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A MOBILE BASED APPOINTMENT BOOKING AND MEDICAL RECORDS FOR HEALTH CARE USING FLUTTER

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Abstract:Mobile phones have crucial influences on consumers and their life style. Nowadays, there are many applications which have been developed for mobile phones and one of those is healthcare applications. Android is used in over 190 countries and powers hundreds of millions of mobile devices. It has the largest installed base of any mobile platform and is rapidly expanding—every day, a million new Android users turn on their devices for the first time and begin searching for apps, games, and other digital content.

Android provides you with a world-class platform for developing apps and games for Android users around the world, as well as an open marketplace for quickly distributing them. Data collected by fitness trackers could play an important role in improving the health and well-being of the individuals. This Android application has handy tools for arithmetic, scientific, and converting calculations This Health application consists of BMI Calculator, Fitness Tracker, Diet Planner, Weight Tracker, Doctor Consultation and aids in Medical Records Storage. This Android application is created by using Flutter (Dart Programming Language) in VS code.

I. INTRODUCTION

Medical appointment and consultation is of necessity in the field of medicine which gives the doctor the opportunity to access, examine, test and diagnose a patient of an ailment or diseases. The establishment and improvement of doctor-patient interaction system is a very important requirement, especially now when the mobile communication technology is developing rapidly. The advantages of mobile web can be made full use of to make up the time and distance gap between doctors and patients and to provide fast and adequate medical services

Through the connection between mobile terminals and specific service, both doctors and patients are able to obtain required data to achieve a better interaction . The mHealth technology has allowed patients to improve & manage their health by gathering information about health symptoms and notifying doctors for appropriate consultation & treatment. There are times when the patient misses to schedule an appointment with the doctor. This leads to delays in providing healthcare service by the practitioner. Now with a healthcare mobile app, the patient can schedule appointments directly from their smartphones.

Electronic Medical Records

Movement of bulky files down a hospital corridor is gradually becoming a thing of the past in the developed and developing countries of the world. Electronic Health Record(EHR) systems have been built to solve this problem to an extent. The adoption rate is slow due to the large low-level awareness of the standards of Health Level 7 (HL7) for the creation of interfaces to communicate with other software. Electronic Medical Records (EMR) can be seen as a streamlined version of an Electronic Health Record (EHR) system. Change is constant in the

Health Care sector and recent advances in technology are piloting this change. The application of technology in healthcare can help to increase access to health care; make patient records more accessible; increase professional communication; create global health networking.

1.4 Weight Reduction and Maintenance

A discrepancy exists with regard to the effect of smartphone applications (apps) on weight reduction due to the several limitations of previous studies. This is a retrospective cohort study, aimed to investigate the effectiveness of a smartphone app on weight reduction in obese or overweight individuals, based on the complete enumeration study that utilized the clinical and logging data entered by Noom Coach app users between October 2012 and April 2014. A total of 35,921 participants were included in the analysis, of whom 77.9% reported a decrease in body weight while they were using the app (median 267 days; interquartile range = 182). Dinner input frequency was the most important factor for successful weight loss (OR = 10.69; 95% CI = 6.20-19.53; $p < 0.001$), and more frequent input of weight significantly decreased the possibility of experiencing the yo-yo effect (OR = 0.59, 95% CI = 0.39-0.89; $p < 0.001$).

II. LITERATURE REVIEW

Prof. Vilas C. Rathod , Aditya Jori, Atharva Kashid, Vishal Chavan Proposed "The review paper on body mass index (BMI) calculator of child malnutrition system" published by JETIR in the year June 2021. The body mass index (BMI) is that the metric currently in use for outlining anthropometric height and weight characteristics in adults and for classifying them into groups. The common interpretation is that it represents an index of an individual's fatness. It is also widely used as a risk factor for the event of or the prevalence of several health issues. The Body Mass Index (BMI) Calculator App is a software programme that eliminates the need for more manual hours to calculate and locate the BMI for a specific person with a single click.

AJAYI, Olusola Olajide, AKINRUJOMU, Oluwatobiloba Samuel DASO, Olugbenga Samuel, AKINNIYI Olufunmilayo Paulina Proposed "A mobile based medical appointment and consultation (MMAC) system" published by IJCSMC in the year 2019, Medical appointment and consultation is of necessity in the field of medicine which gives the doctor the opportunity to access, examine, test and diagnose a patient of an ailment or diseases. Several researches. Also, the system integrates a live consultation with a doctor available online

Victoria SAMUEL, Adewole ADEWUMI, Benjamin DADA, Nicholas Omoregbe ,Sanjay MISRA, Modupe Odusami Proposed "Design and Development of a Cloud-basedElectronic Medical Records (EMR) System''. An Electronic Medical Record System is an electronic record management tool that helps to manage the flow of patient files within a hospital as well as improving the efficiency of the patient lifecycle and optimization of record retrieval process.

III. PROPOSED SYSTEM:

The **A mobile based appointment booking and medical records for health care using flutter**

application is a software program that eliminates the need for more manual hours to calculate, saves

time and your resources.

In this application one can calculate his/her BMI, store medical records, track weight, book
appointments for doctor consultation, and also contains a diet planner.

This application has all major features which helps the user in terms of ease of usage and obtaining quick results.

