

Bankount: A bank account management system using smartphone



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Approval Certificate

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Declaration

I, **Toufiqur Rahman**, declare that this project titled, **Bankount: A bank account management system using smartphone** and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a MSc degree at United International University.
- Where any part of this project has previously been submitted for a degree or any other qualification at United International University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this project is entirely my own work.
- I have acknowledged all main sources of help.
- Where the project is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

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Abstract

Bankount is a bank account management system for managing multiple bank accounts from a single platform. Most people, especially corporate and business man hold multiple bank accounts. But neither there is no way to know the total deposit, nor to know individual account balance or transaction records from the same platform. On the contrary, to know the current account balance they need to visit the nearest bank branch as most of the bank does not provide online service yet or even if they provide, it's not free. Moreover, this service is not available in holidays. Although there is a system running in Europe named Numbrs which is a financial technology company based in Switzerland. It offers an app called Numbrs that aggregates bank account and credit card information and facilitates mobile banking and personal financial planning. But as this system is connected to the bank server with API, it allows limited banks to maintain which they are partnered with. In this experiment, we tried to develop a system which will incorporate all kind of bank transaction information based on their transaction message sent to their customer, as every bank provide this service for free. This system will scan bank transaction messages from the user's smartphone with our mobile app and extract transaction information to the cloud. Users will be able to see all their bank transaction information from anywhere and anytime.

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Thanking you,

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Chapter 1

Introduction

Nowadays most of the people, especially corporate and business man does hold multiple bank accounts. It is very difficult to track all transactions in bank account and credit cards but so far neither there is no way to know the total deposit, nor to know individual account balance or transaction records from the same platform. On the contrary, to know the current account balance they need to visit the nearest bank branch as most of the bank doesn't provide online service yet or even if they provide, it's not free. Moreover, you can't have this service during holidays.

To solve this problem, we will develop a cloud-based mobile application system which will incorporate all kind of bank transaction information based on their transaction message sent to their customer, as every bank provide this service for free and automatically update the account balance on their device. This system will scan bank transaction messages from the user's smartphone with our mobile app named Bankount and extract transaction information to the cloud and also synchronize this information to the cloud which will ensure to protect the loss of data and users will be able to access information securely from anywhere and anytime. Besides, users can access all the transaction information since the registration with our system named Bankount.

Bankount is a system for managing multiple bank account from a single platform. Users can simply add their bank accounts in this app installed on their mobile device. Then with every completed transaction, when users receive a confirmation message, the system would collect transaction information and update it on their device and as well as into the server.

Chapter 2

Existing System

2.1 Numbrs

With Numbrs, users' finances are almost done by themselves. Users can manage their accounts smoothly, track their income and spending, receive smart analytics, and save money effortlessly - online banking with just one app. Users can manage all of their bank accounts in one app. This app links users' bank account and does the hard work for them. Whether users connect one or more bank accounts, Numbrs always provides a complete picture of finances. This app supports more than 3,500 banks in Germany and the biggest banks in the UK [1].

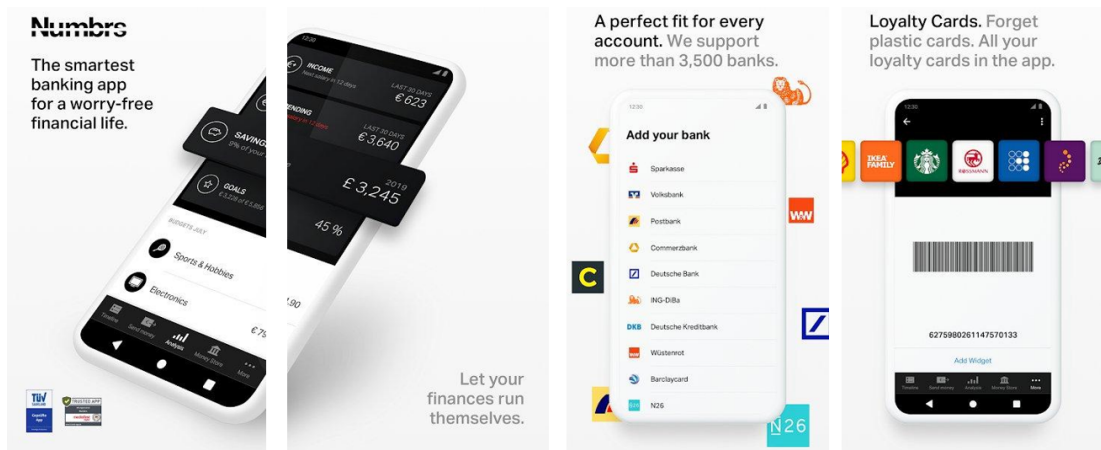


Figure 2.1: Numbrs - App activity

2.2 Bankin'

Bankin' is a money management system available for web and android and ios created by Perspecteev SAS. They allow 350 banks in 4 countries (France, the UK, Spain, and Germany). It offers premium features and users purchase Premium subscriptions, Bankin' Plus+ (€4.99/month or €29.99/year) and Bankin' Pro (€19.99/month or €99.99/year) [2].

