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IoT HEALTH MONITOR SYSTEM

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Abstract

During the ongoing COVID-19 pandemic, Internet of Things- (IoT-) based health monitoring systems are potentially immensely beneficial for COVID-19 patients. This study presents an IoT-based system that is a real-time health monitoring system utilizing the measured values of body temperature, pulse rate, and oxygen saturation of the patients, which are the most important measurements required for critical care. This system has a liquid crystal display (LCD) that shows the measured temperature, pulse rate, and oxygen saturation level and can be easily synchronized with a mobile application for instant access. The proposed IoT-based method uses an Arduino Uno-based system, and it was tested and verified for five human test subjects. The results obtained from the system were promising: the data acquired from the system are stored very quickly. The results obtained from the system were found to be accurate when compared to other commercially available devices. IoT-based tools may potentially be valuable during the COVID-19 pandemic for saving people's lives.

Biomedical signals such as EEG, ECG &PPG carry vital information about the activity of human organs, by extracting details from this signals-health condition of the organs can be monitored. Various studies are going on about the information contained by these signals.

Hence, it became necessary to measure the opposition to Corona before entering the students to school and to ensure their health condition, so we made a ready-made robot to measure the students' temperature and heart rate

and work on preventive measures if it is proven that there are clear symptoms of Corona disease on the student.

Heartrate sensor and a temperature sensor to know if a person is normal or abnormal and heart rate measurement of the student, the staff.

Of this benefit of the proposed solution, the spread of disease will be reduced, the disease will be known quickly, treating and isolating the patient and do an embargo.

CHAPTER 1

1.1 Background

In view of what the world is suffering from due to the Corona virus, and that one of its apparent symptoms is the high temperature of the patient and a noticeable increase in his heart rate, and the state's keenness on the continuity of education inside schools to ensure that students complete their curricula in a proper and complete manner and in the interest of the safety of students and school and university staff, it has become necessary to take Urgent and periodic precautionary measures for schools, organizations .

1.2 Introduction

Coronaviruses are important human and animal pathogens. At the end of 2019, a novel coronavirus was identified as the cause of a cluster of pneumonia cases in Wuhan, a city in the Hubei Province of China. It rapidly spread, resulting in an epidemic throughout China, followed by a global pandemic. In February 2020, the World Health Organization designated the disease COVID-19, which stands for coronavirus disease 2019 [1]. The virus that causes COVID-19 is designated severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2); previously, it was referred to as 2019-nCoV.The World Health Organization (WHO) has declared the coronavirus complaint 2019 (COVID-19) an epidemic [1].A global coordinated trouble is demanded to stop the farther spread of the contagion, A epidemic is defined as "being over a wide geographic area and affecting an exceptionally high proportion of the population [2],The last epidemic reported in the world was the H1N1 flu epidemic in 2009.On 31 December 2019, a cluster of cases of pneumonia of unknown cause, in the megacity of Wuhan, Hubei fiefdom in China, was reported to the World Health Organization. In January 2020, a preliminarily unknown new contagion was linked [3][4]. Latterly named the 2019 new coronavirus, and samples attained from cases and analysis of the contagion 'genetics indicated that this was the cause of the outbreak. This new coronavirus

was named Coronavirus Disease 2019 (COVID-19) by WHO in February 2020[5] . The contagion is appertained to as SARS-CoV-2 and the associated complaint is COVID-19 [6]. Understanding of COVID-19 is evolving. Interim guidance has been issued by the World Health Organization and by the United States Centers for Disease Control and Prevention [2,3]. The biggest problem, the virus can cause acute myocardial injury and chronic damage to the cardiovascular system[7] .An acute cardiac injury was found in 12% of infected people admitted to the hospital in Wuhan, China and is more frequent in severe disease[9] .Rates of cardiovascular symptoms are high, owing to the systemic inflammatory response and immune system disorders during disease progression, but acute myocardial injuries may also be related to ACE2 receptors in the heart[7]. ACE2 receptors are highly expressed in the heart and are involved in heart function[7] [10] .A high incidence of thrombosis and venous thromboembolism have been found in people transferred to Intensive care units (ICU) with COVID-19 infections, and may be related to poor prognosis[11]. Blood vessel dysfunction and clot formation (as suggested by high D-dimer levels caused by blood clots) are thought to play a significant role in mortality, incidences of clots leading to pulmonary embolisms, and ischemic events within the brain have been noted as complications leading to death in people infected with SARS-CoV-2 Infection appears to set off a chain of vasoconstrictive responses within the body, constriction of blood vessels within the pulmonary circulation has also been posited as a mechanism in which oxygenation decreases alongside the presentation of viral pneumonia[12]. Furthermore, microvascular (arterioles and capillaries) blood vessel damage has been reported in a small number of tissue samples of the brains – without detected SARS-CoV-2 – and the olfactory bulbs from those who have died from COVID-19.[13][14][15].COVID-19 was also found to cause substantial – including morphological and mechanical – changes to blood cells – such as increased sizes – sometimes persisting for months after hospital discharge [16][17]

The solution of this problem, Since the authorization of the first COVID-19 vaccines in December 2020, millions of people in the U.S. Have been safely vaccinated. As of October 2021, nearly 405 million boluses of the vaccines have been given. Further than 10 months of data show the vaccines are safe and effective at precluding serious complaint or death due to COVID19.Fresh shots and boosters are also being authorized for certain groups to make the protection indeed stronger. In addition, the FDA has completely approved the Pfizer-Biontech COVID-19 vaccine, which means further data show how well that particular vaccine workshop.

The FDA may completely authorize the Moderna coronavirus vaccine and others in the future. Moment's world effective observation of drug parameters are essential. Numerous operations use these parameters to probe the health conditions of a private.

Heartrate signal is one in all the veritably important drug parameters, which can be attained bynon-invasive fashion. Rooting necessary details from this signal may be a pivotal task. PPG signal contains multitudinous data like rate at that jiffs, respiration rate, vital sign, etc. Effective strategies needed to prompt necessary details from a raw PPG signal. Allow us to study multitudinous algorithms that are habituated excerpt these features, beside its professionals and cons.

1.3 Problem Statement

The biggest problem, the virus can cause acute myocardial injury and chronic damage to the cardiovascular system[21].An acute cardiac injury was found in 12% of infected people admitted to the hospital in Wuhan,

China, and is more frequent in severe disease[23]. Rates of cardiovascular symptoms are high, owing to the systemic inflammatory response and immune system disorders during disease progression, but acute myocardial injuries may also be related to ACE2 receptors in the heart.[21]

ACE2 receptors are highly expressed in the heart and are involved in heart function.[21][24]

A high incidence of thrombosis and venous thromboembolism have been found in people transferred to Intensive care units (ICU) with COVID-19 infections, and may be related to poor prognosis.[25]. Blood vessel dysfunction and clot formation (as suggested by high D-dimer levels caused by blood clots) are thought to play a significant role in mortality, incidences of clots leading to pulmonary embolisms, and ischemic events within the brain have been noted as complications leading to death in people infected with SARS-CoV-2. Infection appears to set off a chain of vasoconstrictive responses within the body, constriction of blood vessels within the pulmonary circulation has also been posited as a mechanism in which oxygenation decreases alongside the presentation of viral pneumonia.[26]

Furthermore, microvascular (arterioles and capillaries) blood vessel damage has been reported in a small number of tissue samples of the brains – without detected SARS-CoV-2 – and the olfactory bulbs from those who have died from COVID-19.[27][28][29] .COVID-19 was also found to cause substantial – including morphological and mechanical – changes to blood cells – such as increased sizes – sometimes persisting for months after hospital discharge [30][3]

1.4 Proposed Solution

This will be done as follows. It will be inside the three sensors of the robot. The first is the one Reference id sensor who will identify the student through his ID, and then the role of the temperature sensor TMP36 will come, which will record the student's temperature, and then the role of the heartrate sensor will come, who will measure the student's heart rate by placing His finger is on a place for the assigned sensor. In the event that the student's vital indicators differ from the normal indicator, the application will start to take the necessary measures towards that by preventing the student from entering and informing the student's guardian and school supervisor in those cases.

1.5 Project Objective

The project will be implemented by measuring vital indicators through a group of sensors. As the heart rate and blood pressure rate will be measured by heartrate, and the measurement will be done by placing the student's finger on the designated place in the sensor and the measurement will be carried out, and the temperature will be measured using a TMP36 sensor. In which the identity of each student will be identified by Reference Id sensor. As these readings will be compared with the normal readings by Model and determine whether the person is healthy or not. In the event that the person's vital signs are not normal, the necessary measures will be taken for this, such as preventing him from entering and informing the school supervisor and his parents.

CHAPTER 2

2.1 Introduction

In this chapter we will introduce several sensors that diagnose heart rate as we will talk about 4 different sensors and they are ECG ,EEG , PPG & Heartrate.

2.2 Electrocardiogram (ECG)

The Electrocardiogram (ECG) is the P-QRS-T wave depicting the cardiac activity of the heart. The subtle changes in the electric potential patterns of repolarization and depolarization are indicative of the disease afflicting the patient. These clinical time domain features of the ECG waveform can be used in cardiac health diagnosis. Due to the presence of noise and minute morphological parameter values, it is very difficult to identify the ECG classes accurately by the naked eye.
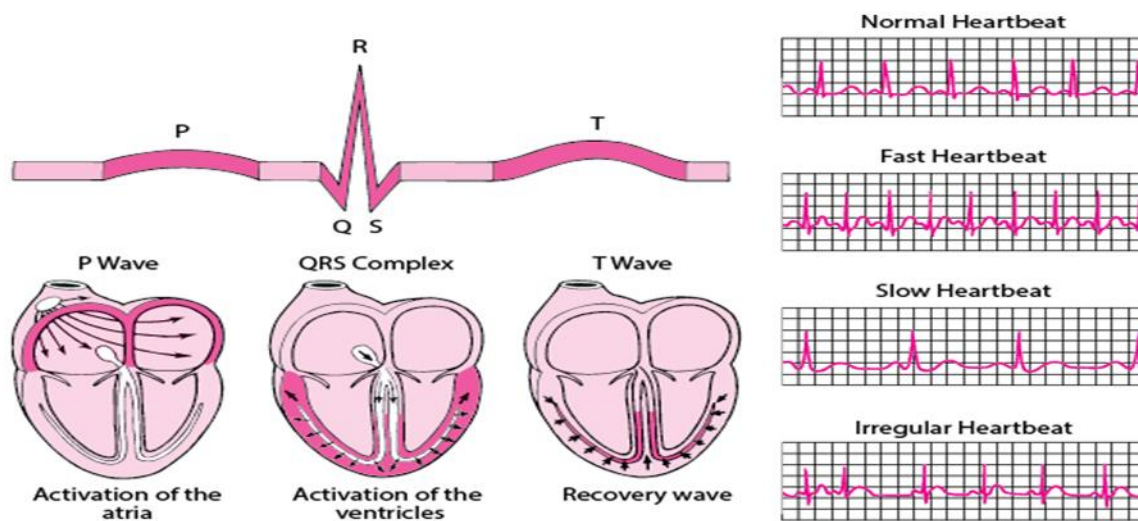
Figure 2.1: Heart beat of ECG

2.2.1 Benefits of ECG sensor

In which as everything has its own Benefits and Drawback the ECG has many Benefits[38]

The ECG is abnormally fast or irregular heart rhythms, and also abnormal conduction of cardiac impulses, which may suggest underlying cardiac or metabolic disorders. It shows Evidence of the occurrence of a prior heart attack (myocardial infarction) and unstable angina.

