BLOODY NORMAL

A PROJECT REPORT

Submitted by

NAME OF THE CANDIDATE

Name	University Roll No	Registration No
Ahana Ray	*19010301006*	*19013000160 of 2019-20*
Ayan Ghosh	*19010301029*	*19013000183 of 2019-20*
Krishanu Mandal	*19010301064*	*19013000218 of 2019-20*
Kartick Sadhu	*19010301060*	*19013000214 of 2019-20*
Amit Kundu	*19010301012*	*19013000166 of 2019-20*
Anouska Dutta	*19010301018*	*19013000172 of 2019-20*

in partial fulfilment for the award of the degree of

Bachelor of Computer Application

Department of Computational Science

BRAINWARE UNIVERSITY

398, Ramkrishnapur Road, Barasat, North 24 Parganas, Kolkata - 700 125

JULY 2022

BLOODY NORMAL

Submitted by

Name	University Roll No	Registration No
Ahana Ray	*19010301006*	*19013000160 of 2019-20*
Ayan Ghosh	*19010301029*	*19013000183 of 2019-20*
Krishanu Mandal	*19010301064*	*19013000218 of 2019-20*
Kartick Sadhu	*19010301060*	*19013000214 of 2019-20*
Amit Kundu	*19010301012*	*19013000166 of 2019-20*
Anouska Dutta	*19010301018*	*19013000172 of 2019-20*

in partial fulfilment for the award of the degree

of

BACHELOR OF COMPUTER APPLICATION

in

Department of Computational Science

BRAINWARE UNIVERSITY

398, Ramkrishnapur Road, Barasat, North 24 Parganas, Kolkata - 700 125

BONAFIDE CERTIFICATE

BRAINWARE UNIVERSITY

398, Ramkrishnapur Road, Barasat, North 24 Parganas, Kolkata - 700 125

DEPARTMENT OF COMPUTATIONAL SCIENCE

BONAFIDE CERTIFICATE

Certified that this project report "**BLOODY NORMAL(A Mobile Application)**" is the bonafide work of "**Ahana Ray, Ayan Ghosh, Krishanu Mandal, Kartick Sadhu, Amit Kundu, Anouska Dutta** " who carried out the project work under my supervision.

SIGNATURE

Dr. Sandip Roy

HEAD OF THE DEPARTMENT

Department of Computational Science

Brainware University

398, Ramkrishnapur Road, Barasat,

North 24 Parganas, Kolkata - 700 125

SIGNATURE

Sumana Chakraborty

SUPERVISOR

Assistant Professor

Department of Computational Science

Brainware University

398, Ramkrishnapur Road, Barasat,

North 24 Parganas, Kolkata - 700 125

TABLE OF CONTENTS

1. ABSTRACT

Bloody normal is a period tracking application software to help women to track their track their period every month. It has multiple options like user can add the symptoms that they are feeling on the time of period.
Like they can add their,
Moods
physical condition
their flow of period.
After adding the starting and ending day of the period from the next month the user would get notified from the application. The application would track and save all the records each and every month. And also, it would save all the information on the internet so that it's easily accessible. Lastly, we have made the whole application very easy to use so that every user can have good user experience.
We have named the application "Bloody Normal "so that people can normalise the period taboo that people still have in their mind.

2. INTRODUCTION

2.1 Project Purpose :

Menstruation, or periods is just normal vaginal bleeding that occurs as part of a woman's monthly cycle. Periods usually start between age 11 and 14 and continue until menopause at about age 51. They usually last from three to five days. Besides bleeding from the vagina, you may have:

- Abdominal or pelvic cramping pain
- Lower back pain
- Bloating and sore breasts
- Food cravings
- Mood swings and irritability
- Headache and fatigue

The main purpose of our project is to track the menstrual/monthly cycle of the user and let the user know the useful information about the cycle in their own smartphone. This app is a resource that allows people with smart devices to log data related to their period. It also deals with the delay of the menstrual cycle and helps to predict period dates. It includes data that may include:

- period start and end dates
- menstrual flow rate
- period symptoms

It also detects patterns and any abnormalities within the menstrual cycle. Basically when we click on the app it asks some general informative questions to the user in order to show the best possible results for that particular individual. This app accurately tracks the menstrual cycle by logging in simple information like the number of days of menstruation, cycle length and date of last period. It has calendar reminders to help the user to prepare and be aware of the upcoming cycle events. Users can log daily to record mood, symptoms. The app will analyse current and past menstrual cycles to discover unique patterns. It also provides informative wellness tips within an empowering women’s community and maintains women

hygiene. It can schedule reminders, start a free chat with a doctor and take various health assessments to know more about periods and health. Also on the basis of the previous cycle data and depending on the fluctuations of the cycle length during previous months our app keeps improving its predictions to notify when your next cycle begins. This app allows you to keep track of when a period starts, how long it lasts, and even how heavy the period is on different days, as well as other symptoms. Another aspect of the app is to offer an option to track the user's mood. Noting down moods and energy levels can help the user to see patterns of how she feels at certain times in the cycle, so that the user can maximize the schedule around how she might be feeling.

As mobile applications become progressively intertwined into people's everyday routine, they have the potential to improve our standard of living. Any smartphone user can now check the weather, count their steps, record their voice to text, and an endless number of other technological feats at their own convenience. So why not a period tracking app which can be a boon to women health care. However, we are okay while tracking socially accepted health indicators like heart rate, weight, steps, etc. are supported and encouraged by the society there still is a lack of acceptance and advancement specifically in the tracking of women's reproductive health. Since period was accepted as something impure. If we compare other health care apps with period tracking apps then we will see there is a huge lack of apps like this aimed for women's health.

2.2 Project Overview :

In this project our main motive is to make an user-friendly application and help the user tracking her menstrual cycle and know useful information regarding it and also about her health status. With the help of this app, users can not only see her period status but also predict the date if the period is delayed anyway. The app gives a calendar where users can check the period start date, end date and flowing days. The main motto of our app is to inform users about her menstrual cycle with the help of general questions asked from the user once she reaches the login phase. It gives various information regarding health and hygiene of the user and tries to enrich the user with all the vital points that the user must follow.

In early days, menstruation was marked as something impure and somewhere that tradition is still being continued. People in early days used to feel shame talking about periods. To make it acceptable and make it a general topic not only for women but also for men, these kinds of apps are launched. So that people make it obvious and feel it is normal and take proper care of herself during 'that time of the month'.

The application basically starts with a 'Sign In' and 'Log In' phase where the user needs to 'sign in' if she is using it for the first time or 'login' if she is already an existing user. The next phase is a general assessment step where the app asks you some basic questions regarding the user's health and menstrual cycle. Then it predicts the expected date for the next month and also takes care if the period is delayed. It has a period start and end button which the user needs to click on when the period starts and ends respectively. The period dates are marked in the calendar and the app keeps a history of datas of each and every month so that the user can view her menstrual cycle status anytime and anywhere. It does nothing, just tracks the user's period.

