Gyalpozhing College of Information Technology
Royal University of Bhutan

ITW202 MOBILE APPLICATION

Assignment 2

MyClock

Section: A

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Purpose

Aim : The aim of this project is to develop a mobile clock app where the users can keep track of their time, set time to complete a particular task and to set alarms to wake up early in the morning.

The **Objectives** of this project are :

1. To build a mobile clock app with more features other than just viewing the current time.
2. To enable setting alarms on the android phones.
3. To enable features such as countdown of time and setting times (hours, minutes and seconds) to complete a particular task.

Scope

User Scope : This project aims to provide an android clock application to the students of Gyalpozhing College of Information Technology.

System Scope

- **Clock :** The users will be able to view the current time.
- **Alarm :** The users will be able to set alarms through this application.
- **Timer :** This feature is used for setting the number of hours, minutes and seconds to count down these time till the number zero is reached.
- **Stop Watch :** This feature is used for measuring the amount of time that elapses between its activation and deactivation.

Functional Requirements

This clock application will be an Android based application which will include the following features:

- **Clock :** This feature will be the main page/ home page of this application, which means that the clock feature will be displayed when this application is opened. This clock feature does not require the users to perform any task other than to view the current time of the day or night.
- **Alarm :** This alarm feature allows the users to set alarm. Users can set multiple alarms. To set the alarm, the user has to first set the alarm time and then select the am or pm format. The users will be alerted about the alarm with the help of a sound/ringtone. The users can set an alarm, stop an alarm and delete an alarm in this application.
- **Timer :** This feature allows to countdown the given(by the users) period of time by seconds. The setting can be done by the number of hours, minutes and seconds to count down these time till the number zero is reached. In between the countdown, the user can pause, resume and cancel the countdown.
- **Stop Watch :** This feature allows to record the period of time, for example; time taken to complete a task. when the start button on this feature is clicked, the timer will start from seconds to minutes and then hours till the timer is stopped. The user will be able the pause, resume and reset the stopwatch according to their wish. This feature measures the amount of time that elapses between its activation and deactivation.

Non-functional Requirements

The non-functional requirements of the project are as follows :

- Performances : This clock application entitled as, "MyClock" will be very fast in response to the users. As this application is an offline based application, the time taken to open the app, view the features and to make use these features will be very less. This application will be very efficient.
- Portability and compatibility : This application can be downloaded and used in any version of android phones regardless of the shape and size of the android phone. This clock app will not be dependent on any other application and therefore it will not conflict with other applications and processes.
- Reliability, Availability and Maintainability : This application will be available for the users for 24/7. A user will be able to view the time, set alarm, set timer and use stopwatch anytime of day and night. As this application is a simple application with no big files and data to be stored therefore, there is very less possibility of failures and damage leading to easy maintenance.
- Security : This application does not require storing of personal information and is a offline based app therefore, it is very secure.
- Usability : This application will be easy to use for the users as this application contains user friendly interfaces and the users will not be facing any problems while using this application.

Software Requirements

The software requirements for this project are :

- Operating System : Ubuntu or Windows
- Android Studio version 4 and above
- Android SDK(Software Development Kit) version 25 and above
- Java Development Kit (JDK) version 8 and above
- SQLite version 3.25.3

Hardware Requirements

The hardware requirements for the developers are as follows :

- RAM : 4-8 GB
- 2.00GHz*4 Processors

The hardware requirements for the users are as follows :

