A MOBILE APPICATION OF SCIENTIFIC INNOVATION & FORMULA

("বৈজ্ঞানিক উদ্ভাবন ও সূত্রাবলি")

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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

This Project titled **"A MOBILE APPICATION OF SCIENTIFIC INNOVATION & FORMULA"**, submitted by Salaha Sultana, Razia Sultana and Ayesha Rahman 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 20 August 2015.

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We hereby declare we hereby declare that, this project has been done by us under the supervision of **Prof. Syed Akhter Hossain, Dept. Head of CSE** 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 and diploma. Any material reproduced in this thesis has been properly acknowledged.

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ABSTRACT

Mobile applications are the massive way to connect a user with phone. Enhancement of mobile network gives a fabulous demanding of mobile applications. Nowadays every person using at least one mobile phone for business purposes or communication purposes. And Students are also using mobile phones lots. So mobile applications can be useful to them. They are using phones for many educational purposes. They are using phones as Calculators, as dictionary, as write down class notes, And as personal computer, which one can use to access the internet for information, to open a document or many others.

The main aim of this project is to build an android application that helps to the Students to get the important formulas when examination is near. Another aim is it can be useful to learn about many popular scientists of different subjects. This application will help School College going students and other users to know about scientists and to get any formulas in seconds without wasting of time.

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CHAPTER 1

INTRODUCTION

A mobile application of Scientific innovation & formula ("বৈজ্ঞানিক উদ্ভাবন ও সূত্রাবলি ") is an Android based application which helps the user to get some necessary information. This application contains many formulas from different books and notes. And also have some important information of some famous Scientists.

For every software development a model design is necessary for easy development. This application is related to incremental model.

In incremental model the whole requirement is divided into various builds. During each iteration, the development module goes through the requirements, design, implementation and testing phases. Each subsequent release of the module adds function to the previous release. The process continues till the complete system is ready as per the requirement.

1.1: Objectives

The aim of this project is to develop a system that can handle & manage to arrange Formulas chapter wise, and will show Scientists details with their pictures for every Subject. Subject wise famous Scientists details are included here.

Easily get all formulas without wasting time is the major goal of this project.

- Create an easy to understand user friendly environment.
- Easy process to get .apk file to install Application.
- Give reliable search facility for the users.
- Attractive user interfaces to navigate through the system for the users.
- Develop the system documentation with details UML specifications.
- Users need not to login, just need to install application.
- Require less time to search.

1.2: Motivation

The main motivation of this application is to learn the mobile application development. We were always curious to know how things work in mobile. This led us to find an easy access way of searching formula when user is needed, called বৈজ্ঞানিক উদ্ভাবন ও সূত্রাবলি Android application. There may few formula searching applications in the android market. বৈজ্ঞানিক উদ্ভাবন ও সূত্রাবলি deals not only with the chapter wise formulas but also many details of famous Scientists are added. It also has an option for the users so that they can test their memory by solving math's related to specific formula. By clicking on formula user can get this information's details.

1.3: Expected Outcomes

বৈজ্ঞানিক উদ্ভাবন ও সূত্রাবলি is an user friendly and very necessary mobile application.The outcome of this project is an improved understanding user with formulas. We started this application with the intention of making something simple and related to safety and remote access.

CHAPTER 2

REQUIREMENTS OF PROPOSED SYSTEM

2.1: High Level Requirements

Every project requires the analysis of design so that it becomes much of user friendly and our one contains in the same way. For that we just tried to navigate the scenario ordered and well designed and having no complexity in it. We select a high end android version that most of the device can grab it. Here Android 4.4.2 Kit-Kat was chosen [1].

2.1.1 Requirement Specification

For running this apps user need to have the following requirements:

- Operating System: Android 2.3 to higher versions.

2.1.2 Software Requirement

For developing the application the following are the Software Requirements:

- Operating System: Windows 8, Windows 7
- Language: Android SDK, Java
- Tools: Eclipse IDE, Android Plug-in for Eclipse
- Technologies used: Android, Java

2.1.3 Hardware Requirements

For developing the application the following are the Hardware Requirements:

- Processor: P IV or higher RAM: 256 MB
- Space on disk: minimum 512MB

For running the application:

- Device: Android version 2.3 and higher
- Minimum space to execute: 20MB

2.2: Use case Models and Description

Use case diagrams are consists of actors, use cases and their relationships. The diagram is used to model the system/subsystem of an application. A single use case diagram captures a particular functionality of a system.

Use case diagrams are used to gather the requirements of a system including internal and external influences. These requirements are mostly design requirements. So when a system is analyzed to gather its functionalities use cases are prepared and actors are identified.

The following figure 2.2.1 shows use case diagram of the developed application[3].