2.2.2 Drawbacks of ECG sensor

It does not measure directly the cardiac electrical source or actual voltages, but it reflects electrical behavior of the myocardium, not the specialized conductive tissue, which is responsible for most arrhythmias. Also it's often difficult to identify a single cause for any single ECG abnormality Traditionally ECG (Electrocardiography) sensors are used for Heart rate and rhythm detection. Since ECG sensor are bulky, they cannot be used to detect heart rate when body is motion.

2.3 Electroencephalography (EEG)

Electroencephalography (EEG) is the recording of electrical activity occurring in the brain, which is recorded from the scalp through placement of voltage sensitive electrodes. It has been repeatedly demonstrated that the brain emits voltage fluctuations on a continuous basis. [33]

EEG helps determine seizure type and epilepsy syndrome in patients with epilepsy, and thereby choice of antiepileptic medication and prediction of prognosis. EEG findings contribute to the multi-axial diagnosis of epilepsy,

in terms of whether the seizure disorder is focal or generalized, idiopathic or symptomatic, or part of a specific epilepsy syndrome.[20]

2.3.1 Benefits of EEG sensor

In which as everything has its own Benefits and Drawback the EEG has many Benefits[38]

The EEG is a High Temporal resolution, and a Safe and easy technique

2.3.2 Drawbacks of EEG sensor

It's Susceptible to EOG signals, ECG signals, muscular activities and power line interference, low spatial resolution, and non stationary signal
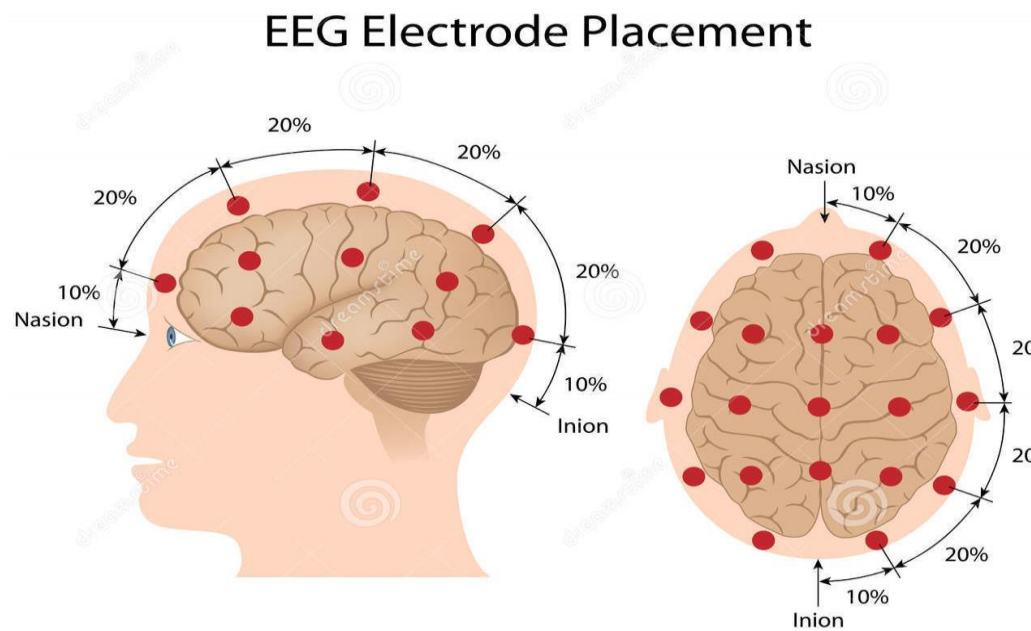
Figure 2.2 : Normalize brain of EEG

2.4 Photo plethysmography (PPG)

The light source emits light to a tissue and the photodetector measures the reflected light from the tissue. This measurement provides valuable information about the cardiovascular system. AS when the heart beats, capillaries expand and contract based on blood volume changes. PPG optical sensor , emits light signals that reflect onto the skin to accurately and continuously measure weak blood flow signals.[18]
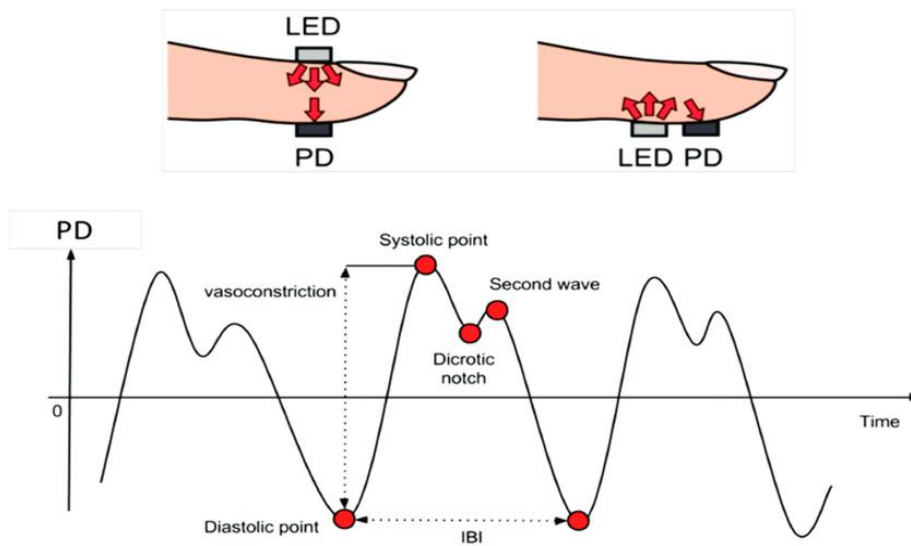
Figure 2.0-1 : Light sensor of PPG

PPG makes uses of low-intensity infrared (IR) light. When light travels through biological tissues, it is absorbed by bones, skin pigments and both venous and arterial blood. Since light is more strongly absorbed by blood than the surrounding tissues, the changes in blood flow can be detected by PPG sensors as changes in the intensity of light. The voltage signal from PPG is proportional to the quantity of blood flowing through the blood

vessels. Even small changes in blood volume can be detected using this method, though it cannot be used to quantify the amount of blood. A PPG signal has several components including volumetric changes in arterial blood which is associated with cardiac activity, variations in venous blood volume which modulates the PPG signal, a DC component showing the tissues' optical property and subtle energy changes in the body. Some major factors affecting the recordings from the PPG are site of measurement and the contact force between the site and the sensor. Blood flow variations mostly occur in the arteries and not in the veins.

Photo plethysmography known most commonly as (PPG) so will start with PPG Stands for photoplethysmogram, Photo means Light, Platysma means change in volume, Gram means graph. So we put them together PPG (photo plethysmography) that means high precision light sensor used to detect volume of blood flow to understand the fluctuation in heart rate.[18] [19]

(PPG) sensor is a preliminary (or first) version of the intended device appearance. It provides blood pressure data for further classification. Additionally, the collected data concerning the blood pressure wave shape can be easily analyzed for use in other bio signal observations, interpretations, and investigations. The design approach also allows the device to be built into a wearable system for further research purposes [18]

As it is inexpensive optical measurement method and a simple optical technique used to often used for heart rate monitoring purposes. It uses a light source and a photodetector at the surface of skin to measure the volumetric variations of blood circulation.[20]

However, one of the major difficulties in using PPG-based monitoring techniques is their inaccuracy in tracking the PPG signals during daily routine activities and light physical exercises.[18] The PPG's ability to measure blood variations in different parts of the body as PPG-based devices for monitoring daily routine activities. Most common PPG sensors use (green LED) as it is the color that is commonly used as the main light source.

IR-LEDs are most commonly used for measuring the flow of blood that is more deeply concentrated in certain parts of body such as the muscles while green LED measures (oxygenated blood and blood without oxygen present). PPG sensors also use a photodetector to measure the intensity of reflected light from the tissue. As this sensor can only be placed at certain body locations (ex: wrist, your finger, etc.). PPG (photo plethysmography) sensors use a light-based technology to sense the rate of blood flow as controlled by the heart's pumping action. PPG devices use an LED operating on one side of the tissue and a photodetector on the other to demonstrate the obstruction and absorption of incident light. If both the LED and photodetector are placed adjacent to each other, all incident lights may reflect off the tissue surface. As LED placed at one end of a finger emits infrared light through the skin. Arterial blood partially absorbs this emitted light, which changes according to the pulse. The photodetector placed at the other end of the finger receives any no absorbed light and generates an associated continuous pulse signal. The PPG waveform is represented by two components of current viz. direct current and alternating current. DC detects signals from tissues where as AC detects signals from changes in blood volume. AS we choose PPG as it provide near perfect results than that

ECG sensor. Heartrate monitoring techniques that rely on PPG sensors have several advantages over traditional ECG-based systems. AS PPG sensors use simpler hardware implementation and have lower costs, and for operation, only a single sensor is required to be placed on the body While ECG-based system requires at least three bio electrodes placed on different body locations (such as the right arm, left arm and right leg) to be able to operate effectively. PPG signals are collected with higher quality. The use of PPG based wearable devices do not require special training or guidance.

2.4.1 Benefits of PPG sensor

It is simple, reliable and inexpensive. It can easily be integrated in wearable healthcare devices for various health related measurements such as pulse rate (or heart rate), blood flow, Heart Rate Variability (HRV) etc. In which the use of PPG based wearable devices do not require special training or guidance.

2.4.2 Drawbacks of PPG sensor

The PPG Sensor can not measure blood pressure, It relies on ECG signal as reference for HR measurement. That requires long settling time than ECG sensor. Also it consume more power (~30mW) than ECG sensor (~2.5 mW) during operation. And It requires external crystal oscillator for accurate timing control.
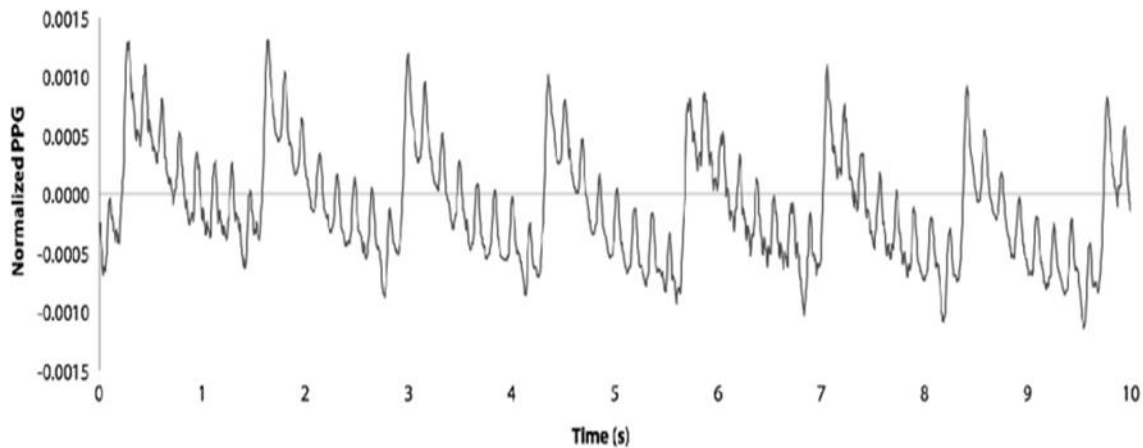
Figure 2.0-2 : Normalized PPG

2.5 Heartrate Pulse Sensor

Heart rate sensor measures pulse waves, which are changes in the volume of a blood vessel that occur when the heart pumps blood. Pulse waves are detected by measuring the change in volume using an optical sensor and green LED. It is the speed of the heartbeat that is measured by the number of contractions (beats) of the heart per minute, heartrate sensor emits light signals that reflect onto the skin to accurately and continuously measure weak blood flow signals AS It is inexpensive optical measurement method and a simple optical technique used to often used for heart rate monitoring purposes. It uses a light source and a photodetector at the surface of skin to measure the volumetric variations of blood circulation. It is identical to ppg sensor but this sensor is more alternative to the second. Heartrate sensor makes uses of low-intensity infrared (IR) light. When light travels through biological tissues, it is absorbed by bones, skin pigments and both venous and arterial blood. Since light is more strongly absorbed by blood than the surrounding tissues, the changes in blood flow can be detected by heartrate sensor as changes in the intensity of light.

