# Chapter 1

# Introduction

## 1.1 Project Definition

An iOS application that will allow user to track his/her workout process and help them to stay fit. It also will be able to connect with any BLE peripheral which implements HRM profile. It record user's heart rate and tracks user's location during workout so that user can improve his/her workout process.

This application will also remind the user time to time to undergo workout and also allow user to set the reminder on desired time. The application will also provide the facility of music so that user can relax and also provide voice assistance as feedback during workout.

## 1.2 Project Overview

Obesity is the most prevalent, fatal, chronic, relapsing disorder of the 21st century. Obesity is a leading cause of world's mortality, morbidity, disability, healthcare utilization and healthcare costs. It is likely that the increase in obesity will strain our healthcare system with millions of additional cases of diabetes, heart disease and disability. Significantly, excess adiposity or obesity causes insulin secretion, which can cause insulin resistance that leads to type-2 diabetes.

Regular physical activity will help you to avoid these things. Physical activity is essential to prevent and reduce risks of many diseases and improve physical and mental health. It can even help you live longer—research from the American Journal of Preventative Medicine indicates that regular exercise can add up to five years to your life.

Since regularity in physical activity is very important, the development of the fitness application that can run in your mobile device is necessary.

This mobile application can be used to track different parameters during workout. This app will be able to connect to BLE enabled Heart Rate Monitor. This monitor will continuously send user's Heart Rate data to application. This application will keep track of Heart Rate data along with user's Speed (Min, Max & Avg.), Energy Expended (Calories burned), Duration, Distance, Step Count, Path on Map. User will be able to set his/her workout goals through this application. Application will notify user on completion of any goal. User will able to view/share his/her daily/weekly/monthly workout statistic from app. This app will remind user for Workout if he/she has set any reminder. User will able to Play music during workout.

## 1.3 Project Objective

'Stay Fit' is charged with the responsibility of being helpful in being fit by including following activities.

- Set Workout Goals
- Set Workout Reminder
- HR Monitor Connection
- Continuous Hear Rate Monitoring
- Undergo Workout
- Workout Report
- Music Player
- Voice Assistance
- Social Sharing

## 1.4 Scope

'Stay Fit' is a single user application that uses various technologies to track the activities of user during workout. It runs on iOS device only and allow user to connect with any BLE device that implements HRM profile. It requires various capabilities of device to perform this task. The application uses GPS to tack user's location and uses BLE to connect with HRM.

As this is a single user application at a time only one user will be able to use services offered by this application. Though this application can be reset to allow the new user to start tracking his/her fitness but the data of old user will not be available after resetting.

The application also works without connecting any HRM device or without using location services, but in those cases the workout report generated by the application will not be accurate and will skip some of the attributes in calculation as in absence of peripheral or services.

The application can keep on running in background until user forcefully kills it, thus user can also continuously measure his/her heart rate and also can plot the recorded values on a graph, which can be very useful in investigation of many diseases. The application includes a very important feature of voice assistance during workout process to allow user to know his duration, goal completion and many other attributes, thus user can push his/her limits and complete a successful workout. Finally the user can also share the details of his/her workout on social network.

## 1.5 Organization

Infostretch Solutions Private Limited.

## 1.6 Platform

iOS (6.0 and later)

## 1.7 Technologies Used

- **iOS Software Development Kit (SDK 7.0)**
  - **Graphics**
    - Core Graphics Framework
    - Foundation Framework
    - UI Kit Framework
  - **Animation**
    - Acceleration Framework
    - OpenGL ES Framework
    - Quartz Core Framework
    - Event Kit Framework
  - **Media**
    - Media Player Framework
    - AV Foundation Framework
    - Audio Toolbox Framework
  - **Map**
    - Map Kit Framework
  - **Location**
    - Core Location Framework
  - **BLE**
    - Core Bluetooth framework
  - **SQLite**
    - SQLite library for iOS
  - **Social**
    - Social Framework
- **Core Plot SDK**
  - Cocoa Touch Core Plot Framework

## 1.8 Database

SQLite 3.7.13

## 1.9 Methodology

Object Oriented System Development

## 1.10 Tools Used

- XCode 5
- iPhone 6.1 and 7.0 Simulator
- Smart Git
- SQLite Explorer
- Iphone 4s, 5, 5s.

## 1.11 Project Execution Type

Iterative Waterfall Model

## 1.12 Project Type

Mobile Application

## 1.13 Project Duration

9th December, 2013 to 29th March, 2014