

Go Fit Logger: An Android Based Mobile Application for Health Care

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Abstract

This paper is about a health application which is supported by mobile devices such as mobile phones for delivering health and fitness care services; it is currently being heavily developed to keep pace with the continuously rising demand for personalized healthcare. The purpose of developing this application is to maintain a record of users exercise and diet routines and motivate oneself to work towards newly set goals in a pre-planned perspective. It also helps users to track their progress in the form of graphs and share in social media. The idea behind developing this application is to leverage the latest mobile and web technologies and develop an application that would address the issues related to users fitness and health. This health application uses the phones in built accelerometer and gyro meter to calculate the number of steps the user walks, the distance travelled and the calories burnt. This is a hybrid application built using Apache Cordova, JQuery Mobile and JavaScript. This paper also includes detailed information on the analysis and development process.

I. INTRODUCTION

What is a Mobile Application, History and Types of Mobile Applications

Although **mobile phones** have taken over our current society, they have been around for several decades in some form or another. Beginning in the late **1940s**, the technology that would later be used in today's **cell phones** was created and the idea of a **mobile phone** was introduced. A smart phone is a multifunctional device that not only communicates, but helps to learn, earn, and have fun. This is made possible by the development of mobile applications. The beginning of the new millennium saw a rapid market evolution of mobile content and applications. Operating systems for

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smart phones (Windows Mobile, Symbian, RIM, Android, Mac iOS), are open to the development of third-party software, unlike the conventional programming environment of standard cell phones.

So, what exactly are these mobile applications?

Mobile Applications are compact software programs that perform a predefined function and are designed to work on handheld devices such as Smart Phones, tablets and feature phones. But all mobile applications are not the same. Mobile applications can be broadly classified into two different types based on the mobile development technology employed to create them. These are **native mobile applications** and **web mobile applications**. Both types can help achieve similar results or perform similar functions but are inherently different in development. Let us understand a bit more about native mobile applications and web-based mobile applications.

Native apps live on the device and are accessed through icons on the device home screen. Native apps are installed through an application store (such as Google Play or Apple's App Store). They are developed specifically for one platform, and can take full advantage of all the device features — they can use the camera, the GPS, the accelerometer, the compass, the list of contacts, and so on. They can also incorporate gestures (either standard operating-system gestures or new, app-defined gestures). And native apps can use the device's notification system and can work offline.

Web apps are not real applications; they are really **websites** that, in many ways, *look and feel* like native applications, but are not *implemented* as such. They are run by a browser and typically written in HTML5. Users first access them as they would access any web page: they navigate to a special URL and then have the option of "installing" them on their home screen by creating a bookmark to that page.

Hybrid apps are part native apps, part web apps. Like native apps, they live in an app store and can take advantage of the many device features available. Like web apps, they rely on HTML being rendered in a browser, with the caveat that the browser is embedded within the app. Hybrid apps are also popular because they allow cross-platform development and thus significantly reduce development costs: that is, the same HTML code components can be reused on different mobile operating systems. Tools such as Phone Gap, Sencha Touch and Apache Cordova allow people to design and code cross platforms, using the power of HTML.

II. PROPOSED APPLICATION

In today's world due to the sedentary occupational patterns a greater importance has been given to mind based work style than the good old physical work. As a result of this the mankind is undergoing a lot of stress and various related health disorders.

The idea behind developing the Go Fit Logger is to leverage the latest mobile and web technologies and develop an app that would address the scenario aforementioned.

Go Fit Logger in a nutshell would be a user's key to maintain a record of exercise and diet routines and motivate oneself to work towards newly set goals in a pre-planned perspective. This application uses the smart phone's stock hardware consoles like Accelerometer, Gyroscope, Global Positioning System (GPS) through a well-structured and patented Application Programming Interface (API) – Apache Cordova, to log the user's health logistics such as walking distance, time, calories-burnt based on the walking distance on a day-to-day timeline or a particular exercise session perspective.