IR-LEDs are most commonly used for measuring the flow of blood that is more deeply concentrated in certain parts of body such as the muscles while green LED measures (oxygenated blood and blood without oxygen present).[47]

2.4.3 Why Heartrate is necessary

It is simple, reliable and inexpensive. It can easily be integrated in wearable healthcare devices for various health related measurements. It is used to measure to heartbeats.

2.5 Comparison between ECG, EEG &PPG

CHAPTER 3

3.1 Use Case
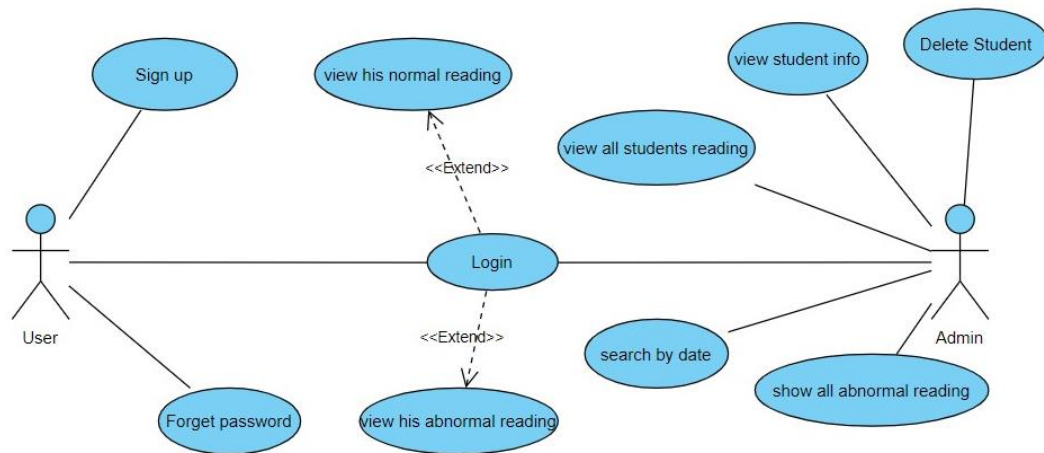
User(Actor): can sign-up his/her account.

User(Actor):if he /she has an account so they can Login.

User(Actor):if he/she forgot his/her password then they use Forget Password.

Admin(Actor):cam sign up his/her account.

Admin(Actor):can add / remove or edit students.

Admin(Actor):can view all students and can view students with their readings.

Admin(Actor):Send an email to parents if his/her child reading data is abnormal.

3.2 System Design

3.2.1 Add New Student Function
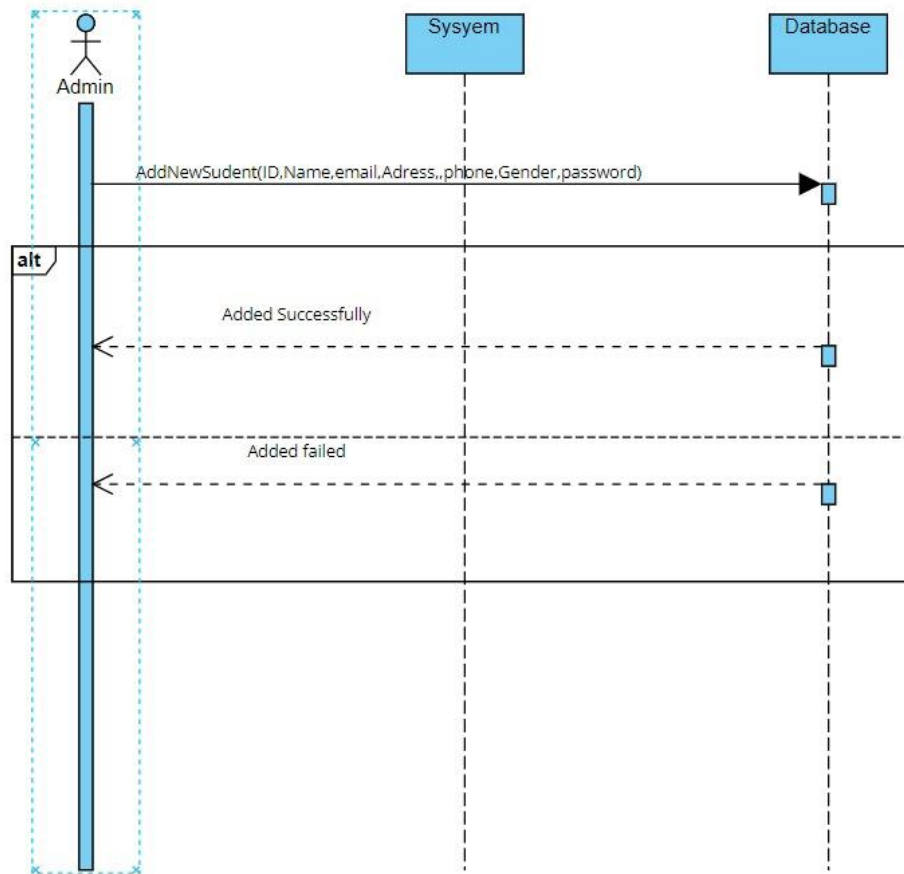
Admin can use (add new student)function then he/she will enter required field (ID, Name, Email, Address,Phone,Gender,Password) in interface system then this data will be stored in database

If data is stored in database so it will be added successfully , and if there is an errors so it will be failed .

3.2.2 New All Data Function
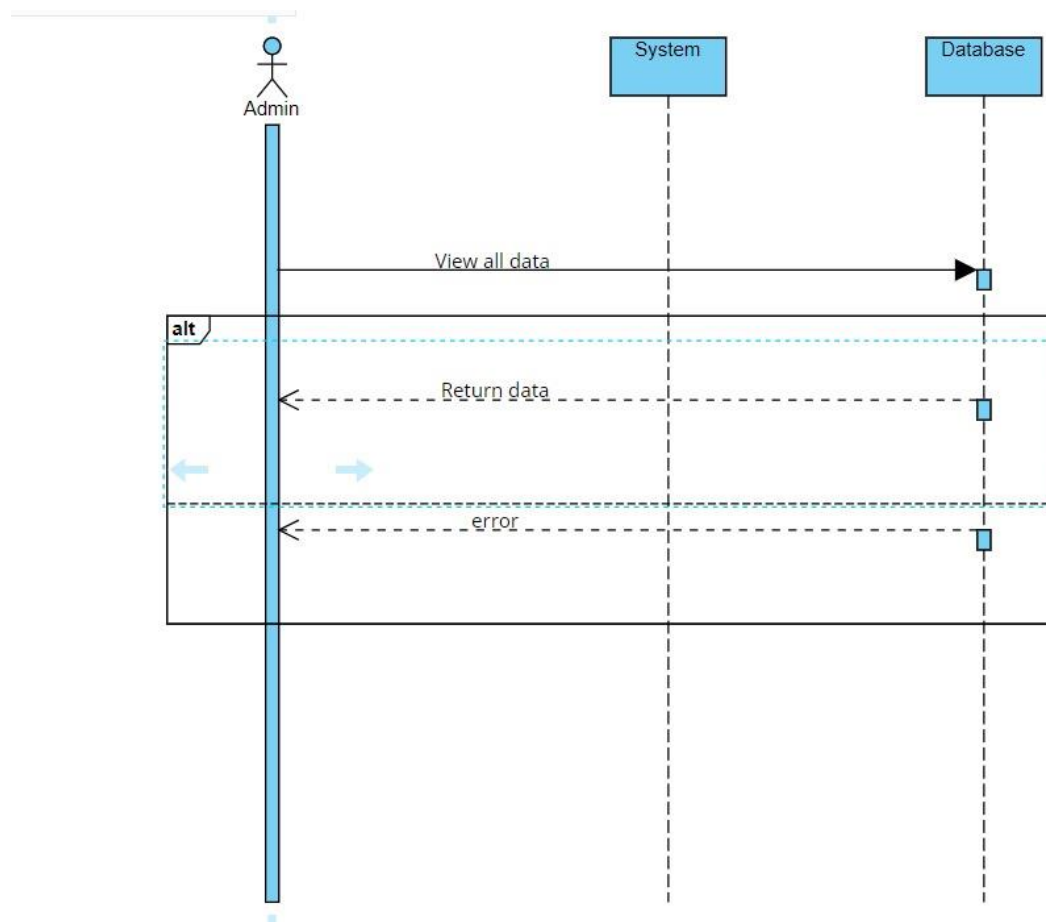
Admin want to see all data of students that is stored in database as there is page in interface named view all data of students if system get the data in database that contains all data of students then it return data , As it won't get data, if there is an error.

3.2.3 Check Student Function
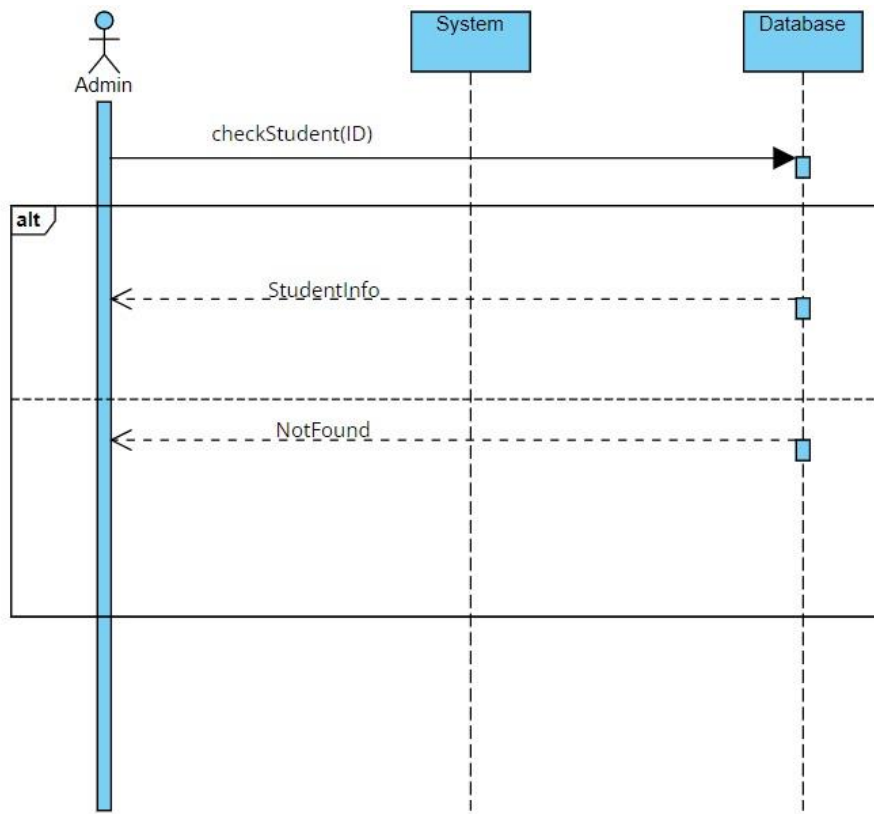
Admin use (Check Student ID) function as admin will search for data of students by ID

If ID of student is stored in database so system will return Student Info, As data isn't

Found so system will return data of this Student ID isn't found.

