

DESIGN AND DEVELOPMENT OF AN ANDROID APP: MAA O SHISHU

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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 “**DESIGN AND DEVELOPMENT OF AN ANDROID APP: MAA O SHISHU**”, submitted by Sanzida sultana mou, ID No: 171-15-9443, Ismita shobnom tammi, ID No: 171-15-8878, Kaniz fatema shetu, ID No: 171-15-8947, 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 01-06-2021.

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I hereby declare that, this project has been done by us under the supervision of **Ms.Subhenur Latif** , **Assistant Professor, Department of CSE** Daffodil International University. I likewise proclaim that neither this undertaking nor any aspect of this project has been submitted somewhere else for grant of any degree or confirmation.

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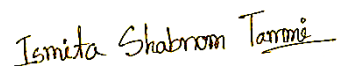


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ABSTRACT

We are going to developed and android application named “Maa O Shishu”.During pregnancy, eating a nutritious diet is related to better brain growth and a healthy birth weight, and can reduce the risk of many birth defects. The risks of anemia, as well as other uncomfortable pregnancy symptoms such as exhaustion and morning sickness, can also be minimized by a healthy diet. On the other hand there are many rules and regulation to maintain at that time and have to change in their life style and habit. So that why a women should have to more careful at that time but in the rural are most of the woman don't have proper knowledge about that and some of case they are believe many myth or wrong thing that's there too much possibility to getting risk in the pregnancy period and also health risk for new born baby. So we are developed a android application that have a complete pregnancy line and instruction for new born baby. The thing is , the application is developed by Bangle language as a result urban people can easily use this application can they would be careful at that time.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

What a pregnant mother needs to know during pregnancy is the period of the pregnant mother, the care and advice of the pregnant mother, the food list of the pregnant mother and many more. With all these, we have arranged our pregnancy apps (pregnancy apps). For a married woman, the taste of motherhood is the most invaluable taste in this world. But this taste turns into disgust when a future mother suffers from complications during motherhood. And the complications during motherhood are when pregnant mothers know what they need to know. The diet of the pregnant mother is very important in this case. A pregnant woman can be in serious danger if she does not know the correct food list. In our apps we have discussed when to eat what food in a week or month. These are just some of the goal setting shareware that you can use. Another very important thing is the danger signs during pregnancy. What to do if there is a danger sign is discussed in all these apps. What to do and what to avoid during pregnancy are discussed here. These apps will help you a lot to know about the period of pregnant mother.

1.2 Motivation

About 5000 women in Bangladesh die every year due to complications during pregnancy, childbirth and subsequent complications. Most of these deaths are due to home delivery by unskilled women in the village. Child Marriage Many mothers and children die of malnutrition as many girls become pregnant at a very young age. This app has been made in Bengali language with care, precautions and some things to do during pregnancy. Childbirth could be an exceptionally critical moment in a women's life. But complications during pregnancy and childbirth are a driving cause of death and disability among ladies of reproductive age in developing countries . Each day, around 800 ladies die from preventable causes related to pregnancy and childbirth and 99% of all maternal deaths happen in creating nations. Where maternal mortality is higher in women living in rustic areas and among poorer communities . Maternal mortality could be a serious public wellbeing concern in Bangladesh.

1.3 Objective

This is the android application which developed for the women in pregnant period and has a new born baby. It's contained most of important and effective guideline like food habit, daily life style, activity, exercise for pregnant women and new born baby. The most effective thing is this app is developed by Bangle language so as result rural or urban people could be benefited and app user interface is very user friendly and easy to navigate.

Features:

- Full guideline for pregnant woman and New born baby
- Information on all vaccines is available on our app
- Used Bangle language
- Calculate pregnancy period and estimated delivery date
- User Registration
- User Login

1.4 Expected Outcome

Our app is mainly for those who understand less English and can't read or write. There are still many superstitions about pregnancy in our society. Due to this superstition, many complications of mother and baby are seen before and after pregnancy. It is often seen that mothers cannot share their problems with anyone. They can share and solve their problems by using our app. And be aware of the superstitions. In addition, by using our app, mothers can easily find out the date of arrival of their child. Hopefully this application will help to reduce prejudice from people about pregnancy. Information on all vaccines is available on our app, including health care for both mother and newborn during meals during pregnancy, before and after delivery.

