Chapter 1

INTRODUCTION

1.1 Introduction

Namaz, also known as salah is a special form of worship that is the second most important pillar of Islam after the shahada (testimony of faith). It is an obligatory form of prayer performed five times a day that was revealed in the Holy Qur'an and taught to us by Prophet Muhammad (peace be upon him). There are many verses in the Holy Quran which Allah tells us about the importance of prayer. This paper is about developing an android application that can be used by any Muslim in this world. This application will be used as a prayer time's reminder and guider throughout their smartphones. The application will provide some features and functions needed for helping to perform prayers on time, which brings comfort for the users. Moreover, the application will allow the users to update their location by GPS without internet. The users will be able to display the Hijri calendar if they need to do so. The application also allows the users to set a reminder that notifies when prayer time in his area. Furthermore, the application will be in two languages, which are Bangla and English. Therefore, it is a very important task for every Muslim to help each other to perform prayer fullest. Every prayer has its specific time that has been clarified. Therefore, knowing it is very important. To help Muslims, so many App developers introduced many applications that can remind the time of prayer. Those Apps have a huge number of users those rely on these applications to know prayer times and so on.

1.2 Objectives of the Project

As mentioned above that there is no existing product for prayer times Alarm application that works offline in fetching the location. However, some applications have a similarity of features and functions. The following table is to compare the features and functions of the seven sample Applications those that been chosen for literature review. Here we tried to develop such a system, which will ensure some aspects,

- Offline prayer time
- Quran recitation
- Prayer time remainder
- Hijri Calendar

1.3 Outline of the Project

This project aims to establish a reliable and smart Prayer alerting system which can be a great Prayer time remainder for the users. In this project paper, the full system will be introduced and the implementations will be described.

1.4 Scope and Limitation of the Project

It is an Islamic Smartphone application meant for instructing Muslims all over the world about how to effectively offer prayers (Namaz) along with all the essential information. Step by step Salah app is a comprehensive prayer guide for believers to get themselves familiar with every aspect of daily prayers, non-obligatory Salat and others. How would it make us feel to have a perfect one for all Muslim guide on our phone? Imagine for a moment we have an app that serves all our Muslim prayer needs. A guide actively helping us to practice our religion. It reminds us when to pray and in what direction with a nice Athan voice that we can choose from or switch the azan alarm to vibration if we are in school or at work.

Chapter 2

LITERATURE REVIEW

2.1 Android Platform

Android is a mobile operating system based on a modified version of the Linux kernel and other open-source software, designed primarily for touchscreen mobile devices such as smartphones and tablets. Android is developed by a consortium of developers known as the Open Handset Alliance, with the main contributor and commercial marketer being Google.

Initially developed by Android Inc., which Google bought in 2005, Android was unveiled in 2007, with the first commercial Android device launched in September 2008. The current stable version is Android 10, released on September 3, 2019. The core Android source code is known as the Android Open Source Project (AOSP), which is primarily licensed under the Apache License. This has allowed variants of Android to be developed on a range of other electronics, such as game consoles, digital cameras, PCs and others, each with a specialized user interface. Some well-known derivatives include Android TV for televisions and Wear OS for wearables, both developed by Google.

2.1.1 Principle of Android

The main principles or key features of android are :

- Interfacing
- Applications
- Memory management
- Virtual reality

2.1.2 History of Android platform

Android Inc. was founded in Palo Alto, California, in October 2003 by Andy Rubin, Rich Miner, Nick Sears, and Chris White. Rubin described the Android project as "tremendous potential in developing smarter mobile devices that are more aware of its owner's location and preferences". The early intentions of the company were to develop an advanced operating system for digital cameras, and this was the basis of its pitch to investors in April 2004. The company then decided that the market for cameras was not large enough for its goals, and by five months later it had diverted its efforts and was pitching Android as a handset operating system that would rival Symbian and Microsoft Windows Mobile.

Rubin had difficulty attracting investors early on, and Android was facing eviction from its office space. Steve Perlman, a close friend of Rubin, brought him $10,000 in cash in an envelope and shortly thereafter wired an undisclosed amount as seed funding. Perlman refused a stake in the company and has stated "I did it because I believed in the thing, and I wanted to help Andy.