3.2.4 Login Function
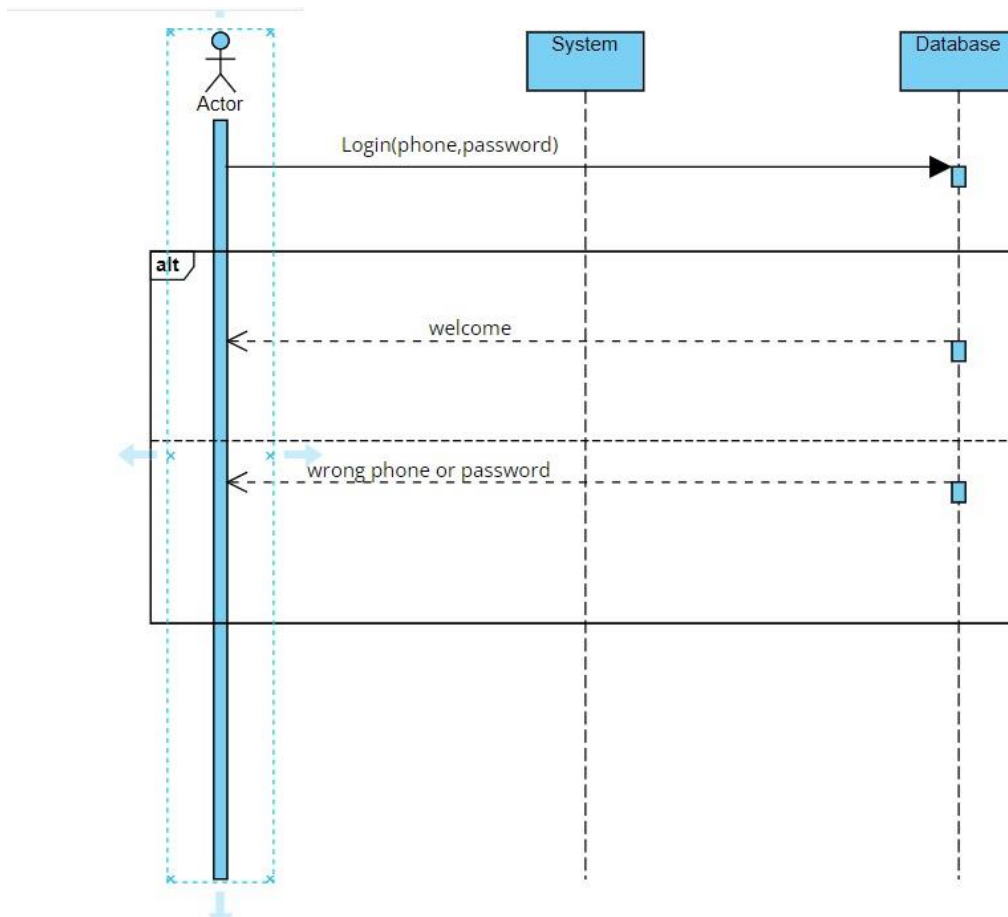
Actor(Admin or User) login with his/her phone and password

As if this data is stored in database so Actor can login successfully,

As if Actor enter phone or password wrong so Actor cannot login so a message " invalid Phone/Password Try Again

3.2.5 Filter Function

.
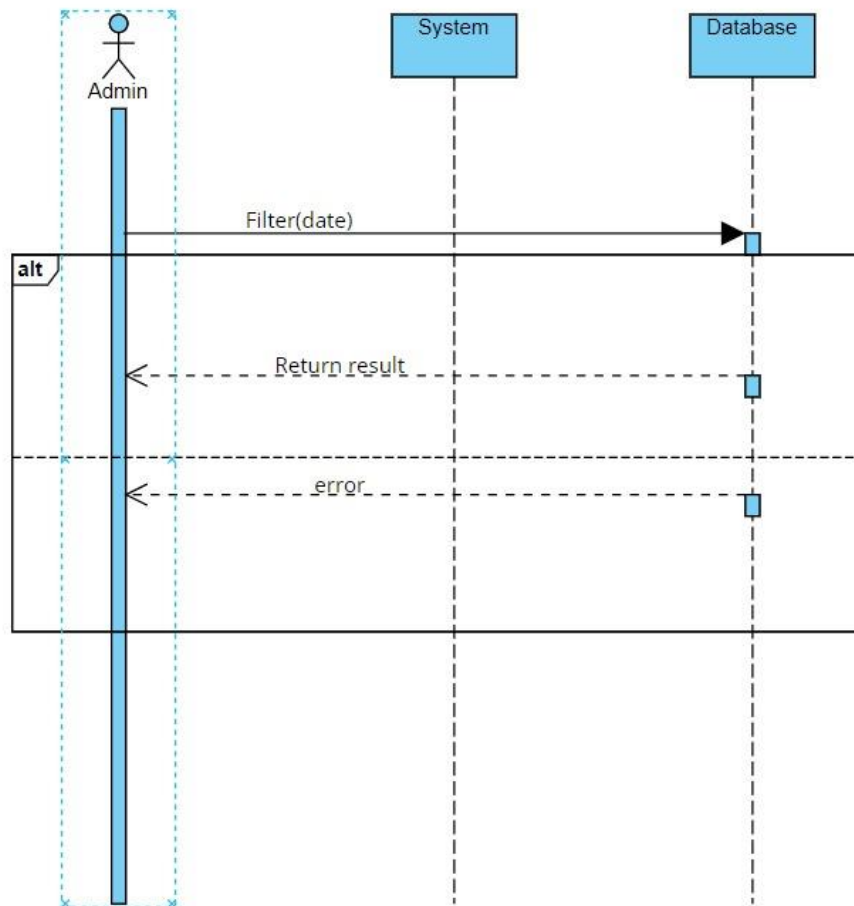
Admin can use Filter Function to filter data by date to show the students that is entered in that day with his/her reading data if system can return this data so system preform successfully

If system did not return data of user(student) .so there is an error.

3.2.6 View Student Reading Function
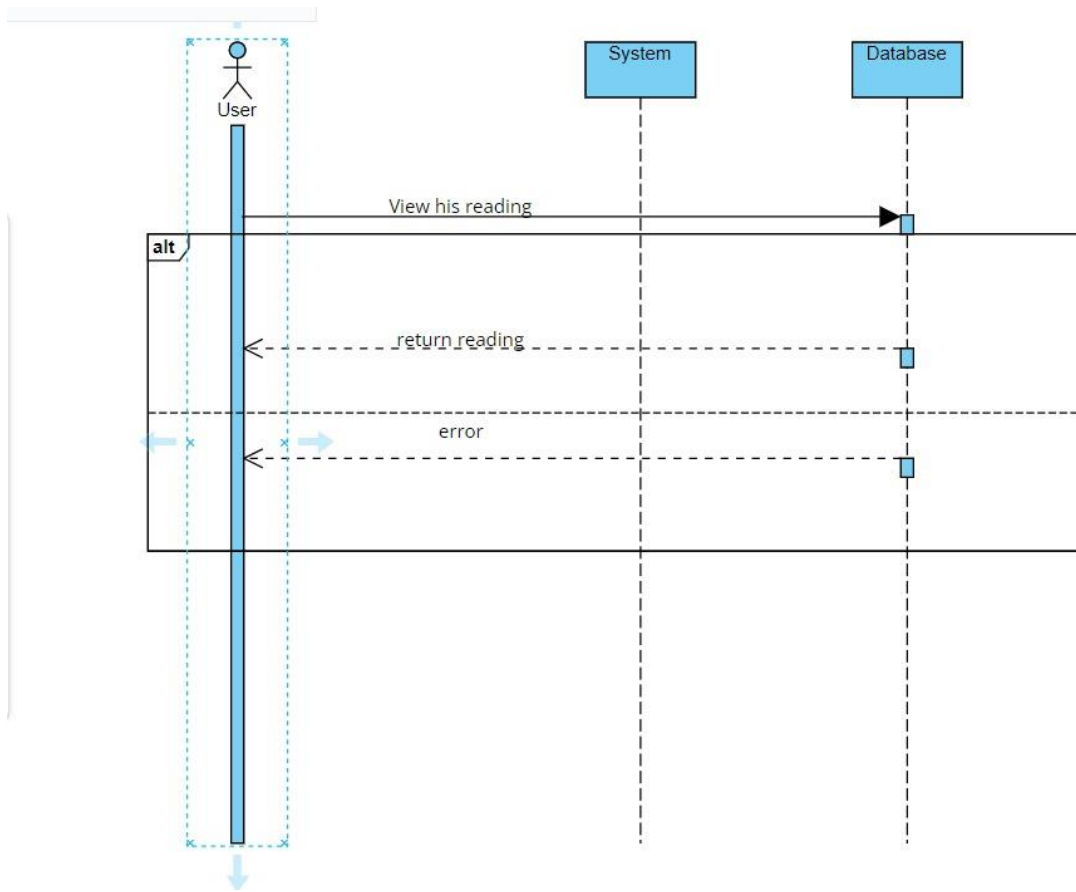
User can see his reading by View function ,If System can get data from database so it will return reading

If system cannot get data from database so it will return an error message.