Since the time smartphones have entered our lives the world seems to be in our hands. So this app gives all the crucial information regarding the user's period in just one click and also helps the user if she is having difficulties by calculating the period start and end date based on previous month data.

2.3 Intended Audience :

This project is a prototype for period tracking application and it is restricted within the college premises. This has been implemented under the guidance of college professors. The target audience marked for this project are adolescent girls and women who are already undergoing their monthly cycle. Since every girl's body has its own schedule, the age for periods varies from girl to girl. It basically starts between the ages of 10-15. A period happens because of changes in hormones in the body. Hormones are chemical messengers. The ovaries release the female hormones estrogenic and progesterone. These hormones cause the lining of the uterus (or womb) to build up. The built-up lining is ready for a fertilized egg to attach to and start developing. If there is no fertilized egg, the lining breaks down and bleeds. Then the same process happens all over again.

Until now people have not accepted the existence of periods with good eyes. Just to make the women feel normal and let them know that it's okay to bleed and it is just a part of our lives these kinds of tracking applications are developed. So that the user not only knows about her monthly cycle status but also feels normal and doesn't feel ashamed of it.

Also it not only focuses on the menstrual cycle tracking but also on the user's health, hygiene and wellness. It takes a general assessment regarding the changes of the body during, after and before the period.

2.4 Scope :

The purpose of the period tracking app system is to ease period management and to create a convenient and easy-to-use application for users, trying to deal with the period days. Above all, we hope to provide a comfortable user experience along with the best healthcare tips.

The menstrual phase of life is unique to all adolescent girls since that is the phase where a girl starts changing into women. However, it has always been surrounded by taboos and myths that exclude women from many aspects of socio-cultural life. But now the time has changed. We can basically track our menstrual cycle with a smartphone and know all of my health status using it. And that's what we tried to do in our project. This project is intended to be used for the tracking of menstrual cycles for an individual user.

This application allow manual inputting of indicators ranging from mood, vaginal discharge, temperature, cramps, sexual intercourse, acne, nausea, fatigue, bloating and many more. Additionally, the user can manually input when they start and end their menstruation to calculate an average cycle length as well as predict the next.

Technology is an ever growing and quickly permeating factor of current society that changes almost everyday. As a result, technology has become increasingly intertwined and a significant influencer with other aspects of society, including the idea of gender and gender roles in society.

2.5 Product Perspective :

Using a period tracking app can help you understand your health better and have control over your menstrual cycle. We all share a love-hate relationship with our periods. We hate the painful cramps, unbearable bloating and unpredictable mood swings. But one key way to understand your health status better with the help of your menstrual cycle is to track it. This app helps you count the days to your period but it also enables you to keep track of your ovulation, mood changes and any physical changes that we generally experience throughout the cycle. Hence, it helps to keep an eye on the overall menstrual cycle. Throughout history, human societies have always made distinctions and discriminations between what male activities are and what female ones consist of that somewhere makes women feel weak and less deserving. Moreover, physical objects, including technology, are not only often designated as belonging to a particular gender, but also considered to have a gender in themselves. We must have noticed that the majority of artificial intelligent (AI) software are named after women such as Amazon's "Alexa", Microsoft's "Cortana", Apple's "Siri". Starting at birth, girls are kept in a knot within strict social boundaries. Till now most of us feel shy talking about periods in public. We are living in the 21th century and till now the thing we couldn't be normal about till date is this actually - 'Periods'. Since the arrival of smartphones has spinned the world of technology upside-down it is now very important to make periods a 'bloody normal' topic so that not only women, but men can also feel okay with it rather than making the girl feel uncomfortable during her monthly days.

Period tracking database system stores the following information-

- **User description:**
  It includes user id, name, password, email. This information may be used for keeping the records of the user either for logging in or signing in.
- **App description:**
  It includes the user's general health assessment, period start date, period end date, and expected date for next month.

2.6 Product Function :

Features of the project:

1) The tracking of menstrual cycle-associated factors such as mood swings, pain, sleeping patterns, intake of medication and contraceptives, sex life, vaginal discharge, food cravings and exercise.
2) A menstrual calendar where period and ovulation dates as well as days on which additional data have been entered by users are highlighted in specific ways.
3) An analysis screen with graphs, tables or numerical depictions that provide users with statistical information such as average cycle lengths or changes in body weight, mood, body temperature etc.

The major features of the database system as shown in below entity–relationship model (ER model)

But before that we must know what an ERD is -

An entity relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is an object, a component of data. An entity set is a collection of similar entities. These entities can have attributes that define its properties.

In other words, ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships.

ER Diagrams contain different symbols that use rectangles to represent entities, ovals to define attributes and diamond shapes to represent relationships/actions.

At first look, an ER diagram looks very similar to the flowchart. However, ER Diagram includes many specialized symbols, and its meanings make this model unique. The purpose of ER Diagram is to represent the entity framework infrastructure.

Relationship is nothing but an association among two or more entities.

Entity can be anything that relates to real-world things either living or non-living that is easily recognizable and unrecognizable. It may be a physical thing or simply a fact about the enterprise or an event that happens in the real world. Attribute is a single-valued property of either an entity-type or a relationship-type.
Here we can see from the provided ER diagram that 'Registered' is the action, which is represented by a diamond shape that shows how two entities share information in the database. Here the two entities are 'User' and User_details'.

User and User_details are the entities which are represented by rectangles. An entity is an object or concept about which you want to store information.

Also Attributes are there which are represented by ovals. A key attribute is the unique, distinguishing characteristic of the entity.
For example, an user's id might be the user's key attribute.
Here, the two entities i.e the user and user_details are sharing the user's information like user_id, name, email_id, password, start_date etc that are being registered which is basically nothing but the action.

With the help of the user details the tracking of the period cycle begins that helps to create the action of generating reports and the report comes as an entity. The report then creates attributes and also takes an action if the user wants to consult a doctor then the user must pass through an entity of payment which will lead the user to an attribute of payment successfully and will give the user the doctor's_id an name as an attribute.

2.7 Future Upgradation :

Now-a-days nobody wants to wait in the long queues for consulting a Doctor. And that is the reason why online doctor consultation is so much in demand these days. The Internet has made our lives easier by offering healthcare services online. Most people want things to be done from the comfort of their home, and that is why they opt for online medical consultations. So if we add this feature in future the number of users can go high in a very short span of time. It is also being noticed that many people feel shy when they have to talk to a Doctor face to face. Specifically women are scared of visiting a Gynecologist. When you consult a Doctor online, there is no physical examination and an online pdf is generated, so the user does not feel embarrassed about anything and talks confidently with the Doctor.

