2017

SOFTWARE REQUIREMENT SPECIFICATION (SRS)

HEART RATE SENSOR USING RASPBERRY WITH SMS ALERT(HRS)

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1. INTRODUCTION

1.1 PURPOSE

The purpose of this document is to provide a complete description of all the function, requirement and specification for the Heart Rate Sensor Using Raspberry With SMS Alert (HRS). It is also the method to be used to ensure that each requirement has been meet. Besides that, this document is also as a common point of reference for system expectation and intended for both stakeholders and the developers. During completion, the document will act as a binding contract between developer and users which will provide a common point of reference for the system expectation.

1.2 PROBLEM STATEMENT

Malaysia is surrounded by a variety of delicious foods that contribute to the increase in calories in our body. In addition, smoking habits also contribute to heart attack. Through the article on the website, a study was conducted which showed that malaysia had a very difficult habit that was "L.A.Z.Y". If we observed, many of us like to eat without stopping and not practicing the right diet. In addition, we are also very lazy to do exercises to get a health body, even lazy to see a doctor to do a check up.

Therefore, this project intend to detect heart rate per minute and display to them without going to the hospital to check up.

1.3 REFERENCES

i) IEEE STD 830-1998, “IEEE Recommended Practice for Software Requirement Specification”, 1998 edition, IEEE, 1998.

ii) Jeffrey A.Hoffer, J. F. (2010). *Modern System Analysis &Design.* Prentice-Hall.

1.4 DOCUMENT OVERVIEW

This document outline is based on the IEEE Standard 830-1998 for Software Requirement Specification (SRS). The explanations of the SRS are divided in 4 chapters:-

Chapter 1 Introduction

This part is described about the purpose of this document and problem statement of the system. Also indicated in this chapter are the references for this document and overview for SRS.

Chapter 2 Overall Descriptions

This part is related with overall description of product perspective, product functions and user characteristic. This part also states the constraints and the assumption and dependencies of the system.

Chapter 3 Specific Requirements

This part is addition from the chapter 2 above. In this part the requirement of the system will be state clearly and more details. Each module description was accompanied with sequence diagram. In this part describe the external interface requirements, software product features, performance requirements and requirements traceability.

Chapter 4 Definitions, Acronyms, and Abbreviations

The definition and acronyms are listed to help user to know the definition and acronyms which are used in developing HRS.

2. OVERALL DESCRIPTION

2.1 OVERVIEW

This section of the SRS should describe the general factors that affect the product and its requirements. This section does not state specific requirements. Instead, it provides a background for those requirements, which are defined in detail in Section 3 of the SRS, and makes them easier to understand.