III. APPLICATION & ITS FUNCTIONALITIES

The system architecture explains the core functionalities of the application. Once a user registers with Go Fit Logger he/she can login which routes to the main page. There are six modules in this application; the first module will be My Profile module which gives the basic details of the logged in user which can be edited when user wants to. Goal Coach Module, this module motivates the user when he picks and set goals suitable. The goals can be reduce weight- where the user gives in his current weight and target weight then this sub module (reduce weight) does some analysis and gives how many calories user should burn so as to reach the target weight. Progress is another module where Dynamic Charting Mechanisms using the latest JavaScript frameworks like Data Driven Documents (d3.js) are leveraged to plot and represent the users progress which gives weekly and monthly progress of the user in the form of a graph over the mobile on the go. Users can go social and share their progress across various social networking medias.

Reminders module- this module ensures that the user does not skip his meal i.e., the user is given notification for every meal at time set by the user. Go Workout- this module will display the number of steps, calories burnt and distance covered when user walked or jogged. The user can also calculate body mass index with this application.

IV. SYSTEM ARCHITECTURE

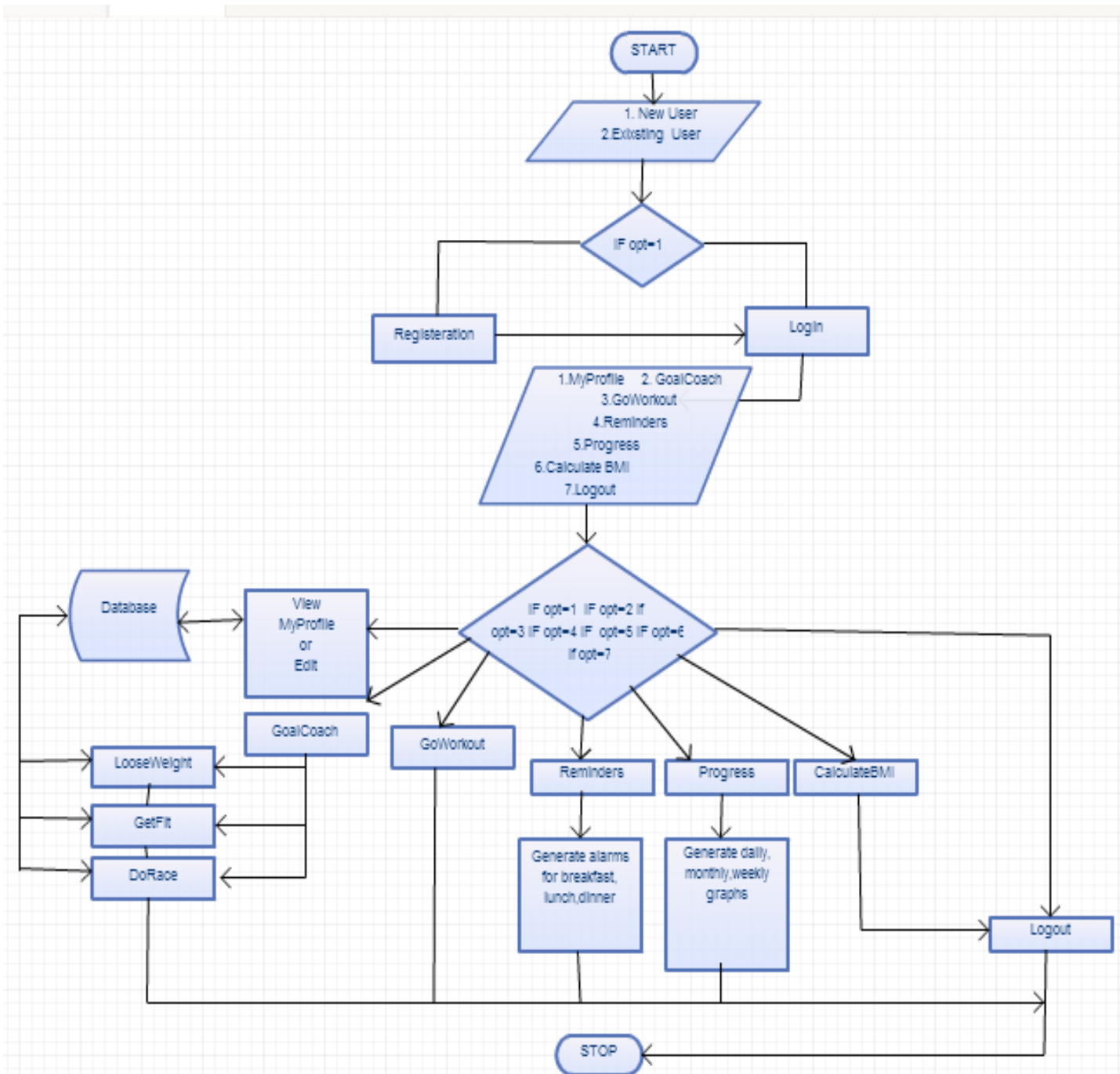
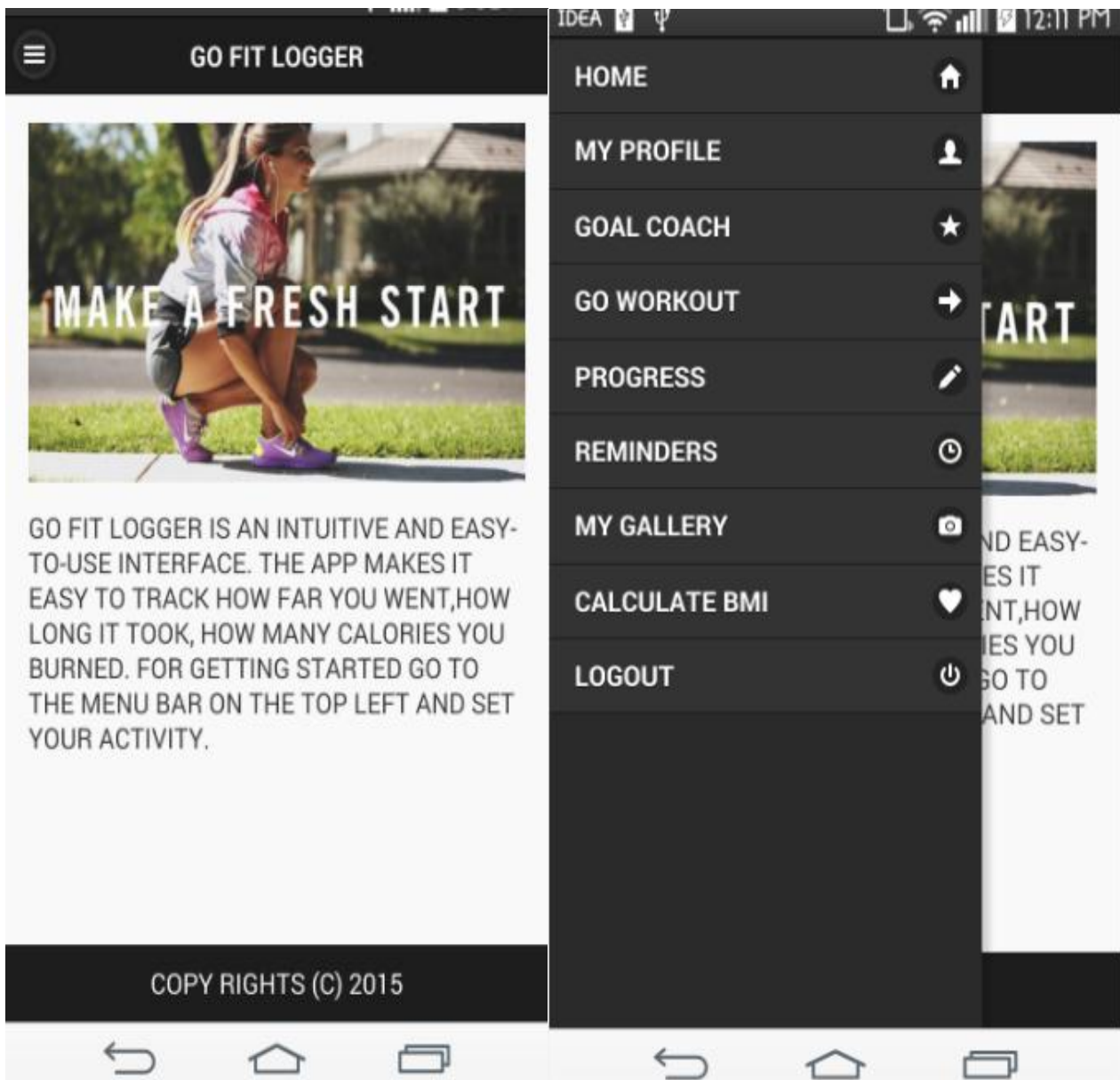


