

**DESIGN AND DEVELOPMENT OF AN ANDROID APPLICATION NAME
VIRTUAL IDENTITY (VID)**

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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

The project titled “**Virtual Identity (VID)**”, submitted by Musfik Ahmad, ID: 151-15-5342 and Hasanuzzaman, ID 151-15-5255, 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 5 November, 2018.

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We hereby declare that, this project has done by us under the supervision of **Md. Jueal Mia, Lecturer of CSE dept. Daffodil International University**. We 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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ABSTRACT

The aim of this project is to help the people who like to update their lifestyle through the topmost use of modern technology. This service deals with every citizen of our country. By using this service an individual can store all his necessary data in a particular place. There will be information about his birth and birthplace, his schools, colleges, universities, occupations, extra-curricular activities, his family, his marital status, his income, his tax, his certificates, passports, police verifications, bank statements, medical reports etc. He will not have to stand in a line for hours or he will not have to roam here and there for required documents in time of need. It will be a junction of all authentic verified information of a person. Like while applying somewhere generally the user will need birth certificate, NID, certificates, police verification papers, signatures, pictures etc. All the information will be provided by this service. The data are authentic, verified and secure. Both Government and citizens are expected to be benefited through this service. We have done this project by using is, Android Studio, XML, Language: JAVA, Database: Firebase. After execution, the system is tested in various circumstances and it is proved effective as a demo application.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

VID stands for Virtual Identity. As we are given National Identity Card (NID) for being a citizen of a country. VID is a virtual identity for every citizen of the country. VID will include every single information of an individual. The difference between VID and NID is that NID is an analog process where information is scattered and not available to the user from anywhere. On the other hand, VID is a digital process where information is being brought together and available for the users from anywhere. A user can use his verified information in different sectors. This is a warehouse of information of a citizen.

These data will be collected by the government. But these data cannot be used by any user. User as well as the citizen cannot use these data directly. User can use these data by copying or get a photocopy version of it.

We are trying to do a better approach to use those data by sending it to there where it is needed. User will have the control to send to where user wants.

1.2 Motivation of Work

Main motivation of this project is to promote this type of application which is for government and all type of citizen of a country.

So it is quite difficult for the user to operate this system as it is completely unknown to the citizen.

VID aims to virtually arrange all data of a citizen. If your data is Virtually arranged, you don't have to run here and there. Data can be used in many areas and can be send and used anywhere. Sitting in your home you can fill any form, apply anywhere with every required document. The government can ensure the misuse of information and build a corruption free database where user will not have to pay to get his own information. Unfortunately, we are ineffective because we don't have the full database.

1.3 Objectives:

- One stoppage for all personal data.
- Create a mobile app to user end.
- Use those personal data for personal use.
- Link one user data in one place.
- More secure.
- Making data more authentic.
- More access able.
- Reducing trouble and saving time.
- Easily controllable and editable.
- Accumulated and protected by government
- No more scattered data.

1.4 Expected Outcome

- Analog data will turn into digital data.
- Saving time
- Smart database system
- Data recycling
- More control

1.5 Report Layout

This report contains other part in the given way. In chapter 2 we will keep the discussion about the background of this service, related work and comparative studies, problems that may arise and challenges of this project. Then in next chapter we will discuss about requirement specifications including business process modeling, requirement collection and analysis and use of case modeling and description. We will also discuss about logical data model and design requirements in this chapter. Then we will discuss about front end design, back end design, interaction design and UX and also discussed about implemented requirements in chapter 4 named design specification. Implementation and front-end design and implementation of interaction along with testing implementation and test results and reports will be discussed under the name of Implementation and Testing in chapter 5. In chapter 6 the conclusion will be done by discussing discussion and conclusion and scope for further developments.

References and appendices will be given later on under the title of appendix A: project reflection, Appendix B: Related diagram.

CHAPTER 2

BACKGROUND

2.1 Introduction

We developed a system which can interconnect the government related databases which are basically disperse in different field. It is very easy when all data of a citizen will be reserved in one place, so we can use our right information in right time. By applying this sort of system, government can easily get rid of those unnecessary data which are not used anymore. Most of the people of our country has smart devices to use this application and get the real benefit.

2.2 Related Works

We can see this type of work in Google and Facebook where others website can be connected with these accounts, so the needed information can be extracted. In some developed country, they give smart ids where user can use the intergraded data easily transmitted to other system.

2.3 Comparative Studies

This application developed us is completely isolated from other application which already exist since we are trying to introduce our unique application and database system in our government. Some developed country has already implemented this kind of application and database system to enhance citizen information and privacy. In privet sector, this kind of database system has already been developed and implemented in some way. But we are working to implement our conception providing gigantic storehouse of information in our country.

2.4 Scope of the Problem

- Friendly user interface
- Updated information
- Easy access of the information
- Robust system
- Easy tracking

2.5 Challenges

- Collecting citizen's personal data from them
- Checking, debug and test
- Centralized the integrating data
- Parsing specific data
- Building a simple user interface

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Business process modeling

It is a strategy agency of a company's business strategy and work progress, a medium of identifying potentiality of improvement. It can be done following many methods like flowcharts and data-flow diagram.