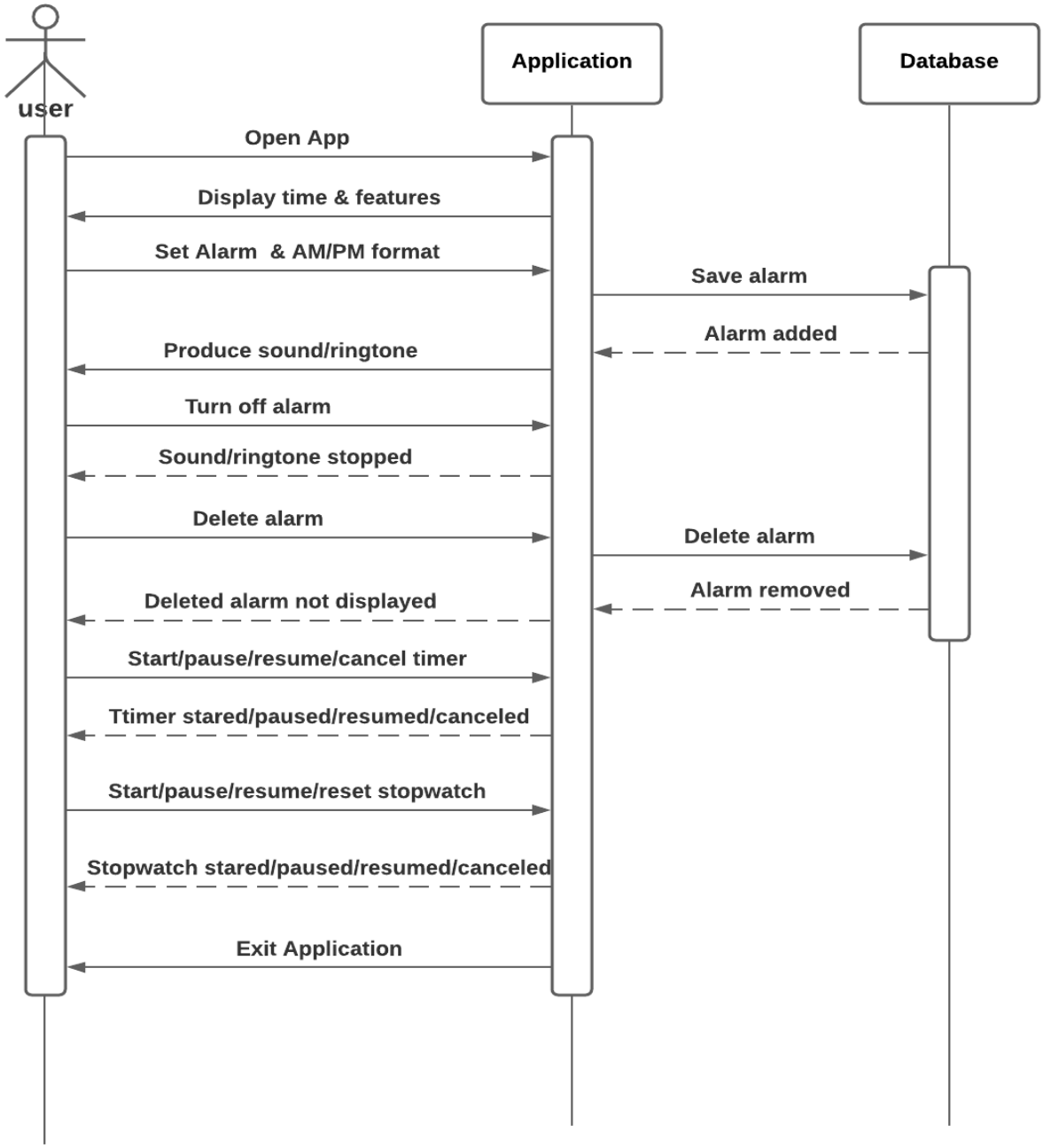
- An android phone

System Designs

a. Use Case Diagram

In this use case diagram of the clock application, there are two actors; one on the left side is the primary actor which uses the application and the secondary actor on the right side which the system needs assistance from to achieve the primary actor's goal. In this application, the primary actor is the users and secondary actor is the application itself. The users first has to open the application and the features will be displayed. The users can view the current time, set multiple alarms, set timer for countdown and start stopwatch to record a period of time. After setting an alarm, it can also be removed/deleted. For the timer and stopwatch, the users can perform tasks such as start, pause, resume and cancel/reset. The alarm will be altered to the user by the application through some sounds/ringtone.