In future, we can add customized diet plans for the user during the period days so that the user's preferences, food intolerances, specific requirements, or food allergies are all taken into consideration. Also in future there will be push notification systems and reminders. We are busy with our lives; sometimes, it might slip out of the mind. In such cases, a push notification from the app can be very useful to remind the user of upcoming flow days so she can prepare herself. It basically helps the user to keep the mind and body ready for 'that time of the month'. Also by adding this feature users can log their food intake. This will help them in the real time tracking of their calorie intake and the exact requirement as per their body.

Multi- device synchronization is also a great idea which can allow the user to synchronize with different devices. Since in today's world we use basically more than one device on a daily basis, it can either be a smartwatch, tablet etc. So that the user can get a track of it through any of the smart gadgets.

Sleep tracking during those days is a good option to add on. Since due to cramps, bloating and heavy flow the sleep goal is somewhere not completed during the period days. So this feature will help the user to know the sleep deficiency of the user and help the user to set a goal to and tracking the sleep time activity like the deep sleep time as well as the light sleep time. In some cases, the sleep tracking option will be able to monitor whether the user is awake or asleep. They may do this by measuring heart rate and breathing, which can offer insights into whether the user is in a sleeping or wakeful state.

We all know that roughly 60% of our body is water. A human body requires 2-3 liters of water in a day. During the period days more water is required by the body. Water is the

most crucial thing to drink on during the period days the idea of water tracker can be a boon to the app growth. This app reminds the user to drink water and stay hydrated during period days. It considerably helps in assisting the user to achieve their goals by ensuring proper intake of water in their body. By tracking the user's daily water intake, it will give the user’s body the chance to recover from the blood flow. It also leads to Dehydration or unregulated daily water intake of the user's body which can sometimes lead to headaches.

Online consultation, chat, query system option can also be added so that the user can feel free to contact anytime when she feels uncomfortable or faces any difficulty. They can clear any of their queries at any time through online consultation. Moreover, with the chat system in place they can talk with fellow women and can share their experiences and progress.

3. Requirement Specification

3.1 Introduction :

Requirements for the application are as follows:

- Simple UX
- Symptom tracking: Heart rate, basal body temperature, sleep, menstruation, flow, PMS, pregnancy test, exercise
- Medication tracking and alerts
- Data analysis and prediction (color coded)
- Export, import, edit and delete data
- Custom notes and symptom option
- No typing required, button clicking only
- Customizability of notifications of menstruation and ovulation (on/off frequency)

3.2 Software Requirements :

Android OS version 5.0 or more.

Connection of high-quality internet connection

3.3 Hardware Requirements :

RAM 1GB or more

Minimum storage 500MB or more

4. Analysis

A new study finds that smartphone apps to track menstrual cycles often disappoint users with a lack of accuracy, assumptions about sexual identity or partners, and an emphasis on pink and flowery form over function and customization. Nearly half of the survey respondents used a smartphone app to track their periods for a variety of reasons: to understand their body and reactions to different phases of their cycles; to prepare for their periods; to achieve or avoid pregnancy; or to inform conversations with healthcare providers. Other strategies for menstrual tracking included digital calendars, paper diaries, following birth control cues, noticing symptoms or simply remembering, the researchers found. Women found the modelling assumptions used in some period tracking apps weren't accurate or flexible enough to consistently predict their menstrual cycles, particularly when their periods weren't regular. Many apps don't allow users to correct them when the predictions are wrong or to input data or explanations about why a particularly stressful month or change in birth control might have thrown off their cycles.

5. Design

5.1 System Design :

Unified Modelling Language (UML) is a general purpose modeling language. The main aim of UML is to define a standard way to visualize the way a system has been designed. It is quite similar to blueprints used in other fields of engineering.
UML is not a programming language, it is rather a visual language. We use UML diagrams to portray the behavior and structure of a system. UML helps software engineers, businessmen and system architects with modeling, design and analysis. UML is linked with object oriented design and analysis. UML makes the use of elements and forms associations between them to form diagrams. Diagrams in UML can be broadly classified as:

Structural Diagrams – Capture static aspects or structure of a system. Structural Diagrams include: Component Diagrams, Object Diagrams, Class Diagrams and Deployment Diagrams.
Behavior Diagrams – Capture dynamic aspects or behavior of the system. Behavior diagrams include: Use Case Diagrams, State Diagrams, Activity Diagrams and Interaction Diagrams.

6. System Implementation

6.1 Introduction :

Figma, for prototype design

● Figma is a vector graphics editor and prototyping tool which is primarily web-based, with additional offline features enabled by desktop applications for macOS and Windows. The Figma mobile app for Android and iOS allow viewing and interacting with Figma prototypes in real-time mobile devices. The feature set of Figma focuses on use in user interface and user experience design, with an emphasis on real-time collaboration.

React-Native, for frontend

● React Native is an open-source UI software framework created by Meta Platforms, Inc. It is used to develop applications for Android, Android TV, iOS, macOS, tvOS, Web, Windows and UWP by enabling developers to use the React framework along with native platform capabilities. It is also being used to develop virtual reality applications at Oculus.

Node.js, for Backend/API

● Node.js is an open-source, cross-platform, back-end JavaScript runtime environment that runs on the V8 engine and executes JavaScript code outside a web browser. Node.js lets developers use JavaScript to write command line tools and for server-side scripting—running scripts server-side to produce dynamic web page content before the page is sent to the user's web browser. Consequently, Node.js represents a "JavaScript everywhere" paradigm] unifying web-application development around a single programming language, rather than different languages for server-side and client-side scripts.

● Node.js has an event-driven architecture capable of asynchronous I/O. These design choices aim to optimize throughput and

scalability in web applications with many input/output operations, as well as for real-time Web applications (e.g., real-time communication programs and browser games).
●The Node.js distributed development project was previously governed by the Node.js Foundation, and has now merged with the JS Foundation to form the OpenJS Foundation, which is facilitated by the Linux Foundation's Collaborative Projects program.

MySql database

● MySQL is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language. A relational database organizes data into one or more data tables in which data may be related to each other; these relations help structure the data. SQL is a language programmers use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.