2.2 PRODUCT FUNCTIONS

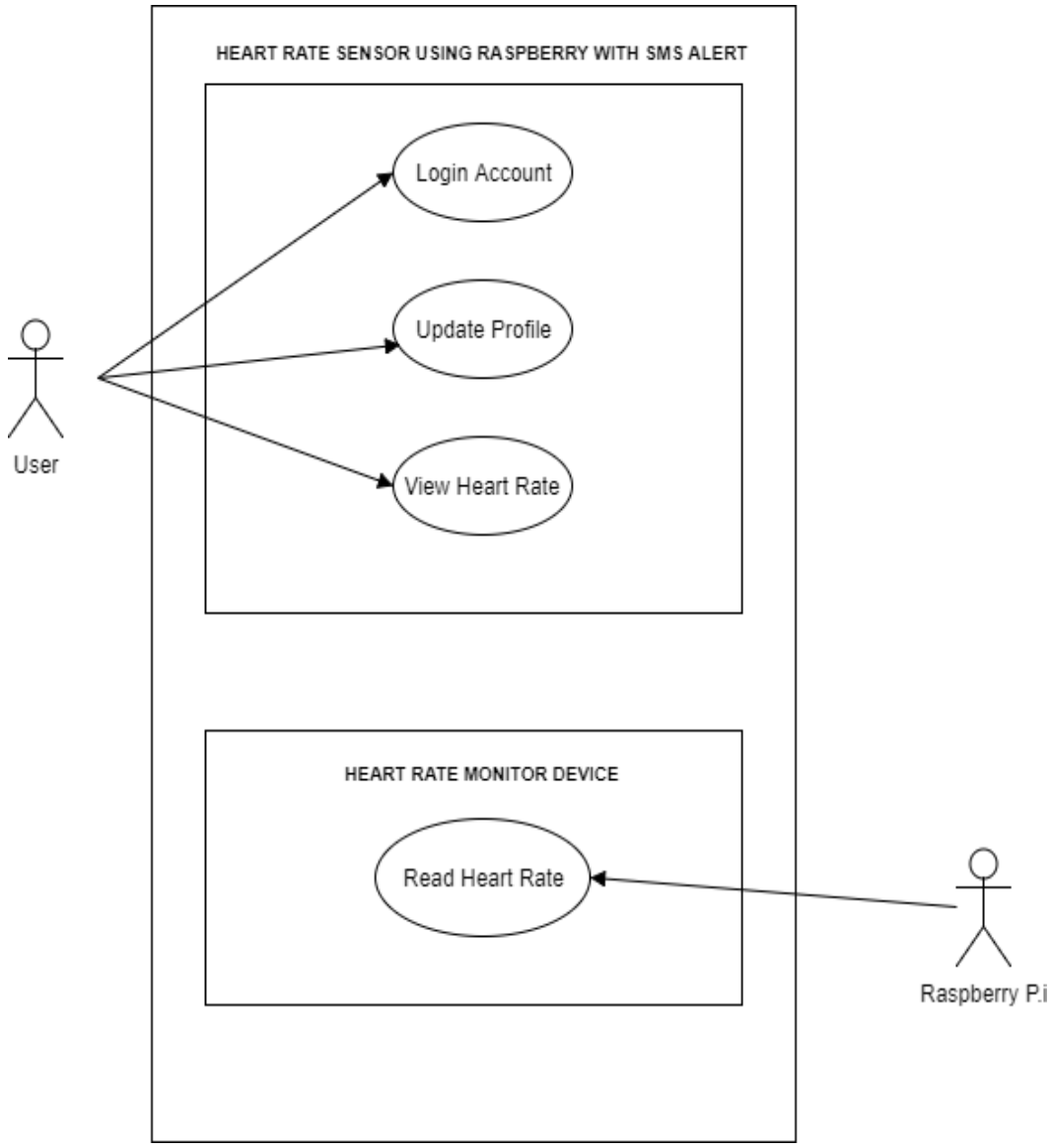


Figure 2.1: Functions that available in the HRS

2.3 USER CHARACTERISTICS

There are some minimum characteristics that the target users must have in order to access the AMSUPIID application which are:

i) The user must sign up and know the username and password that need to login to the system.

ii) The GUI and user friendly system is provided to make easy for teachers and parents to use the system.

iii) User must familiar and have knowledge in browsing internet to access the web base application system.

2.4 CONSTRAINTS

This subsection of the SRS should include a brief description on any item or condition that limits the developer in developing the system. There are few constraints confronted in order to meet the basic requirement of the system:

i) User need to have mobile phone to receive SMS about heart rate.

ii) User need to have the device to check the heart rate.

2.5 ASSUMPTIONS AND DEPENDENCIES

2.5.1 Assumption

All of the users are assumed that they are familiar with the computer and tools that will be use for the system. This system is

developed for android application and users need to browse it using the internet.

2.5.2 Dependencies

The operation of Heart Rate Sensor using Raspberry pai with SMS Alert (HRS) depends on the network connection in order to function properly. HRS also depends on the configuration of the Android application and devices such as handphone and raspberry pai.

3. SPECIFIC REQUIREMENTS

3.1 EXTERNAL INTERFACE REQUIREMENTS

3.1.1 User Interfaces

User interface is a very important part in a system and it is the part that interacts with user. The user interface is a key and determines the application usability; therefore user interface must be user friendly and meet the user requirements. This is required due to the reason of a user who is inexperience and limited knowledge in using the system. There will be different set of user interfaces display according to their role. This section will show and explain about the interface which will be used by the users of the system.

3.1.1.1 Log in Interfaces

User need to login into the Android application. Then, the application will display home page. User can select the menu option to continue this application.

3.1.1.2 Update Profile Interfaces

User must login first. Then user need to choose update profile menu to update their profile. At this interface, user can change their phone number, email and update password.

3.1.1.3 View Heart Rate Interfaces

User must login first. Then user need to choose view Heart rate. At this interface, user can view their Heart Rate. Besides that, user will get the SMS notification as a references.

3.1.2 Software Interface

This section identifies the type of software and its function that will be used to develop this system.