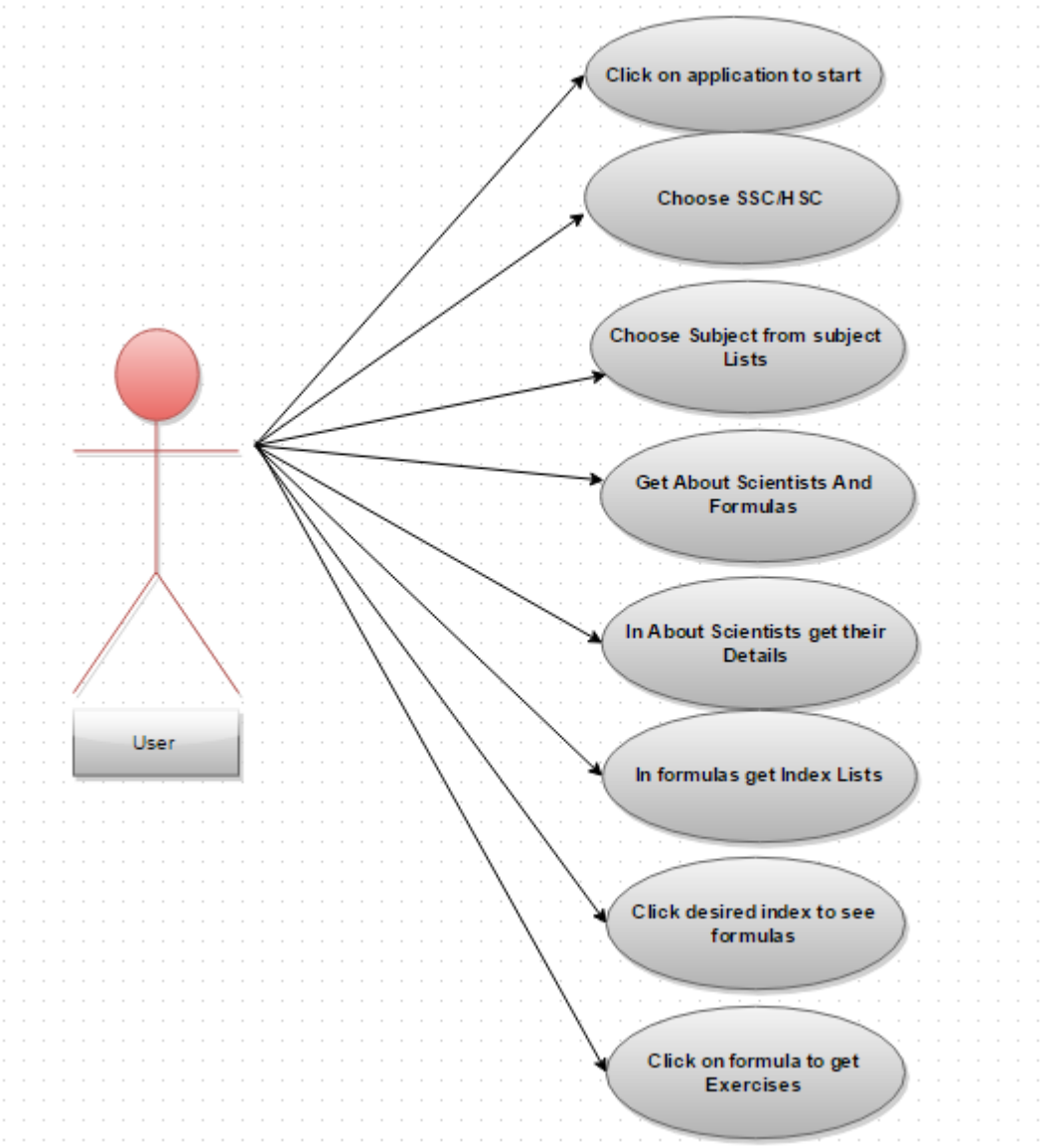

Figure 2.1: Use case diagram of the application.

2.3: Process Models

Process models are processes of the same nature that are classified together into a model. Thus, a process model is a description of a process at the type level.

Following figure shows a model diagram of process model.