1.5 Report Layout

In our report we have six chapter such as the Introduction, Background , Requirement Specification , Design Specification , Implementation and Conclusion and features scope. The report layout of my project has been describe in chapter one. In chapter two, we focused over the general background of my project as well as the related work. For my project, comparative studies, the complexity of the issue, and the challenges .Beside from the business process model, requirement gathering and analysis, and use case modeling,

The design requirement, the logical data model, and the description are all covered.

In chapter four, mainly we discuss details specification of my project including with front-end design, back end design and interaction design and UX and implementation requirement . In chapter five, I covered the details of implementation and testing part including with implementation of database, implementation of front-end design and test result and report. In chapter six, I describe the conclusion and future idea of this app.

CHAPTER 2

BACKGROUND

2.1 Introduction

Maa o Shishu is android application. it's developed within the Android Studio IDE which is so heavy perform and confirm the developer pc features a good configuration of RAM, hard disc or SSD. So 1st time it had been a difficult moment. Sometimes within the update version of IDE they depreciate some inbuilt function and introduce new faction rather than the previous functions. That's why I even have to updated in code writing , sometimes error in occurred in code due to using depreciate function then I even have to review the Google Android developer documentation site , Stack Overflow website then solve this error. For app developing purpose I even have to knowledge in Java programing language and for Rest api need knowledge about PHP language and for database connection , data insert , retrieve , manipulation need SQL Quarry also.

2.2 Related Works

In the google play store or app store there are many app with similar name or different related name . In those application they contain only text xml code like those app features a series of pregnancies by week, especially for those who are going to be the first mother. Before becoming a mother, you need to plan a lot of things that will ensure a healthy pregnancy and a healthy baby. Pregnancy details are mentioned in this app such as early signs of pregnancy, what to eat or not to eat during pregnancy, caesarean and delivery advice, what kind of work to abstain, about nutritional value of food, some special tips, medical advice and warnings etc. Discussed. Their so minimal banked programming content or features.

2.3 Comparative Studies

At first we have to brain storm about the rural people what they thinking about pregnancy and new born baby and they belive in many superstition about it. Then we have to solve those problem . I have also learn about Android studio ide like how to install this and what are the

minimum requirement of pc configuration to install and setup properly and know about Java home as system advance environment variable to support java program or compile java code. we are searching in Google play store and then we found many app name like Pregnancy but don't similar with our app features concept. In our app has unique features like user can calculate their pregnancy time period form the beginning to end and we hope that is kind of effective for woman in that period. And I will try to make it user friendly design and functionality.

2.4 Scope of the Problems

In our application we won't take huge user traffic at the first moment because of low cloud storage and bandwidth . If there are 5000 + user uses this app at a time then the server are going to be down and application not responding (ANR) is occurred [4]. within the app development, there's a standard programmatical problem is the java null pointer exception. Null Pointer Exception may be a Runtime Exception. In Java, common null data are often allocated to an item reference. Null Pointer Exception is tossed when the program endeavors to utilize an item reference that has the null data. In many times this problem also occurs once I run the app, but it's some to difficult to seek out why the compiler show this sort of error however, I even have fixed those problems by doing a code study [4].

2.5 Challenges

When a developer develops an app there are many challenges that come to him/her. In my project, the primary challenge is i used to be a beginner in android development in order that a number of the features I didn't start with because I had no knowledge about them. Then I searched in YouTube, Google, Stackoverflow. After getting the knowledge that I even have implemented during this app. Still, now there also are many challenges like App server maintenance, appear new bug within the app then need to fix asap, getting updated with the new android version and android SDK. Last week Google announced that they modify their user device permission access policy for Android 10 and Android 11. So as a result a number of doesn't add the previous procedure then I had modified those code consistent with the new user permission

CHAPTER 3

REQUIRMENT SPECIFICATION

3.1.1 Business Process Model

Business process modeling is that the graphical representation of a company's business processes or workflows, as a way of identifying potential improvements. this is often usually done through different graphing methods, like the flowchart, data-flow diagram, etc. BP modeling is employed to map 2 different states of the process: As-is, the state of the method because it is true now, without making any changes or improvements, and To-be, the longer term state, after making the changes or improvements.