AWS Server

● *AWS" redirects here. For other uses, see AWS (disambiguation).Amazon Web Services, Inc. (AWS) is a subsidiary of Amazon that provides on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered pay-as-you-go basis. These cloud computing web services provide distributed computing processing capacity and software tools via AWS server farms. One of these services is Amazon Elastic Compute Cloud (EC2), which allows users to have at their disposal a virtual cluster of computers, available all the time, through the Internet. AWS's virtual computers emulate most of the attributes of a real computer, including hardware central processing units (CPUs) and graphics processing units (GPUs) for processing; local/RAM memory; hard-disk/SSD storage; a choice of operating systems; networking; and pre-loaded application software such as web servers, databases, and customer relationship management (CRM).*

● *AWS services are delivered to customers via a network of AWS server farms located throughout the world. Fees are based on a combination of usage (known as a "Pay-as-you-go" model), hardware, operating system, software, or networking features chosen by the subscriber required availability, redundancy, security, and service options. Subscribers can pay for a single virtual AWS computer, a dedicated physical computer, or clusters of either.Amazon provides select portions of security for subscribers (e.g. physical security of the data centers) while other aspects of security are the responsibility of the subscriber (e.g. account management, vulnerability scanning, patching). AWS operates from many global geographical regions including 6 in North America.*

●*Amazon markets AWS to subscribers as a way of obtaining large-scale computing capacity more quickly and cheaply than building an actual physical server farm.All services are billed based on usage, but each service measures usage in varying ways. As of 2021 Q4, AWS has 33% market share for cloud infrastructure while the next two competitors Microsoft Azure and Google Cloud have 21%, and 10% respectively, according to Synergy Group.*

Firebase for Google authentication and cloud messaging

●Firebase is a platform developed by Google for creating mobile and web applications. It was originally an independent company founded in 2011. In 2014, Google acquired the platform and it is now their flagship offering for app development.

6.2 Sample Code :

Main page code

App.js

```
import React, { useEffect } from 'react'; import { StyleSheet, Text, View } from 'react-
native'; import { Calendar } from 'react-native-calendars'; import Navigation from
'./src/components/Navigation'; import { AuthProvider } from './src/context/AuthContext';
import ReminderScreen from './src/screens/ReminderScreen';

const App = () => {
  return (

    <AuthProvider>
      <Navigation />
    </AuthProvider>
  );

}

export default App;
```

Components:

Navigation.js:

```
import { Text, View } from 'react-native' import React, { useContext }
from 'react' import { NavigationContainer } from '@react-
navigation/native'; import { createNativeStackNavigator } from '@react-
navigation/native-stack'; import { AuthContext } from
'../context/AuthContext'; import LoginScreen from
'../screens/LoginScreen'; import RegisterScreen from
'../screens/RegisterScreen'; import NewUserScreen from
'../screens/NewUserScreen'; import HomeScreen from
'../screens/HomeScreen'; import DashboardScreen from
'../screens/DashboardScreen'; import ReminderScreen from
```

```
'../screens/ReminderScreen'; import ReportScreen from
'../screens/ReportScreen'; const Stack = createNativeStackNavigator();
const Navigation = () => { const { userInfo, jwtToken } =
useContext(AuthContext);

  return (
    <NavigationContainer>
      <Stack.Navigator>

        {userInfo.userAccessToken ?
          ( <>
            <Stack.Screen
              name='Dashboard'
              component={DashboardScree
              n} options={{ headerShown:
              false }}
            />
            <Stack.Screen name='Home'
              component={HomeScreen}
              options={{ headerShown:
              false }}
            />
            <Stack.Screen name='Reminder'
              component={ReminderScree
              n} options={{ headerShown:
              false }}
            />
            <Stack.Screen name='Report'
              component={ReportScreen}
              options={{ headerShown:
              false }}
            />
          </>
```

```
            ) : (
              <>
                <Stack.Screen name='NewUser'
                  component={NewUserScreen
                  } options={{ headerShown:
                  false }}
                />
                <Stack.Screen name='Login'
                  component={LoginScreen}
                  options={{ headerShown:
                  false }}
                />
                <Stack.Screen
                  name='Register'
                  component={RegisterScre
                  en} options={{
                  headerShown: false }}
                />
              </>
            )}
          </Stack.Navigator>
        </NavigationContainer>

    );

}

export default Navigation;
```

Context

AuthContext.js: import AsyncStorage from "@react-native-async-storage/async-storage"; import axios from "axios"; import React, { createContext, useState } from "react"; import { base_url } from '../config'; import jwt_decode from "jwt-decode"; export const

```
AuthContext = createContext(); export const AuthProvider = ({
children }) => {

  const [isLoading, setIsLoading] =
  useState(false); const [userInfo, setUserInfo] =
  useState({}); const [jwtToken, setJwtToken] =
  useState({}); const [userDetails,
  setUserDetails] = useState({}); const
  [userCount, setUserCount] = useState('');

  // User login function const login =
  async (email, password) => {
    setIsLoading(true);
    axios.post(`${base_url}/user/login`, {
      email, password
    })
      .then(res => { let userInfo
        = res.data.data;
        setUserInfo(userInfo);
        AsyncStorage.setItem('userInfo',
        JSON.stringify(userInfo)); setIsLoading(false); let
        jwtToken = jwt_decode(userInfo.userAccessToken);
        setJwtToken(jwtToken); // console.log(jwtToken);
        checkUserDetails(jwtToken.userId);
      }).catch(e => {
        console.log(`login error
        ${e}`);
        setIsLoading(false);
      });
  };

  // User registration function const register =
  async (name, email, password) => {
```

```
    setIsLoading(true);
    axios
      .post(`${base_url}/user/register`, {
        name, email, password
      })
      .then(res => { let userInfo
        = res.data.data;
        setUserInfo(userInfo);
        AsyncStorage.setItem('userInfo',
        JSON.stringify(userInfo)); setIsLoading(false); let
        jwtToken = jwt_decode(userInfo.userAccessToken);
        setJwtToken(jwtToken); // console.log(jwtToken);
        // console.log("Id : ", jwtToken.userId);
        checkUserDetails(jwtToken.userId);
      })
      .catch(e => {
        console.log(`register error
        ${e}`); setIsLoading(false);
      })
}

// User logout function
const logout = () => {
    AsyncStorage.removeItem('userInfo');
    setUserInfo({});
}

// Add user bleeding details function const addUserDetails = (userId,
intervalTime, bleedingTime, startDate) => {
    setIsLoading(true);
    axios.post(`${base_url}/details/addinfo`, {
      userId, intervalTime, bleedingTime, startDate
    })
```

```
        .then(res => {
            let userDetails = res.data; console.log(userId,
            intervalTime, bleedingTime, startDate);
            setUserDetails(userDetails);
            AsyncStorage.setItem('userDetails',
            JSON.stringify(userDetails)); setIsLoading(false);
            console.log(userDetails);
        }).catch(e => { console.log(`Add
            details error ${e}`);
            setIsLoading(false);
        });
};
```

7. Testing

7.1 Introduction :

Software testing is nothing but an art of investigating software to ensure that its quality under test is in line with the requirement of the client. Software testing is carried out in a systematic manner with the intent of finding defects in a system. It is required for evaluating the system. As technology is advancing we see that everything is getting digitized. You can access your bank online, you can shop from the comfort of your home, and the options are endless. Have you ever wondered what would happen if these systems turn out to be defective? One small defect can cause a lot of financial loss. It is for this reason that software testing is now emerging as a very powerful field in IT. Although like other products software never suffers from any kind of wear or tear or corrosion but yes, design errors can definitely make your life difficult if they go undetected. Regular testing ensures that the software is developed as per the requirement of the client. However, if the software is shipped with bugs embedded in it, you never know when they can create a problem and then it will be very difficult to rectify defect because scanning hundreds and thousands of lines of code and fixing a bug is not an easy task. You never know that while fixing one bug you may introduce another bug unknowingly in the system.