The study adopts the use of Object Oriented Analysis and Design (OOAD) method. The underlying principle is that one model software systems as collections of cooperating objects, treating individual objects as instances of a class within a hierarchy of classes. Object-oriented analysis describes an information system by identifying things called objects. An object represents a real person, place, event, or transaction.

For example, when a patient makes an appointment to see a doctor, the patient is an object, the doctor is an object, and the appointment itself is an object. Object-oriented analysis is a popular approach that sees a system from the viewpoint of the objects themselves as they function and interact. The end product of object-oriented analysis is an object model, which represents the information system in terms of objects and object-oriented concepts. The following procedures shall be followed in the execution of the work:

i. Data Collection/Information Gathering: Information was gathered on flow of the manual method of medical appointment and consultation.
ii. Modelling: Well-defined UML diagrams (Data Flow Diagram, Use Case Diagram, Sequence Diagram) were used for the modelling the proposed system.
iii. Design and Implementation: Object-oriented design approach is adopted for the design of the proposed system, which is to be implemented as android-based.

VS Code:

Visual Studio Code is a streamlined code editor with support for development operations like debugging, task running, and version control. It aims to provide just the tools a developer needs for a quick code-build-debug cycle and leaves more complex workflows to fuller featured IDEs, such as Visual Studio IDE**.**

Flutter:

Flutter is a UI toolkit for building fast, beautiful, natively compiled applications for mobile, web, and desktop with one programing language and single codebase. It is free and open-source. Initially, it was developed from Google and now manages by an ECMA standard. Flutter apps use Dart programming language for creating an app.

Flutter gives easy and simple methods to start building beautiful mobile and desktop apps with a rich

set of material design and widgets. Here, we are going to discuss its main features for developing the

mobile framework.

Open-Source: Flutter is a free and open-source framework for developing mobile applications.

Cross-platform: This feature allows Flutter to write the code once, maintain, and can run on different platforms. It saves the time, effort, and money of the developers.

Hot Reload: Whenever the developer makes changes in the code, then these changes can be seen instantaneously with Hot Reload. It means the changes immediately visible in the app itself. It is a very handy feature, which allows the developer to fix the bugs instantly.

Accessible Native Features and SDKs: This feature allows the app development process easy and delightful through Flutter's native code, third-party integration, and platform APIs. Thus, we can easily access the SDKs on both platforms.

Minimal code: Flutter app is developed by Dart programming language, which uses JIT and AOT compilation to improve the overall start-up time, functioning and accelerates the performance. JIT enhances the development system and refreshes the UI without putting extra effort into building a new one.

Widgets: The Flutter framework offers widgets, which are capable of developing customizable specific designs. Most importantly, Flutter has two sets of widgets: Material Design and Cupertino widgets that help to provide a glitch-free experience on all platforms.

Libraries:

Rive: Rive is a real-time interactive design and animation tool. Use our collaborative editor to create motion graphics that respond to different states and user inputs. Then load your animations into apps, games, and websites with our lightweight open-source runtimes.

Lottie: Lottie for Flutter. Lottie is a mobile library for Android and iOS that parses Adobe After Effects animations exported as json with Bodymovin and renders them natively on mobile! This repository is an unofficial conversion of the Lottie-android library in pure Dart.

firebase_auth: Flutter plugin for Firebase Auth, enabling Android and iOS authentication using passwords, phone numbers and identity providers like Google, Facebook and Twitter.

bottom_navy_bar: A bottom navigation bar is a material widget that is present at the bottom of an app for selecting or navigating to different pages of the app. It is usually used in conjunction with a Scaffold, where it is provided as the Scaffold. bottomNavigationBar argument.

shimmer: Shimmer effects are loading indicators used when fetching data from a data source that can either be local or remote. It paints a view that may be similar to the actual data to be rendered on the screen when the data is available.

shared_preferences: SharedPreferences is what Android and iOS apps use to store simple data in an allocated space. This data exists even when the app is shut down and starts up again; we can still retrieve the value as it was. The data stored in SharedPreferences can be edited and deleted.

cloud_firestore: Flutter plugin for Cloud Firestore, a cloud-hosted, noSQL database with live synchronization and offline support on Android and iOS.

fluttertoast: It will disappear on its own after completing the time provided by the developers.

A developer mostly used the toast notification for showing feedback on the operation performed by the user. Showing toast notification message is an essential feature in android applications.

glassmorphism: Glassmorphism is a user interface (UI) trend of cards in Flutter and a very important component of website consent and achievement. It is very responsive to changes in UI patterns and styles and various evolving styles. Influenced UI Glassmorphism has overwhelmed the most recent UI patterns.

IV.TESTING AND EVALUATION

Open Testing: Open testing: Create an open testing release to run a test with a large group and surface your app's test version on Google Play. If you run an open test, anyone can join your testing program and submit private feedback to you.

Internal Testing : Internal testing deals with low-level implementation. Here each function or component is tested. This testing is accomplished by the implementation teams. This focus is also called clear-box testing, or sometimes white-box testing, because all details are visible to the test.

Closed testing: Create a closed testing release to test pre-release versions of your app with a wider set of testers to gather more targeted feedback. Once you've tested with a smaller group of colleagues or users, you can expand your test to an opetrusted n release.

CONCLUSION

The **mobile based appointment booking and medical records for health care using flutter** application is a software program that eliminates the need for more manual hours to calculate, saves time and your resources. This application has all major features which helps the user in terms of ease of usage and obtaining quick results.

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