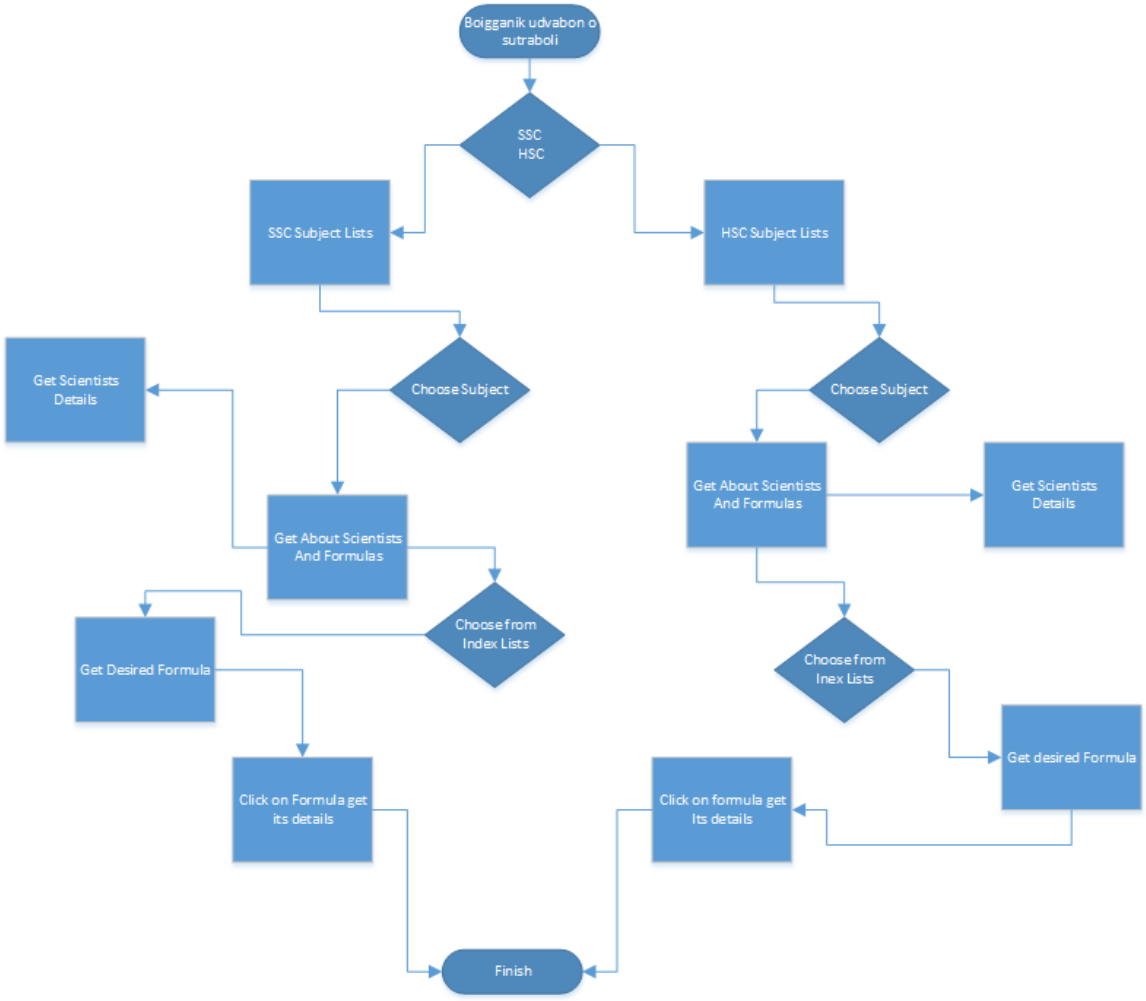

Figure 2.2: Process Model Diagram.

2.4: Class Diagram (UML)

Class Diagram provides an overview of the target system by describing the objects and classes inside the system and the relationships between them. It provides a wide variety of usages; from modeling the domain-specific data structure to detailed design of the target system.

Figure below illustrates Class diagram of this application.

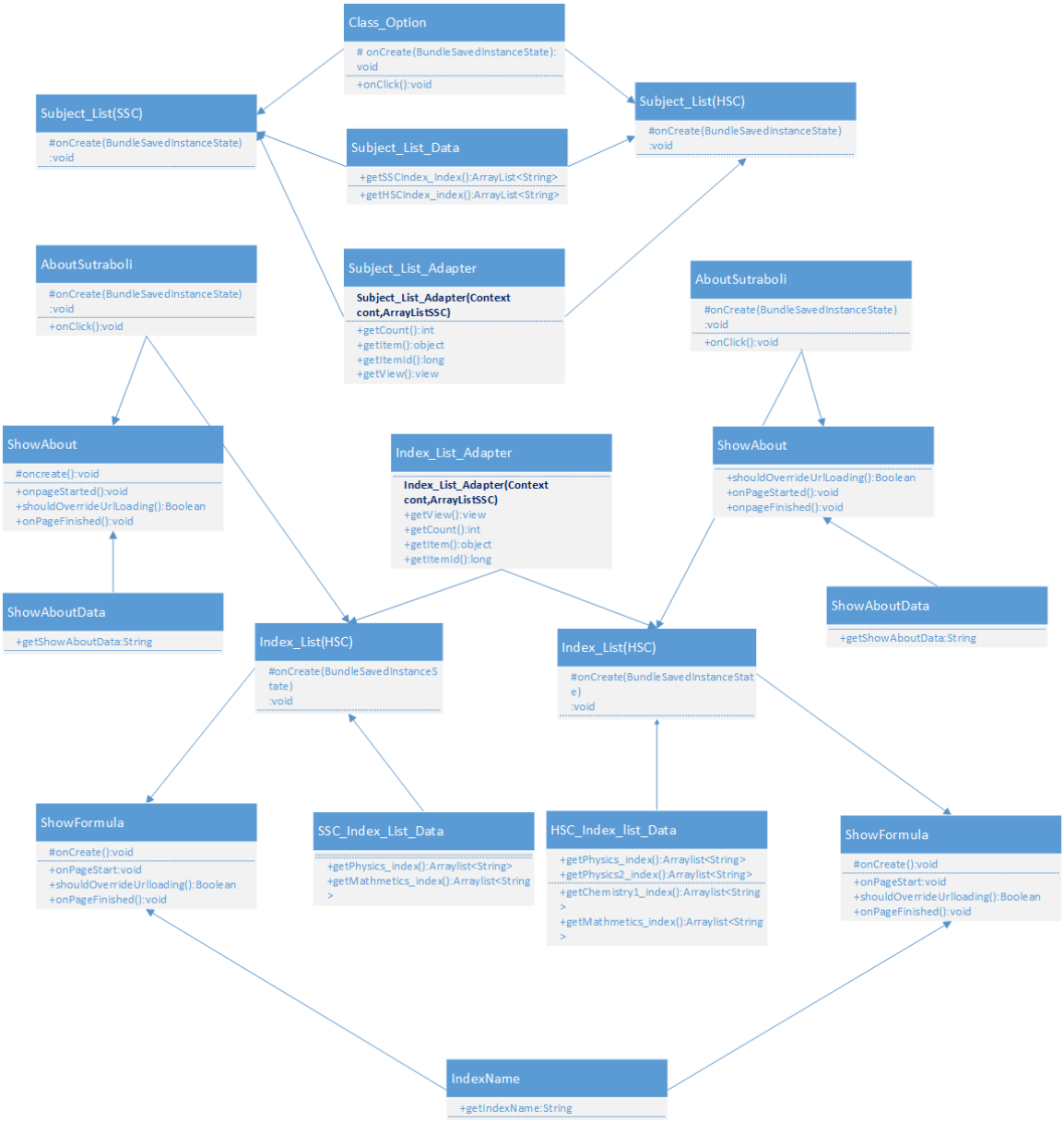

Figure 2.3: Class diagram.