In July 2005, Google acquired Android Inc. for at least $50 million. Its key employees, including Rubin, Miner and White, joined Google as part of the acquisition. Not much was known about the secretive Android at the time, with the company having provided few details other than that it was making software for mobile phones. At Google, the team led by Rubin developed a mobile device platform powered by the Linux kernel. Google marketed the platform to handset makers and carriers on the promise of providing a flexible, upgradeable system. Google had "lined up a series of hardware components and software partners and signalled to carriers that it was open to various degrees of cooperation".

2.1.3 About Salah

Namaz, also known as salah is a special form of worship that is the second most important pillar of Islam after the shahada (testimony of faith). It is an obligatory form of prayer performed five times a day that was revealed in the Holy Qur'an and taught to us by Prophet Muhammad (peace be upon him). So this app is about Namaz which is also known as Salah. There are some conditions or rules one needs to do before Namaz. Bath, wudu etc. Also, Azan is an important part of Namaz. What is Wudu (Ablution)? It is a special cleaning performed by washing the face, arms, and feet, and by wiping the head. There are few rules one must follow for wudu. This app will show those rules. What is Adhan (Call to prayer)?

The adhan calls Muslims to prayer. As prayers are 5 times in a day so Adhan is also for 5 times a day before praying namaz. This app will provide Adhan according to the location and time. There are different types of rules for namaz. So there will be the rules of namaz given in details so that one can understand and follow to perform namaz easily.

2.1.4 Namaz App

Mobile software serves individual functionality of the users able by Android platform is called Android applications, generally known as „apps‟. Recently there have been lots of attempts to design android apps that come in aid of students and teachers like taking attendance of students using a mobile phone, virtualized lab infrastructure for different computation and engineering courses, practising and learn software development through virtual world etc. In addition to such service, an android app can also be purpose useful to helping students, teachers, and staffs of an institute in their everyday academic works. Students from different classes/ levels/terms/semesters need to verify them each day academic schedule to get prepare for their classes, assignments, laboratory work etc. besides the teachers essential to know the routine for lectures, labs, project works etc. that they need to supervision. Office staffs have to arrange them work following the routine and forthcoming events. Academic notices are published for students and teachers as well as the staff members. Exam schedule, results, announce, news relation to forthcoming events, programs are visible on the notice board. Some quick changes can be made in scheduling or there may be some significant news that members of the department must know. To keeping the log of all these stuff as hard copies is a cumbersomeness process. To publish a new notice when people are away from the campus is not possible. Someone can miss an important notice or announcement. This problem can be avoided if there is an android app installed in their mobile phones which can acknowledge them of their routine, schedule, notice, announcements, updates etc and notify them of any kind of new message. If there comes any need to publish an urgent notice, administrators can simply post it in the „notice board‟ option so that anyone can see it sitting in their homes. Teachers can add any updates about their classes or exams using this application and students can be aware of it just by checking the update window. This makes any kind of information easily accessible to all, changes to be made with little effort and time. It also saves lots of paper that would be required if these procedures depend on hard copies only. This android mobile application was designed for the Department of Applied Physics, Electronics & Communication Engineering under the Faculty of Engineering, University of Chittagong. It can be further enhanced by including more services to provide if a new need arises with time. Commercial organizations have been utilizing android apps for Electronic Health Record (EHR) and Utility billing application and much more. With some edition, this app also can be utilized within commercial organizations for official purposes. Android phones are now become handiness to many and much people with the advance of electronics and communication technology. They are getting wide acceptability because of their utilized cordial applications. This paper deals with such an android application made for academic avail of students, and teachers and staff s of the educational institution. Its features are- provide class and laboratory schedule, notice board, teachers update, notification for recently inclusive updates, CGPA (cumulative grade point average) calculation. Its goal is to provide avail in academically works by making communication more facile, provide simple and quick access to information.

Though it has been developed for a specific institution, this application has the possible tractable to inclusive much assistive function and have extent version for a wide range of users.

Chapter 3

Tools

3 Programming Code

JAVA programming codes for building the application, user interface, PHP (Hypertext Preprocessor) programming codes have been used for dynamic access. Extensible Markup Language (XML) and Cascading Style Sheets (CSS) codes have been employed to give this system a good appearance. The outside, a network monitoring system monitors the network for problems caused by overloaded and/or crashed servers, network connections or other devices.

