

King Saud University
College of Computer and Information Sciences
Department of Software Engineering
SWE 483 - Mobile Application Development



صلاتي حياتي

Table of Contents

Abstract	3
Introduction	4
Work Distribution	4
Functional Requirements (ghada, Shammaa, Muntaha)	6
SQLite Database Design	8
System Interface (ghada, Shammaa, Muntaha)	9
View Splash Screen	9
Register	9
Login	9
GPS	9
View Prayers Times	9
View Countdown Counter for next prayer	10
View Settings Page	10
Change Prayers Times Settings	10
Change Silent Mode	10
Logout	10
Technical Challenges	14
References	15

Abstract

Due to the increasing demand for a more efficient way to know prayer times, we propose our application "صلاتي حياتي", in which we target all muslims around the world.

Given that "صلاتي حياتي" is an application for mobile use, we used Android as the platform for it. With Java as the programming language. Several other tools were also used, such as SQLite, Github, Google Drive, and Zoom. Moreover, "صلاتي حياتي" follows the style of client-server architecture and uses SQLite for its database.

However, technical challenges are mentioned at the end of this report.

Introduction

In this day and age, technology has a great impact on our daily lives and on making many aspects of it much easier. Even though there are many applications to help muslims doing different duties such as Aumrah, Haj, and prayer, there is a room for technological development to help doing these duties smoother.

"صلاتي حياتي" is an Android application that targets the muslims around the world. In "صلاتي حياتي" , muslims will be provided with an opportunity to know times for each prayer in addition with a countdown minutes for the next prayer. also , allowing users to make their phones silent during the prayer time and they can control this time if they want it to be just a one minute or more than that to help them focus on the prayer and nothing interrupts their prayer. The application will allow the users to change between Juristic "Hanafi" , "Shafi'i" etc.

Although this application only displays the prayer time in addition with some functionalities, it has the potential to expand and add more than that such as determine the direction of qibla.

Work Distribution

Team Member	Assignment
Ghada	<ul style="list-style-type: none">- The countdown counter for next prayer- Setting prayers times parameter- The document: System Interface, and Technical Challenges
Majd	<ul style="list-style-type: none">- Application Interfaces- Splash screen- Notifications- The document: Introduction, and Technical Challenges
Shammaa	<ul style="list-style-type: none">- Calculate prayer times- Setting prayers times parameter- GPS permission- The document: System Interface, and Technical Challenges
Hadeel	<ul style="list-style-type: none">- SQLite database- Register and login- The document: SQLite Database Design, and Technical Challenges
Muntaha	<ul style="list-style-type: none">- Settings page- Silent mode for each prayer- The document: System Interface, and Technical Challenges

Functional Requirements

REQ ID	Requirement	Status
01	The user shall be able to signup using (name, email and password)	Complete
02	The user shall be able to login using email and password	Complete
03	The user shall be able to logout from the application	Complete
04	The system shall display a splash screen when the application is opened	Complete
05	The user shall be able to view the prayers' times based on his/her location	Complete
06	The system shall ask the user for his/her location permission	Complete
07	The system shall be able to display countdown counter for the next prayer	Complete
08	The user shall be able to view the settings page	Complete
09	The user shall be able to set a silent mode duration for each prayer (Fajr,Dhuhr,Asr,Maghrib,Isha)	Complete
10	The system shall be able to mute/unmute the user's mobile phone for each silent mode prayer	Complete
11	The user shall be able to view the prayers' times based on his/her selected Juristic methods: <input type="checkbox"/> Shafii <input type="checkbox"/> Hanafi	Complete
12	The user shall be able to view the prayers' times based on his/her selected higher latitudes adjustment methods: <input type="checkbox"/> No adjustment <input type="checkbox"/> Middle of night <input type="checkbox"/> 1/7th of night <input type="checkbox"/> Angle/60th of the night	Complete
13	The user shall be able to view the prayers' times based on his/her selected time formats: <input type="checkbox"/> 24-hour format <input type="checkbox"/> 12-hour format <input type="checkbox"/> 12-hour format with no suffix <input type="checkbox"/> Floating point number	Complete
14	The user shall be able to view the prayers' times based on his/her selected calculation methods: <input type="checkbox"/> Jafari	Complete

	<input type="checkbox"/> University of Islamic Sciences, Karachi <input type="checkbox"/> Islamic Society of North America (ISNA) <input type="checkbox"/> Muslim World League (MWL) <input type="checkbox"/> Umm al-Qura, Makkah <input type="checkbox"/> Egyptian General Authority of Survey <input type="checkbox"/> Tehran	
15	The user shall be able to receive a notification for each prayer (Fajr,Dhuhr,Asr,Maghrib,Isha)	Complete

SQLite Database Design

The database used in this application is SQLite. “SQLite is an in-process library that implements a self-contained, serverless, zero-configuration, transactional SQL database engine”[1]. It has many advantages such as [2] :

1. Lightweight
2. Better Performance
3. No Installation Needed
4. Reliable

Figure 1 shows the database Entity relationship (ER) diagram of the applications.