3.1.1 Business processing model (Agile method)

We are using agile method as a business processing model of our project for the causes given below: [1]

- Working application is delivered frequently
- Improve Process Communication
- Increase Control and Consistency
- Improve Operational Efficiencies

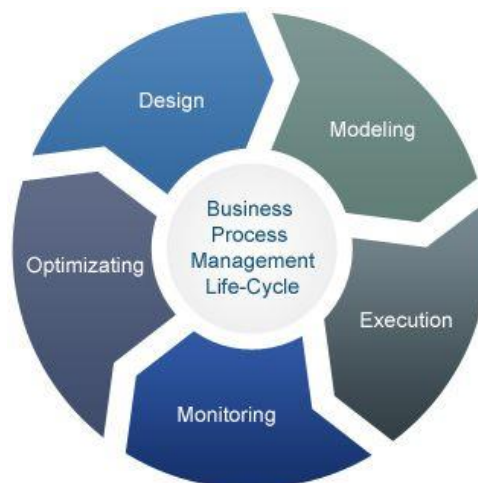


Figure 3.1.1: Business processing model (agile method)

3.2 Requirement Collection & Analysis

3.2.1 Software Requirements:

- Android Studio IDE
- Android Virtual Device
- Database: Firebase
- Firebase Storage
- Firebase Hosting
- Firebase Authentication
- Adobe Photoshop

3.2.2 Hardware Requirements:

- Operating system: Windows
- Android supported device
- Computer configuration:
 - RAM-8GB (min)
 - Hard Disk- 150GB (min)
 - Processor- 1.5GHz (min)

3.4 Use Case Modeling and Description

It is a system that allows a user to connect one or more than one users who are foreigners to the database. Every use case should give some reasonable, to the point and authentic result to the participator or providers of the application. It is used for the specification of required information, why those are required, what is the need of those required information, what is supposed to be done by the server, how the required information pose with the surrounding so that it can offer its service.

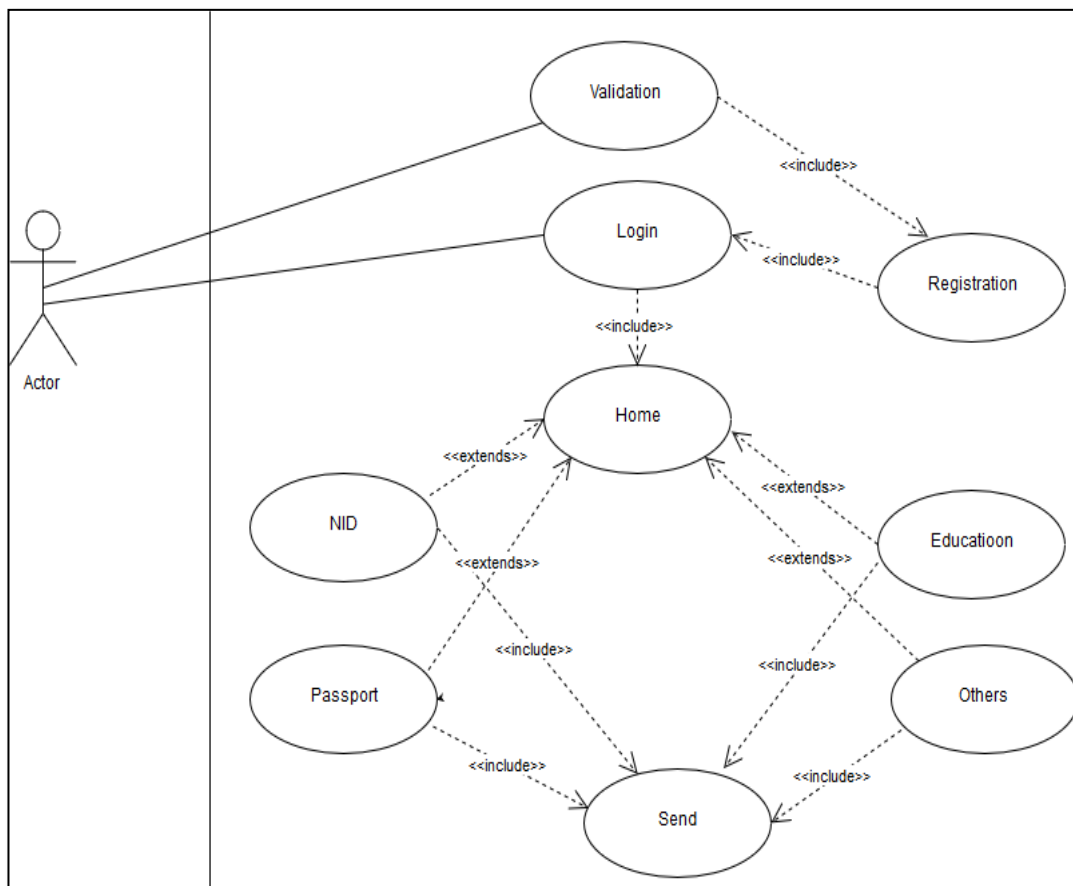


Figure 3.3: Use case diagram

Use Cases	User of The Application
Primary Actor	User
Pre-Condition	User Must have an Account for Log In. User need to Give all the correct information for create an account.
Description	Normally User can browse or see all the services. If he/she have an account, he will get all listed services. He/she can send feedback to the admin.
Post-Condition	Show an acknowledgement to user “You have Successfully Logged in”. Then he/she will be able to take all the services.

Table 3.3: Illustrates the idea of use cases of different users.

3.5 Logical Data Model

Logical data models represent the abstract structure of a domain of information. [10] It is a map of the whole project. Access this user need his/her NID, date of birth, email and password. After that user can use his/her data. System will provide those data in real-time. User can give feedback to the system.

