



APP FOR ONLINE OPD APPOINTMENTS AND HOSPITAL INFORMATION SYSTEM

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ABSTRACT

The purpose of a project entitled "App for OPD Appointment and Hospital Information System" is to provide user-friendly, simple, fast, and cost-effective service. It deals with the collection of patients detail, diagnosis report, etc. Traditionally, it was done manually. The main function of the system is to register patients, confirm online appointments for hospitals and store patient details and retrieve data when required. This system can be entered using USERNAME and PASSWORD. It is accessible either by hospital Receptionist(admin), Doctors and customers i.e. patients. only they can add a database to the system. The data is perfectly secure for personal use and makes data processing very quick.

Keywords:Java Virtual Machine, Java Runtime Environment, Java Development Kit (JDK), Graphical User Interface (GUI), API, Integrated Development Environment (IDE), Android Development Tool (ADT).

1. Introduction

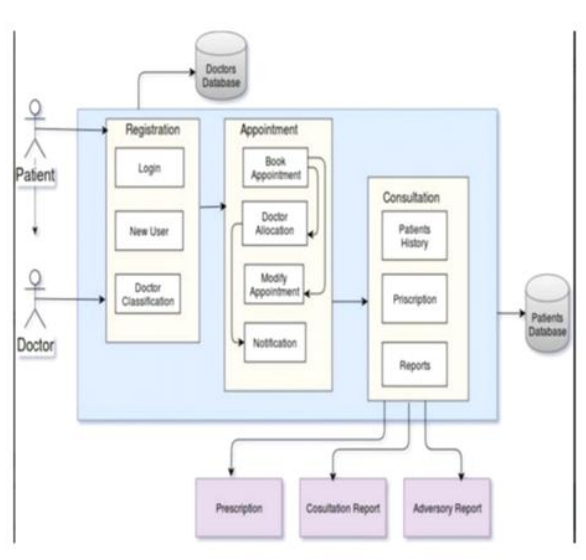
In the digital era, App for OPD Appointment and Hospital Information plays an important role in improving the day-to-day operations of healthcare facilities and diagnostic centers. An efficient EMS helps you gain control of the medical, legal, and administrative aspects of hospital operations in an organized manner. It comes with useful modules to connect the workflow of doctors and clinics. This advanced system helps hospitals and clinics improve patient services. It helps hospitals manage appointments, patient registration, doctor schedule, and emergency services. Additionally, "MediCare" offers a mobile version, which is compatible with android devices.

The main objective to develop a project on Doctor Appointment System is to provide the android app for Doctor Appointment System to patients, from where users can use it from their mobile devices. Android project on OPD Appointment System is compatible with all android mobiles. Souters can use and configure it on their mobile devices. Whenever a patient needs to book an appointment, the user can visit the website as well as an android app. The user will have various options for booking an appointment. He can book an appointment in a way that creates an event in Google calendar. The doctor or his assistant can confirm the appointment with just a single click. The patient can be notified of the confirmation through an email, or SMS. Also, patients can register for a pathology labs appointment.

First take a look at, the traditional medical appointment booking system. You normally contact the clinic and talk to the receptionist to schedule an appointment. You pick the suitable appointment available or choose a specific date and time, depending on your circumstances and the need for the treatment. Many clinics also provide an appointment receipt for the same day for the ongoing OPD. This Application serves exactly the same purpose by using technology and does it more user-friendly. In Covid-19 Pandemic everyone faces the problem in hospitals, vaccination centers, and pathology labs so to reduce such kinds of problems we decide to work on this problem. Being a good human being, it is our mere responsibility to help people by solving their problems. Being in the IT profession we are developing an app to help people. This application can reduce the time for patients as well as Doctors and will work as a mediator between them

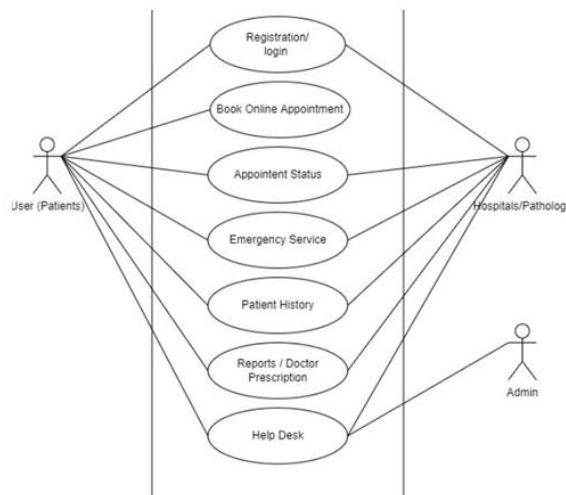
2. Structure

The system design provides the understanding and procedural details necessary for implementing the system. A system design is an act of defining the components, units, interfaces, and data for a system to satisfy specified requirements. System design is a more creative process in order to make it functional, reliable, and reasonably easy to understand, modify and maintain. System design deals with the development of the actual mechanics for a new workable system. The purpose of this project is to create a base where patients and doctors can interact efficiently with each other and provide ease and comfort to the patients. It also aims to resolve the problems that patients have to face while making appointments and keeping medical files. Patients can choose a medical practitioner based on their professional profile and other patient reviews. While doctors can access and update a patient's medical history after every check-up.