2.5: Implementation Requirements

This project used following Requirements.

1. Android:

In layout-Button, list view, text view, web view.

2. Java for android coding [1].

3. Html page for Bangla and formula placement.

4. MathML for equations placement [2].

5. CSS for color, padding, letter, widths and other decorative purposes.

2.6: Role and responsibilities

This section describes the App roles and the roles' responsibilities.

Application Role is to:

- Check request from user choice.
- Get necessary information from right Activity.
- During loading Result Show web view for waiting.

Responsibilities of the Application:

- Conducts a monthly review of the Application performance.
- Identifies enhancements that need to be applied to the App.
- Determines the prospects for continued use and support.

CHAPTER 3

IMLEMENTATION AND TESTING

3.1: Physical Schema

System Architecture:

Android is a mobile operating system (OS) based on the Linux kernel and currently developed by Google.

Android consists of a kernel based on the Linux Kernel long-term support (LTS) branch. As of January 2014, current Android versions are built upon Linux Kernel 3.4 or news but the specific kernel version number depends on the actual Android device and chipset. Android has used various kernels since its first 2.6.25. [1].

This Android Architecture is not visual for the user, it's a built in function or architecture.

Figure 3.1: android Architecture showing the major components of Android OS (Android Wiki, 2014).

Figure 3.1 shows diagram of the Android architecture. Android OS is basically a software stack with various layers with each layer offering different services to the layer above it. The layers include a Linux Kernel which is responsible for interaction with the hardware. Libraries are written in C or C++ and are specific to the hardware of the system.

3.2: GUI and Interaction

1. Home Screen

Opening the application first, below figure will appear with two choices of SSC and HSC. Here have to make decision of which section's information needed.

Figure 3.2: Home Screen

2. Subject_List

Choosing anyone from home screen will show following figures of subject Lists of SSC/HSC. This figure is for HSC subject list.

Figure 3.3: Subject List

3. Shutraboli

When any subject will be chosen then this figure will appear with Scientists and formula options. Choosing Scientists users gets their information and choosing other one gets formula chapters.

This picture is showing the choosing options.

Figure 3.4: Sutraboli

4. For About Scientists

When About Scientists option is chosen one scrolling page like following will be shown. Here users will get the pictures and innovation information of different scientists.

Pictorial Diagram showing details information with scientist's picture.

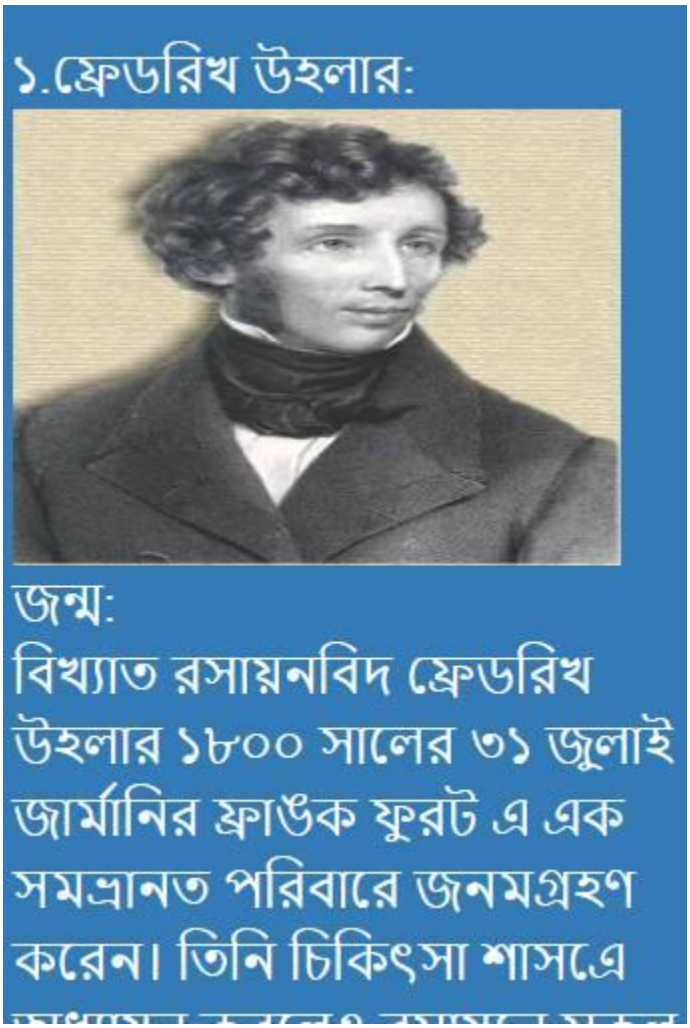

Figure 3.5: About Scientists

5. Choosing get Formula

Any formula will take place on the phone screen like below picture. This is also scrollable and by clicking on every single formula will take to another page of formula details information.