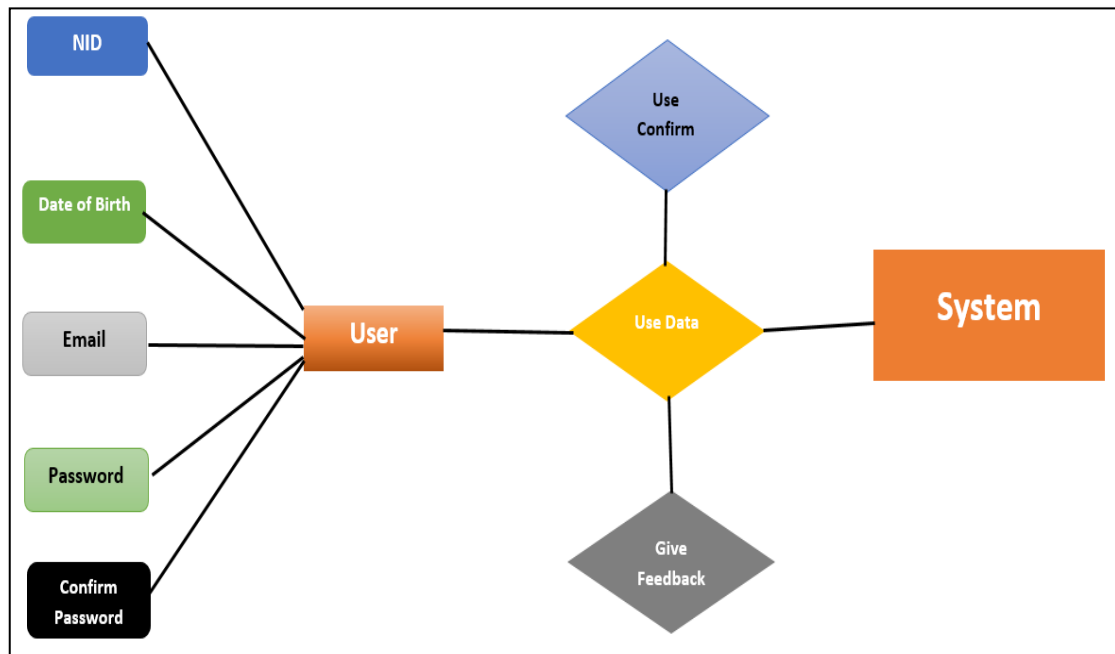


Figure 3.4: E-R Diagram of the Proposed System

3.5 Design Requirements

- The system will be used by user who is a citizen also.
- System admin will control database.
- User will create account and login.
- User will give NID no & data of birth to identify himself. Then user can sign up providing phone no, email address, password etc.
- User can send data.
- User can request to admin to edit data. Admin can edit after verify.
- The messages will be stored in database.
- Admin (govt.) can edit or remove any data or account if it's needed.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design Specification

In front end design, we kept our outlook of this application simple and friendly to users so that they can navigate every option easily. Details are given below.

4.1.1 User authentication

First, a user has to provide NID no. and date of birth to check and authenticate that his data is in the database or not. We use firebase query to check user's data and to authenticate him. We use Linear layout [2], edit text and date area, progress bar animation and a check button. User will get toast message if success.

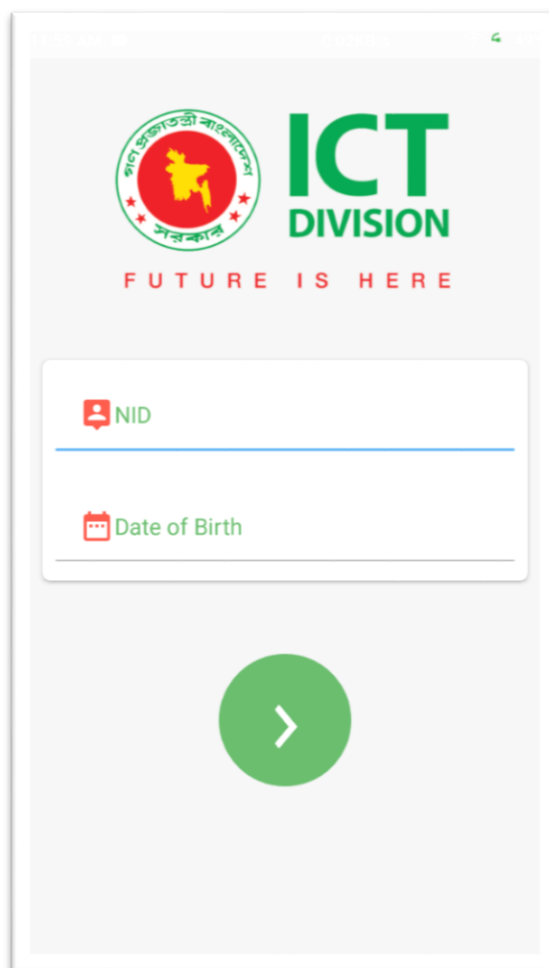
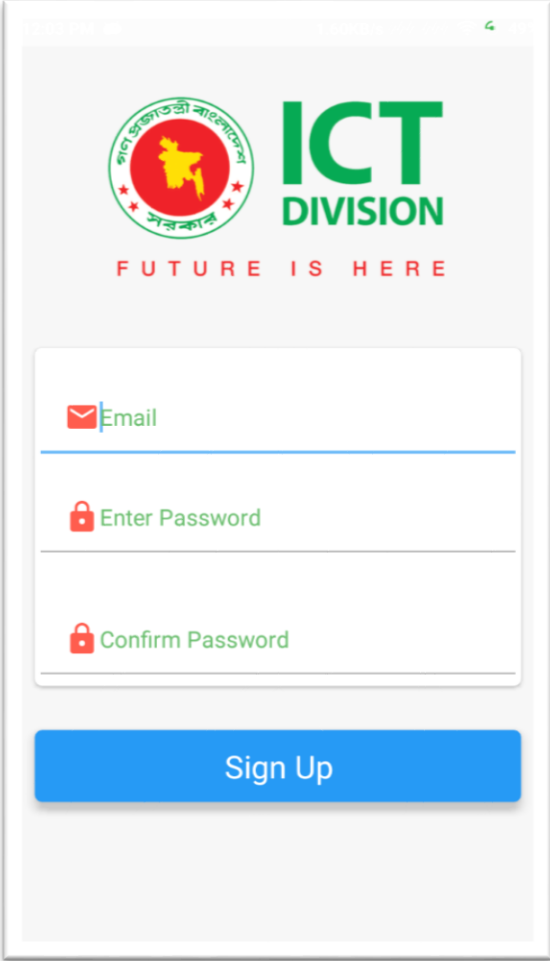


