social media platform, the platform is not very fruitful as it is not designed for this task. The offline system is not that streamlined. There is no such platform (Bakos, 1997) for finding the book they need. So, the students completely depend on the local market or their community. As it is the era of the Internet, online shopping is pretty common. Books can be purchased online but what matters is price. New books are not always cheap and sometimes they only need the book for just one time. So, collecting old books is the easiest and economical way in that case.
As there is no such platform for book sharing in Bangladesh currently, we proposed this model. Though several apps have been proposed or designed so far in others countries (Wargo, 2012). So, anyone can get used to booking easily and cheaply. Using this platform user can share a book with anyone who may need it for free or the user can rent the book for a certain period in exchange for money. Renting is beneficial for both users and the provider. Some key features of this model are, unique login using users' mobile numbers, creating a profile for free, upload the book list the user wants to share. Chatting between the users can play a big role and make the platform useful for book lovers. They can discuss the pros and cons of books they are reading. Users may recommend some books to each other. The user can find the provider of the books from the map. So, the user can collect the book from any suitable location as they wish.

Another key feature is, this platform will provide both textbook and novel or fictional books. As people nowadays are reading lots of books (Wargo, 2012) beside textbook, this platform may play a vital role for those readers to find any book they cherish to read.

2. REQUIREMENT ANALYSIS

The existing system of sharing books depends on many things as such as the location of the user, the community in which the user belongs as the system is completely offline. It is very difficult to find fiction or novel for a person if his/her friends do not read any book besides textbooks. Though nowadays there are a lot of book-related groups in social media, things are not as easy as we see. Collecting books from others is always tedious and time-consuming.

The whole world turns into a global village because of the Internet. It is said that the world is now in hand. People nowadays want to save time as time is the most valuable thing (Abdullah-Al-Shafi & Bahar, 2019a; Abdullah-Al-Shafi & Bahar, 2017; Abdullah-Al-Shafi, Bahar, & Wahid, 2019; Abdullah-Al-Shafi, et al., 2018; Abdullah-Al-Shafi & Bahar, 2019b). That's why many of those people shop online. Now, if they find a platform from where they can collect books they want to read for free of cost or in exchange for a small amount of money, they will accept the platform cordially. Our proposed model is the expected platform which will be suitable for readers and book providers.

The model will be deployed on an android app from where users can get an unlimited collection of fiction and non-fiction books. Once the user finds the desired book, user can get the book by interacting with the provider using the systems native chatting system. The major features of our proposed model are:

1. The platform is simple and user-friendly for both the reader and the provider.
2. Both readers and providers can give a rating to each other.
3. The user can add/remove/modify as many books as possible to his/her 'My Desk' (library). 'My Desk' defines those books the user wants to share with others.
4. The user can view the full details of the previous transaction history.
5. The location of the user will automatically generate and will be saved as the user's address. This automation ensures the reliability and security of the system.
6. A user can only borrow any book from the provider only if the provider accepts the users' request of asking books.

3. SYSTEM ANALYSIS

Principal components of the system are registration, login, search books, request book, and transaction. As the platform is android, the user can get access to those books anytime they wish because nowadays almost everyone has an android phone.

If any user needs a book, they have to search for that book. Then if they find the book, they can choose the edition too if the provider mentions the edition. Users can choose any of the books after searching for a book, regarding the location. After choosing the book user can see the owner's profile, rating by which the user can judge whether the owner is malicious or not. Although there is no chance of counterfeit people as the registration process requires a unique mobile number. By using the systems’ native chatting option, users and providers can interact with each other. The chatting option makes the platform more convenient and secure. After chatting with the provider and if agreed, the user can ask for books. The provider can agree to the user's request by accepting a smart notification option.

Only if the provider accepts the request then both user and provider can share those books among
them and after use, they can give a rating to each other. These ratings will indicate the behaviors, responsibility, and professionalism of both the user and the provider.

4. ADVANTAGES
The advantage of the system is beyond limit. The system will change the whole concept of sharing books. The reader will find a completely fresh environment and gather a lot of new experiences using this platform. The system will certainly break the ancient book sharing scenario.

5. SYSTEM ARCHITECTURE
The main architectural components of the system are a graphical user interface (GUI), front end and back end. The technologies mainly used in the development are mainly java and different android libraries (Abdullah-Al-Shafi, et al., 2018; Abdullah-Al-Shafi & Bahar, 2016; Abdullah-Al-Shafi & Bahar, 2018a; Abdullah-Al-Shafi, Bahar & Saha, 2016). Java is an open-source programming language maintained by Oracle and by a community of individual developers and corporations to address many of the challenges encountered in developing any application, program or software (Abdullah-Al-Shafi & Ziaur, 2019; Abdullah-Al-Shafi & Bahar, 2018b; Abdullah-Al-Shafi & Bahar, 2018c; Abdullah-Al-Shafi, 2018). As the system will be deployed in android, java is one of the main languages for building android applications. It aims to simplify both the development and testing process of any programmable software.

Another key component is an android jetpack which provides a library like data binding and design pattern (Bahar, et al., 2018) for client-side model-view-controller (MVC) and model-view-view-model (MVVM), along with components commonly used in different applications. Another important component is shared Preference which works as a storehouse of data. This component is used for saving client ID and password.

Figure 1: System Flow Diagram
The database is the most important thing of any application, software or platform. The whole platform data will be maintained by using Google cloud-based database platform 'firebase'. Firebase is free to use and we used it for storing images, data from users, etc.

The most important feature nowadays for any application is the location. For providing location google map and google location is best. But nowadays Google does not offer free map services, so we had to use this service by accessing another 3rd party system. The 3rd party system is an android library known as the Leku android library. Google location is used for showing both user and provider location.

Some key components of android application development systems are also used in this platform like navigation drawer, activity, fragment, circular image view, etc.

6. CONCLUSION

In conclusion, the proposed system for book sharing will provide a platform for all students to give and take books in a more efficient and streamlined manner. The system incorporates several techniques to further increase the process of sharing books. By automating the book searching process with the help of computer assistance, a lot of precious time and effort of the students will be saved. The proposed system will thus be much more efficient than the current offline process and will be a huge help to all students.

The system will drive the new generation towards books who think reading is boring, because of the availability of the book. Thus, the proposed system will be much more efficient than ever before than the existing offline procedure of sharing books. In the end, the system will ensure the reach of knowledge to everybody’s doorstep. Thus, the system will help to fulfill one of the basic needs of any human which is education. The system will establish the tagline, ‘maximum use of the book, minimum use of money.’

7. REFERENCES


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