CHEST STRAP HEART MONITOR

Introduction

This document describes requirements for a chest Strap heart monitoring device. This is a wearable device which connects to a phone using Bluetooth. It is rechargeable and records the heart activity of a patient which can be sent to the hospital database and can be accessed by the doctor for further examination and further analysis.

Function and Scope:
The chest strap device is a worn device which is intended to detect each heartbeat and transmit the data to a receiver such as a phone app. The electrode picks up electric signals from the body sweat and begins interpreting the signals into 1s and 0s for meaningful data calculation. The data is displayed as the number of beats per minute and will be sent to the hospital's serve from there the doctor can retrieve the data for further analysis and examination.

References
Eduardo Mateos, "*How Heart rate monitor works and what's best for you*".https://www.correrunamaraton.com/en/how-heart-rate-monitors-works/.

2.1 Overall Description
The chest strap heart monitoring device is intended for the patients, doctors as well as the hospital admin.

Hardware requirement for a Chest Strap Heart Rate Monitoring Device

Electrodes: The electrode detects the electric signals from the heart activity. It needs to be moistened by the sweat from the patient to be activated.

Optical Emitter: Sends light waves into the skin. Most of the emitters use multiple light wavelengths because of the varying skin thickness.

Photo detectors: It captures the light refracted from the user of the device and translates the signals into 1s and 0s that can be calculated into meaningful heart rate data.

Accelerometer: This measures motion and it is used in combination with the photo detector signal as inputs into PPG (photoplethysmography) algorithms.
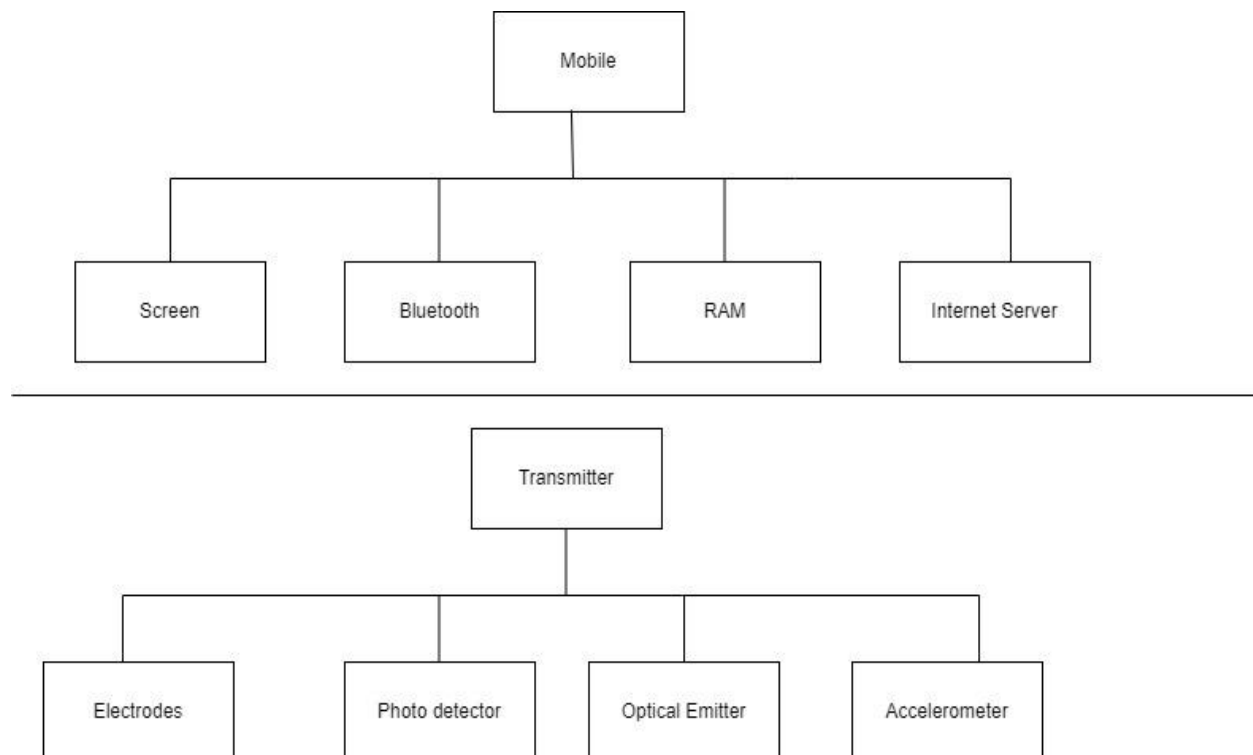
Bluetooth: The Bluetooth connects the Chest Strap with the phone to transfer the data.