3.1 Tools for Development

To develop the application, Android development tool with integrated Eclipse IDE (Integrated development environment) software and phone emulator has been used. Java development kit (JDK) of version higher than 5 is required for providing a runtime environment.

3.2 How It Work

To run this application, the android phone should be of version minimum of 4.2. 2MB memory space is required on the android device. The device must have internet connection settings. To avoid complexity, and to gain proper benefit out of limited hardware and memory storage android application often employ server-based intra-enterprise group communication. Android can be used efficiently as a server platform. Similarly, this application uses a web server to hold the required data for processing.

3.3 IMPLEMENTATION DETAILS

For the implementation of the App I quiz, the Platform used is Android 4.2 and the language used is Java and XML. SQLite is used at the backend. For the setting environment of Android, there is a minimum requirement of JDK i.e. java must be installed on the system. JDK SE development kit 7 is used for this purpose. Code is written by using an editor i.e. Eclipse which is an opensource editor available. After Eclipse (Juno, the default version) is installed, there is a need to connect Android SDK with Eclipse, this is done by using ADT Plugin. By using ADT Plugin link, plugin developer tools can be downloaded and installed. SQLite is automatically embedded into the Android device. Using SQLite in Android doesn’t require any setup to be followed.

Developers only have to define SQL statements for creating and updating database in SQLite. If the App creates and uses a database then the default location of the database is DATA/data/APP_NAME/databases/FILENAME. Various modules of the app are as follows: A. User login module: In this module, the user has to first register. User will be moved to Register activity after clicking the register button on the login screen. User has to fill details like Username, Email-id, Mobile number, Password and Confirm Password Etc. Only registered user can play quiz by logging in. B. Admin module: If the user logs in as an Admin then the user can add new questions by selecting a particular area and a subject related to that area or make any changes to the database. Admin can display the result of all users, date wise or name wise as the case may be. C. Registration for new User: If the user wants to play quiz, the first user must register by filling details like User name, Email id, Password, Confirm Password etc. After successful registration, the user can log in. After login, user can Play the quiz. As Admin as User Insert question Home View Display Results Play Quiz Display Results Read Tutorials About Quiz Login Page Registration for new user Database Abhinav Kathuria et al, International Journal of Computer Science and Mobile Computing, this module shows icons for playing quiz, About, Results, Exit. When the user clicks on the Quiz icon, the options will be displayed, representing different fields. When the user selects some specific subject then random questions will be asked. Each Question will be given one minute. User has to answer the question within that time. At last, the result will be displayed. E. Results view: This module is used to display previous as well as current scores of users. By viewing the results, the user can measure performance compared to past attempts. The main objective of this project was to test the knowledge of the user in various fields and also based on the score, students can judge, where they are lacking. It provides help in every field included in I quiz application. It provides tutorials to students so that they can learn along with giving the tests.

3.4 Android studio

Android Studio is the official Integrated Development Environment (IDE) for Android app development. Android Studio offers even more features that enhance our productivity when building Android apps, such as:

- A flexible Gradle-based build system
- A fast and feature-rich emulator
- A unified environment where we can develop for all Android devices
- Apply Changes to push code and resource changes to our running app without restarting
- Code templates and GitHub integration to help us build common app features and import sample code
- Extensive testing tools and frameworks
- Lint tools to catch performance, usability, version compatibility, and other problems
- C++ and NDK support