Software testing is now a very significant and integral part of software development. Ideally, it is best to introduce software testing in every phase of software development life cycle. Actually a majority of software development time is now spent on testing.

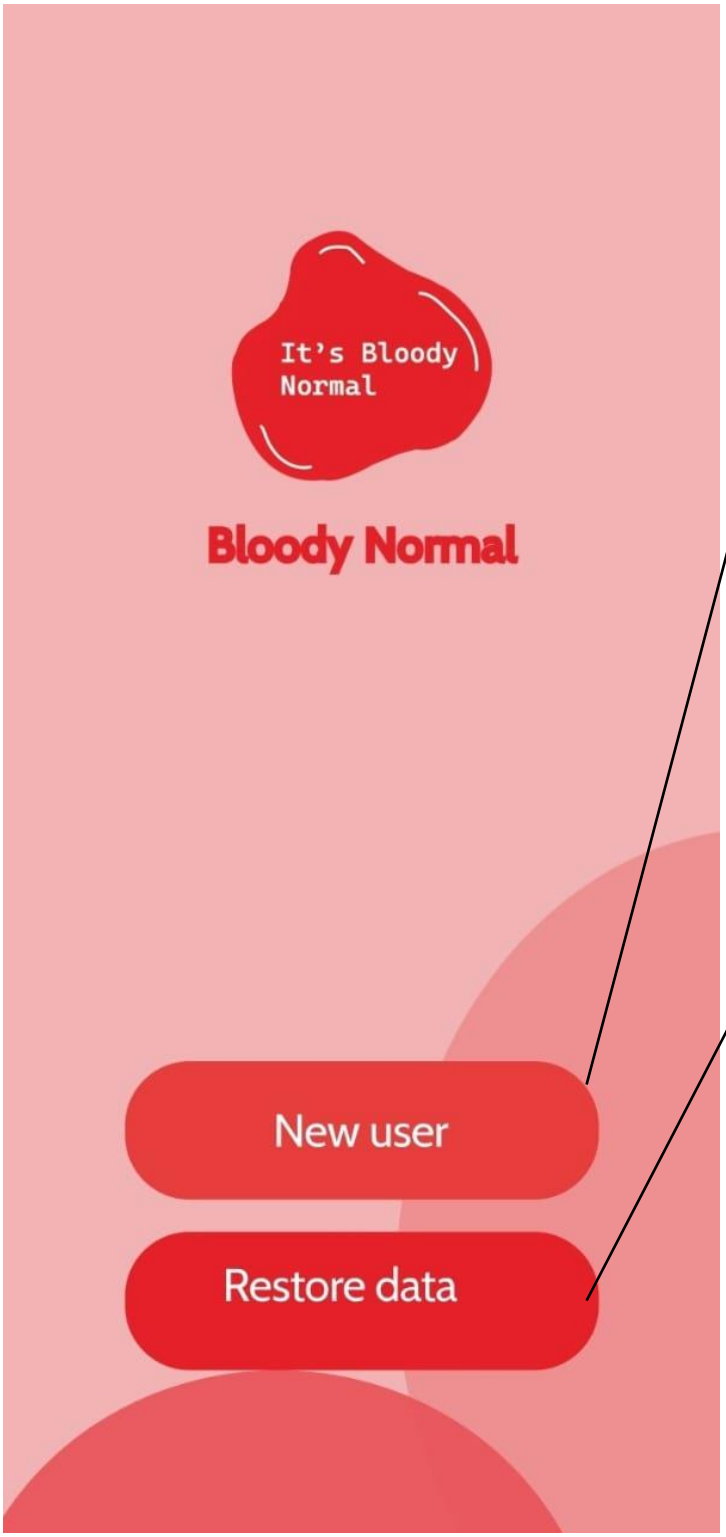
7.2 Testing Methods :

Black Box Testing: Black Box testing is a software testing method in which the functionalities of software applications are tested without having knowledge of internal code structure, implementation details and internal paths. Black Box Testing mainly focuses on input and output of software applications and it is entirely based on software requirements and specifications. It is also known as Behavioral Testing.

White box testing: This techniques analyze the internal structures the used data structures, internal design, code structure and the working of the software rather than just the functionality as in black box testing. It is also called glass box testing or clear box testing or structural testing.

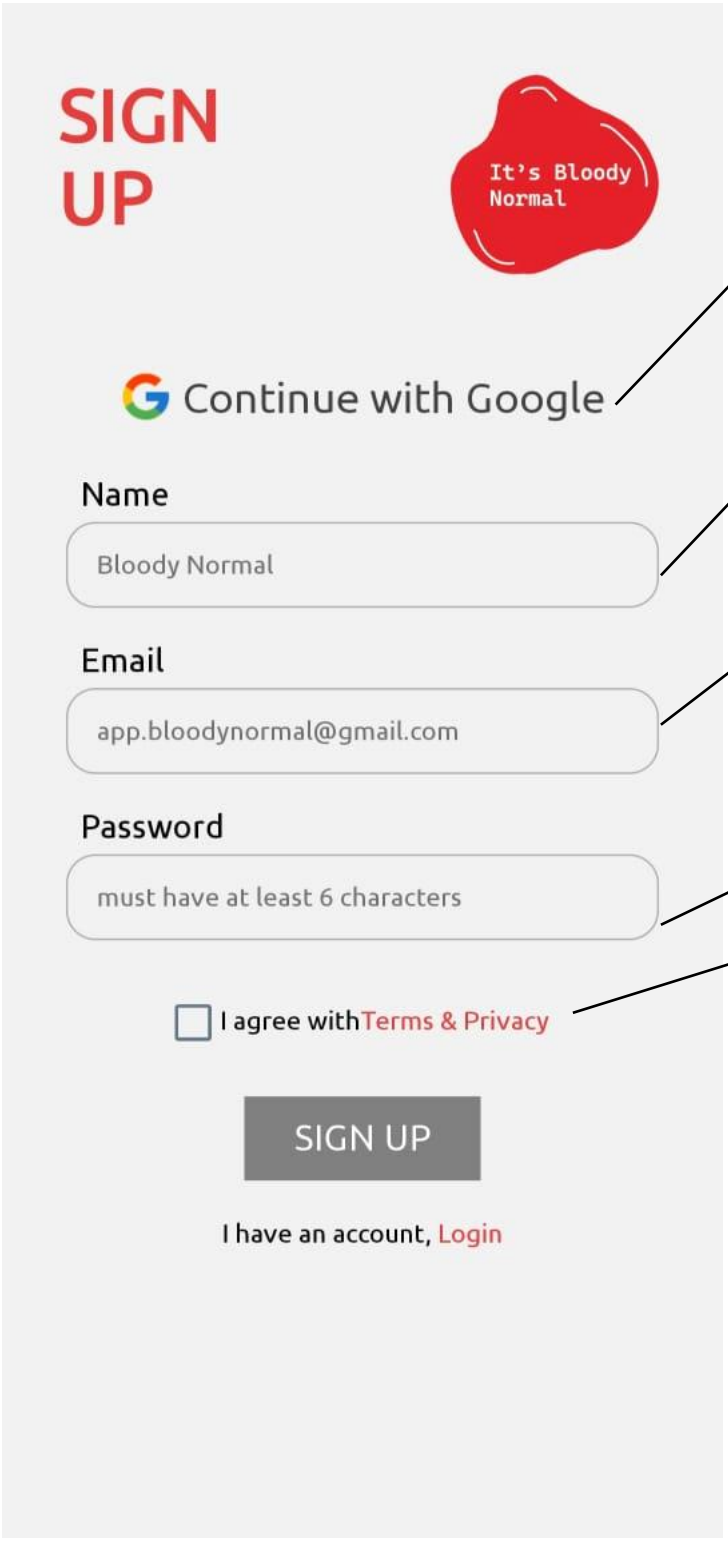
8. Sample Screenshot :