Following figure is showing this information.

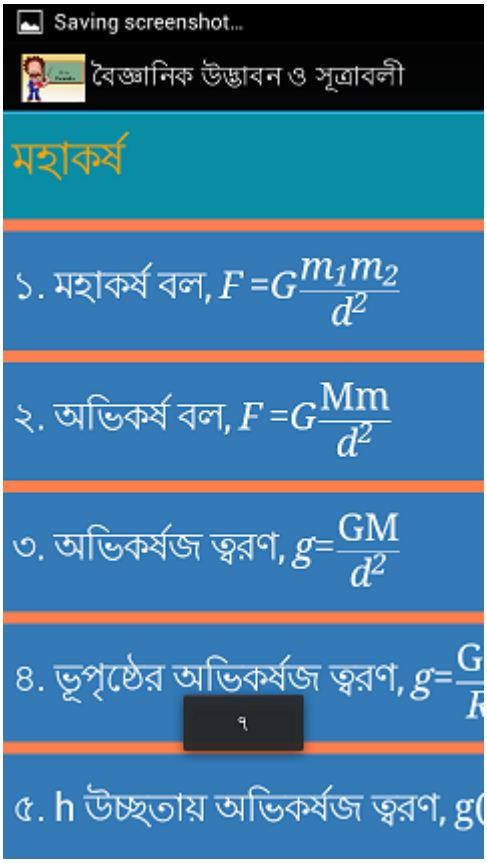

Figure 3.6: Get Formula

7. After Click on formula

This the Last page for the application. This page is for details of individual formula, if user feels necessity to know this they can easily go through this page. And it will arrange like subsequent form.
Subsequent form is for getting formula's details.

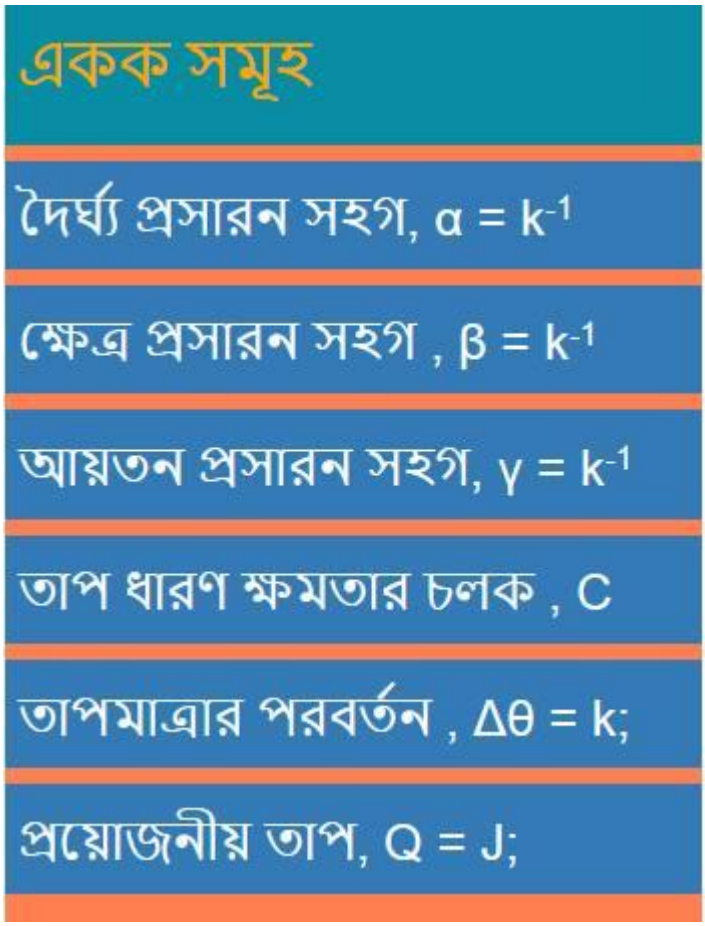

Figure 3.7: Formula Details

3.4: Implementation

When user clicks on app icon then appears a screen with two button named SSC and HSC. This is Home screen for this app. This activity has a layout named "class_option". And home screen uses class, named "Class_option". This activity has a Layout named class_option. This Class_option class is extends Activity and Implementing OnClickListener.

"Class_option" Details

This class contains two methods.

- on Create(Bundle SavedInstanceState):Void
- on Click(View v):void

In on Create method, buttons and all kind of variable will be initialized. And on click listener will be set for handling click event of those buttons.

If user clicks on SSC or HSC button then it will go Subject List Class.

This pictorial representation showing CLASS_OPTION as home page.

Fig 3.8: Diagram of CLASS_OPTION as Home page.

“Subject List” Details:

This class contains one method.

- on Create(Bundle SavedInstanceState):Void
- onItemClick(Adapter View<?> adapter, View v, **int** position, **long** id) : Void

  In on Create method, List View and all variable will be initialized.