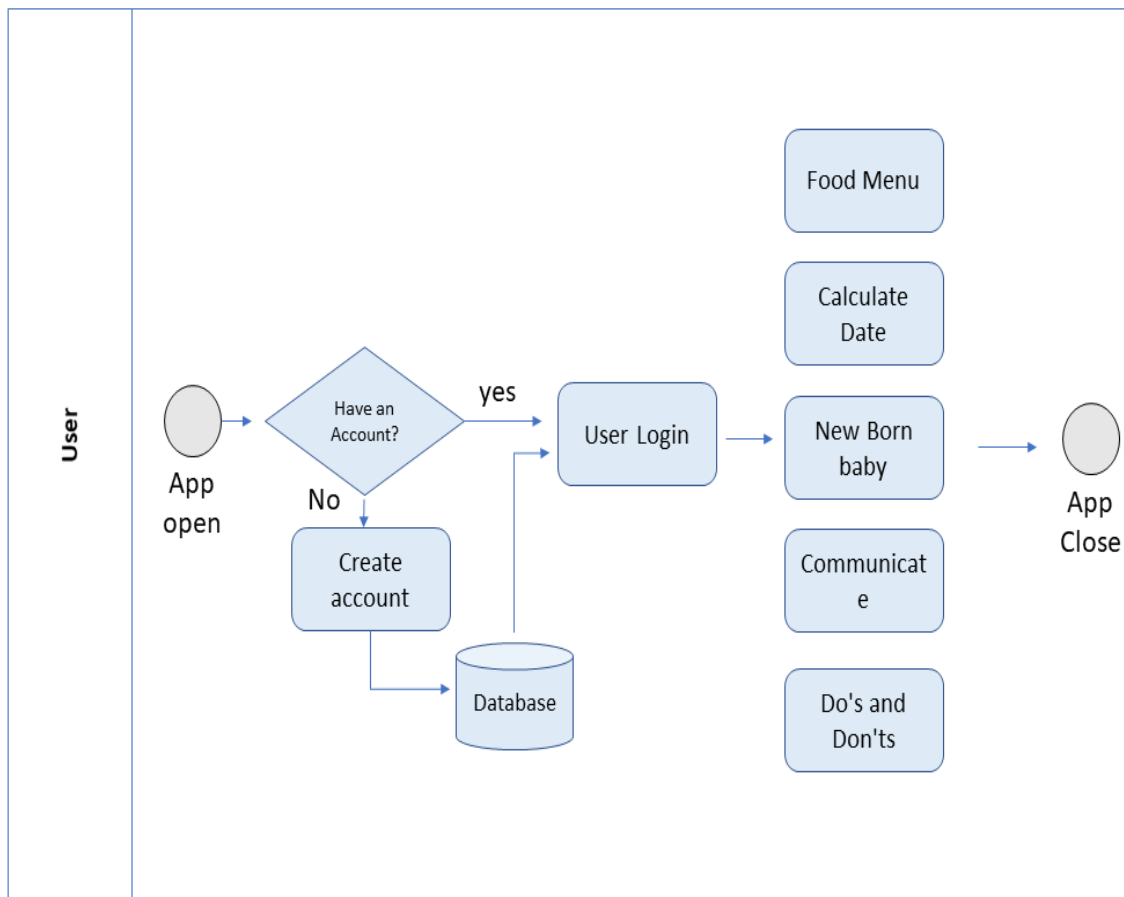


Figure 3.1: Business Process Model

3.1.2 Block Diagram

A block diagram is a specific flowchart used in designing to imagine a system at a significant level. It is used to plan new systems or to explain and improve existing ones.