3.2.7 Send Email To Student Parent Function
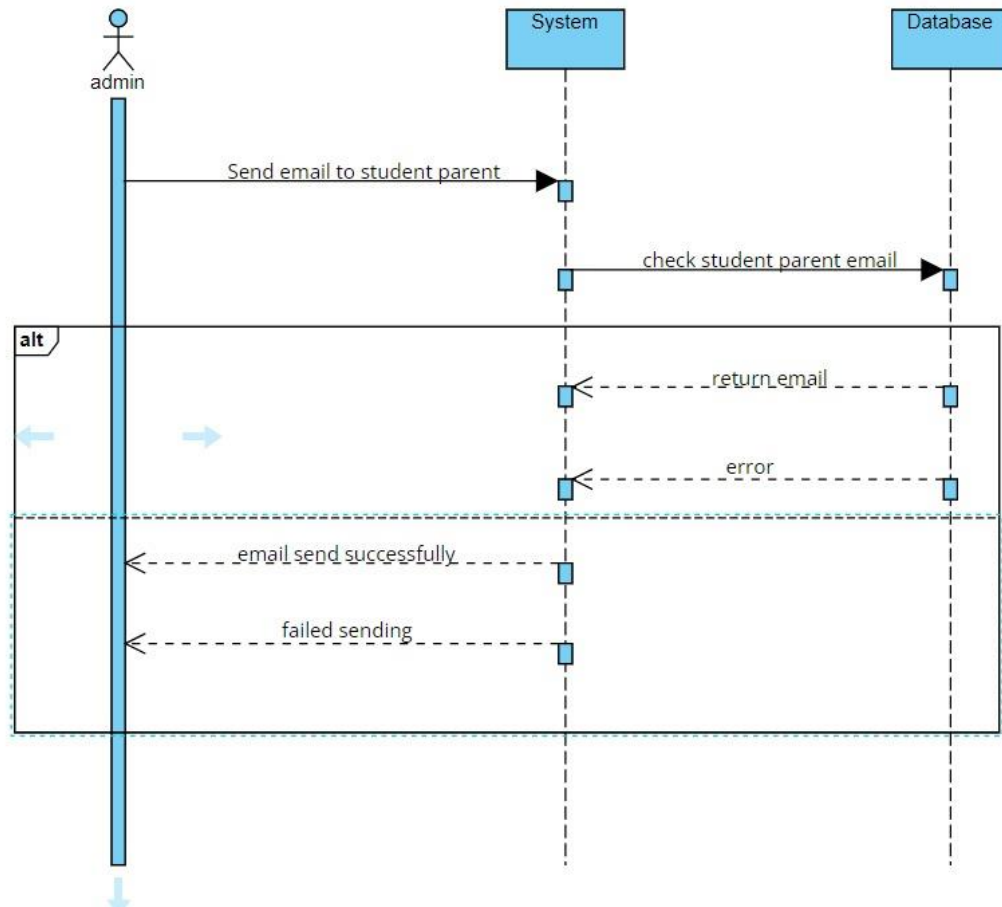
Admin enable to sent email to student parent through get email address that is stored in database

If you can get email address from database so it will return email address and can sent the email.

If you can't get email from database, it will appear error Message.

3.2.8 Update or Delete Student Information Function
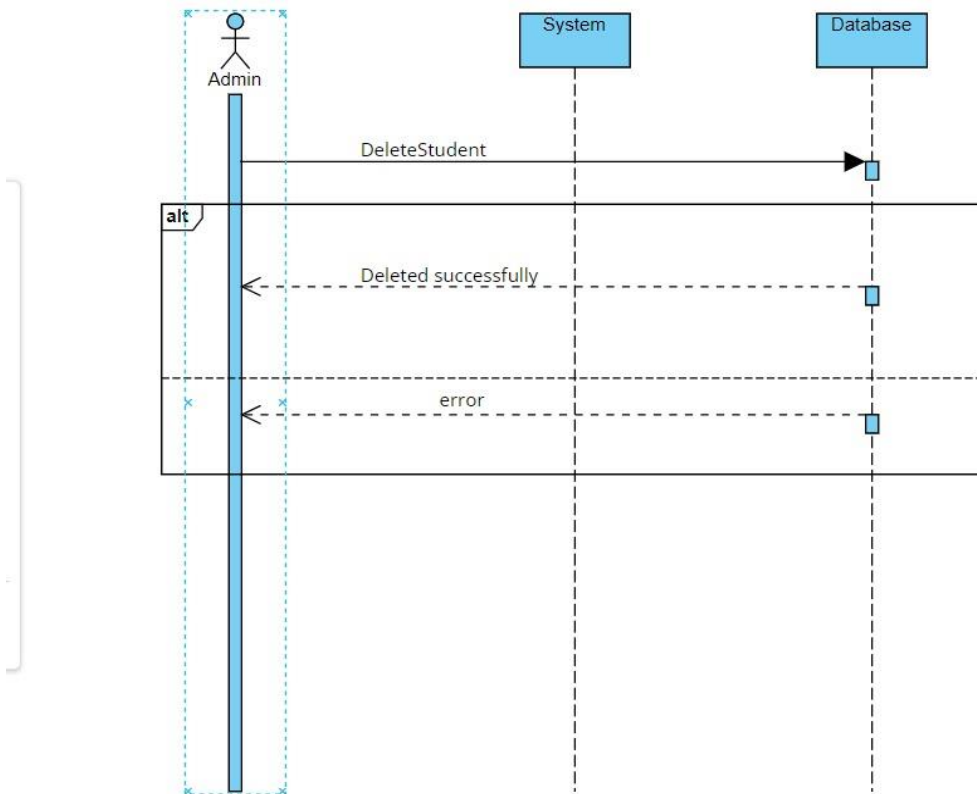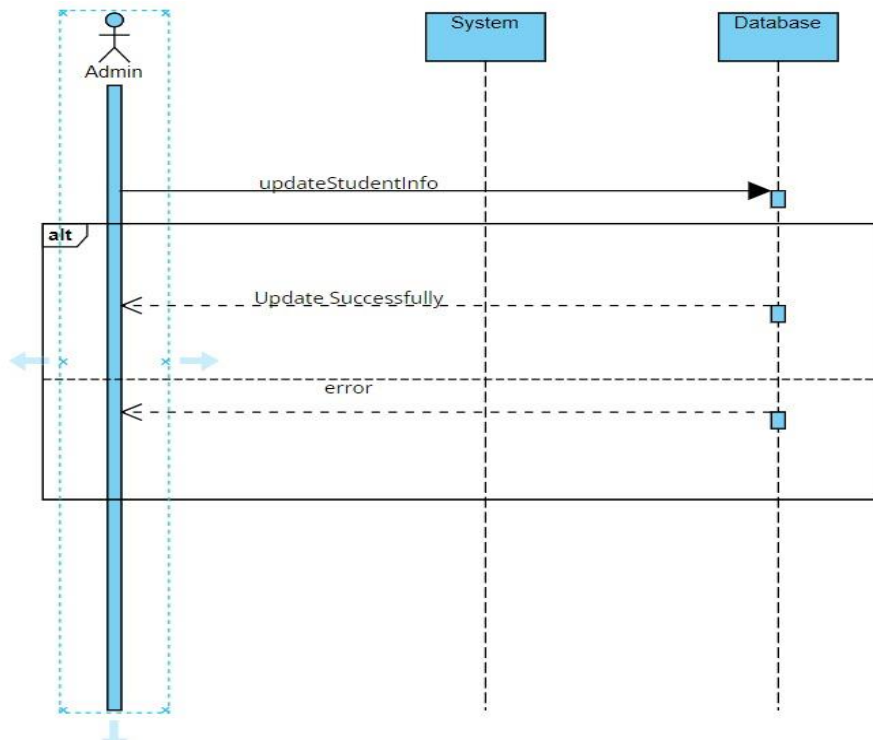
Admin can Update or Delete at Student information, through get student information from database to Update or Delete it.

If you can't get information from database, the error Message will appear.

CHAPTER 4

4.1 Introduction

Currently, the COVID-19 pandemic is one of the major global issues faced by health organizations. As of November 19, 2020, the total number of people worldwide confirmed to have been infected with SARS-COV-2 is more than 56.4 million, while the total number of fatalities from the coronavirus is more than 1.35 million, thereby proving that COVID-19 cases are surging worldwide [44]. COVID-19 patients have several symptoms, such as fever, shortness of breath, decrease in oxygen saturation level, dry cough, diarrhea, vomiting, sore throat, headache, loss of taste and smell, body pain, and abnormal pulse rate [45]. it is important for COVID-19 patients to be regularly informed about their health conditions, especially body temperature, heart rate, and oxygen saturation (SpO2) [46].

4.2 Material and Methods
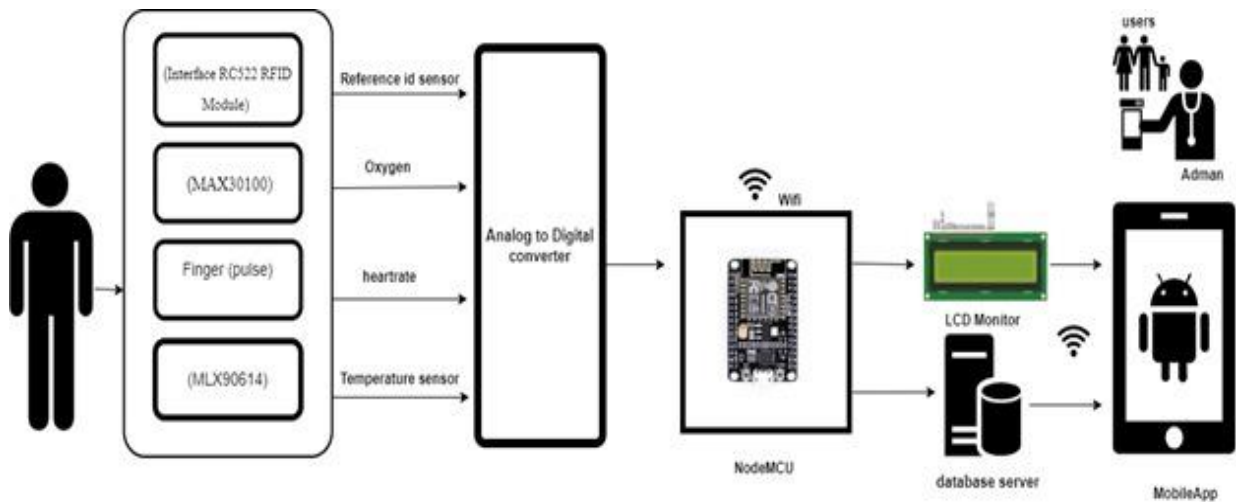
4.3 Hardware Materials Used

The system consists of two parts: the equipment and the mobile application. Both parts are fundamental to the system. The health monitoring system can measure oxygen saturation, pulse rate, and human body temperature. This multifunction system requires several components to be implemented. Implementation is achieved by performing activities portrayed in a work arrangement. For making the system successful, design implementation plays an important role. The components required to execute this system are briefly described below.
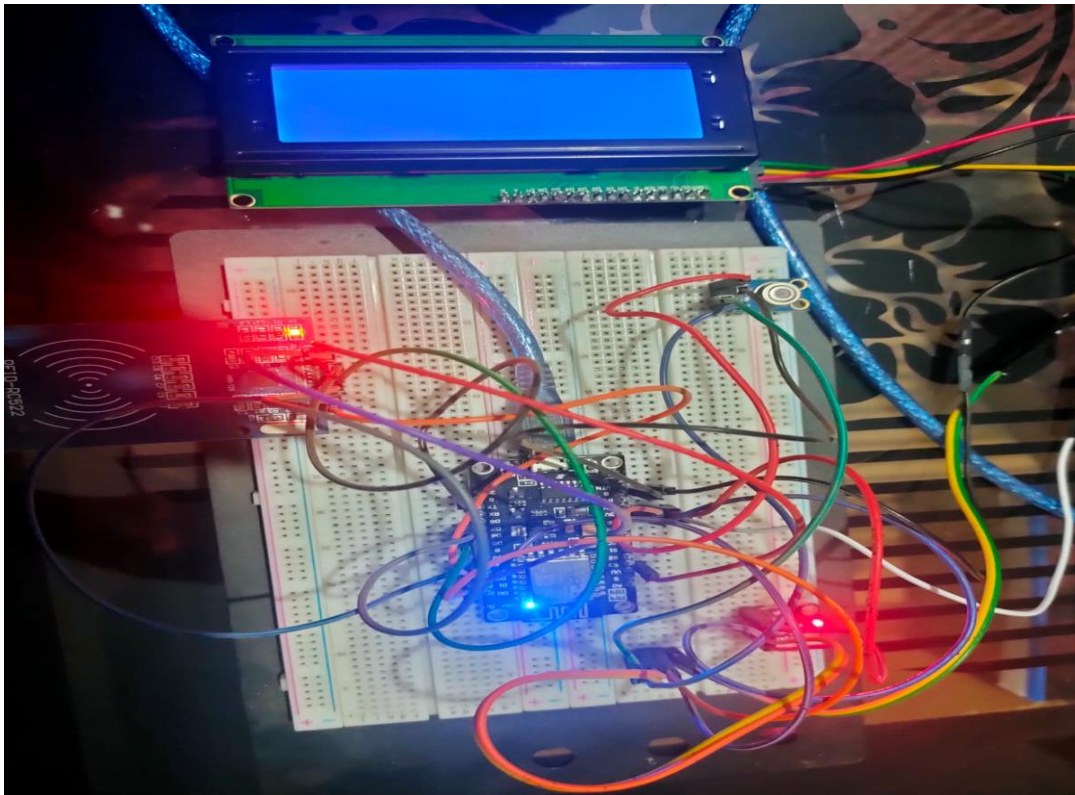
Figure 4.1: hardware connection