Figure 4.1.1: User's data checking

4.1.2 Signup process

After checking, if user is new then user will see a sign-up page to set up his profile. If user is already signed up, then he will redirect to log in page with a toast message that he is already registered.



The image shows a mobile application interface for the ICT Division. At the top, there is a header with the Bangladesh coat of arms on the left, the text 'ICT DIVISION' in green, and the slogan 'FUTURE IS HERE' in red. Below the header is a sign-up form with three input fields: 'Email' (with an envelope icon), 'Enter Password' (with a lock icon), and 'Confirm Password' (with a lock icon). A blue 'Sign Up' button is located at the bottom of the form.

Figure 4.1.2: Sign up

4.1.3 Log in as user

If user is already having an account, then he will see the log in page directly. After logging in user can do to home page. We use firebase authentication [3] with a scroll view [4] to authenticate email and password.

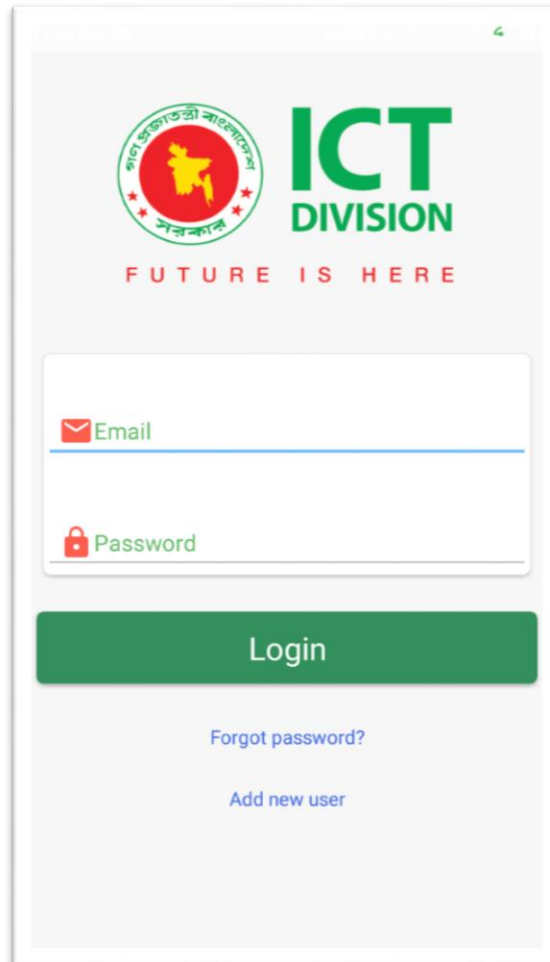


Figure 4.1.3: Log in

4.1.4 Home page

After logging in, user will go to home page with different options. In this page everything is ordered systematically. Information are not scattered in this page. They are arranged and categorized according to their types. User can choose any specific option with click and every related information will be shown on screen. We use navigation drawer layout [5] to navigate all activity.

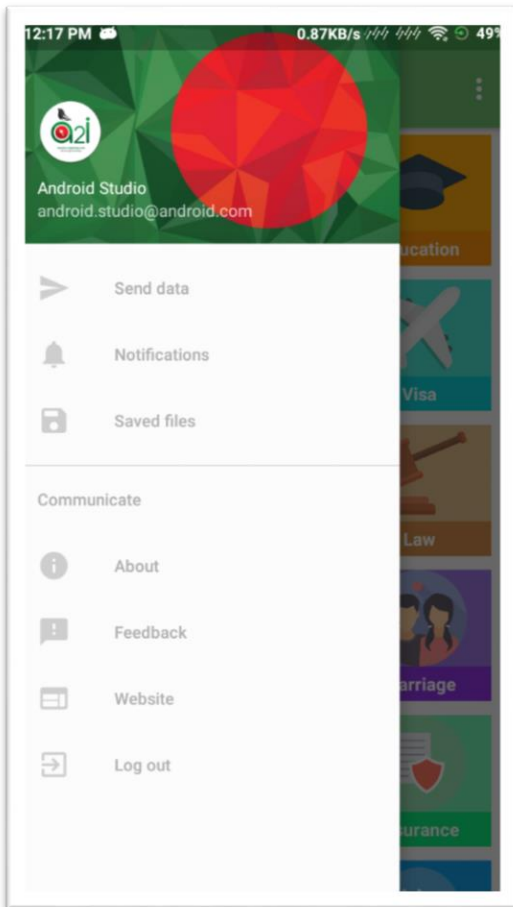


Figure 4.1.4.a: Home with navigation



Figure 4.1.4.b: Home content

4.1.5 Showing information details

When user go to each option, user will get a list of his information. Suppose, if user goes to NID option then user can see his name, father's name, id no, address etc. User also can see his/her photo where it's needed.