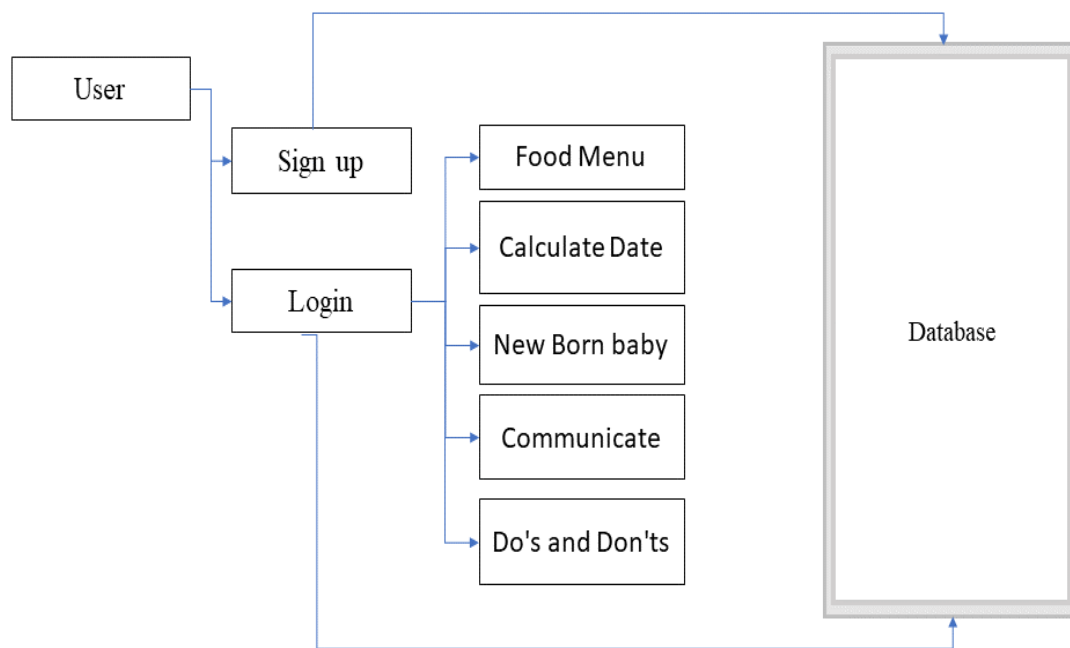


Figure 3.2: Block Diagram of the System

3.2 Requirement Collection and Analysis

Requirement Engineering, also known as requirement analysis, is the method of determining user requirements for new or updated applications. It is often referred to as requirements gathering or requirements capturing in the sense of software engineering. The tasks that go into determining the needs or conditions to meet for a new or altered product or project, taking into account the potentially conflicting requirements of various stakeholders, analyzing, documenting, validating, and managing software or system requirements are all included in requirements analysis. We have also collect requirement from our own village rural area and discusses our group members and also compare with existing application in google play store

3.2.1 Feasibility Study

Because of their portability and useful applications, mobile devices are becoming increasingly popular. Portable computers are now used by not only people but also businesses for both small and large tasks. The rapid adoption of mobile technology, on the other hand, is increasing the viability of mobile users and programmers. When developing a mobile application, developers seek to create a platform that can be used on a variety of devices, including smartphones, tablets, laptops, and computers. This is the most essential analysis for creating an app. After you've chosen an idea, you'll need to do a feasibility analysis on our idea or project concept. That is, is your idea special, is it suitable for the target audience, is the app stable and usable, and does it solve a problem for the user with this idea, etc., and is your service feasible for the user ?

A feasibility analysis is an independent review of an App design to see if it is feasible and worth pursuing. The key advantage of a feasibility study is that it takes the guesswork (to some extent) out of the app launch. As a result, there will be no surprises during the production and launch of the app. We did feasibility study about my idea and implementation. For the 1st, I search in google play store and I noticed that there many application but exactly our features or same concept.

3.3 Use Case Modeling and Description

A use-case model is a simplified representation of how specific types of users interact with a device in order to solve a problem. Usage cases, actors, and their relationships are the most important model components. To make communication easier, a use-case diagram is used to help visualize a subset of the model.