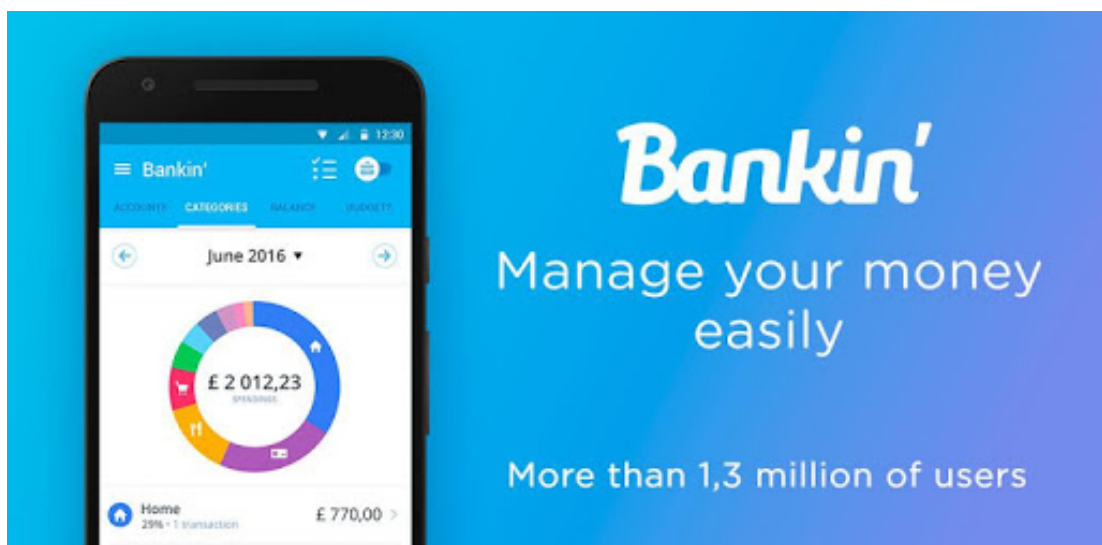


Figure 2.2: Bankin' - App interface

2.3 Outbank

Outbank available for android and ios allows users to aggregate their bank accounts, instant access savings accounts, stock portfolios, credit cards, and digital services such as PayPal in one app. More than 4,000 banks and financial institutions have been integrated across Germany, Austria, and Switzerland [3].

2.4 Linxo

Linxo is a money management system available for web, android, ios, and windows platform created by Linxo SAS. It can access over 320 banks and account types and automatically centralizes all the operations in users' accounts. It provides spending

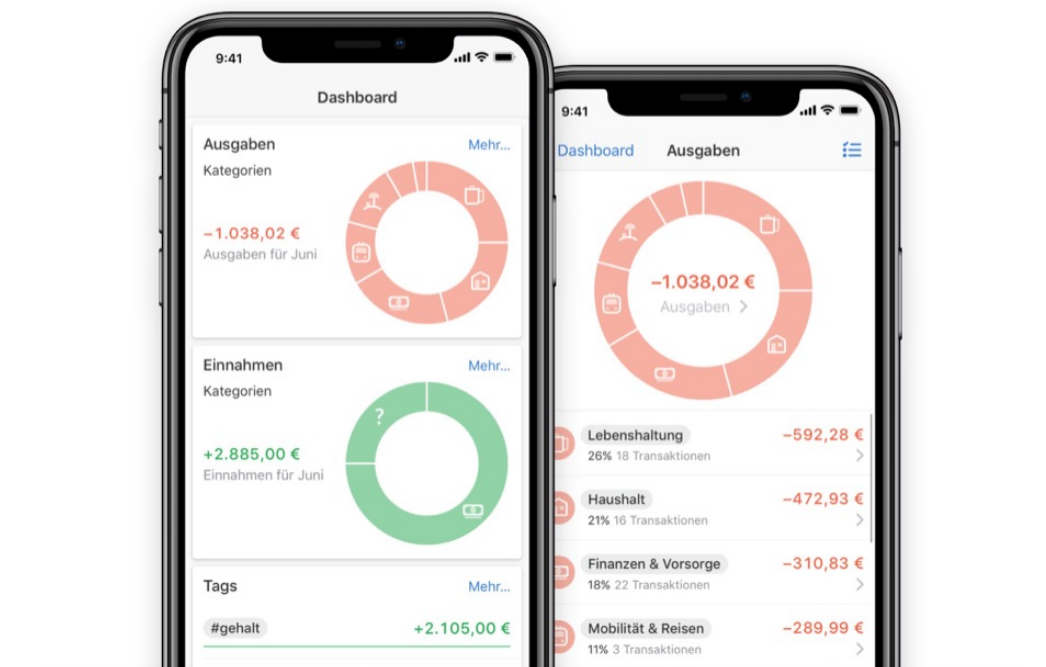


Figure 2.3: Outbank - App interface

and savings information. It also allows transferring funds to other accounts through their app [4].