This is the first page of the application



Here if a new user install the application, she needs to click on the new user button and register herself.

If the user already have been using the application and somehow uninstalled the application and need to restore all her previous data she would click on Restore data



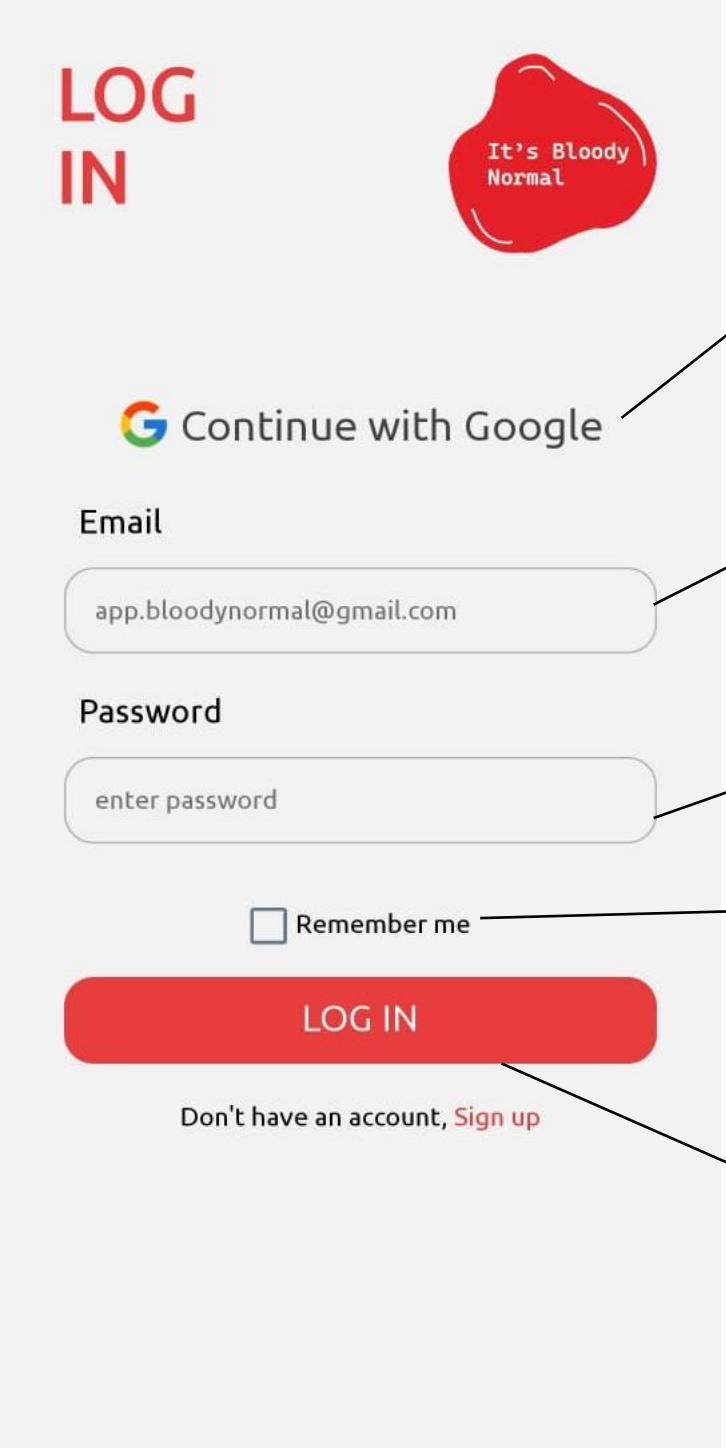
If user wants to continue with google she needs tap here

User need to fill her name

User need to register her actual email id to create account

Now user must have enter a password

Now the final step user needs to checked terms & Privacy and the press sign up to complete registration process



If user wants to continue with google she needs tap here

User needs to enter her registered email to continue

User needs to enter the saved password

We have added a remember me button where the data of user will automatically get saved