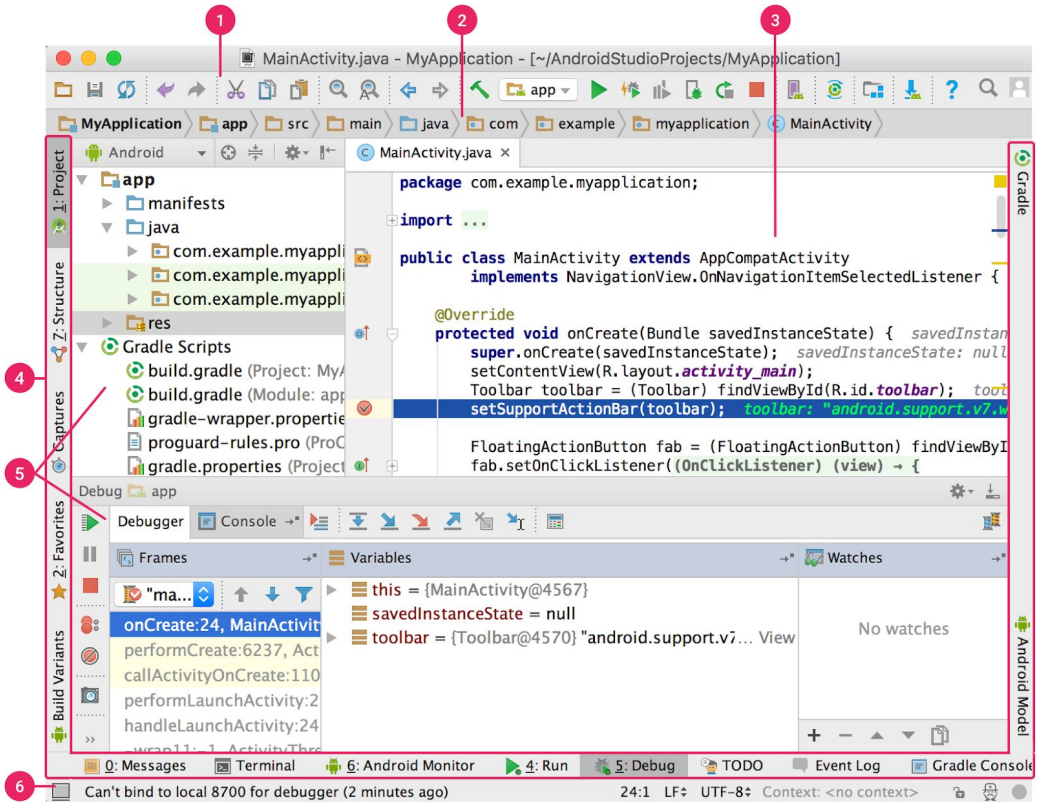


Fig: Android Studio main window

3.5 Adobe XD

Adobe XD is a vector-based user experience design tool for web apps and mobile apps, developed and published by Adobe Inc. It is available for macOS and Windows, although there are versions for iOS and Android to help preview the result of work directly on mobile devices. Adobe XD supports website wireframing and creating click-through prototypes.