Figure 2.4: Linxo - App interface

2.5 Kresus

Kresus is a personal finance manager to check all accounts, from any bank, in a single place. It is open-source and self-hostable software. So users can use this system by manual input of their bank accounts and transaction record [5].

2.6 bKash

bKash App is a simple, easy-to-use, and highly secure mobile money app for sending cash quickly to people, recharging mobile balance, paying favorite stores and shops, making utility and other bill payments from home, and so much more. It also provides notifications on latest bKash activity and offers transaction history, transaction summary, and status of transaction limits, and many other mobile financial services. To start using the app, users need an active bKash account and can log in by simply entering bKash account number and existing bKash PIN after account verification.

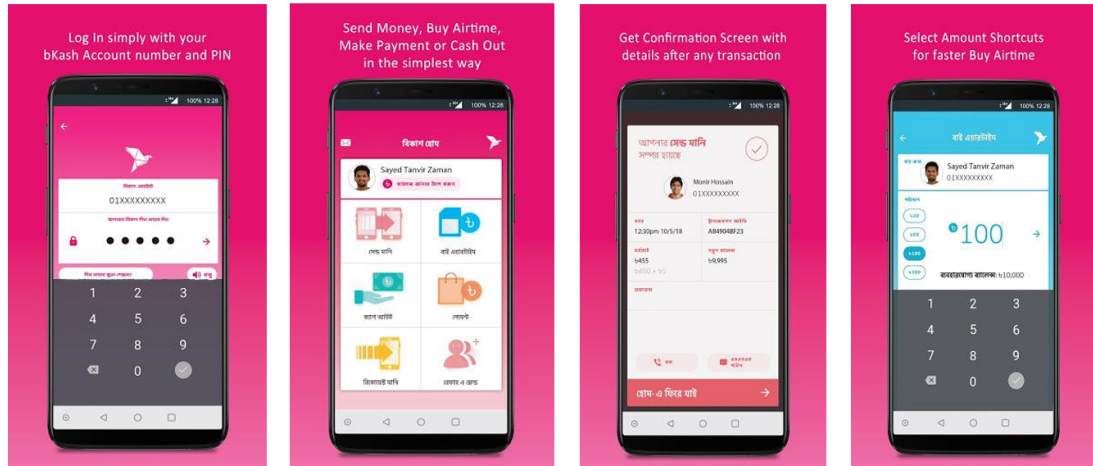


Figure 2.5: bKash - App interface

2.7 NexusPay

NexusPay from Dutch-Bangla Bank is the first fully card less solution in Bangladesh. NexusPay works with all types of cards including Nexus, Visa, MasterCard, Dutch-Bangla Bank Agent Banking, and Rocket Mobile Banking.

Even though there are number of systems available around the world for bank account management, there is no such system in our country to facilitate customers for managing their multiple bank accounts. Therefore, we are developing such a system in this project to create this facility.

Chapter 3

Proposed System

The world is changing so fast. Nowadays people always find out the easiest path to get things done. You just think about that, you have more than four bank accounts. And you need to assess them in different ways for each account. Which is so much time consuming and difficult. What if we get you a system that will make your life so much easier and comfortable for every transaction? Here is the system that will be easy to use and easy to assess with all bank accounts from a single platform. It does not matter where users are. Users can access their transaction history from anywhere. Users do not need to worry about the loss of banking information and their transaction histories. It will be kept safe in our system. And this system reserves the right to report to law enforcement agencies for any activities that reasonably believe to be unlawful.

3.1 Design

With Bankount users can add their all bank accounts. To create a new user account, users just need to put their full name, email, and password. Otherwise, users just go to the 'Login' page and put the email and password. After then users need to add their bank accounts step by step. After adding bank account, system will automatically scan smartphone device to get transaction SMS and send them to server for storing transaction records.

It is a mobile (iOS, Android) based application. So users can download the mobile app and start using it. They also can access information from the web platform. We are working on the updated version.