If users click on SSC Button it will send a keyword SSC to “Subject_List_Data”. By depending on this keyword it will return an arraylist of SSC subject list data. To

Show a list view using this data we used an adapter class named “Subject_List_Adaper”;

This Class extends “BasAdapter” Class; when user will choose a subject from subject list then onItemClick method will be called; onItemClick pass two keyword to“About_Sutraboli” class, one is class name and another is subject.

Below figure is for Subject_List_Data.

Fig 3.9: Diagram Subject_list_Data.

“About _Sutraboli” Details:

This Class contains two methods.

- on Create(Bundle SavedInstanceState):Void
- on Click(View v):void

In onCreatemethod, buttons and all kind of variable will be initialized. And on click listener will be set for handling click event of those buttons.

About sutraboli Class is also an Activity. It has a Layout Name “flt layout”

When user click on “about button”, it will show about famous scientists.

In this view user will able to see biography with image of some famous Scientists.

Fig 3.10: Diagram about Sutraboli.

“Show About” Details:

- on Create(Bundle SavedInstanceState):Void

In this method all data variable will be initialized. Then By depending On Class and subject data about of scientist will show. When data is loading from assets folder, there will be a show a progress dialog.

If user clicks on Sutraboli button then it will go in Index List Activity.

Diagram for show About Data given below.

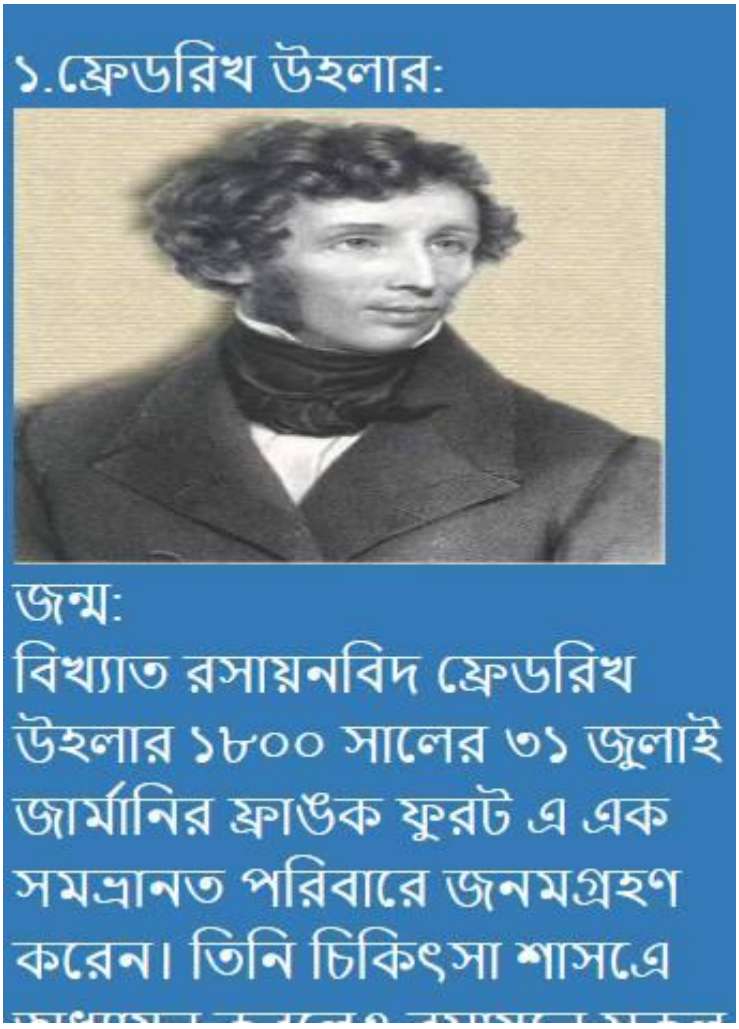

Fig 3.11: Diagram ShowAboutData.

“Index List” Details:

- on Create(Bundle SavedInstanceState):Void
  In onCreatemethod, List View and all variable will be initialized

- onItemClick(Adapter View<?> adapter, View v, **int** position, **long** id)
  : Void

This Activity has a layout named “index_list”. In on Create method all data variable will be initialized. By checking class (ssc/hsc) and subject, this method will collect data of index list using helper class “Ssc_Index“. By using this data we will make a lstview using Index_List_Adapter. ThisListView is custom list View. When user will click on a list item, finally it will show formula.

Subject_List diagram is given for fine understanding.

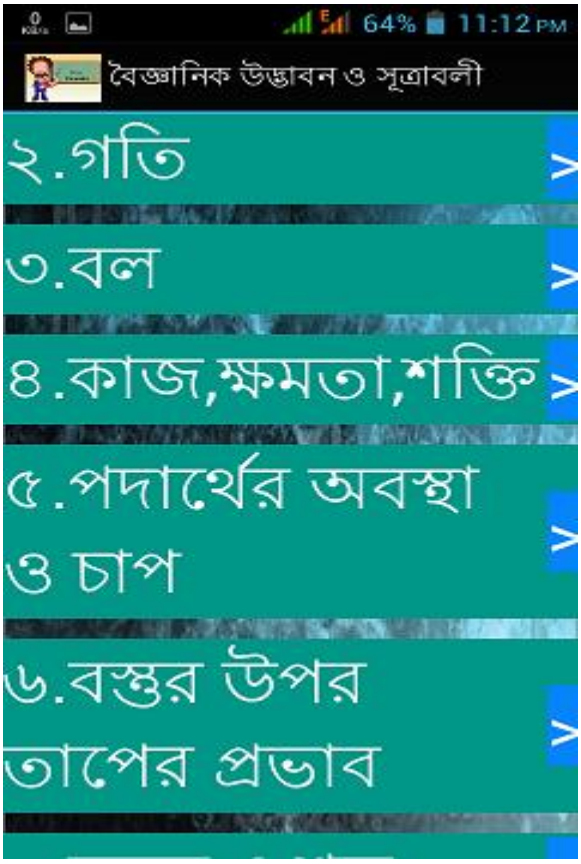

Fig 3.12: Diagram of Index_List.