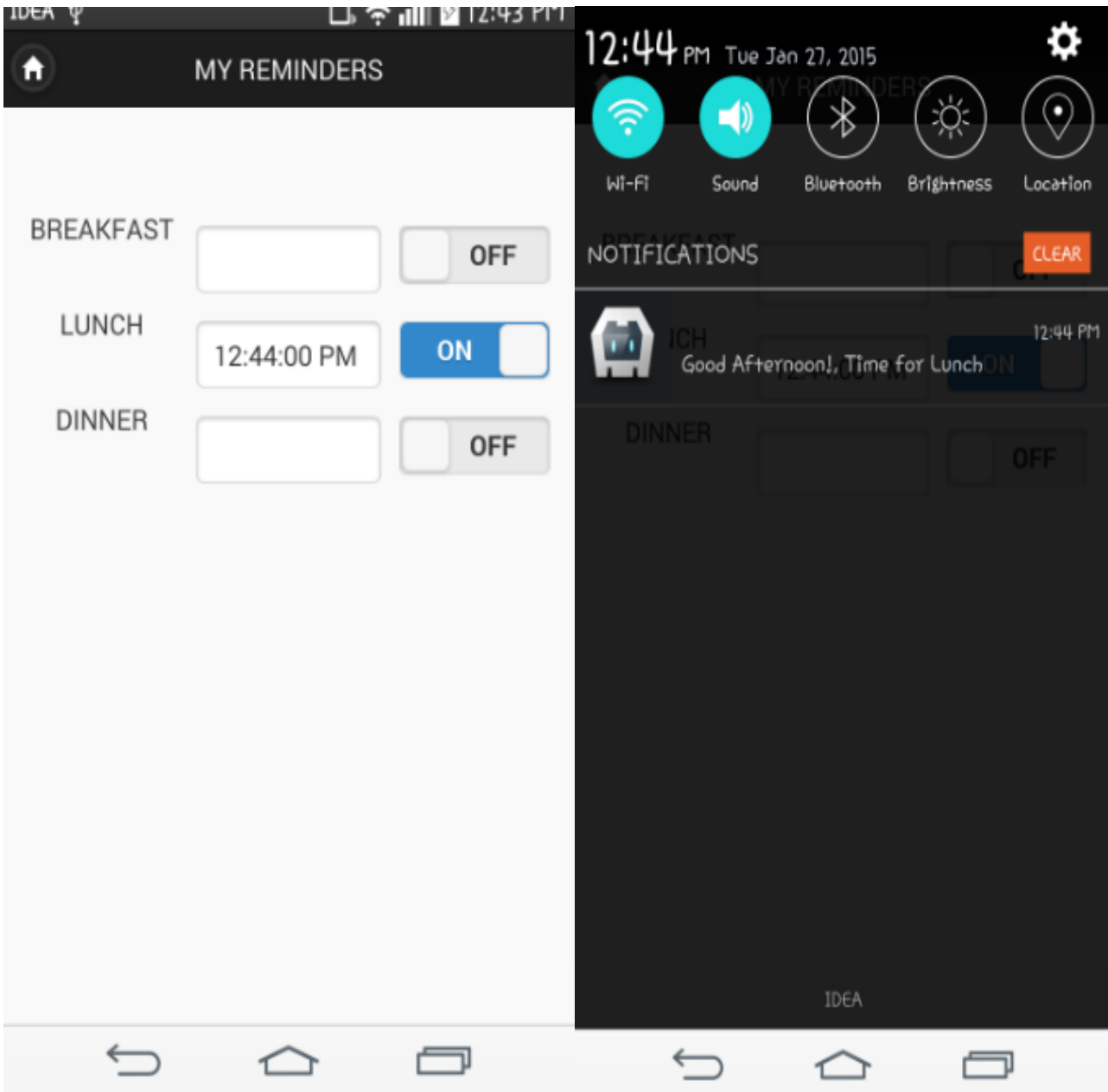
Fig: 1

V. SCREEN SHOTS

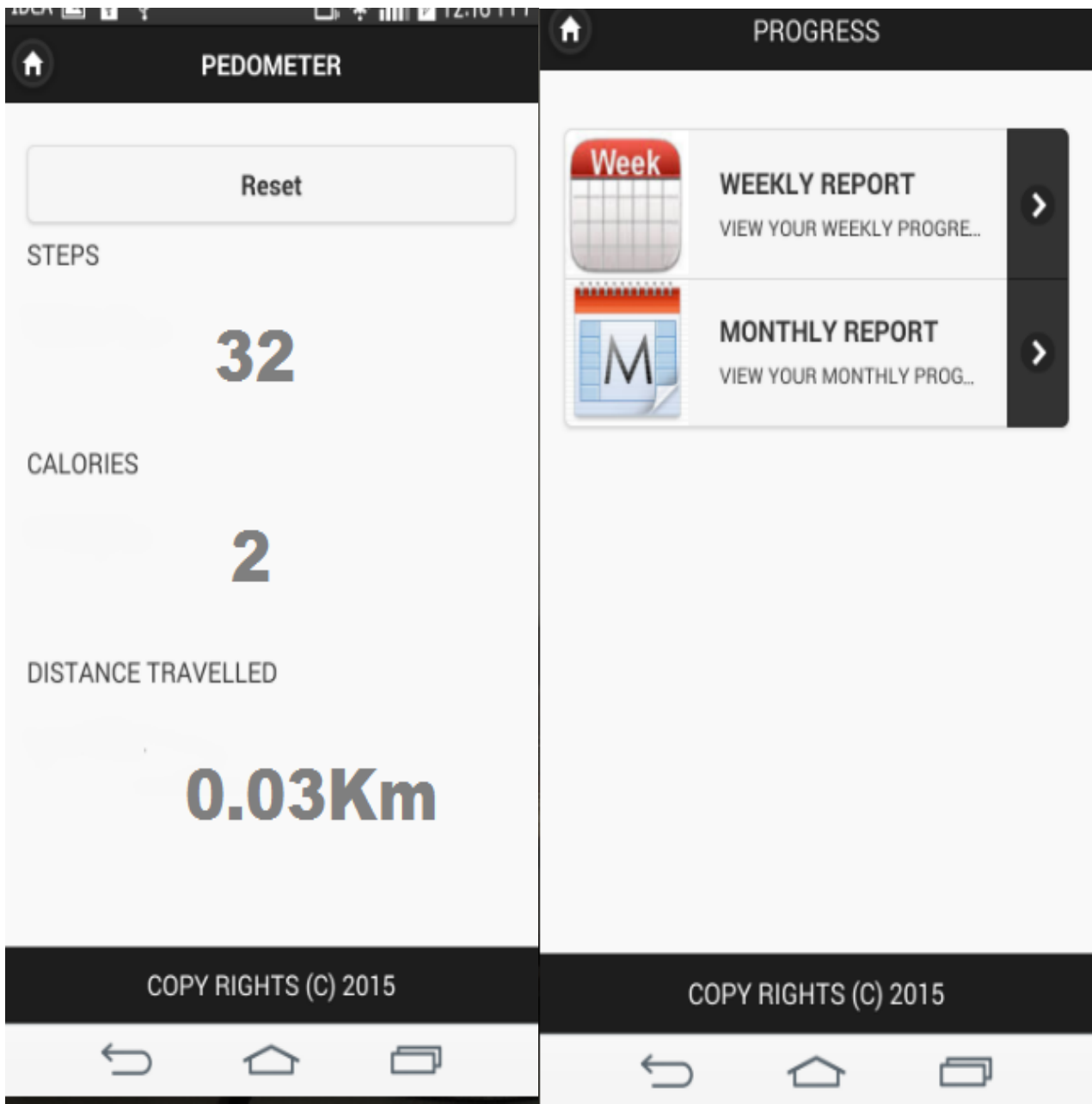
Home screen and menu page



Screen shots for My Reminder module and sample notification

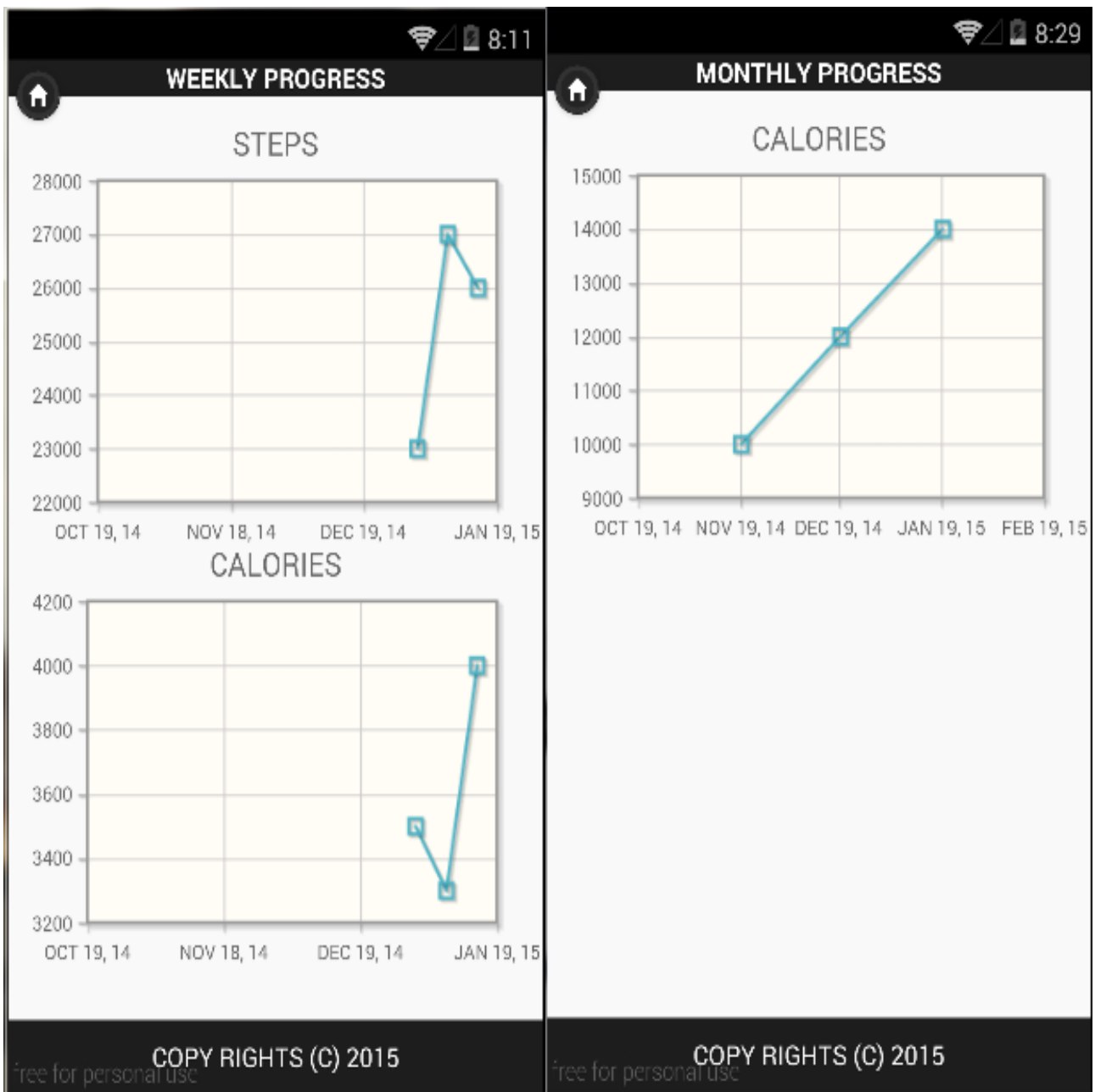


Screenshots for Go Workout Module



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Progress Module (Weekly and Monthly Progress)



VI. FUTURE ENHANCEMENT

Most of the Fitness trackers and health applications available in the mobile app market today do not extend offline support. Go Fit Logger is programmed to maintain a two level database, both on the client and server side and maintain a time-to-time synchronization between both the ends. Thereby the user would not face any outages and data loss issues due to lack of Internet connectivity.

To address this scenario, the default HTML5 Web Storage present in most of the Smartphone's is used to maintain a database schema that replicates a mainstream database on a per user basis. Any metric pertaining to the user like (calorie count, walking distance etc.) would be recorded at the client in the first spell and updates the mainstream database adhoc based on the users preference using Representational State Transfer (Restful Web services).

VII. CONCLUSION

The vision and hope that Go Fit Logger would be the most preferred health monitoring application across the country would be the main intent, motivation and responsibility of development.

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