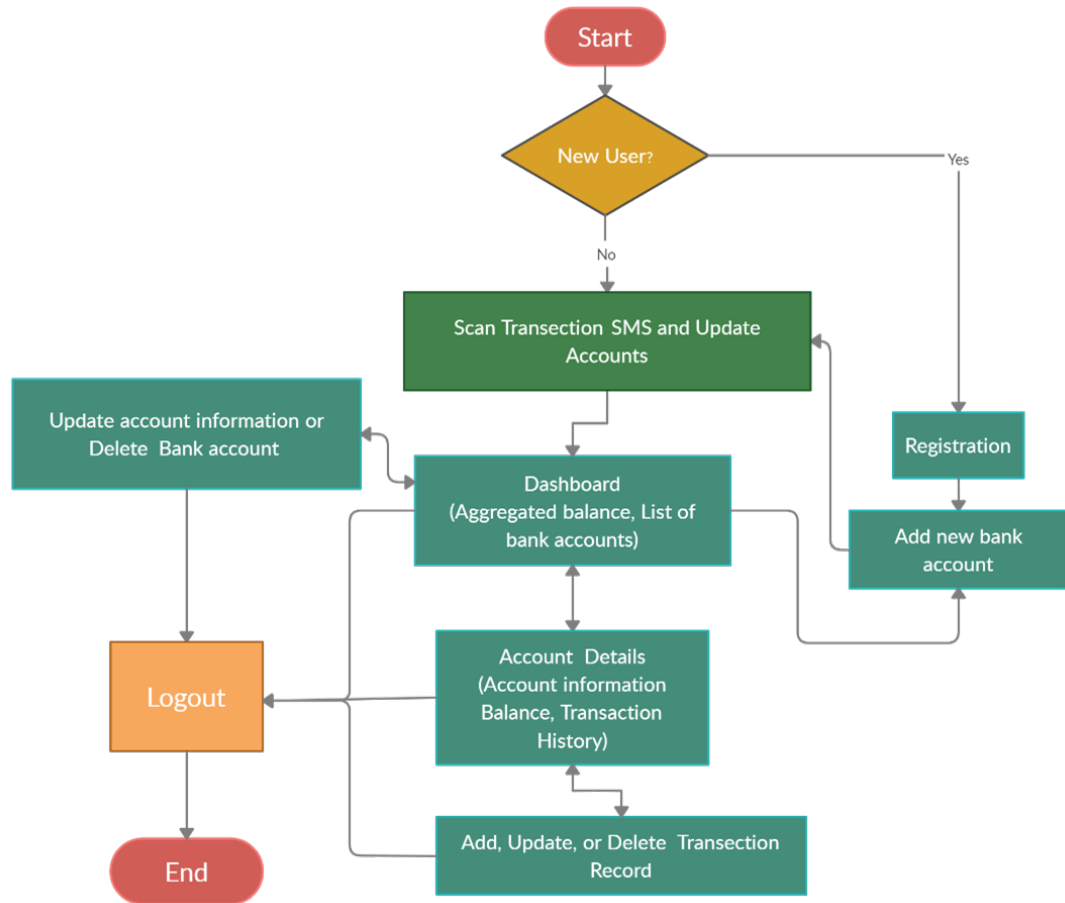


Figure 3.1: Proposed system - Data Flow Diagram (DFD) of proposed system

Fig. 3.1 shows the complete Data Flow Diagram (DFD) of our proposed system. In this system, users can add their bank accounts available in Bangladesh to manage account information, balance, and transaction history. To create a new user account, users just need to register a new user account. After then users need to add their bank accounts step by step. After adding a bank account, system will automatically scan the smartphone device to get transaction SMS and send them to the server for storing transaction records. Dashboard represents list of all bank accounts added to our system and the amount of money of each of the bank account as well as the aggregated balance of all accounts. Account Details represents details of selected bank account and transaction records of that account. If any transaction is missing in our system, users can add new transactions or update, delete any transaction if they want. To update

or completely delete of any account is also possible. A logout system allows users to protect their data and secure usages of this system,

3.2 Mobile app-based features

Following feature shows how to create a user account as a new member. If users already have an account then they need to press the ‘Already have an account’, which are showing in the Fig.3.2 and Fig.3.3.