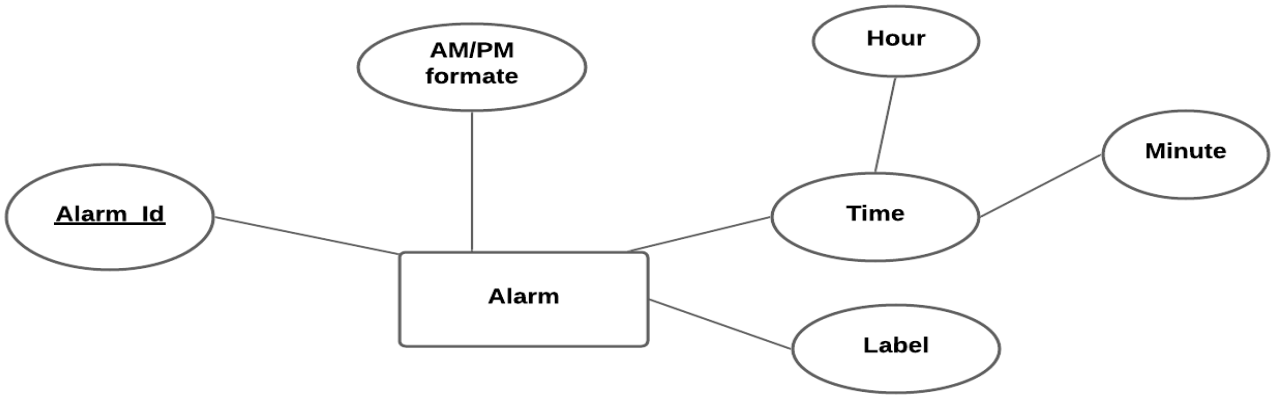
b. Sequence Diagram



In this sequence diagram of the clock application, there is one actor which is the user and two objects which are application and the database. Firstly, when the user opens the application, the clock page will be displayed which shows the current time. Then, when the user sets an alarm, the

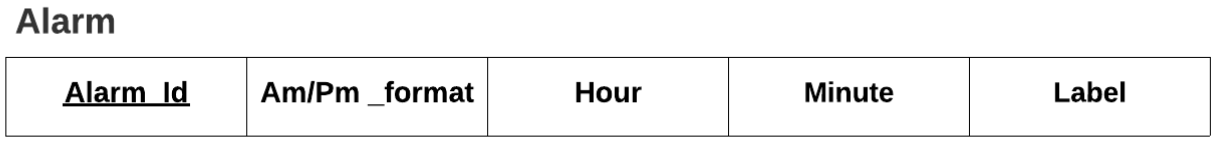
alarm will be saved in the database, added in the application and displayed to the users. When the alarm is altered, the app produces a sound or ringtone. And when the user turns off the alarm the application will stop the sound or ringtone. If the user decides to delete an alarm, then the alarm will be deleted from the database, removed from the application and will not be displayed to the users. The users can also start, pause, resume and cancel/reset the timer and stopwatch and this will be be done accordingly by the application. Then, finally the users can exit from the application.

c. Entity Relational Diagram



In the Entity Relational diagram of the clock application there is only one strong entity, "Alarm" is included as the other features of this application such as clock, timer and stopwatch does not require the storage of data. The alarm entity has the attributes such as Alarm_Id, AM/PM_format, time and label. The AM/PM_format and the label attributes are the single valued attribute. The time attribute is the composite attribute as it is composed of other two simple attributes; hour and minutes and the Alarm_Id is the primary attribute/ primary key of the entity. The users will be able to perform CRUD operation in this alarm entity/feature.

d. Relational Schema Diagram



In this relational schema diagram there is only one schema included as the schema diagrams are derived from the ER diagrams and this clock application contains only one entity. Therefore, there is no foreign keys included and the primary key of the schema Alarm is Alarm_Id.