4.3.1 Heart rate

remote Heart rate monitoring is necessary to gain the needful information Which allows the discovery of extremities and to assess the threat of Heart failure. Some contrivers have shown heart rate examiner designs and tools internet of effects technology (IOT) by using Arduino Uno with a Wi-Fi chip esp8266. The inflow medium of this process for covering the patient heart was

enforcement of heart beat monitoring system using (IOT) internet of effects which depends on the NodeMcu board and Easy palpitation detector interpretation1.1 has been done. The heart beat signals were collected from cutlet using Easy palpitation detector V1.1 module which was amplified in order to transfigure them to an Observable scale. The NodeMcu board which is grounded on the Esp8266 Wi-Fi module will also connect the network to router that will feeds the law and will transmit the data of the detector online that can be reached from anywhere over internet. The OLED displayer that

Heartbeat Sensors are available in Wrist Watches Smart Phones, chest straps, etc. The heartbeat is measured in beats per minute or bpm, which indicates the number of times the heart is contracting or expanding in a minute. [40]
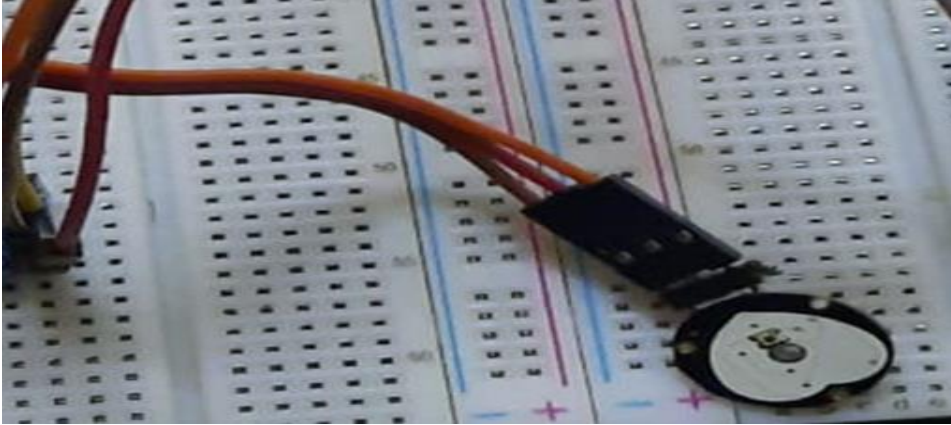
Figure 4.2: heart rate

4.3.2 NodeMcu board

NodeMCU is an open source development board and firmware based in the widely used ESP8266 -12E WiFi module. It allows you to program the ESP8266 WiFi module with the simple and powerful LUA programming language or Arduino IDE.

With just a few lines of code you can establish a WiFi connection and define input/output pins according to your needs exactly like arduino, turning your ESP8266 into a web server and a lot more. It is the WiFi equivalent of ethernet module. Now you have internet of things (iot) real tool.

With its USB-TTL , the nodeMCU Dev board supports directly flashing from USB port. It combines features of WIFI accesspoint and station + microcontroller. These features   make the NodeMCU extremly powerful tool for Wifi networking. It can be used as access point and/or station, host a webserver or connect to internet to fetch or upload data. [43]
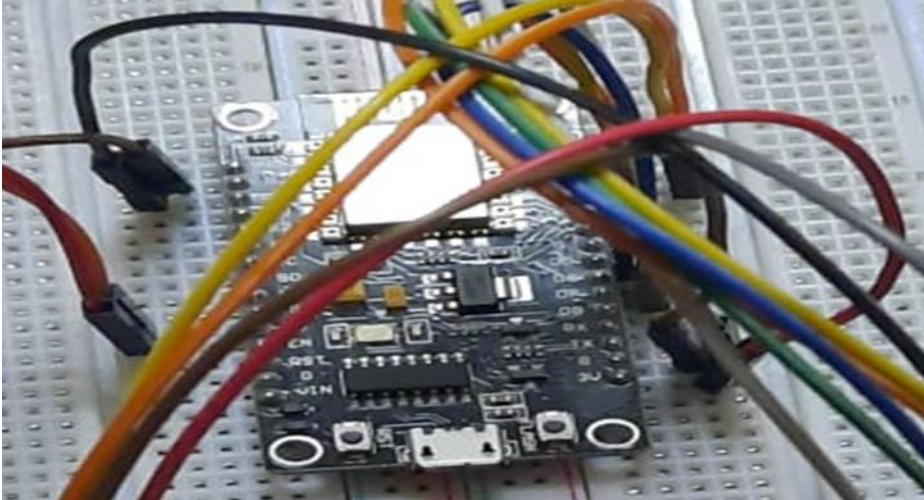
Figure 4.3 : NodeMCU Board

4.3.3 MLX90614

The MLX90614 infrared temperature sensor is contactless infrared sensor. You only need a line of sight with the object you are targeting. It is an infrared thermometer designed for non-contact temperature sensing. Due to its built in low noise amplifier, 17-bit ADC and powerful DSP unit, a high accuracy and resolution of the thermometer is achieved. This well-known sensor with its 0.5℃ accuracy level has many applications in healthcare and industrial control.

MLX90614 Temperature Sensor Specifications

- Operating Voltage: 3.6V to 5V (available in 3V and 5V version)
- Supply Current: 1.5mA
- Object Temperature Range: -70° C to 382.2°C
- Ambient Temperature Range: -40° C to 125°C
- Accuracy: 0.02°C

- Field of View: 80°

- Distance between object and sensor: 2cm-5cm (approx.)

Where to use the MLX90614 Temperature sensor

The key feature of MLX90614 is that it is a contactless IR temperature sensor with high accuracy. So it can be used in industries to measure the temperature of moving objects like a rotating motor shaft. Due to its high accuracy and precision, it is also used in a wide range of commercial, health care, and household applications like room temperature monitoring, body temperature measurement, etc [41]
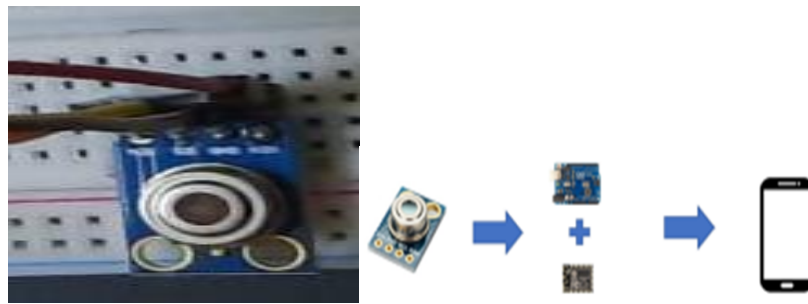
Figure 4.4 : Temperature sensor

4.3.4 Interface RFID RC522

RFID or Radio Frequency Identification system consists of two main components, a transponder/tag attached to an object to be identified, and a Transceiver also known as interrogator/Reader. A Reader consists of a Radio Frequency module and an antenna which generates high frequency electromagnetic field. On the other hand, the tag is usually a passive device,

meaning it doesn't contain a battery. Instead it contains a microchip that stores and processes information, and an antenna to receive and transmit a signal. To read the information encoded on a tag, it is placed in close proximity to the Reader (does not need to be within direct line-of-sight of the reader). A Reader generates an electromagnetic field which causes electrons to move through the tag's antenna and subsequently power the chip.

The powered chip inside the tag then responds by sending its stored information back to the reader in the form of another radio signal. This is called backscatter. The backscatter, or change in the electromagnetic/RF wave, is detected and interpreted by the reader which then sends the data out to a computer or microcontroller.

The RC522 RFID module based on MFRC522 IC from NXP is one of the most inexpensive RFID options that you can get online for less than four dollars. It usually comes with a RFID card tag and key fob tag having 1KB memory. And best of all, it can write a tag, so you can store your some sort of secret message in it.

The RC522 RFID Reader module is designed to create a 13.56MHz electromagnetic field that it uses to communicate with the RFID tags (ISO 14443A standard tags). The reader can communicate with a microcontroller over a 4-pin Serial Peripheral Interface (SPI) with a maximum data rate of 10Mbps. It also supports communication over I2C and UART protocols.

The module comes with an interrupt pin. It is handy because instead of constantly asking the RFID module "is there a card in view yet? ", the module will alert us when a tag comes into its vicinity.[42]

Figure 4.5 : Interface RC522 RFID Module with Arduino
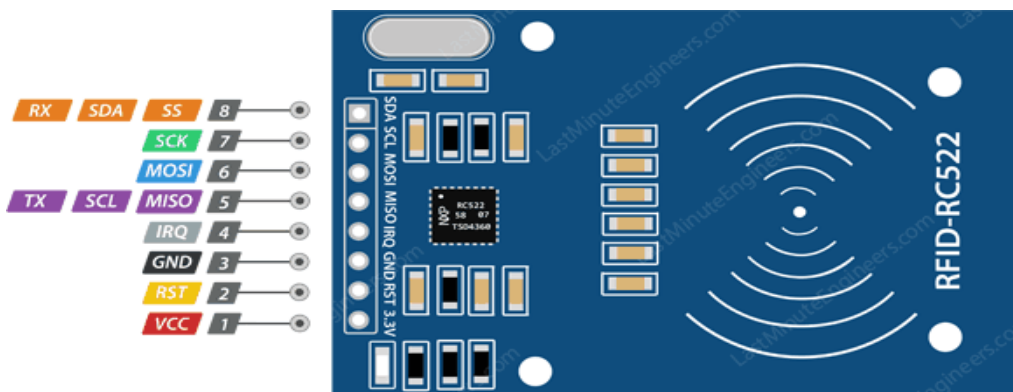
- **VCC** supplies power for the module. This can be anywhere from 2.5 to 3.3 volts. You can connect it to 3.3V output from your Arduino. Remember connecting it to 5V pin will likely destroy your module!