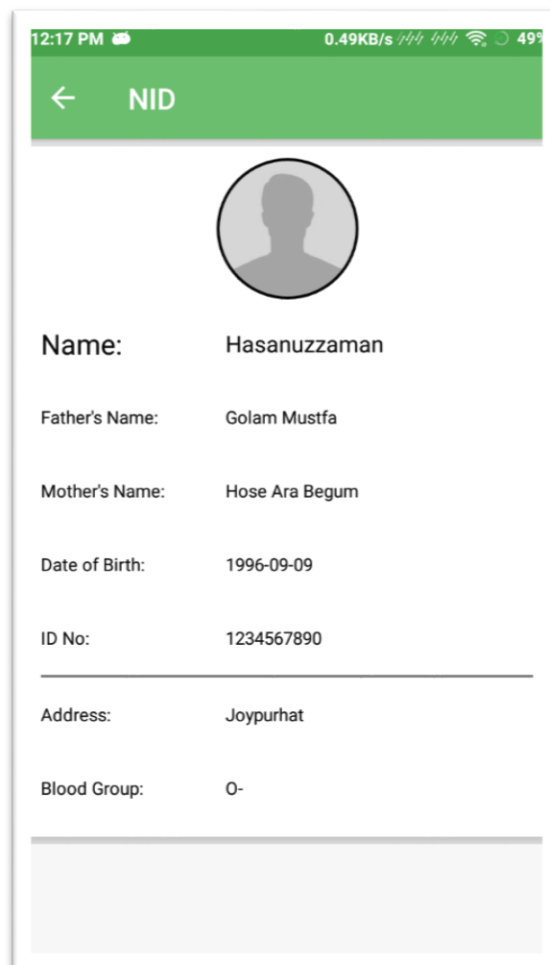


Figure 4.1.5: Showing information details

4.2 Back-end Design Specification

Back end design is the ultimate destination of this application. Interaction design is a must for an application to perform swiftly. We tried to do our best to make this application easy as much as possible. We have used buttons and icons to create an easier application for the users. Many icons are used by us to select desired information. So an illiterate person can also operate this service with little or without any help. This makes the service easier to use. [6]

4.3 Interaction Design and UX

Interaction design is understandable in light terms. It can be defined as the relationship into the users of the products and the products. Very often these products are virtual products like different apps, websites etc. Interaction design aims to give the best service to its user what he/she gets online. It works on the improvement of the product's quality, availability, validity and the delight the user gets using the product. [7]

We tried to make this application simple, minimal and easy to use for all user to use in daily life. The mechanism of these application is also simple to understand and improve in future. We have implemented animation, relative icons [8], proper descriptions, user friendly design for better user experience.

4.4 Implementation Requirements

Technology used to develop this system are as follows:

Programming/Scripting Languages: JAVA, XML

Database: Firebase

Storage: Firebase

Authentication: Firebase

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

We are using online firebase real-time database [9] server for data storage. We use firebase hosting for host user data entry web form. User cannot entry his/her own data. Only admin which is government can entry user's data. These data will be stored in database. All data is stored by its category. Every user data will be saved under NID no. which is unique for everyone so it's a primary key.

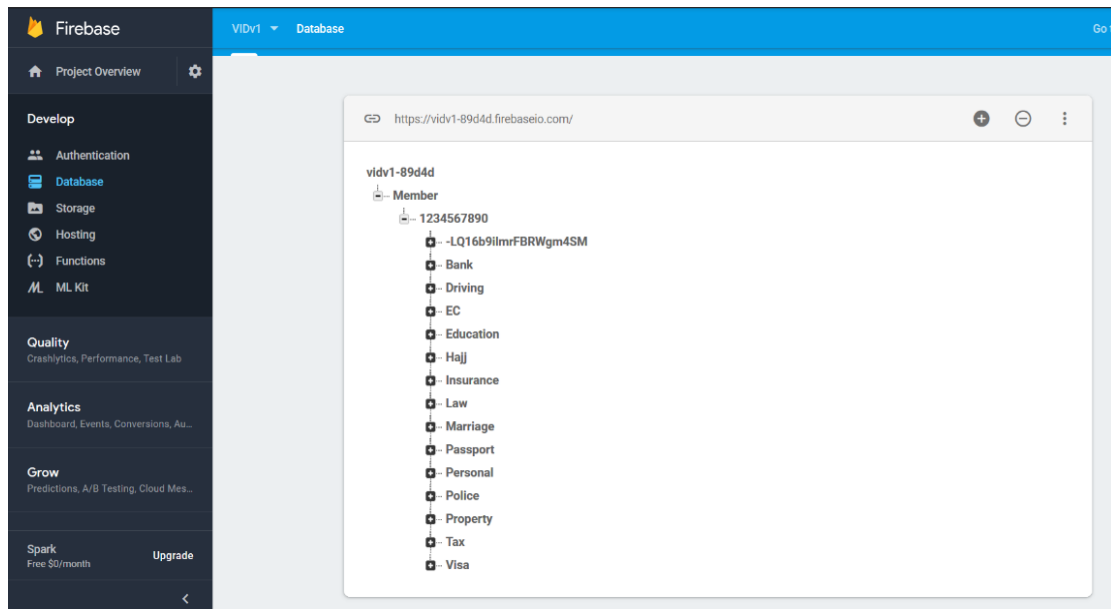


Figure 5.1: Implementation of Database

5.2 Implementation of Front-end Design

We tried to keep our front end design simple and easy to understand. So that a user can easily understand and do his work. We use navigation layout, scroll view layout, buttons, search bar and many more feature to keep an interactive design. We set nice and relative images and icons to help user.