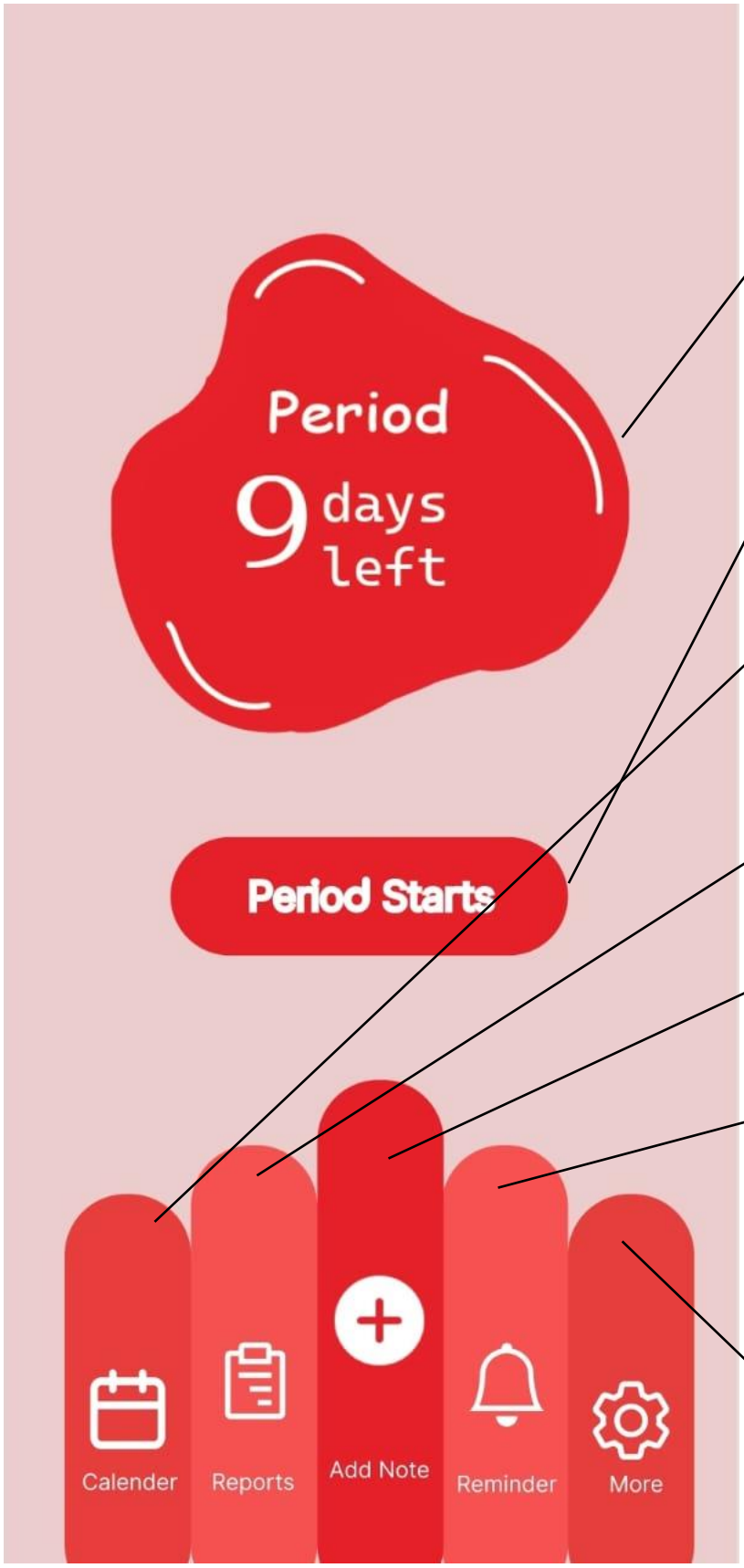
And lastly we have added a login button

Here the user needs to add the duration of the of the periods start date, through which the application would calculate the next period date

Here the user needs to add the periods duration time.

Here the user needs to add the last date of period.

Lastly we have added two button cancel and done .



Here the user can see how many days are left to get the period.

By clicking on this Tab the user can add the current starting date of her period.

In the add note section the user can add any note regarding her period.

We have added some basic health related options which can be added by clicking on the reminder section.

More is a kind of settings button which we have added here to access more features.

In the calendar section the user can change the bleeding time and interval time.

We have added a feature where after collecting all the data the user can generate a report.

9. Use Case :

A use case describes how a user will interact with the system. It basically describe the product from the end user's point of view in a simple story format. It is the real-life visualization of the functional requirements.

Both the new user who is logging in for the first time and also the existing user who has logged in before are basically 'Users'. Logging in to the application is very simple and user-friendly. The user just needs to fill in basic information like name, email-id, set password, phone number. On logging in a small assessment test with general health questions are taken from the user so that the app can predict and show up best wellness tips and guidelines to the user.

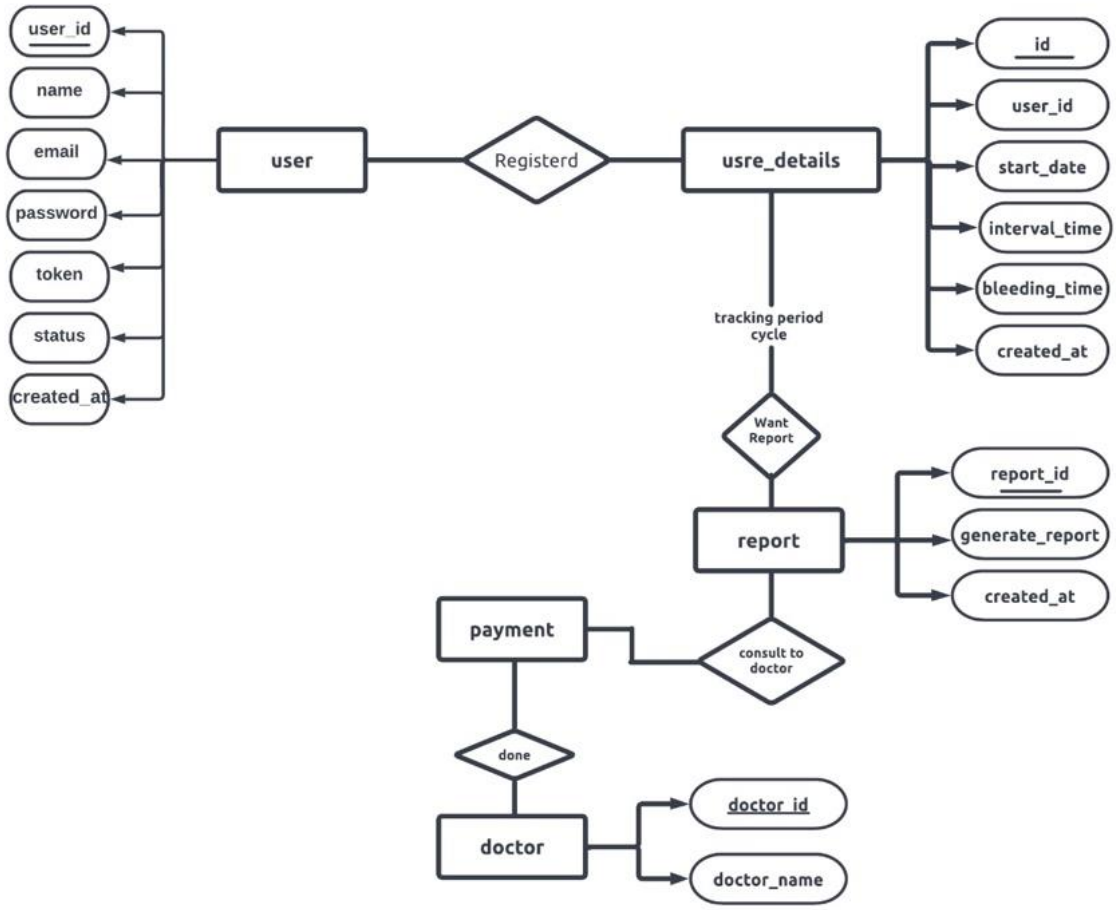
On logging in the user needs to fill the data like last periods, start date, duration, bleeding time. Users can change or edit the filled data. Also users can track the cycle length that is basically for how many days the period will last for.