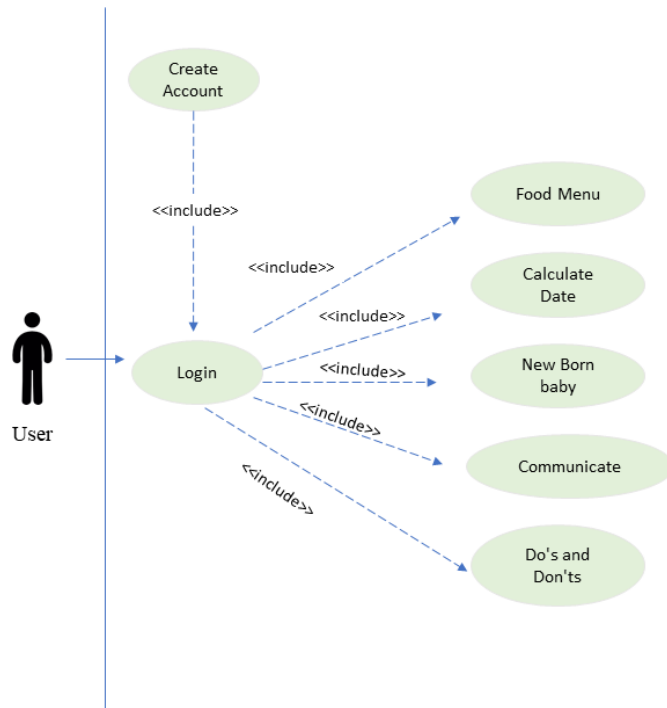


Figure 3.3: Use Case Diagram

3.4 Logical Data Model

A logical data model is a diagram that shows how data is processed in a database. This diagram is known as the E-R diagram because it includes all entities and relationships between tables.

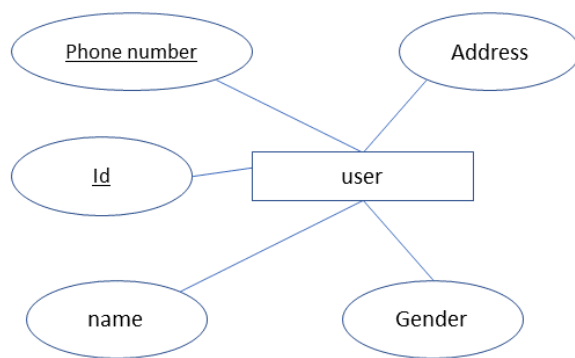


Figure 3.4: ER Diagram of the system

3.5 Design Requirements

The specification of requirements is the first step in designing an application. Since all processes are dependent on the design of the requirements. The following are some relevant requirements:

- User Create Account
- User sign in
- Food Menu for Pregnant woman
- Calculate Pregnancy Date
- Health Guideline for new born baby
- Communication
- Do's and Don'ts

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

This is the most crucial part of the mobile app. It is based on the presentation layer, and users can communicate with other users or people directly. People nowadays are drawn to fast and simple solutions. As a result, We attempted to make the app's user interface user-friendly and simple to work with. For a strong user interface and simple interaction, We sometimes use Google Material Design [2].

This is the user interface of user login by entering their phone number and secret password. Before login.



Fig 1: User Login

In the Fig 1 there is a home page of application. Here there is all menu for pregnant women and new born baby's health guidelines. Like Food menu , Calculate pregnancy date , Do & Not to Do , Communicate etc. After create account login to the system then user can use those features.



Fig 2: Home Page

In the Figure 2 this is the page of Food Manu with perfect quantity that is ensure proper vitamins and Calcium etc and which food very essential for theirs and makes them health this the pregnancy period

2:44 PM 4G 88%

← খাবার মেনু



প্রথম তিন মাস দৈনিক ১৬০০ ক্যালরি

সকালের নাশতাঃ
রুটি/পাউরুটি-৬০ গ্রাম=২ পিস
ডিম-একটা/ডাল-১০ গ্রাম
সবজি ইচ্ছামতো।

সকাল ১০-১১টাঃ
মুড়ি/বিস্কুট/কেক ইত্যাদি-৬০ গ্রাম+ফল

দুপুরের খাবারঃ
ভাত-দুই কাপ=২৪০ গ্রাম
মাছ/মাংস-৬০ গ্রাম
ডাল-আধা কাপ, মাঝারি ঘন
সবজি-ইচ্ছামতো।

বিকেলের নাশতাঃ
নুডলস/ছোলামুড়ি/সেমাই ইত্যাদি-৩০ গ্রাম

বাতের খাবারঃ

Fig 2: Food menu

In the Figure 3 this is the user interface to calculations of some important terms like estimated baby delivery date , current pregnant time , remaining time to born a new baby . The first day of period, or menstruation, begins a menstrual cycle, which ends when your next period begins. To prepare for pregnancy, your body produces various levels of substances called hormones during each monthly menstrual cycle.