• UseCase:

A Use Case diagram shows the interaction between the system and external entities to the system. These entities are called actors. The proposed system shows admin, doctors, and users as actors.



3. Methodology

.Android Studio IDE:

Android Studio is the official integrated development environment for Google's Android OS, built on Jet Brains' IntelliJ IDEA software and designed specifically for Android app development. It is available for Windows, Mac OS, and Linux-based operating systems like Ubuntu. It is a replacement for the Eclipse Android Development Tools (ADT) as a primary IDE for native Android development. Android Studio was announced on 16th May 2013, at the Google I/O conference. It was in the early access preview stage starting from version 0.1 in May 2013, then entered the beta stage starting from version 0.8 which was released in June 2014. The first stable build was released in late 2014, starting from version 1.0. Since 7th May 2019, Kotlin is Google's preferred language for Android app development. Other programming languages like Android Studio, Java, and C++ are also supported file naming and delivery.

3.1. Visual Studio Code:

These tools are used to perform common tasks making every day's work faster. Visual Studio Code has support for Git hub so you can work with source control without leaving the editor including viewing pending changes diffs. Architecturally, Visual Studio Code At its heart, Visual Studio Code features a lightning-fast source code editor, perfect for day-to-day use. With support for many languages, VS Code helps you be instantly productive with syntax highlighting, bracket matching, auto-indentation, box selection, snippets, etc. Keyboard shortcuts, easy customization, and community-contributed keyboard shortcut mappings let you navigate your code simply. For coding, you will often support tools with more code understanding than just blocks of text. Visual Studio Code includes a built-in service for IntelliSense code completion, rich semantic code understanding and navigation, and code refactoring. Debugging is the one feature that developers miss most in a leaner coding experience, so we made it happen. Visual Studio Code has an interactive debugger, so you can step through source code, inspect variables, view call stacks, and execute commands in the console. VS Code also integrates with build and scripting ode combines the best of web, native, and language-specific technologies. Using Electron, VS Code combination of web technologies such as JavaScript and Node.js with the speed and flexibility of apps. VS Code uses an advanced version of an industrial-strength HTML-based editor that uses the "Monaco" cloud editor, Internet Explorer's F12 Tools, and others. VS Code depends on a tools service architecture that enables it to integrate with many of the other technologies that power Visual Studio, including Roslyn for .NET, TypeScript, the Visual Studio debugging engine, and others. Visual Studio Code has a public extensibility model that lets developers build and use extensions, and richly customize their edit-build-debug experience.

3.2. Android SDK:

A software development kit that enables developers to build applications for Android. The Android SDK has sample projects with source code, development tools, an emulator, and required libraries to develop an Android app. Applications are developed using the Java programming language and compiles on Dalvik, a custom virtual machine designed for embedded use that compiles on top of a Linux

3.3. XAMPP Server:

XAMPP is a free-to-use software developed by Apache Friends. XAMPP software package contains Apache distributions for Apache server, Maria DB, PHP, and Perl. And it is basically local host or a local server. This server works on your personal desktop or laptop computer. The support of XAMPP is to test the clients or your website before submitting it to the remote web server. This XAMPP server software gives you support to the environment for testing MySQL, PHP, Apache, and Perl projects on the local computer. The full form of XAMPP is X stands for Cross-platform, (A) Apache server, (M) Maria DB, (P) PHP, and (P) Perl. Cross-platform usually means that it can run on any computer with any operating system. Next Maria DB is the most famous database server and it is developed by the MySQL team. PHP usually provides a space for web development. PHP is a server-side scripting language and the last Perl is a programming language that is used to develop a web application. The XAMPP installation process is easy so anyone can install it easily. When XAMPP setup is installed successfully on your local computer it works as a local server or localhost. You can verify the websites before submitting them to the remote web server. This XAMPP server software gives you a suitable environment for testing MySQL, PHP, Apache, and Perl applications on a local computer.