Software	Function
App Android invertor	- Construct the Android application
XAMPP	- Storing data in database.
Android application	- Web browser to view developed project.

Table 3.1: Software Interface

3.2 SOFTWARE PRODUCT FEATURES

3.2.1 Use Case for Login [SRS_HRS_REQ_100]

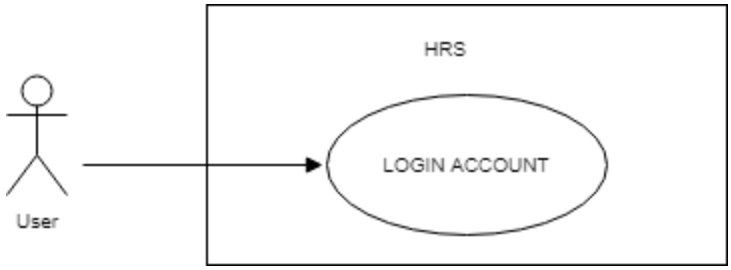


Figure 3.1: Use case for Login

3.2.1.1 Brief Description

Use case Login Account is used by users to authenticate themselves using their Google account before using the application. Figure 3.1 depicts the use case login Account.

3.2.1.2 Use Case Specification

Use case specification will discuss all detail about use case login account.

History Log	1.0.0	1. Create initial use case		
Version	1.0.0			
Use Case ID	UC-1			
Use Case Name	Login Account			
Created By	Solihin		**Last Updated By**	Solihin
Date Created	19 .11. 2017		**Last Revision Date**	20.11. 2017
Actors	Users, Android			
Description	1) User authenticate themselves before using the application			
Precondition	1. The android device used has an active network connection to the internet. 2. User clicks on the application icon in Android apps.			
Post-Condition	User successfully logged into the HRS android application			
Normal Flow	**1.0 Log Into System** 1) The application displays a Login with Google+ button. (SRS_REQ_101) 2) User clicks on Login with Google+ 3) The system submits Intent for Google+ login to Android. 4) If Google+ App not installed. **[A-1: Google+ Web]** 5) Android executes Google+ App. 6) The system requests permissions from user to use profile information from Google+. (SRS_REQ_102) 7) User gives permission to the application to retrieve profile information from their Google+ account. 8) The system updates the user's profile with the information received and displays the home screen with a message to update Profile with health information.			

Table 3.2: Use case specification login

Alternative Floew	**1.0 A-1 Google+ Web** The device used does not have the official Google+ App installed. 1) The Android opens Google+ page using default browser. 2) The system requests permissions from user to use profile information from Google+. Proceed with Step 6
Exception	No Exception flow

Table 3.2: Continue

3.2.2 Use Case for Update Profile [SRS_HRS_REQ_200]

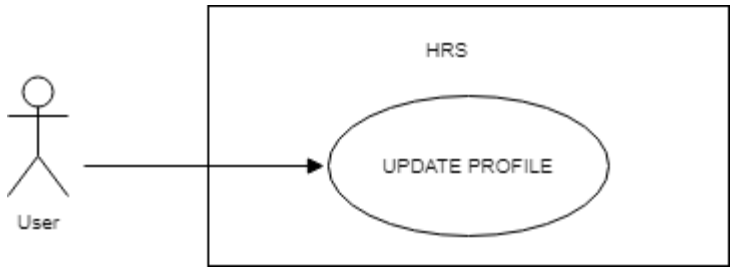


Figure 3.2: Use case Update Profile

3.2.2.1 Brief Description

Use case Updated Profile is used by users to input their personal and health profile to be used by application to provide health recommendations.

3.2.2.2 Use Case Specification

Use case specification will discuss all detail about use case Update profile.

History Log	1.0.0	2. Create initial use case	
Version	1.0.0		
Use Case ID	UC-2		
Use Case Name	Update Profile		
Created By	Solihin	**Last Updated By**	Solihin
Date Created	19 .11. 2017	**Last Revision Date**	20.11. 2017
Actors	Users		
Description	1) User update their profile information		
Precondition	2) The android device used has an active network connection to the internet. 3) The user is logged in to the android application		
Post-Condition	The user successfully updates their profile information		
Normal Flow	**2.0 Update profile** 1) The user enters the Profile screen of the HRS Android application 2) The system determines if the user's profile information is incomplete. **3)** If profile is complete. **[A-1: Edit Profile]** 4) User clicks on "Background". 5) The system requests for user's background profile information such as Name,Age, Gender, No Telephone (SRS_REQ_201) 6) User fills in their background profile information and clicks "Save". 7) The system returns to previous screen. 8) User clicks on "Heart Rate". 9) The system lists Heart Rate conditions such as presence of respiratory diseases. (SRS_RED_202). 10) User taps on heart rate conditions that apply to them and clicks "Save". 11) The system saves the information to the database. 12) User leaves Profile screen.		