Users might need some notes to keep in mind so adding notes is also applicable. Users will get reminders from the logged in app that will help the user to remember about her upcoming period days. Symptoms like bloating, stomach cramps, and heavy bleeding can also be added into it. Also changing of password can be done easily by the user according to the user's wish.

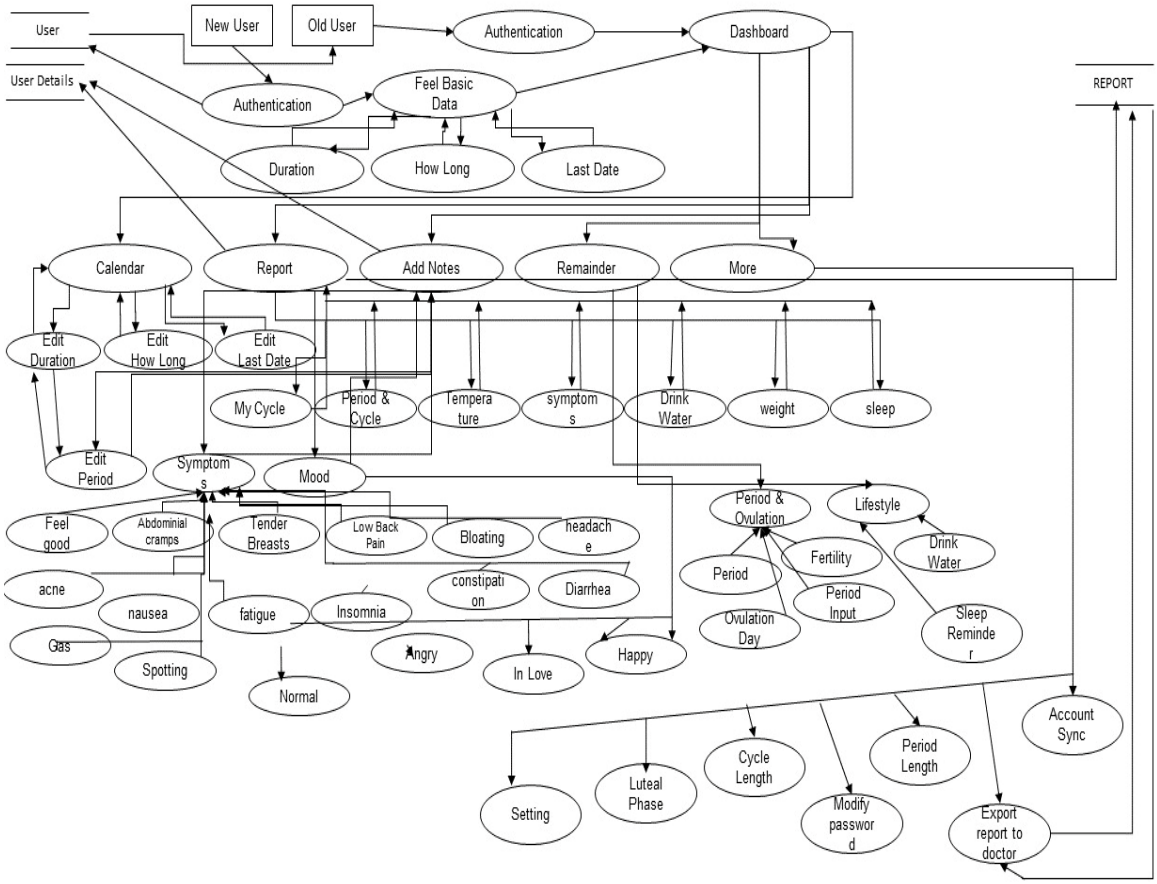
Generation of reports in the form of pdf can be easily accessible so that users can get the overall description of the period and get to know about everything related to the user's health and wellness. With the help of those reports, users can consult an online doctor and solve queries and problems related to the user's health. But for this user needs to make a payment some amount of money is required in order to connect with a doctor online and generate reports.

10. Diagrams:

ER:



DFD:


User
User Details
New User
Old User
Authentication
Dashboard
Authentication
Feel Basic Data
REPORT
Duration
How Long
Last Date
Calendar
Report
Add Notes
Remainder
More
Edit Duration
Edit How Long
Edit Last Date
My Cycle
Period & Cycle
Tempera ture
symptom s
Drink Water
weight
sleep
Edit Period
Symptom s
Mood
Period & Ovulation
Lifestyle
Feel good
Abdominial cramps
Tender Breasts
Low Back Pain
Bloating
headach e
Fertility
Drink Water
Period
Period Input
acne
nausea
fatigue
Insomnia
constipati on
Diarrhea
Ovulation Day
Sleep Reminde r
Gas
Spotting
Normal
Angry
In Love
Happy
Account Sync
Cycle Length
Period Length
Setting
Luteal Phase
Modify passwor d
Export report to doctor

11. References :

- React Native - Learn once write anywhere (Official React-Native doc https://reactnative.dev/).
- Refer Tutorials Point for React native website.
- Access Technical Thapa YouTube channel React-Native Playlist
- Access Code For You YouTube Channel to learn React native authentication with REST API.
- Access Code Step By Step YouTube Channel to learn React native API call.
- Introduction to Node.js (Official node.js doc website https://nodejs.dev/learn)
- Geeks for Geeks website.
- VAC (Value Added Course) Classes by "**Tamaghna Banarjee"**, organized by **Brainware University**.
- AWS Training (https://www.aws.training/)
- Amazon Relational Database Service Documentation (https://docs.aws.amazon.com/rds/).
- Access Getting Started with AWS RDS provided by Amazon Web Services.
- AWS EC2 (https://aws.amazon.com/ec2/).
- Amazon S3 - Cloud Object Storage - AWS (https://aws.amazon.com/s3/).
- Firebase official documentation (https://firebase.google.com/)

12. Conclusion :

The most challenging part was the development of some screens in modern technology (**React-Native**) also build logic and custom **API's** according to our projects.

The main goal of our project was to help women's about their menstrual cycle and spread some awareness about the **period.** And we also wanted to remove at-least some taboo that people still have about period. Hopefully building this application in our major project would help people to think, talk and open-up about this topic.

We would like to thank our project mentor "**Sumana Chakraborty**" ma'am to encourage and help us in every point of this project.