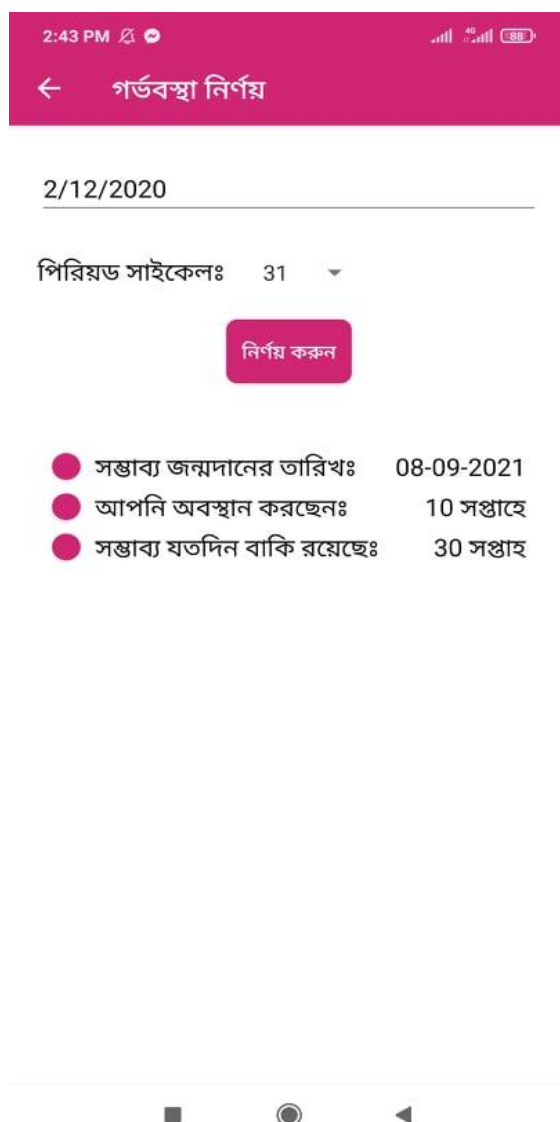


Fig 3: Calculate Pregnancy

In the Figure 3 this is the page of Food Manu which food very essential for theirs and makes them health this the pregnancy period.



Fig 4: Food items

4.2 Back-end Design

This is the Java code for Food items for pregnant women. These foods are rich with the nutrients you'll need during your pregnancy. Keep them on hand so you can eat on them as well as consume them during meals.

```
1 package com.maoshishu.myapplication;
2
3 import ...
4
5
6
7
8 public class Foods extends AppCompatActivity {
9
10     @Override
11     protected void onCreate(Bundle savedInstanceState) {
12         super.onCreate(savedInstanceState);
13         setContentView(R.layout.activity_foods);
14         getSupportActionBar().setTitle("খাদ্যসমৃদ্ধ");
15
16         getSupportActionBar().setDisplayHomeAsUpEnabled(true);
17         getSupportActionBar().setDisplayHomeAsUpEnabled(true);
18     }
19
20
21     @Override
22     public boolean onOptionsItemSelected(MenuItem item) {
23         int id = item.getItemId();
24
25         if (id == android.R.id.home){
26             this.finish();
27         }
28
29         return super.onOptionsItemSelected(item);
30     }
31 }
32
33
```

Figure 5.1: Java code for Food items

This the java code to calculate pregnancy date. Here a women calculate her pregnancy date.

```
1 package com.maoshishu.myapplication;
2
3
4 import ...
5
26
27 public class Calculator extends AppCompatActivity {
28     EditText last_date;
29     TextView tv1, tv2, tv3;
30     Button test_button;
31     Spinner cycle_duration;
32     private int day;
33     private int month;
34     private int year;
35     private int num_days;
36     private int bday;
37     private int bmonth ;
38     private String date;
39
40     Calendar cal = Calendar.getInstance();
41     private int dayToday = cal.get(Calendar.DAY_OF_MONTH);
42     private int monthToday = cal.get(Calendar.MONTH);
43     private int yearToday = cal.get(Calendar.YEAR);
44
45     public DatePickerDialog myDialog;
46
47     @Override
48     protected void onCreate(Bundle savedInstanceState) {
49         super.onCreate(savedInstanceState);
50         setContentView(R.layout.activity_calculator);
51         getSupportActionBar().setTitle("গর্ভাবস্থা নির্ণয়");
52
53         getSupportActionBar().setDisplayHomeAsUpEnabled(true);
54         getSupportActionBar().setDisplayHomeAsUpEnabled(true);
55
56         test_button = (Button)findViewById(R.id.test_button);
```

Figure 5.2: Java code for Calculate pregnancy date

4.3 Interaction Design and UX

Interaction design is a fundamental concept; it is the technique for contact between the client and the substance. When people think of collaboration plans, they generally think of programming things like software or websites. Interaction design is a cycle that entails understanding the client's problem, measuring the problem and determining the normal outcome, performing actions based on the results, and permanently resolving the problem. The intuitive plan's mission is to create things that help clients achieve their objectives in the most efficient and timely manner possible.