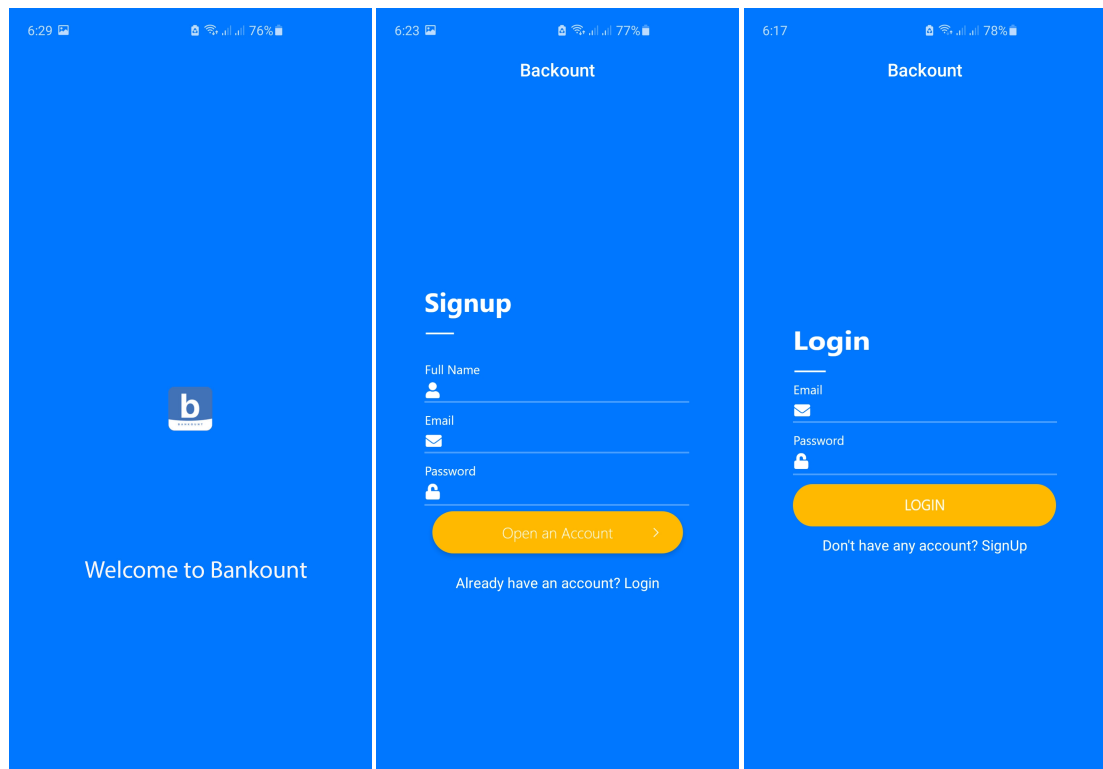


Figure 3.2: Welcome

Figure 3.3: Sign up

Figure 3.4: Login

Fig: 3.1: It shows the ‘Bankount’ Welcome page. Fig: 3.2: ‘Sign UP’ page and Fig: 3.3: ‘Login ’page.

To Manage bank accounts, users can add their bank accounts and manage them if they need. Users can anytime change or update their account information if needed. Users can also delete any bank account similarly they can add transaction history for each account and update or delete each transaction record.

3.2 Mobile app-based features

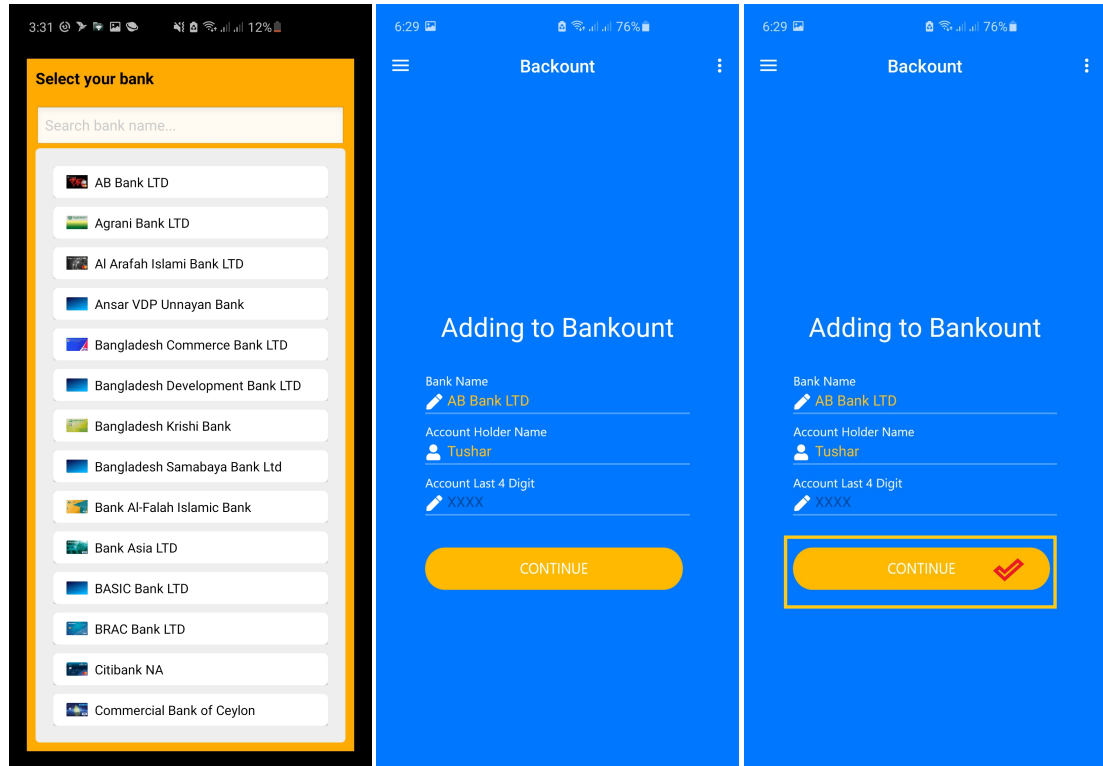


Figure 3.5: List of all banks

Figure 3.6: Add new account

Figure 3.7: Confirm Account addition

To add a bank account users first select a bank name from the list of bank names showing in Fig: 3.4. Then providing account information like account holder name and account last 4 digits showing in Fig: 3.5, users can easily add their account by pressing continue button showing in Fig: 3.6.