Table 3.3: Use case specification update profile

Alternative Floew	**2.0 A-1 Google+ Web** 1) The user has filled in profile information previously. 2) The system displays the saved profile information. (SRS_RED_203). 3) If User clicks on “Background”. a) The systems displays user’s background profile information b) User edits personal profile information and clicks “Save”. 4) If User clicks on “Heart rate”. a) The systems displays user’s health profile information b) User edits health profile information and clicks “Save”. Proceed with Step 10
Exception	No Exception flow

Table 3.3: Continue

3.2.3 Use Case for View Heart Rate [SRS_HRS_REQ_300]

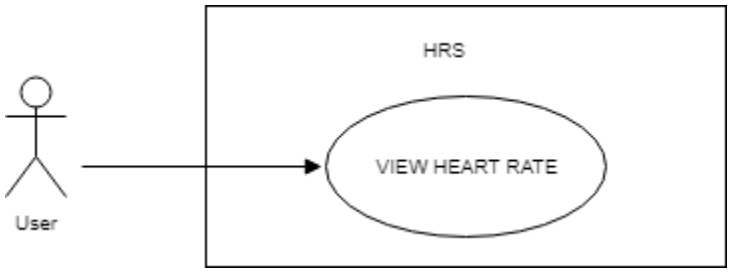


Figure 3.3: Use case view heart rate

3.2.3.1 Brief Description

Use case View Heart Rate is used by users to view their data heart rate. The data will replace new when user check up their new heart rate.

3.2.3.2 Use Case Specificatiin

Use case specification will discuss all detail about use case view heart rate.

History Log	1.0.0	3. Create initial use case		
Version	1.0.0			
Use Case ID	UC-3			
Use Case Name	View Heart Rate			
Created By	Solihin		**Last Updated By**	Solihin
Date Created	19 .11. 2017		**Last Revision Date**	20.11. 2017
Actors	Users			
Description	Users are able to view health precautions based on their health profile in the HRS Android application			
Precondition	1) The Android device used has an active network connection to the internet. 2) The user is logged in to the system.			
Post-Condition	The user is able to view heart rate for the past until their not make a new heart rate.			
Normal Flow	**3.0 View Heart Rate** 1) The user enters the Home screen of the HRS Android application. 2) The system view the heart rate (SRS_REQ_301, SRS_REQ_302) 3) The user pulls down the screen to refresh. (SRS_REQ_303) 4) The system displays the new heart rate if user make a new heart rate.			

Table 3.4: Use case specification view Heart Rate

Alternative Floew	No alternative flow
Exception	No Exception flow

Table 3.4: Continue

3.2.4 Use Case Read Heart Rate [SRS_HRS_REQ_400]

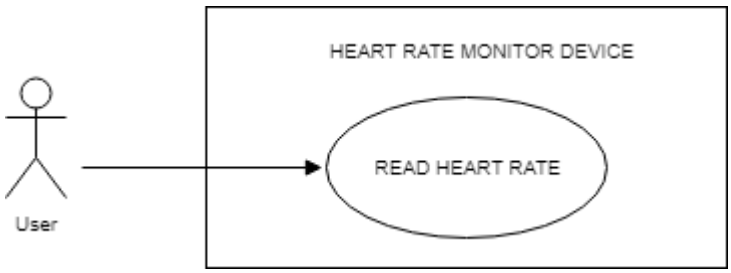


Figure 3.3: Use Case Read Heart Rate

3.2.4.1 Brief Description

Use case Read Heart Rate is used raspberry pai to read heart rate and send notification SMS to user.

3.2.4.2 Use Case Specification

Use case specification will discuss all detail about use case read heart rate.