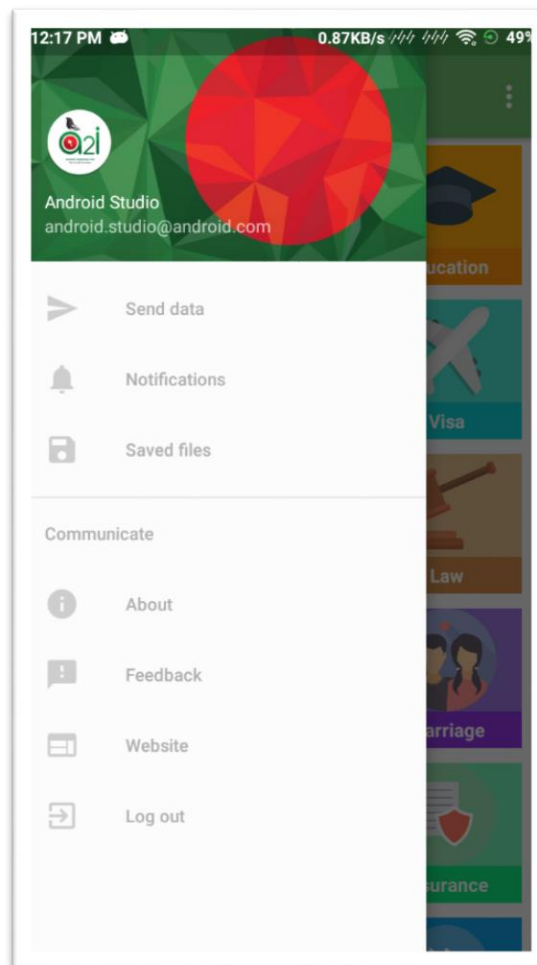


Figure 5.2: Front end design

5.3 Implementation of Interactions

5.3.1 Choose sender

While sending data, user will first choose where to send data. User can search from list where to send. Those, who are authenticated from government will be listed here by the admin. So that user can only send data to the exact and authenticated company or institute. For example, user can search for Daffodil International University and select to send data.

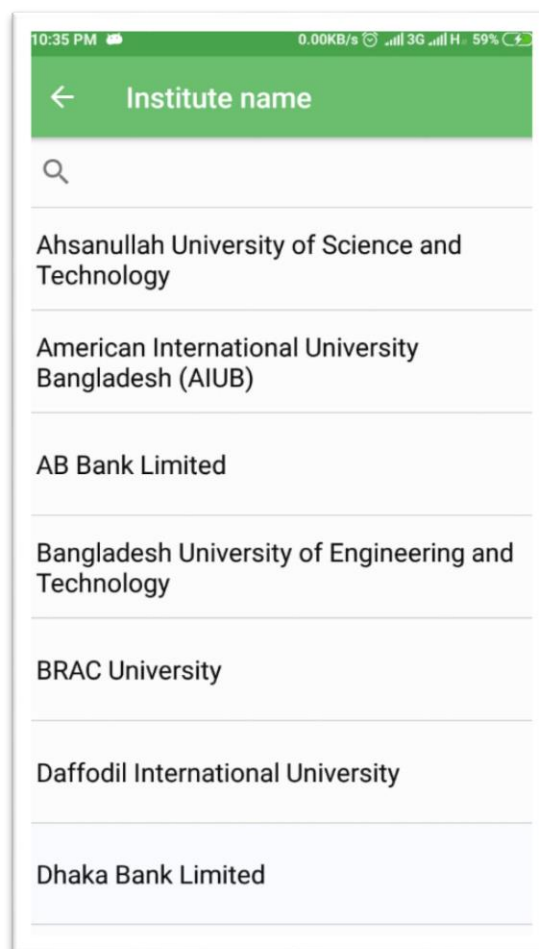


Figure 5.3.1: Choosing sender

5.3.2 Give access to data

Sender already submit their need to admin(govt.) that what data they need to access. After admin approval, sender name will be shown in sender list. When user want to send data, a pop up will come up with details that what data user want to send or access. This will help admin and user a lot, because is this system, any data cannot be stolen.