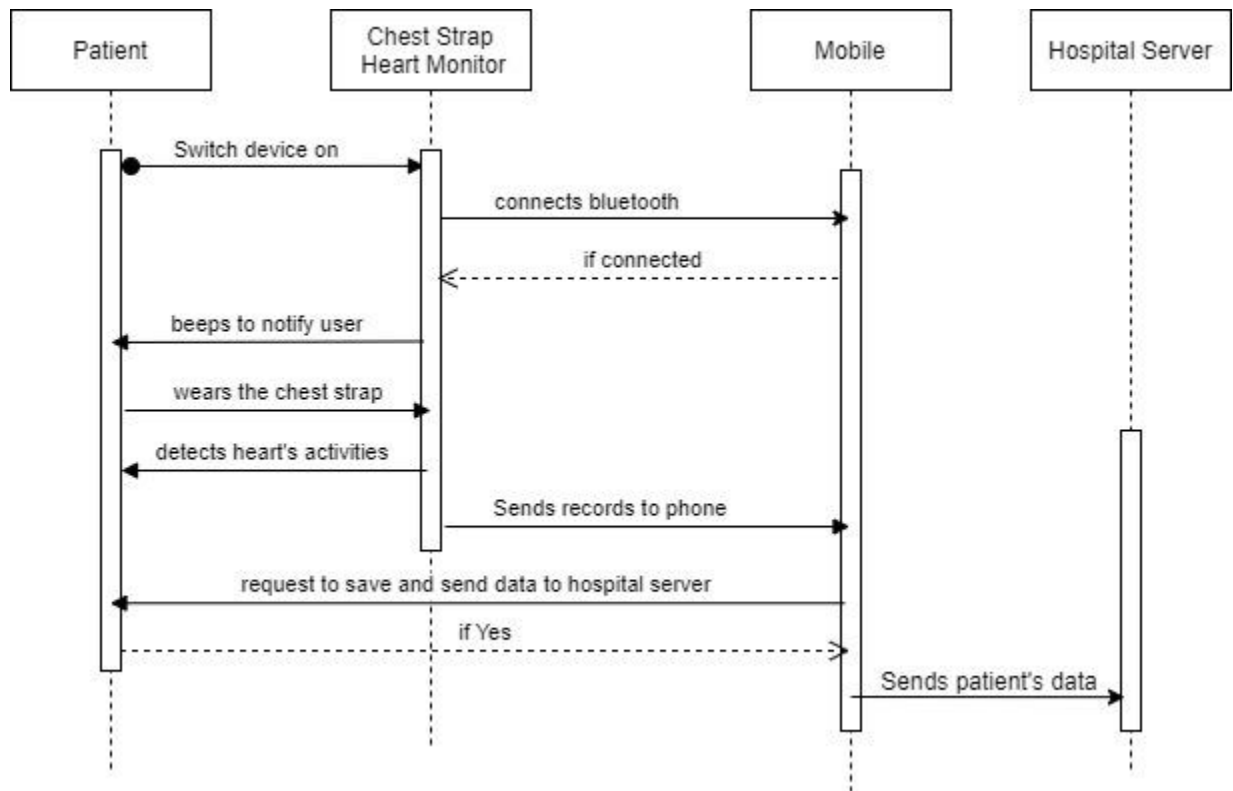**Battery**: usually a battery of CR2016 or CR2032 battery.

Functional Constraints:
-Low sensor Battery
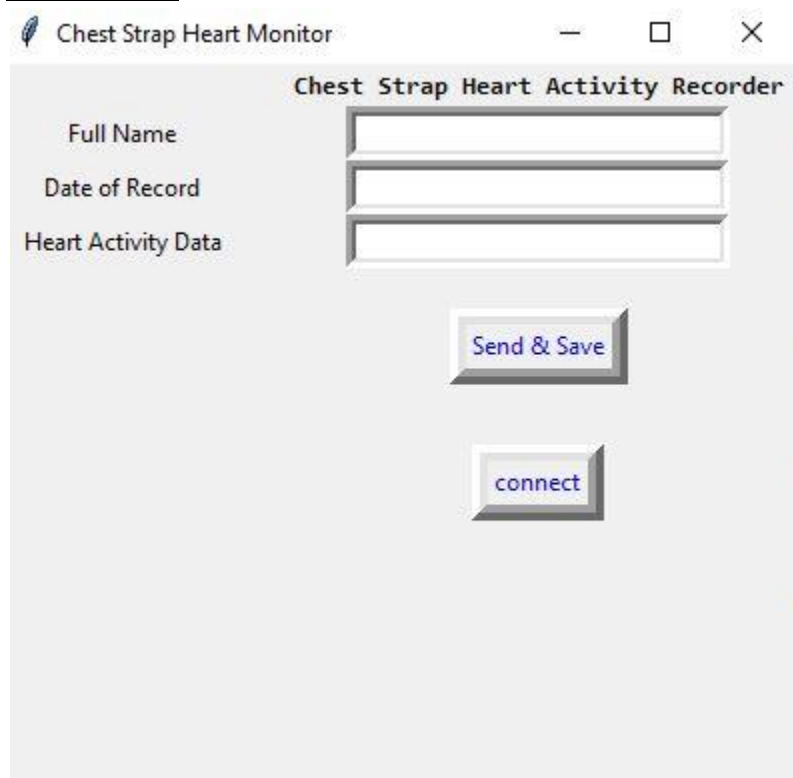-Broken transmitter
-Interference in connection with Bluetooth.

Requirement Diagram

Sequence Diagram

Patient	Chest Strap Heart Monitor	Mobile	Hospital Server

Switch device on

connects bluetooth

if connected

beeps to notify user

wears the chest strap

detects heart's activities

Sends records to phone

request to save and send data to hospital server

if Yes

Sends patient's data

User Interface