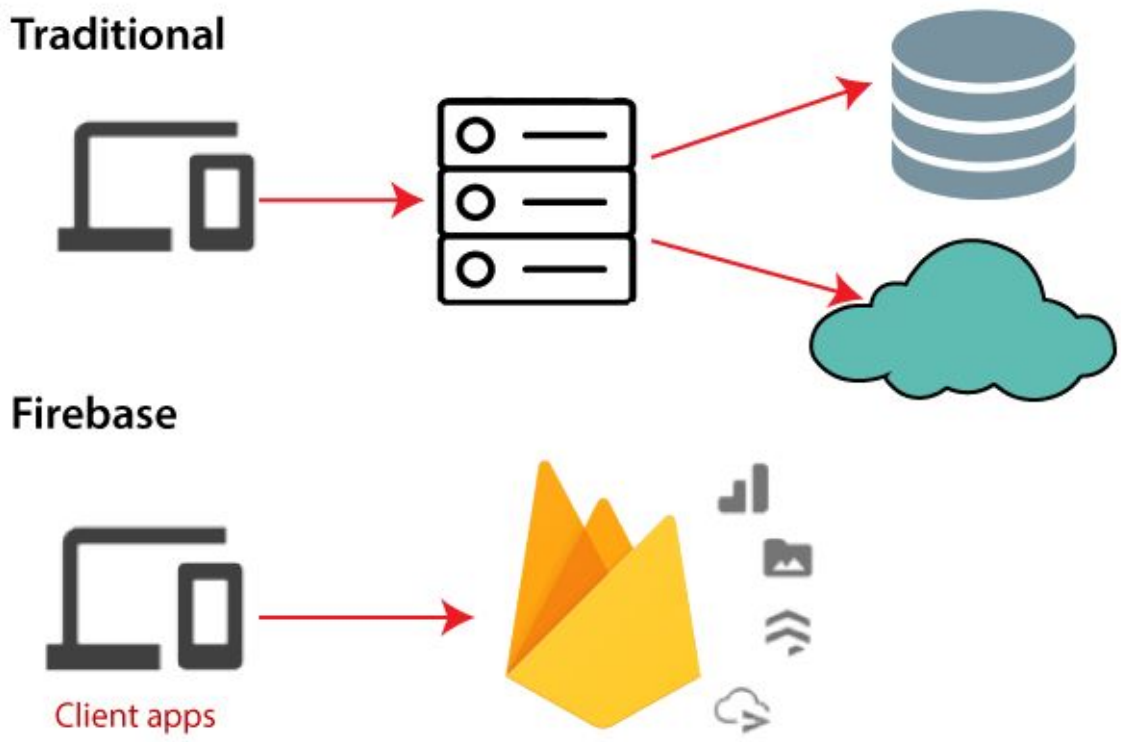
3.6 Adobe Illustrator for UI design

Adobe Illustrator is a vector graphics editor and design program developed and marketed by Adobe Inc. UI stands for **User Interface design**. **Adobe Illustrator** is the industry-standard vector graphics app that lets **us** create logos, icons, drawings, typography, and complex illustrations for any medium. **Adobe Illustrator** is the industry-standard design app that lets us capture our creative vision with shapes, colour, effects, and typography.

Fig: UI Design Concept using Adobe Illustrator

3.7 Firebase

Firebase is a Backend-as-a-Service (BaaS) which started as a YC11 startup. It grew up into a next-generation app-development platform on Google Cloud Platform. Firebase (a NoSQLjSON database) is a real-time database that allows storing a list of objects in the form of a tree. We can synchronize data between different devices.



3.8 App landing page

App developers often overlook app marketing. Just because we made a great app does not mean that people will find it. How can people discover our app? We should at least create a landing page for our app, and ideally before we build our app. The page serves as a central point that we can lead people to if they are interested in learning more about our app. And when we are still building our app, we don't have an app page in the App Store yet, so we will need something else to attract potential customers.

Chapter 4

App Structure

Features

Some of the unique features of this Step by Step Salah (Namaz) app are:

• In-depth illustration of each step taken during every Salat Prayer along with Audio

• Salah Times with Voice Azan reminder

• Step by Step Salah

• Clear steps with detailed descriptions.

• Easy to use user interface.

• Covering every facet of performing Salah.

• Essence of salah

• Muslims Dua's for daily use

• Tasbeeh counter, count and save our Tasbeeh

• Different Settings options depending upon gender and sect.

• Share option for benefiting others with this useful Prayer App is also provided.

Categories:

The learning outcomes of this Islamic application of learning Namaz are divided into five major classes with real-time step-by-step method:

1. Daily Prayers

This section tells about the nature of Rakaat (Fard or Mandatory, Sunnah Emphasized or Mu`akkadah, Sunnah Gher Mu`akkadah, Nafl Mustahab and Witr Wajib) that come in each Daily Prayer with prayer timings for all 5 five obligatory Namaz, i.e. *Fajar, Duhr, Asr, Maghrib and Isha*.

2. Occasional Salah

In this category of step by step salah app the number and kinds of Rakaat and different supplications that come in Jumma Prayer, Funeral (Namaz e Janazah), Tasbeeh (Salatul Tasbeeh), Salat al Istikhara and Eid are covered.

3. Preparation

In this segment of Namaz app, the believers will come to know about necessary characteristics associated with learning Namaz rules. The learnings are spread over maintaining complete Cleanliness, how to perform Wudu, covering all Body parts and keeping the importance of Time of the prayer in mind.

4. Making up

This category of step by step salah app is all about making Muslims aware of the significance of carrying out Missed Salah, how to offer Qaza Namaz and performance of omitted Salat under different circumstances. It also lets the user know about common Mistakes that occur during routine prayers.

5. Timings

This part is all about making app consumers identify with the correct prayer timing for all five compulsory Salat in a step by step salah app. It tells about the actual occasion of Namaz based on different information sources of current **Location, Juristic** (Hanfi, Shafi), **Calculation** methods (WML, Makkad, Karachi, ISNA, Tehran, Egypt) and **Latitude** (Angle Based, Mid Night, One Seventh). It also informs about the upcoming Namaz instance in three different Adhan Sounds.

6. Tasbeeh Counter

Easily count our daily Zikr correctly and save our Tasbeeh and create daily zikr template for each day of step by step salah app.