3.2 Mobile app-based features

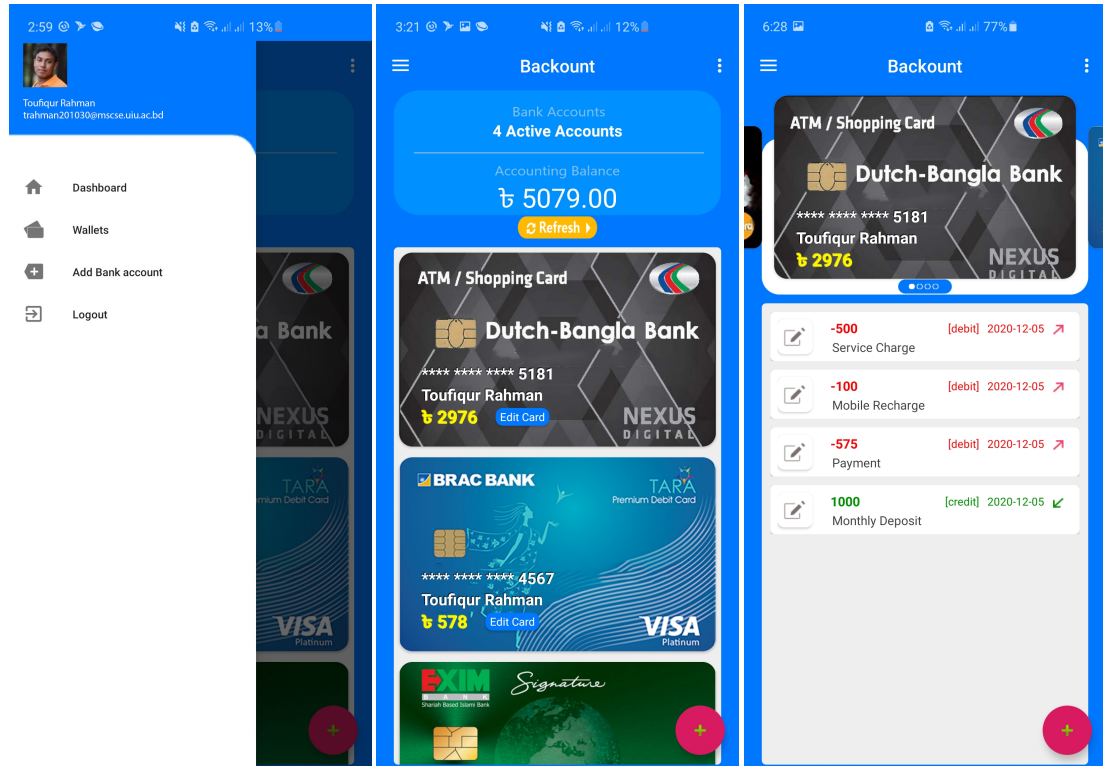


Figure 3.8: Application Main Menu

Figure 3.9: Dashboard-Bank accounts

Figure 3.10: Transaction history

Fig: 3.7 shows the Main Menu containing 'Dashboard', 'Wallets', 'Add Bank Account', and 'Logout' options.

In Fig: 3.8, Dashboard shows all bank accounts added and the amount of money of each of the bank account as well as the total balance of all accounts. Users can press on 'Wallets' or select any card to see all the Transactions of bank accounts showing in Fig: 3.9 and also they can add a new bank account, new Transaction by pressing the plus button and update or delete any account or Transaction by pressing the edit button.