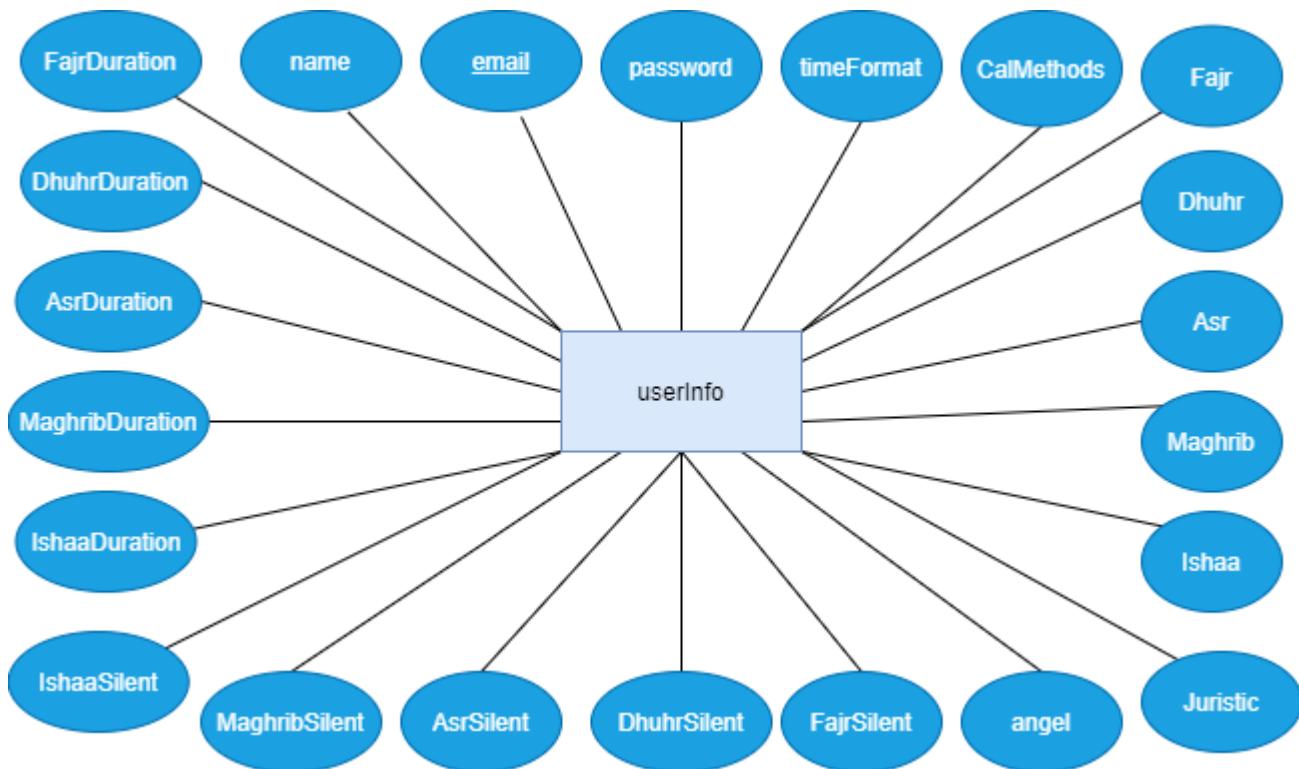


Figure 1: Entity relationship diagram (ER)

System Interface

View Splash Screen

1. The user opens the application
2. The splash screen will be displayed (Figure 2)

Register

1. The user opens the application
2. The login page is displayed (Figure 3)
3. The user clicks on “إنشاء حساب”
4. The sign up page is displayed (Figure 4)
5. The user fills in the name, email, password, and confirm password
6. The user clicks on “إنشاء حساب”

Login

1. The user must have a registered account
2. The user opens the application
3. The login page is displayed (Figure 3)
4. The user fills in the email, and password
5. The user clicks on “تسجيل دخول”

GPS Permission

1. The user does the “Login” steps
2. The system will display a popup window asking for having permission to access the user devices' location (Figure 5)
3. The user clicks “Allow only while using the app”

View Prayers Times

1. The user does the “Login” steps
2. The main page is displayed (Figure 6)
3. The user can view the prayers time

View Countdown Counter for next prayer

1. The user does the “View Prayers Times” steps
2. The countdown counter will be displayed on top of the page (Figure 7)
3. If we assume the next prayer is AlAsr, and when it is AlAsr time, a message will be displayed that says: “لقد حان وقت صلاة العصر”, for each prayer. (Figure 8)
4. The countdown counter will change accordingly for the next prayer time. (Figure 8)