- **RST** is an input for Reset and power-down. When this pin goes low, hard power-down is enabled. This turns off all internal current sinks including the oscillator and the input pins are disconnected from the outside world. On the rising edge, the module is reset.

- **GND** is the Ground Pin and needs to be connected to GND pin on the Arduino.

- **IRQ** is an interrupt pin that can alert the microcontroller when RFID tag comes into its vicinity.

- **MISO / SCL / Tx** pin acts as Master-In-Slave-Out when SPI interface is enabled, acts as serial clock when I2C interface is enabled and acts as serial data output when UART interface is enabled.

- **MOSI** (Master Out Slave In) is SPI input to the RC522 module.

- **SCK** (Serial Clock) accepts clock pulses provided by the SPI bus Master i.e. Arduino.

- **SS / SDA / Rx** pin acts as Signal input when SPI interface is enabled, acts as serial data when I2C interface is enabled and acts as serial data input when UART interface is enabled. This pin is usually marked by encasing the pin in a square so it can be used as a reference for identifying the other pins.[42]
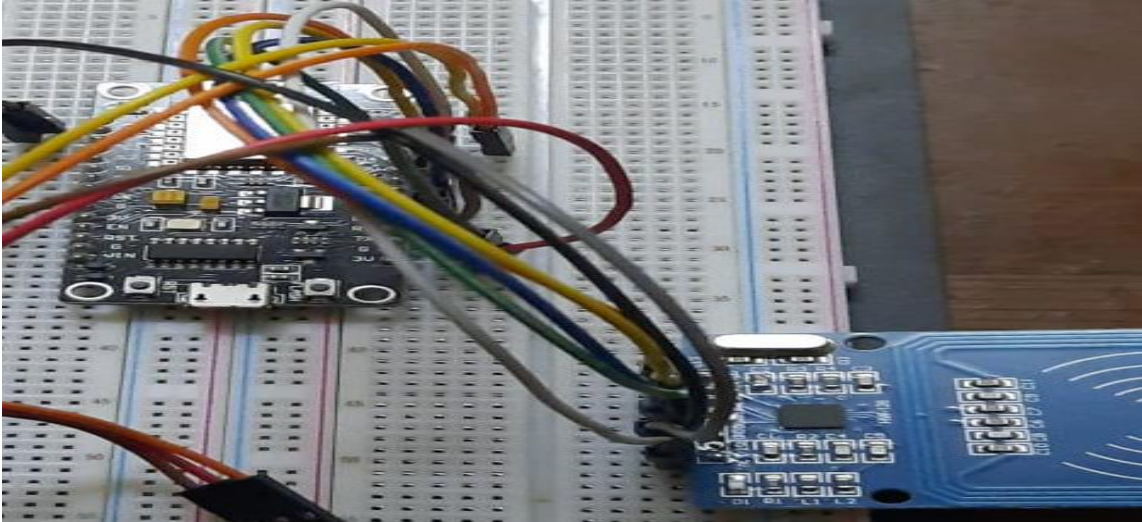
Figure 4.6 : writing RC522 Reader writer with Arduino

4.3.5 MAX30100

In this project we will be Interfacing MAX30100 Pulse Oximeter Sensor with Arduino. The MAX30100 Sensor is capable of measuring Blood Oxygen & Heart Rate. We can use any display like a LCD Display to view the value of SpO2 and BPM. The blood Oxygen Concentration termed SpO2 is measured in Percentage and Heart Beat/Pulse Rate is measured in BPM.

The MAX30100 is a Pulse Oximetry and heart rate monitor sensor solution. It combines two LEDs, a photodetector, optimized optics, and low-noise analog signal processing to detect pulse oximetry and heart-rate signals. You can use this sensor with any microcontroller like Arduino, ESP8266, or ESP32 and easily measure the patient's health parameters. [48]

- Blood Oxygen & Heart Rate Measurement on OLED Display
- IoT Pulse Oximeter using Blank & ESP8266
- Measure SpO2 & BPM on Blank using ESP32
- IoT Based Patient Health Monitoring System

Working of MAX30100 Pulse Oximeter and Heart-Rate Sensor

The device has two LEDs, one emitting red light, another emitting infrared light. For pulse rate, only infrared light is needed. Both red light and infrared light are used to measure oxygen levels in the blood.

When the heart pumps blood, there is an increase in oxygenated blood as a result of having more blood. As the heart relaxes, the volume of oxygenated blood also decreases. By knowing the time between the increase and decrease of oxygenated blood, the pulse rate is determined.

It turns out, oxygenated blood absorbs more infrared light and passes more red light while deoxygenated blood absorbs red light and passes more infrared light. This is the main function of the MAX30100: it reads the absorption levels for both light sources and stores them in a buffer that can be read via I2C communication protocol.

Oxygen enters the lungs and then is passed on into blood. The blood carries oxygen to the various organs in our body. The main way oxygen is carried in our blood is by means of hemoglobin. During a pulse oximetry reading, a small clamp-like device is placed on a finger, earlobe, or toe.[48]
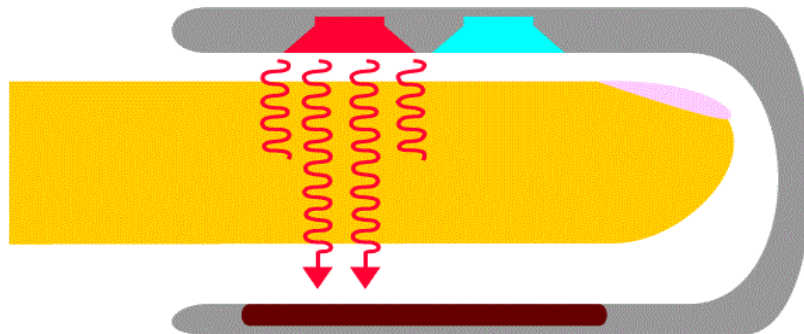
Small beams of light pass through the blood in the finger, measuring the
amount of oxygen. It does this by measuring changes in light
absorption in oxygenated or deoxygenated blood**.**

low concentration   high concentration

low absorption   high absorption
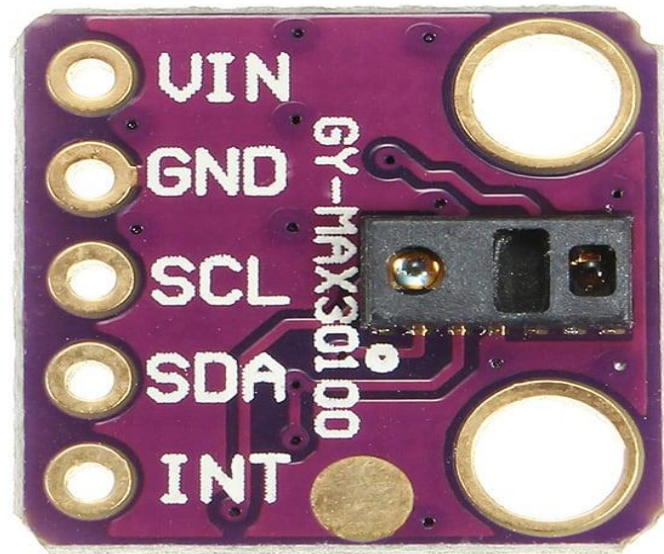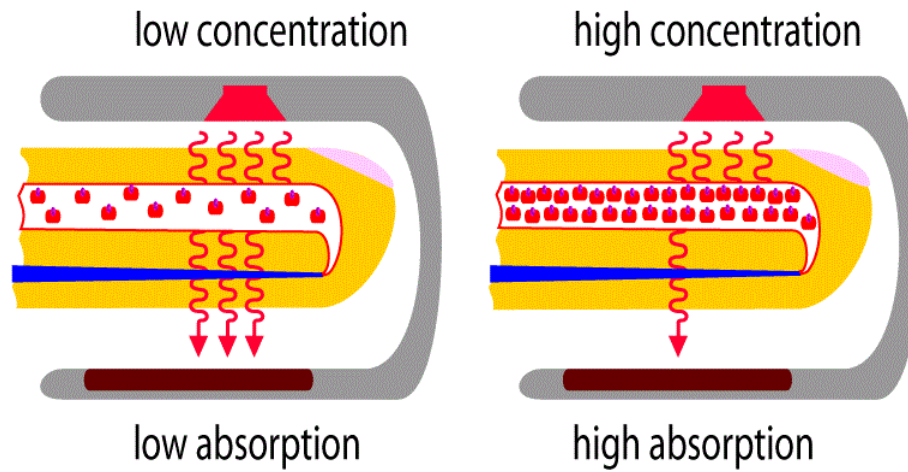
Figure 4.7 : MAX30100

Code

```
#include <SPI.h>

#include <MFRC522.h>

#include <Wire.h>

#include <ESP8266WiFi.h>

#include <ESP8266HTTPClient.h>

#include "MAX30100_PulseOximeter.h"

#include <Adafruit_MLX90614.h>

#include <SimpleTimer.h>

#include <LiquidCrystal_I2C.h>



#define SS_PIN  D4

#define RST_PIN D3

#define I2C_SDA 21

#define I2C_SCL 22

#define REPORTING_PERIOD_MS 10000
```

```cpp
LiquidCrystal_I2C lcd(0x27,20,4);

uint8_t bm280_address = 0x76;

uint8_t max30100_address = 0x57;

uint8_t irmlx90614_address = 0x5A;

uint32_t tsLastReport = 0;

Adafruit_MLX90614 mlx = Adafruit_MLX90614();

PulseOximeter pox;


//************************

MFRC522 mfrc522(SS_PIN, RST_PIN); // Create MFRC522 instance.

//************************

String OldCardID = "";

const char *ssid = "OPPO F9";

const char *password = "hadeer222";


//************************
```

```
String URL = "http://iothealth-001-site1.ftempurl.com/api.php"; //computer
IP or the server domain

String getData, Link;


double TempReading;

double oxgnReading;

double hartReading;

//***********************

unsigned long previousMillis = 0;

void setup() {


  Serial.begin(115200);

  SPI.begin();  // Init SPI bus

  mfrc522.PCD_Init(); // Init MFRC522 card

Wire.begin();

mlx.begin();

pox.begin();
```

```
    lcd.begin();

    lcd.clear();

    lcd.backlight();


    connectToWiFi();

//delay(2000);

Serial.println();

}

void loop() {




//delay(3000);

//

//--------------------------------------------

//check if there's a connection to Wi-Fi or not

  if(!WiFi.isConnected()){

    connectToWiFi();    //Retry to connect to Wi-Fi
```

```
  }

  //look for new card

  if ( ! mfrc522.PICC_IsNewCardPresent()) {

    return;//got to start of loop if there is no card present

  }

  // Select one of the cards

  if ( ! mfrc522.PICC_ReadCardSerial()) {

    return;//if read card serial(0) returns 1, the uid struct contians the ID of the
read card.

  }

  String CardID ="";

  for (byte i = 0; i < mfrc522.uid.size; i++) {

    CardID += mfrc522.uid.uidByte[i];

  }

  //-------------------------------------------

  if( CardID == OldCardID ){

    return;
```

```
  }

 else{

  OldCardID = CardID;

 }

 //-----------------------------------------

 Serial.println(CardID);

 printFreq();

 printTemp();




 SendCardID(CardID);



}

void printTemp(){



Serial.print("Ambient =" ); Serial.print(mlx.readAmbientTempC());
```

```
Serial.print("*C\tObject = "); Serial.print(mlx.readObjectTempC());

Serial.println("*C");

TempReading= mlx.readObjectTempC();

 lcd.setCursor(0,0);

lcd.print("T: ");

lcd.print(TempReading);

lcd.print(" C   ");



 delay(5000);



}



void printFreq(){

pox.update();



if (millis() - tsLastReport > REPORTING_PERIOD_MS) {
```

```
    Serial.print("Heart rate:");

    Serial.print(pox.getHeartRate());

    Serial.print("bpm / SpO2:");

    Serial.print(pox.getSpO2());

    Serial.println("%");

     hartReading=pox.getHeartRate();

  oxgnReading=pox.getSpO2();

  lcd.setCursor(0,1);

   lcd.print("B/S:");

   lcd.print(pox.getHeartRate());

   lcd.print("/");

   lcd.print(pox.getSpO2());

   lcd.print("     ");



   tsLastReport = millis();

 }

 }
```

```cpp
//*****send the Card UID to the website****

void SendCardID( String Card_uid ){

 Serial.println("Sending the Card ID");

 if(WiFi.isConnected()){

  HTTPClient http;    //Declare object of class HTTPClient

  WiFiClient client;

  //GET Data

  getData = "?studentID=" + String(Card_uid) + "&temp=" +
TempReading + "&oxygen=" + oxgnReading + "&hardRate=" +
hartReading; // Add the Card ID to the GET array in order to send it

  //GET methode



  Link = URL + getData;

  http.begin(client,Link); //initiate HTTP request   //Specify content-type
header



  int httpCode = http.GET();   //Send the request

  String payload = http.getString();    //Get the response payload
```

```
//   Serial.println(Link);   //Print HTTP return code

  Serial.println(httpCode);   //Print HTTP return code

  Serial.println(Card_uid);     //Print Card ID

  Serial.println(payload);    //Print request response payload



  if (httpCode == 200) {



    delay(100);

    http.end();  //Close connection

  }

 }

}

void connectToWiFi(){

  WiFi.mode(WIFI_OFF);      //Prevents reconnection issue (taking too
long to connect)

  delay(1000);
```

```
    WiFi.mode(WIFI_STA);

    Serial.print("Connecting to ");

    Serial.println(ssid);

    WiFi.begin(ssid, password);


    while (WiFi.status() != WL_CONNECTED) {

      delay(500);

      Serial.print(".");

    }

    Serial.println("");

    Serial.println("Connected");


    Serial.print("IP address: ");

    Serial.println(WiFi.localIP());  //IP address assigned to your ESP

    yield();

    delay(1000);

}
```