History Log	1.0.0	4. Create initial use case	
Version	1.0.0		
Use Case ID	UC-4		
Use Case Name	Read Heart Rate		
Created By	Solihin	**Last Updated By**	Solihin
Date Created	19 .11. 2017	**Last Revision Date**	20.11. 2017
Actors	Rasphberry pai		
Description	The rasphberry pai read the heart rate human		
Precondition	1) The raspberry pai prototype has an active network connection to the internet.		
Post-Condition	The current rasphberry pai concentration read the heart rate.		
Normal Flow	**4.0 Read Heart Rate** 1) The Raspberry request for reading the heart rate (SRS_REQ_401) 2) Rasphberry pai calculate the heart rate per minute (SRS_REQ_402) 3) Raspberry pai send SMS alert to user mobile and android app (SRS_REQ_403).		
Alternative Flow	No alternative Flow		
Exception	No exception flow		

Table 3.5: Use case specification Read Heart Rate

3.3 PERFORMANCE REQUIREMENTS

This system will be built using app Androind Inverter. It will be built as a android application.

i) Internet is needed in order to access onto the HRS system.

ii) Exception handling and error handling must be implemented to show user the error.

iii) User guidance must be showed when errors occur and provides context-sensitive user help instructions.

3.4 REQUIREMENT TRACEBILITY MATRIX

This section will discuss Requirement Tracebility Matrix for system will develop.

REQUIREMENTS	DESCRIPTION
SRS_REQ_100	**Login**
SRS_REQ_101	The system shall allow users to login with their Google account.
SRS_REQ_102	The system shall retrieve profile information from user's Google+ account.
SRS_REQ_103	The system shall not allow users to login without an active internet connection
SRS_REQ_104	The system shall allow users to stay logged in
SRS_REQ_200	**Update profile**
RS_REQ_201	The system shall request for user's personal profile information such as Name, Age, Gender, email and No hanphone
SRS_REQ_202	The system shall request for user's health profile information such as Heart rate per minute and ills history
SRS_REQ_203	User shall be able to view saved personal profile information.
SRS_REQ_204	User shall be able to edit saved personal profile information.
SRS_REQ_205	User shall be able to view saved health profile information
SRS_REQ_206	User shall be able to edit saved health profile information.
SRS_REQ_207	The system shall not allow users to update personal profile information without an active internet connection
SRS_REQ_208	The system shall not allow users to update health profile information without an active internet connection

Table 3.6: Requirement Tracebility Matrix

REQUIREMENTS	DESCRIPTION
SRS_REQ_300	**View Heart Rate**
SRS_REQ_301	The system shall allow users to view heart rate.
SRS_REQ_302	The system shall allow users to get alert notifications when the rate reaches unhealthy level and health level
SRS_REQ_303	The system shall allow users refresh and get new heart rate when they make a new heart rate.
SRS_REQ_400	**Read Heart Rate**
SRS_REQ_401	Heart Rate monitor sensor device shall read heart rate from user.
SRS_REQ_402	Heart rate monitor sensor can calculate heart rate per minute
SRS_REQ_403	Heart rate monitor sensor able to send SMS alert to user

Table 3.6: Continue

4. DEFINITIONS, ACRONYMS, AND ABBREVIATIONS

4.1 Definition

No.	Glossary	Definition
2	MySQL	MySQL is a relational database management system (RDBMS) which has more than 6 million installations.
3	phpMyAdmin	phpMyAdmin is a tool written in PHP intended to handle the administration of MySQL over the Web.

Table 4.1: Definition

4.2 Acronyms

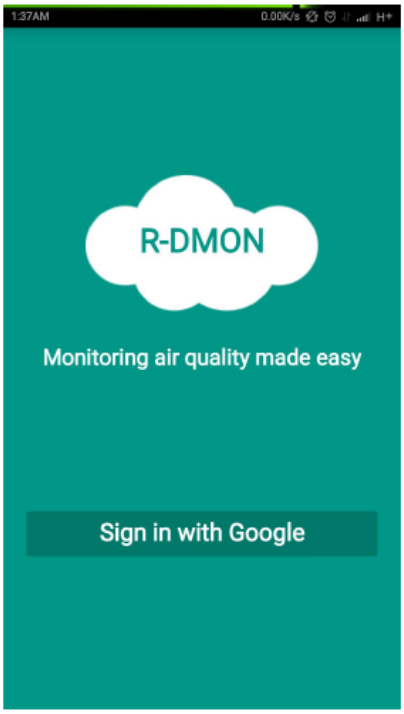
No.	Abbreviation	Definition
1	SRS	Software Requirement Specifications
2	HRS	Heart Rate Sensor using raspberry with SMS Alert
3	PIID	New proposed methodology which is combination
6	REQ	Requirement
7	PHP	Hypertext Preprocessor