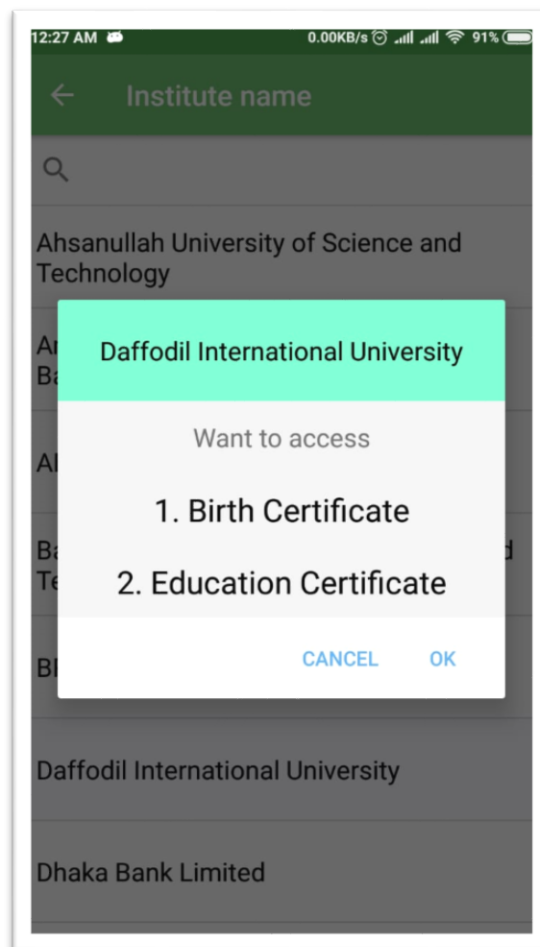


Figure 5.3.2: Giving access

5.4 Testing Implementation

Implementation testing is a procedure to check the execution of technological approaches. On one hand it executes the approaches to check if it works in real life or not, on other hand it shows the progress and lacking of the application. It aids in promoting the quality and interoperability of execution by solving the lacking.

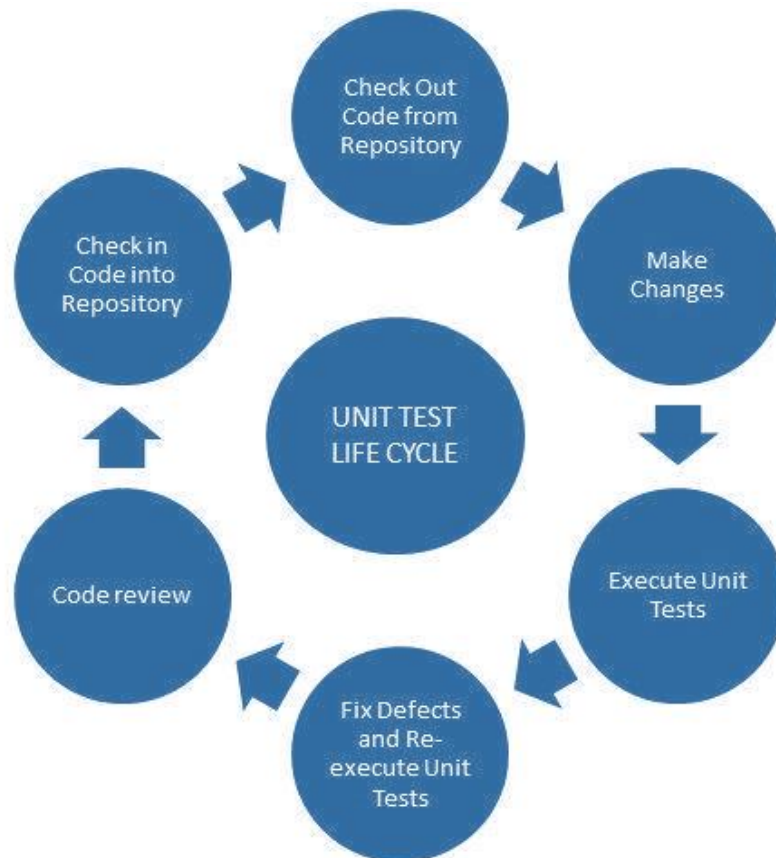


Figure 5.4: unit testing life cycle

5.6 Test Results and Reports

Testing name	Supported case	Limitations
Email validation	User can enter any email that follow email pattern	Valid or inactive email cannot be detected
Password	Minimum length is 6 and can be any type like numbers, special characters, symbols etc.	Not supported if length is shorter than 6 and there is no upper limit of password.
NID validation	Input type must be number and valid NID	Other character or invalid NID no not supported
Date of birth	Input type must be date format (YYYY/MM/DD)	Invalid format will cause error
Share data	Only authorized institute can get data	Unauthorized institute will not get any data
Registration validation	New user can register	Reregistration is not available

Table 5.6: Illustrates the Test Results and Reports.

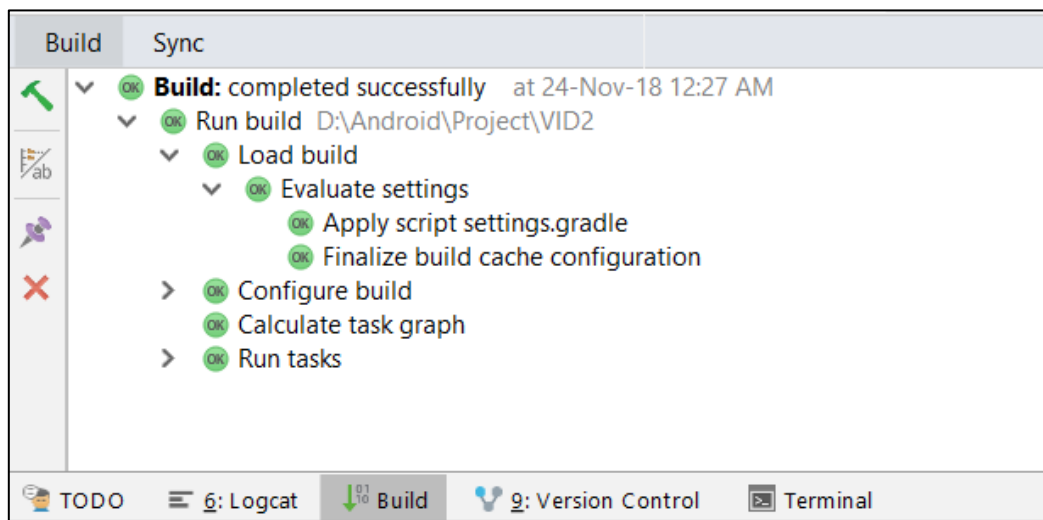


Figure 5.5: testing and building

CHAPTER 6

CONCLUSION AND FUTURE SCOPES

6.1: Discussion and conclusion

We believe that our developed application has the utmost possibility and it can go further way to solve many complex situations. We couldn't publish due to some limitations. But if the government wishes to digitalize our country and free our country from corruption and broker then it is possible to do so by using our application. It will also improve the way of living of the users because it will save both money and time. So, we hope that government will implement and improve this system in a proper way.