“Show_Formula” Details:

- on Create(Bundle SavedInstanceState):Void
  In on Create method and all variable will be initialized

This is also an activity .and it has also has a layout named “show_formula”.

In this method there will create a link for showing desired index formula.

When user will click on a formula then it will show formula details.

Following form is for Show Formula.

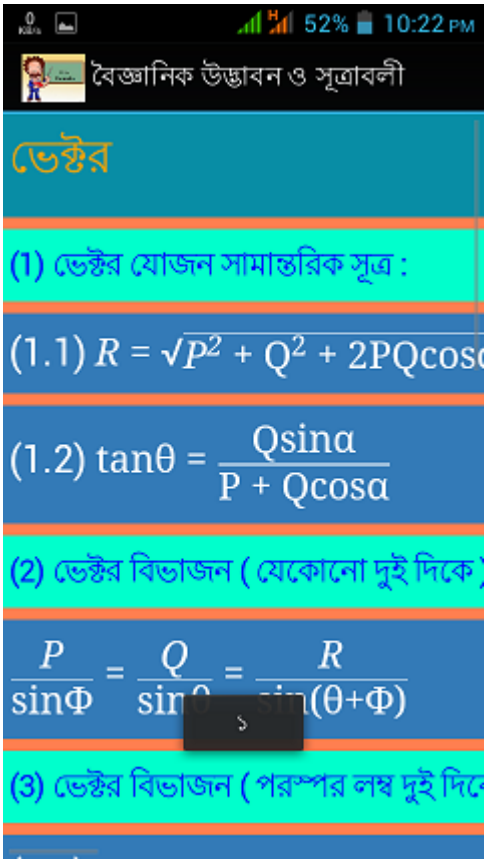

Fig 3.13: Diagram of Show formula.

Following form is for Show Formula Details.

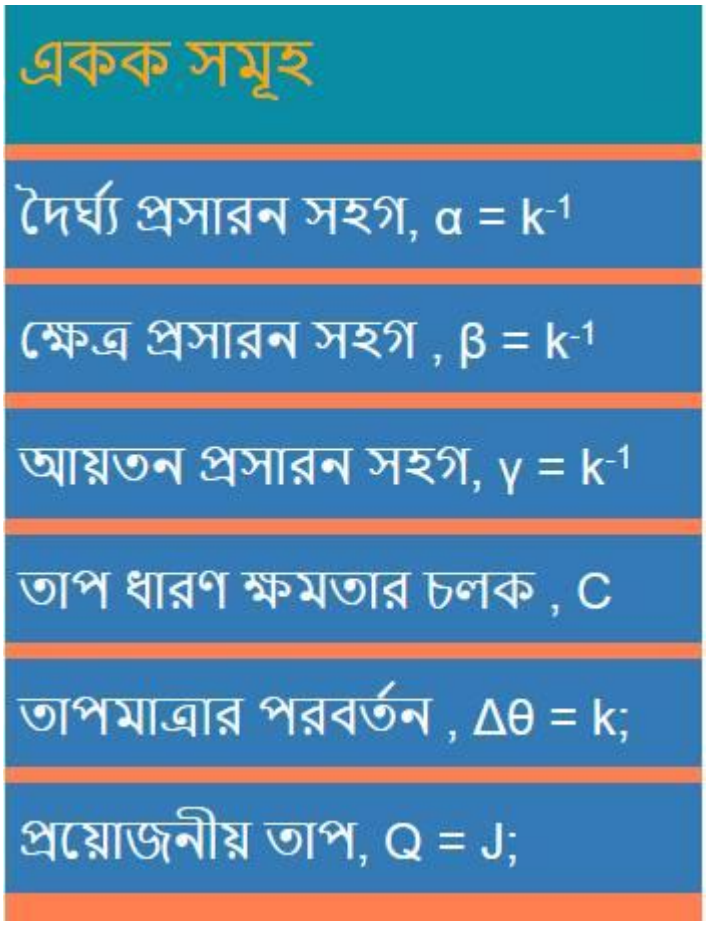

Fig 3.14: Diagram of Show formula.

Helper Classes:

Subject_List_Data:

In Subject list data following methods are used.

- getSscIndex_index():Array<String>
- getHscIndex_index():Array<String>

getSscIndex_index (): method return array ofssc subject list

getHscIndex_index (): method return array ofhsc subject list

Subject_List_Adapter:

In this method there is a constructor to initialized data globally.

- getCount():int
- getView(int position,convertView, viewgroup

GetCount method return a integer value that is the of listItem.

On the other hand getView method arranged the view.

SSC_Index_Data:

In SSC index data following methods are used.