View Settings Page

1. The user does the “View Prayers Time” steps
2. The user clicks on the settings icon on right top of the page (Figure 6)
3. The settings page is displayed (Figure 9)

Change Prayers Times Settings

1. The user does the “View Settings Page” steps
2. The user choose his/her choice of :
 - “مذهب”
 - “تعديل خطوط العرض العليا”
 - “تنسيقات الوقت”
 - “طرق الحساب”
3. The user clicks “حفظ”. (Figure 9)

Change Silent Mode

1. The user does the “View Settings Page” steps
2. The user clicks on prayer switch button to activate/ deactivate silent mode (Figure 10)
3. The user enters the duration of silent mode for activated prayer (Figure 10)
4. The user clicks “حفظ”. (Figure 10)

Logout

1. The user does “View settings Page”
2. The user clicks on “تسجيل الخروج” button
3. The user is logged out from the application
4. The login page is displayed



صلاتي
حياتي



البريد الإلكتروني

example@domain.com

كلمة المرور

تسجيل دخول

مستخدم جديد؟ [إنشاء حساب](#)

إنشاء حساب

اسم المستخدم

البريد الإلكتروني

كلمة المرور

تأكيد كلمة المرور

إنشاء حساب

لديك حساب بالفعل؟

Figure 2: Splash screen

Figure 3: Login page

Figure 4: Sign up page

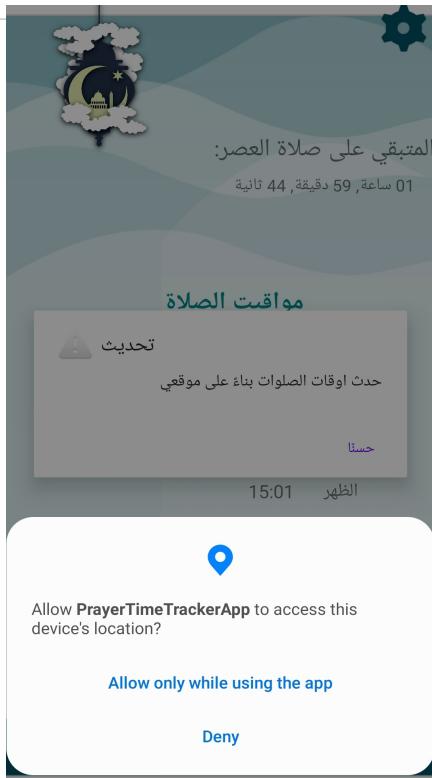


Figure 5: Permission to access location



Figure 6: Main page



Figure 7: Countdown counter on the top



Figure 8: Message will be displayed at time of prayer



Figure 9: Settings page



Figure 10: Activate silent mode and enters duration

Technical Challenges

1. Dealing with SQLite databases is a little difficult, as when adding or removing a column, the version must also be changed. This step is often forgotten and a little time is spent trying to figure out why the table has not changed.
2. Creating the countdown counter was a little bit tricky, there are no resources on how to start the counter automatically after it's finished, which took some time to figure out how it works.
3. Using Alarm Manager to activate/deactivate silent mode for a mobile phone was challenging, since the lack of resources on performing silent mode daily and for a specific time.
4. Reading and understanding the "PrayTime" class was a little bit confusing at the beginning, but once we understand it and know how we should use it, the developing process starts to be very smooth.
5. Dealing with UI in android studio is a bit hard since objects place changes whenever the screen size is changed.

References

- [1]: Sqlite.org. 2021. *About SQLite*. [online] Available at: <<https://www.sqlite.org/about.html>> [Accessed 8 April 2021].
- [2]: www.javatpoint.com. 2021. *SQLite Advantages and Disadvantages - javatpoint*. [online] Available at: <<https://www.javatpoint.com/sqlite-advantages-and-disadvantages>> [Accessed 8 April 2021].
- [3]: Developer.android.com. 2021. *CountDownTimer*. [online] Available at: <<https://developer.android.com/reference/android/os/CountDownTimer>> [Accessed 8 April 2021].
- [4]: it, C., VEGAN, G., Ninja, L. and Espinosa, D., 2021. *CountDownTimer in android - how to restart it*. [online] Stack Overflow. Available at: <<https://stackoverflow.com/questions/19997588/countdowntimer-in-android-how-to-restart-it>> [Accessed 8 April 2021].
- [5]: Accella.net. 2021. Scheduling code execution on Android using AlarmManager « Accella. [online] Available at: <<https://accella.net/knowledgebase/scheduling-code-execution-on-android/>> [Accessed 10 April 2021].
- [6]: Longitude and latitude GPSTracker Android always return 0, 0., Diam, A. and Tamrakar, N., 2018. *Longitude and latitude GPSTracker Android always return 0,0.* [online] Stack Overflow. Available at: <<https://stackoverflow.com/questions/26559021/longitude-and-latitude-gpstracker-android-always-return-0-0>> [Accessed 10 April 2021].