6.2: Scope for further development

- Implementation of Artificial Intelligence
- Data mining
- Understanding citizen's behavior
- Improve security
- Adding more functionality

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- [10] https://en.wikipedia.org/wiki/Logical_data_model

APPENDIX A: Project Reflection

We had a huge learning about android application and java programming during making this project. We now understand android studio to work on better than before, and also had a better understanding of mobile application design. Now we have better idea to create nice and interactive user interface. We also had a great experience through this journey. We have a high expectation about this project if implemented in real life. We learn many new things including firebase database system, authentication, storage posting etc. As individuals we understand user's demands and need realistically. We realize the importance of data privacy and applied this knowledge and experience in our project. We tried to respect the security concern of a user's data at best. So, we have made this application as secure as possible.

Appendix B: Related Diagrams

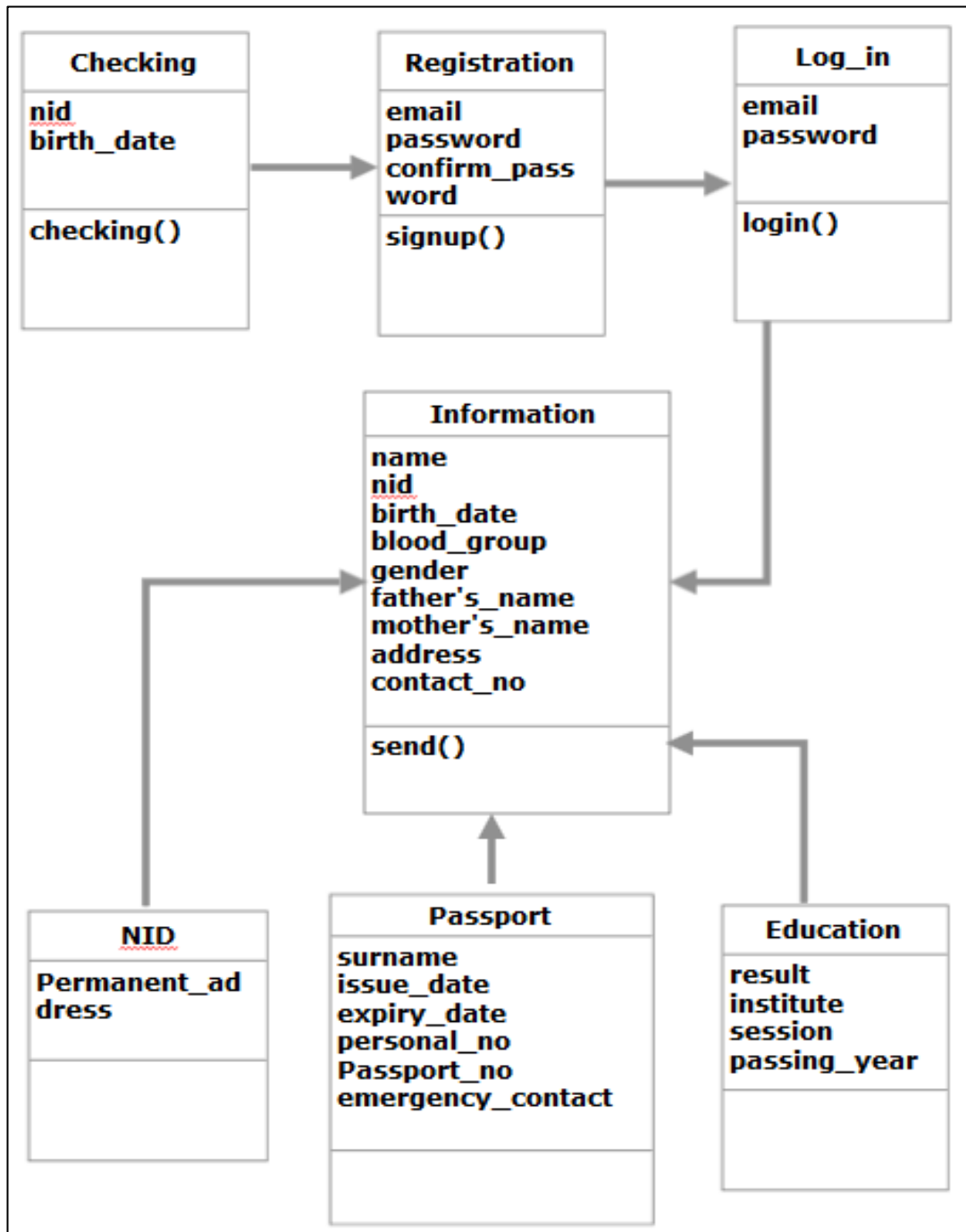


Figure: UML Diagram

PLAGIARISM REPORT