4.4 Implementation Requirements

To implement this software, you'll need another programming language, such as Java, PHP, or SQL, as well as Android Studio, a Google open source platform. In addition, some third-party API or library to enforce all specifications is required.

4.4.1 Java

The majority of native app developers use the java programming language to build their app. Furthermore, several languages, such as Kotlin, Flutter, and Dart, can be used to build apps. Java was used in my app. The Java programming language is an object-oriented programming language. Java ME is the lightweight version of Java. Most mobile phones and tablets support Java ME, which is based on Java SE [1]. The Java Platform Micro Edition (Java ME) offers a scalable and safe framework for designing and executing applications for mobile devices [1]. Java ME applications are adaptable, stable, and can take advantage of the device's local capabilities. Java ME caters to the constraints that come with designing applications for mobile devices. Fundamentally, Java ME is designed to run applications on devices with limited memory, display, and processing capacity. However, the Java programming language and the Android SDK are the preferred methodologies for Android devices.

4.4.2 PHP

MYSQL is used as the database on the web server, and PHP is used to extract data from the database. Our application will communicate with the PHP page using basic parameters, and PHP will contact the MYSQL database, retrieve the results, and return them to us. When a record is created, PHP is also used to retrieve it from the MySQL database. To pull up a record, some information about the record to be retrieved must be transferred to the PHP tab. In addition, I use PHP to build Restful APIs and app database connections. For their API, the majority of developers use this language. The NodeJS programming language is also used to build APIs [7] [6].

4.4.3 Google Material Design

Material design is a Google-created plan language that, at its core, is an extremely complex and well-defined set of rules to help both creators and end-users mimic Google's work as well as explain why things in Google look and respond the way they do. [two] However, in terms of content spacing, text size, text colour, margin, grids, scale active icon, app color, and so on, I've used Google Material Design in my app. That is to say, the material design gives the app a total gaudiness [2].

4.4.4 Constrain layout design : Constraint Layout, which is currently the default format in Android Studio, gives you numerous places to put objects. You can compel them to their compartment, to one another, or to rules. This permits you to make enormous, perplexing, dynamic, and responsive perspectives in a level chain of command. It even backings activities!

CHAPTER 5

IMPLEMENTATION

5.1 Implementation of Database

Databases store all types of data in order to create a simple stage for ID and power. For the client, the information base makes data access easy, fast, and adaptable. The analysis of relative records is used to create a chart. To plan and store data, we must first assemble the table's layout, which includes the table name, table section names, unfamiliar key, and important key.

MySQL was used in my program. This information base management system is used to build and maintain the data base. It provides an organized method for restoring, developing, upgrading, and erasing data.

5.1.1 Firebase Database: This database is provide by Google. It is more secure , fast and easy to handle and it's real time database. By the google Gmail account one can create project then make a database. Firebase is not only for database it has also many services like cloud storage , Firebase Machine learning , Cloud functions , User authentication , Hoisting , Cloud messing , Push notification , Test lab etc. [3] This is one of the best platform for any project back-end services. But those services are not free at all. After a crossing the limitation the you have to pay google according to their payment policy. Meanwhile the firebase database is a parent-child tree type database

In the Campus Boi app I have been using two services such as User authentication using phone number by sending one time password (OTP) to login or phone verifying purpose. In phone authentication google send 10k OTP for free but after uses of limit then you have to pay for OTP. [3] However there are also some authentication like authentication by Facebook , Email , GitHub ,Google account and so on. For app push notification I have also enrolled Firebase cloud messing service. It has also a uses limitation after that you have to pay. By using this service easily send a push notification to all user for any announcement , awareness SMS or others [5].