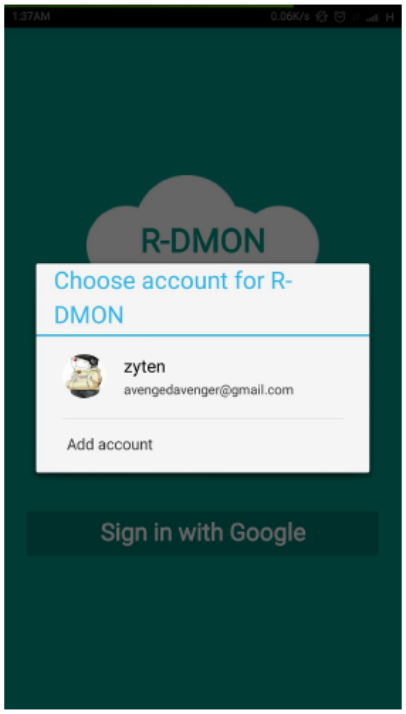
Table 4.2: Acronyms

APPENDIX A

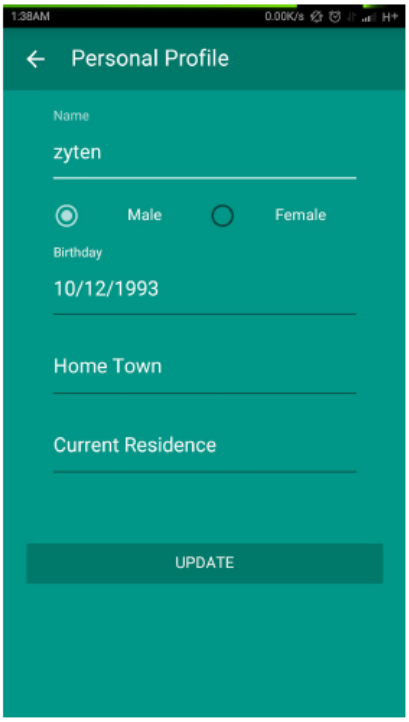
Purpose User Interface

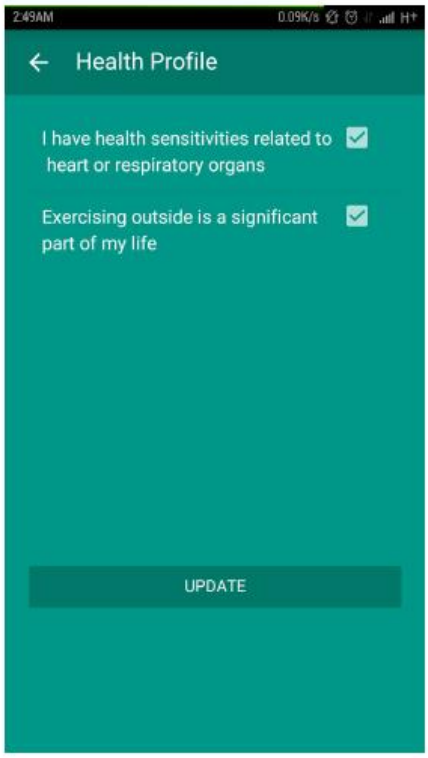
PURPOSE LOGIN INTERFACE



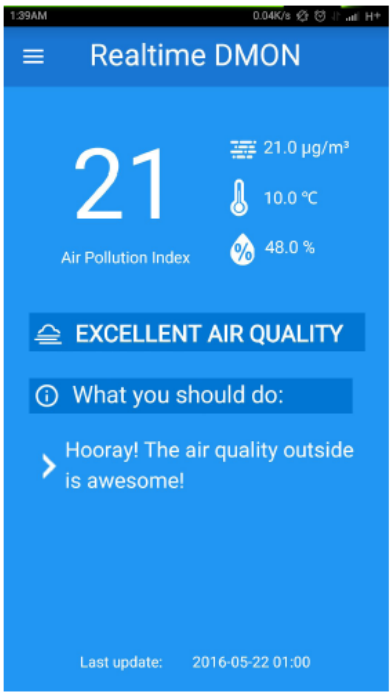


PURPOSE UPDATE PROFIL INTERFACE





PURPOSE VIEW HEART RATE



PURPOSE READ HEART RATE