3.2 Mobile app-based features

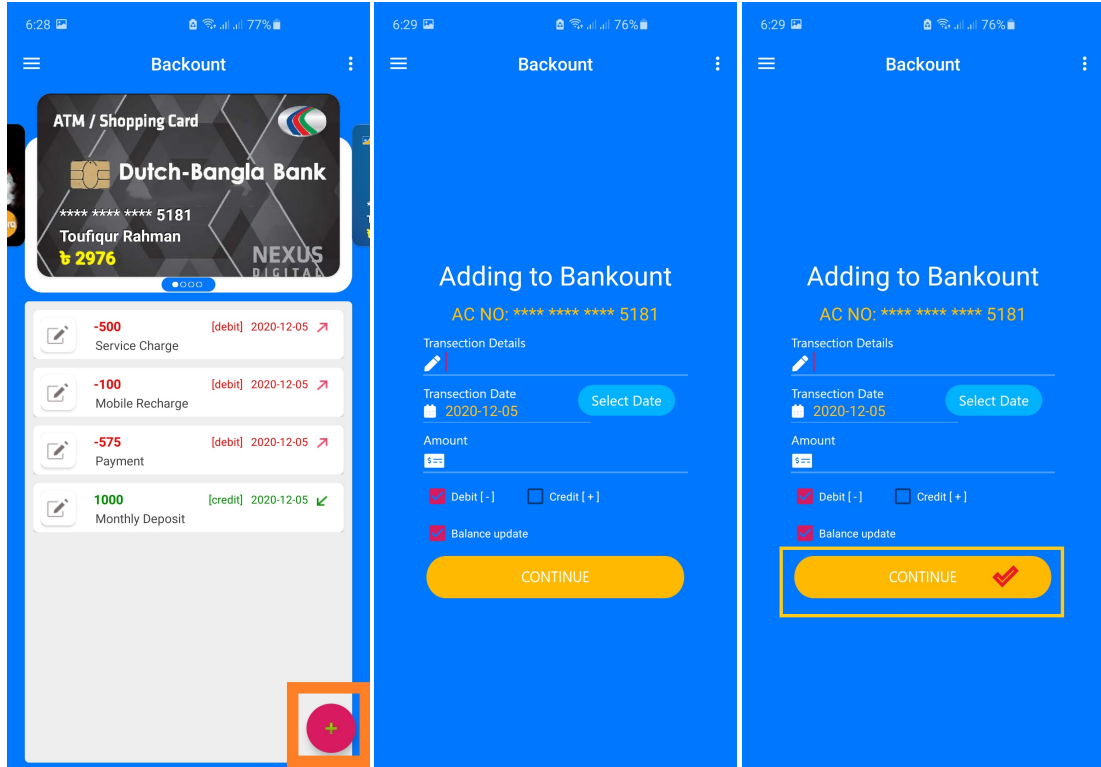


Figure 3.11: Add Transaction button

Figure 3.12: Add new Transaction

Figure 3.13: Confirm transaction addition

To add a transaction record users first press the plus button showing in Fig: 3.10. Then providing transaction information like transaction details, transaction date, amount of transaction and transaction type such as debit or credit showing in Fig: 3.11, users can easily add transaction record by pressing the continue button showing in Fig: 3.12.

3.2 Mobile app-based features

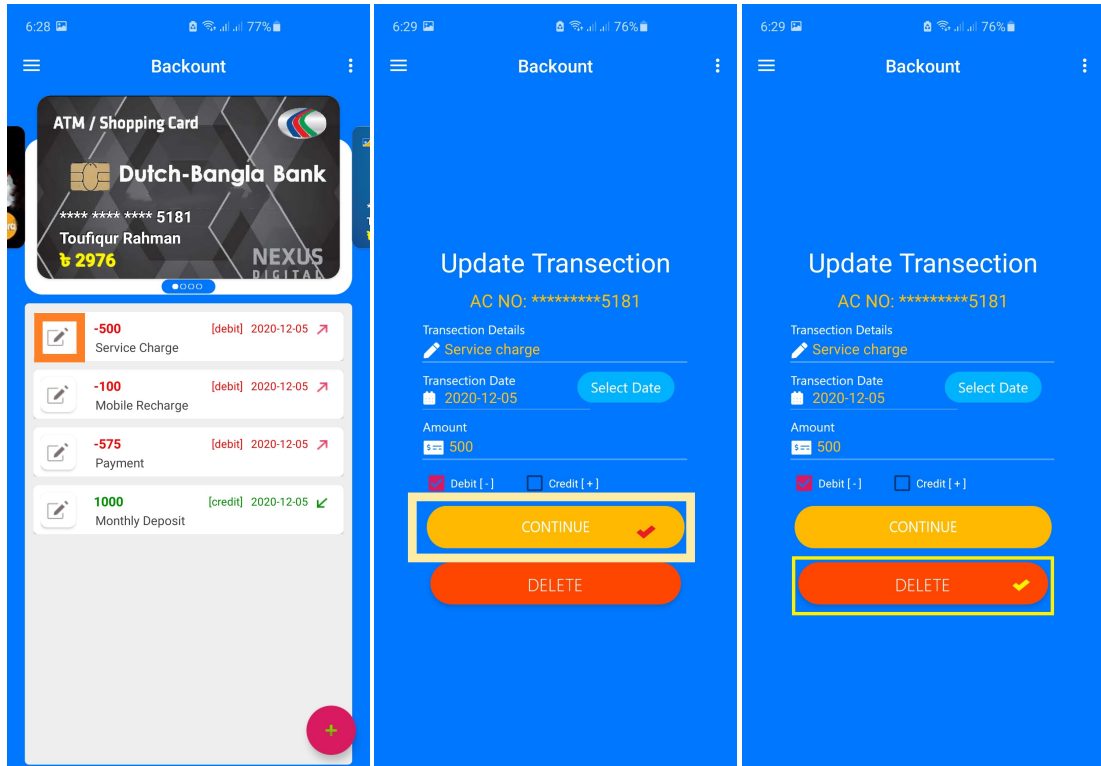


Figure 3.14: Edit Transaction button

Figure 3.15: Update Transaction

Figure 3.16: Transaction delete button

To update or delete any transaction record, users press the edit button showing in Fig: 3.13 then providing updated transaction information, users can easily update or change transaction record by pressing the continue button showing in Fig: 3.12. To delete any transaction, users simply press on delete button showing in Fig: 3.15.