3.4. Java Platform:

The Java platform is used to support programs that facilitate the developing and running of programs written in the Java programming language. A Java platform will support an execution machine (called a virtual machine), a compiler, and a set of Java libraries. There may also be additional servers and alternative libraries that depend on the requirements. Java is independent so Java platforms have been implemented for a wide variety of hardware and operating systems with a view to enabling Java programs to run identically on all of them. Different platforms are based on different classes of device and application domains.

- Java Card: A technology that allows small Java programs (applets) to be run safely on smart cards and similar short memory devices.
- Java ME (Micro Edition): Specifies several different sets of libraries (known as profiles) for devices with limited storage and display. It is used to build applications for mobile devices, PDAs, TV set-top boxes, and printers.
- Java Standard Edition (Java SE): For general-purpose use on desktop PCs, servers, and some devices.
- Java Enterprise Edition (Java EE): Java SE plus various APIs which are useful for multitier client-server enterprise applications.

The Java platform includes different programs, each of which provides a part of its overall capabilities. For eg., the Java compiler which changes Java source code into Java byte code (an intermediate language for the JVM), is also provided as part of the Java Development Kit (JDK). The JRE (Java Runtime Environment), complementing the JVM with a JIT (just-in-time) compiler, converts intermediate byte code into native machine code on the fly. The Java platform also supports an extensive set of libraries. The important components in the platform are the Java language compiler, the libraries, and the runtime environment in which Java byte code executes according to the rules depending on virtual machine features.

3.5. *Php:*

PHP is used as a server-side language (as opposed to a language like JavaScript that's generally executed on the client-side). In programming terms, client-side refers to website activity that takes place locally on a user's computer through the user's web browser. Client-side languages like HTML, CSS, and JavaScript give instructions that web browsers can use and convert into content on your computer screen. JavaScript is a scripting language like PHP is on that list. Again, the processes scripted by JavaScript take place on the client-side—JS provides instructions that can be understood by and executed in your web browser. The Client-side is the side you see when you're using the internet.

3.6. *MySQL:*

MySQL is one of the most popular language for open-source databases. With its good features like performance, reliability, and simplicity of use, MySQL has become the leading database choice for web-based application development, used by high-profile web properties including Facebook, Twitter, YouTube, Yahoo!, and many more.

3.7. *Firebase:*

Firebase Storage provides safety for file uploads and downloads for Firebase apps, regardless of network quality. The programmer can use it to store images, audio, video, or other user-generated content. Firebase Storage is developed by Google Cloud Storage. Firebase Inc. was raised in May 2012. The company further raised Series A funding in 2013 June. In 2014 October, Firebase was acquired by Google. In 2015 October, Google acquired Divshot to merge it with the Firebase team. Since the acquisition, Firebase has grown inside Google and expands their services to become a unified platform for mobile developers. Firebase now interacts with different other Google services to offer broader products and scale for developers. In 2017 January, Google acquired Fabric and Crashlytics from Twitter to join those services to the Firebase team. According to the analysis, Firebase would be launching Cloud Firestore, a Document Database, in 2017 October.

4. Features

4.1. *Confirm OPD Appointment:*

The app for online OPD appointments and Hospital Information systems is the main goal to develop the application. The patient can book an appointment by simply clicking the "Get Appointment" button provided in the application through a user-friendly Graphical User Interface (GUI). This feature implementation will reduce the time of patients as well as the load of the Hospital system or pathology labs.

4.2. *Provide Hospital Information:*

It helps hospitals manage appointments, patient registration, modality appointments, inventory, doctor schedule, emergency care, and laboratory information system. It'll help the Hospital system track the details of patients by collecting prescriptions, pathology report, and patient history from users. This advanced system helps multispecialty hospitals, laboratories, and clinics improve patient outcomes. As a result, the Hospital System which is an important issue will take place more seriously.

4.3. Store the medical history of the patient:

This feature provides helps to store the patient's details after each functionality. We provide databases for hospitals to manage patient appointment history. Patients can also review details that are stored in the database through the application. It also aims to resolve the problems that patients have to face while making appointments and keeping medical files.

5. Conclusion

This project improves interactions between hospitals and patients. Different features of this project will enhance its reliability and user-friendliness. This project will be developed according to the needs of the medical sector and has a large scope in the respective sector. This project has some unique features like a track record of patient history will make this project different from other already available software on the same concept. Different features like verification of hospitals by software admin and provision of reporting bugs and issues will make this software authentic and secure. This is how this project is penny support to the medical sector for improving its services.

6. Future Scope

Online appointments with doctors for long-distance patients. Including laboratory and pharmacy so that medical store owners can view suggested prescriptions and laboratory can view clinical tests recommended by the doctor. This feature helps to remove all the paperwork.

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