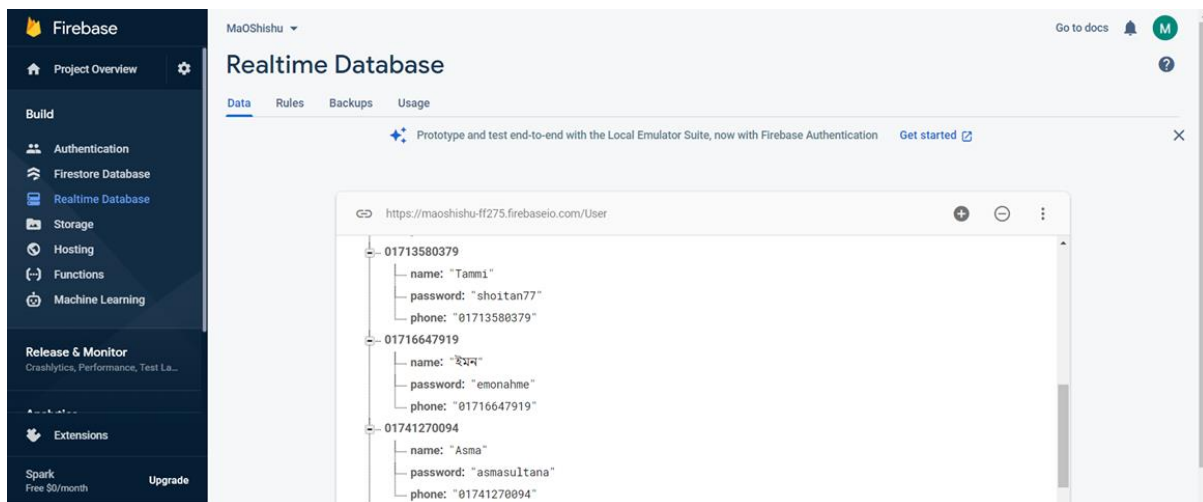


Fig: 5.3 User Database

5.2 Implementation of Front-end Design

Since users interact with a mobile application on a regular basis, the front-end process is important. They won't be able to see the code in the backend. People would not use your app no matter how good your code is if the design is bad. The most powerful side of front-end design is responsive design, which ensures that the design would look the same on every phone display size. In my app, I use user constraints to keep the layout as simple as possible. This style is mobile-friendly and adapts to any screen size. I often use a linear style with a weight total on occasion, which makes the design more sensitive.

Android Layout design :

Instead of writing template XML by hand, the Layout Editor helps you to layout assemble formats by dragging UI components into a visual plan manager. The plan proofreader will display your format on a number of Android devices and adaptations, and you can gradually resize the template to ensure it fits well on different screen sizes.

The ConstraintLayout, which is now the default layout in Android Studio, includes a variety of options for object placement. You may bind them to a jar, to each other, or to a set of rules. In a flat hierarchy, this allows you to construct broad, complex, dynamic, and reactive views. It also allows for animations.

5.3 Testing Implementation

Based on user activity , the test Case table of Ma o Shishu user app features

Test Case	Test input	Expected output	Actual Output	Result	Tested On
Database Connection	Test in API	Successfully connected	Connection Successful	Passed	27-03-2021
Create account	Test in edit test filled, and Insert API	Successfully Created	Created Successful	passed	27-03-2021
Login	Test in edit test filled, and login API	Successfully login	Login Successful	passed	27-03-2021
Food menu	Without book image or name	Will show invalid information	Showed waring message	passed	27-03-2021
Calculate Pregnancy	Empty filled	Will show invalid information	Showed waring message	passed	27-03-2021

5.5 Test Results and Reports

Test report is obligatory to reflect testing brings about a conventional way, which gives an occasion to appraise testing result quick. To get the correlation and cautioning results with object, need to portray the natural or operational condition. The result will store in a record. This called is the test outcome report.

CHAPTER 6

Conclusion and Future Scope

7.1 Conclusion

Eating a balanced diet during pregnancy is linked to improved brain development and a stable birth weight, as well as lowering the risk of many birth defects. Anemia complications, as well as other painful pregnancy symptoms including nausea and morning sickness, may be decreased by consuming a balanced diet. In the other hand, there are also laws and regulations to follow all the moment, and people's lifestyles and habits must change. So that is why a woman should be more vigilant at that time, but most women in rural areas lack proper information about this, and some of them believe many misconceptions or incorrect beliefs, such as that there are too many risks in pregnancy. As a result, we created an Android application with a full pregnancy line as well as instructions for new born babies. The thing is, since the application is written in Bangle, urban people can easily use it. However, they must exercise caution at all times.

7.2 Future Scope

- Notification or Alert system
- Upgrade User Interface
- Background Pregnancy date courting
- Remote Communication
- Cloud Messaging

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