- getPhysics_index(): ArrayList<String>
- getMath_index():ArrayList<String>
- getChemisty_index():ArrayList<String>

getPhysics_index () return arraylist of physics data, getMath_index () return arraylist ofmath data and getChemisty_index () return arraylist of chemistry data[4].

Index_List_Adapter:

In Index list adapter following methods are used.

- GetCount (): int
- GetView: void

GetCount method counts the total number of index_list.

GetView method arranges the view of listItem.

Hsc_Index_List_Data

In HSC index list data following methods are used.

- getPhysics1_index()ArrayList<String>
- getMath index () ArrayList<String>
- getChemisty2_index()ArrayList<String>

GetPhysics1_indexreturn arraylist of physics data, getMath_index () return arraylist of math data and getChemisty2_index () return arraylist of chemistry data[5].

3.5: Testing using Smartphone

Overall Testing:

In overall testing various modules have been tested individually. This has been done manually to test if the expected result is actually seen on the screen. The flowing are the test cases with the help of which the application has been tested.

Table 1: Testing of all kind of user case

Sr. No.	Test Input	Expected Output	Actual Output	Result
1.1	Click to App Icon.	SSC HSC	Successful/Pass	Alright
1.2	While clicked on SSC button	SSC Subject lists	Physics Mathematics	Pass
1.3	While clicked any subject from SSC Subject Lists	About Scientists Formulas	বিশিষ্টবিজ্ঞানীগণ	Pass

			সূত্রাবলি	
2.1	If Click on About Scientists	Showing scientists Details	Pictures of scientists and their famous inventions	Pass
	If Click on Formulas	Get Index Lists of Subject	All Chapters	Pass
3.1	While clicked on HSC button	HSC Subject Lists	১।পদার্থবিজ্ঞান১ ২।পদার্থবিজ্ঞান২ ৩।রশায়নবিজ্ঞান১ ৪।গনিতশাশ্ত্র	Pass
3.0	While clicked any subject from HSC Subject Lists	About Scientists Formulas	বিশিষ্টবিজ্ঞানীগণ সূত্রাবলি	Pass
3.2	If Click on About Scientists	Showing scientists Details	Pictures of scientists and their famous inventions	Pass
3.3	If Click on Formulas	Get Index Lists of subject	All chapters	Pass
3.4	If click on the Formula	Get formula Details	Get formula Details	Pass

CHAPTER 4

DISCUSSION AND CLOCLUSION

We started this application with the intention of making something simple and related to safety and remote access

4.1: Discussion and Future Scope

বৈজ্ঞানিক উদ্ভাবন ও সূত্রাবলি is an user friendly and very necessary mobile application.The outcome of this project is an improved understanding user with formulas. We started this application with the intention of making something simple and related to safety and remote access.

Future Scope

For future Scope of this application discussing below through feasibility Sense.

Feasibility Sense:

The main goal of feasibility study is to assess the economic durability of the proposed system. The feasibility study needs to answer the question: “Does the idea make technical sense?” “Does it make operational sense?” “Does it make economic sense?”

In respect of these questions we are about to find out if this application is feasible or not [2].

Technical Feasibility

বৈজ্ঞানিক উদ্ভাবন ও সূত্রাবলি application is developed for android phones. Now almost everyone uses android phones. For using this service don’t net connection always .After installing this apps their don’t need any net connection. Data connection is available now

And we need it for higher development. So we believe technical support won't be a problem for this project.

Economical Feasibility

- Developer can submit the app on Google play and earn from it.
- Can earn from advertising into the app.
- Trial period may free then it may be premium one.

Behavioral Feasibility

- User can access this any android phone.
- As user can search desired formula of any chapter, so it saves users time.
- As it has Scientists details also it will be more helpful to understands.
- It provides users best formula memorizing way without wasting lots of time to finding and arranging them.

So we, think this application is very much useful to all Students of SSC and HSC.As Students are using phone in large amount, Future Scope of this application is broad.

4.2: Conclusion

Mobile is an essential part of our modern life. The user of Android mobile phone has rapidly increased. So we invent an android application. After successful implementation and satisfactory testing the users reviewed that this app is more friendly and easy to use. This app will be very useful for those who often forgot formulas and more helpful to every other user in Learning About famous Scientists.

Future Direction:

This project is very essential for everyone. In future students will depend much on smart phones. So if this apps is installed in their phone, there will be no tension to find formulas. And time will be saved so that they can use them in creating purposes.

CHAPTER 5

REFERENCE

[1]. Android Architecture, http://www.tutorialspoint.com/android/androidstructure, last accessed on November27, 2014.

[2]. Laura, Anne (2014), "Feasibility Study Linking Migrant Settlement Records", Australian Bureau of Statistics, pp1-3, last Accessed on February 20, 2015.

[3]. Use Case and Class diagram, https://www.draw.io/, last Accessed on july10, 2015.

[4].Android coding, http://www.tutorialspoint.com, last Accessed on February25, 2015.

[5].Java coding, http://www.javatpoint.com, last Accessed on February20, 2015.

[6].Use of coding, http://www.w3schools.com/, last Accessed on February 20, 2015.

[7].Data details, https://docs.oracle.com/, last Accessed on February20, 2015.

[8].Html writing, https://www.youtube.com, last Accessed on February25, 2015.

[9]. CSS code, http://www.w3.org/, last Accessed on January 21, 2015.

[10].MathML, http://www.mathscribe.com/, last Accessed on February 21, 2015.