3.2 Mobile app-based features

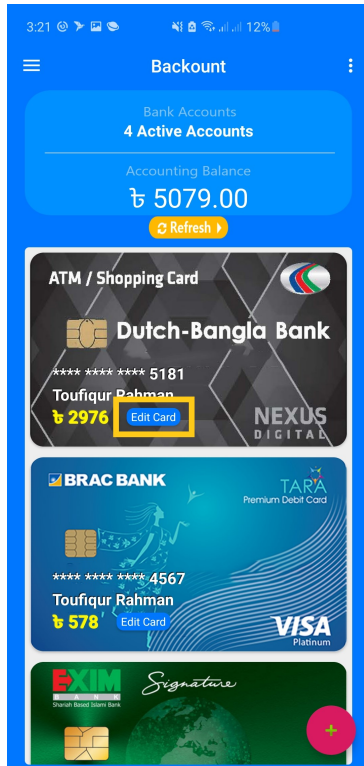


Figure 3.17: Edit Account button

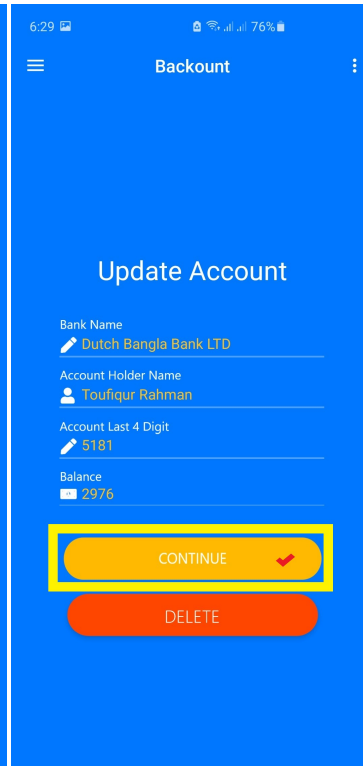


Figure 3.18: Manage existing Account

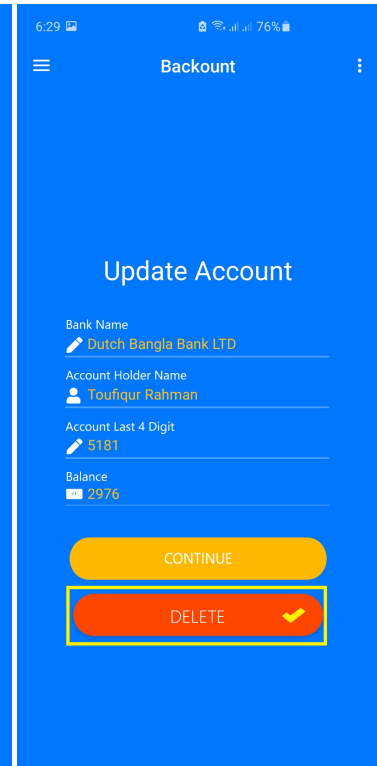


Figure 3.19: Delete Account

To update bank account information, users press the edit card button showing in Fig: 3.16 then providing updated account information, users can easily update or change accounts by pressing the continue button showing in Fig: 3.17. Here, users can also change account balance if needed. To delete any bank account as well as all transaction records corresponding to that account, users simply press on delete button showing in Fig: 3.18.

Chapter 4

Advantages and Limitations

4.1 Advantages

This system will make life easier for those people or organizations who have to handle multiple bank accounts. Although this is not going to help to manage those accounts, still it can save time by just showing transaction records and current account balance, which can also be a great help to some extent. Besides, it stores all the transaction records on the server, so the user will be able to access all the transaction records from anywhere, any time and from any platform (Web, Desktop, Android, and iOS). The analytics would also help the user to visualize the transaction statistics with each account wise, month-wise, and so on. Features include:

- Account information such as account number, account name, balance, and transaction history.
- An individual and aggregated balance of all accounts added to the system.
- Scanning incoming transaction SMS sent by the bank for storing transaction record automatically.
- An individual and aggregated balance of all accounts added to the system.
- Allowing users to update, delete any transaction or add any missing transaction record.
- Get to know financial health in real time from a single platform anytime anywhere.

4.2 Limitations

Even though having these advantages, we still have some limitations we were not able to cover up within this short time period. First of all, though this system can catch all the incoming messages and extract information when internet is available, a new message pattern can cause extraction error. On the contrary, scanning message for iOS is not supported yet. Moreover, until this version, only few bank transaction message format is tested. These are Exim bank Limited, Dutch Bangla Bank Limited and Islamic Bank Limited. So more bank transaction message format should be tested for effectively use of this system.

Chapter 5

Conclusions and Future Work

5.1 Conclusions

To conclude, in all our experiments we just tried to develop a system, which will allow user to manage their multiple bank account and to track all transactions in bank account and credit cards in one platform. The system help users to know financial health in real time from a single platform anytime anywhere. Also, user can use this system without any cost.

This system will scan bank transaction messages from the users' smartphone with our mobile app and extract transaction information to store on the cloud. Users will be able to see all their bank transaction information from anywhere and anytime.

5.2 Future Work

First of all, we would like to rid all of the limitations. Need to run services for both android and iOS app to read SMS immediately. We also need to upgrade the web app. The data analysis and dashboard is not available yet. We would like to implement organization support so that one account can be accessed by multiple people with different roles. Besides, it should have the feature to collect transactions from different smartphones and store them for a single Bankount account instance. As this system would gather a lot of useful information, we could process them to extract knowledge by applying Machine Learning and Data Analytics. In the future we can connect the app with the bank and MFS system using their API, this way we will also be able to provide more features with higher accuracy. After having enough amount of data in

our system of a particular user, we can predict fraud transaction and notify the user about it.

5.3 References

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2. <https://bankin.com/>
3. <https://alternativeto.net/software/outbank/about/>
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