CHAPTER 5

5.1 Software

As shown Figure: The Mobile Application had six interfaces. The figures below show the interfaces of mobile applications known as the IOTHealth shows the Home of the Mobile Application for Parent's student.

Figure 5.8 : Iot medical care

As shown Figure: When you press the Sign in button, the Sign in interface for the Mobile Application will be displayed. Old Parent's student can Sign in using their Phone & Password. And the new Parent's student needs to Sign up to Sign in the Application.
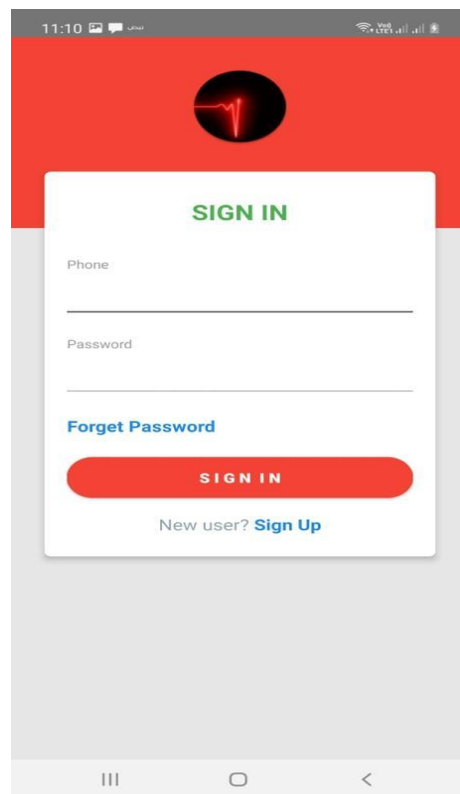
Figure 5.9 : sign in

As shown Figure: Displays the Sign up interface of the mobile application. New Parent's student can Sign up to log in as it divided into to things:

First: Account Information by providing their Reference ID, Email address, Phone & Password.

Second: Profile Information by providing their Full Name, Choose Gender (Male or Female), Birth Date. After completing the Sign up, Parent's student   data will be stored, and after the successful Registration, The Parent's student   can see the Sign in. So Parent's student   can now Sign in to the mobile application.
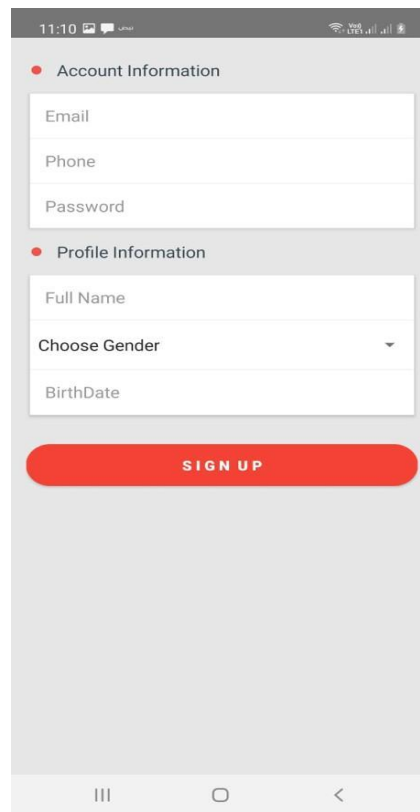
Figure 5.10: sign up

As shown Figure: When you click   Forget Password, it will take you to another page to reset or change a new password. Parent's student can reset the password by entering Email Address, the new password & reconfirm password by pressing submit button.
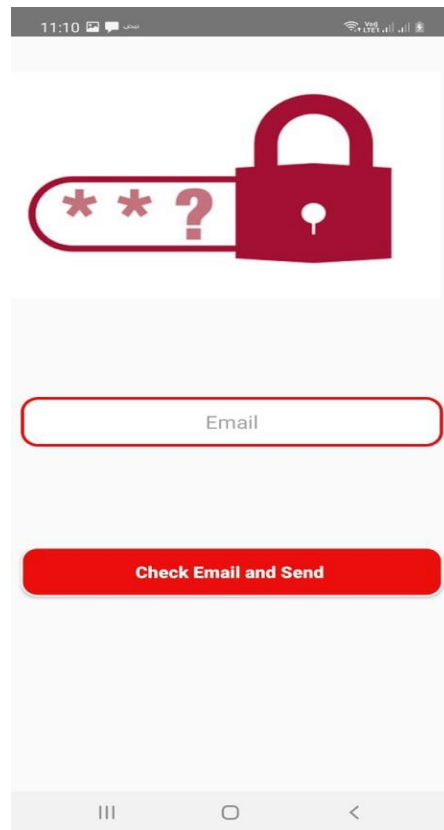
Figure 5.11: Forget Password

As shown Figure: After Parent's student   Sign in to the Mobile Application,
A welcome Student Page will appear.
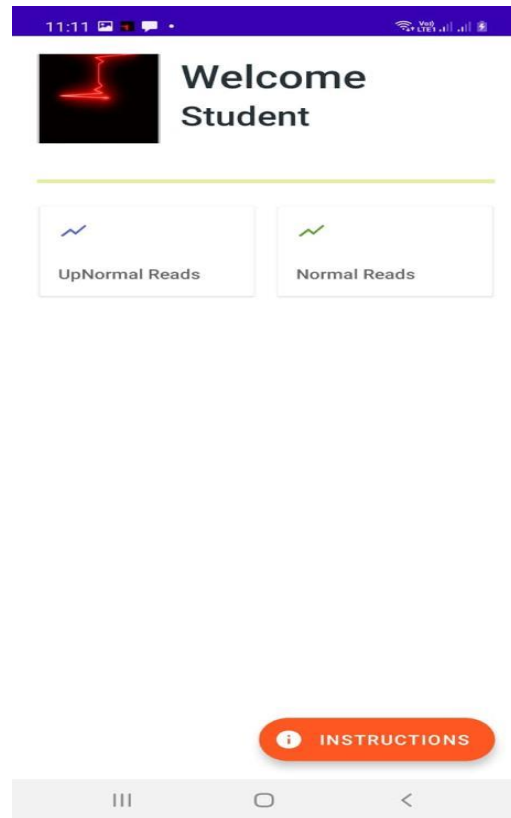
Figure 5.12: Welcome student

As shown Figure : After Parent's student Sign in to the Mobile Application , If his son /daughter is abnormal .His/ Her Read Data will be in abnormal page. A there is a notification will appear to Parent's student that his son Or her daughter isn't well and you should go to the doctor.
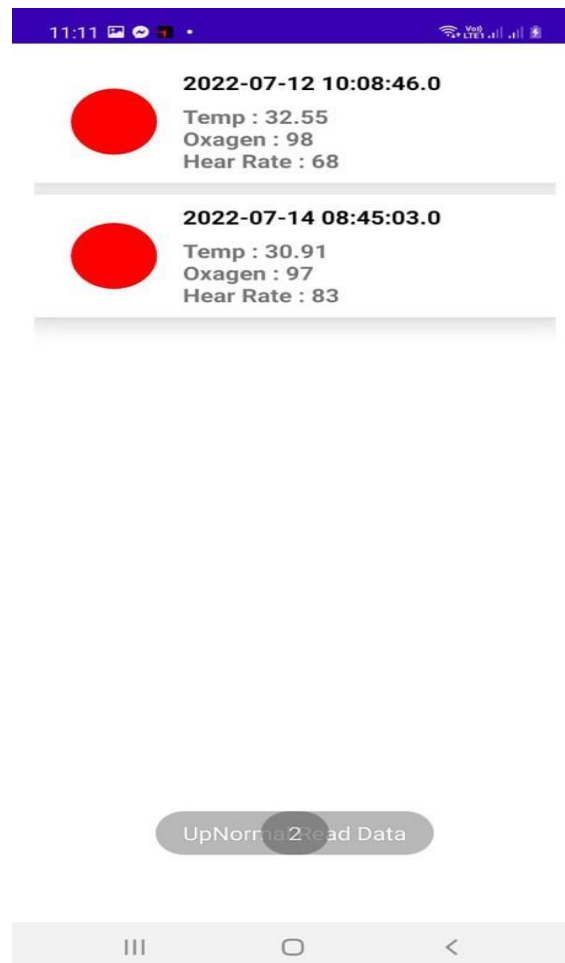
Figure 5.13: Abnormal Reads

As shown Figure : After Parent's student Sign in to the Mobile Application , That

If his son /daughter is normal . .His/ Her Read Data will be in normal page.

Figure 5.14 : normal Reads

As shown Figure: When you click   on instruction page ,it will appear
information about Covid -19.

Figure 5.15 : instructions page

As shown Figure: The Web Application had five interfaces. The figures below show the interfaces of Web application known as the iothealth shows the Homepage of the Web Application For admin.
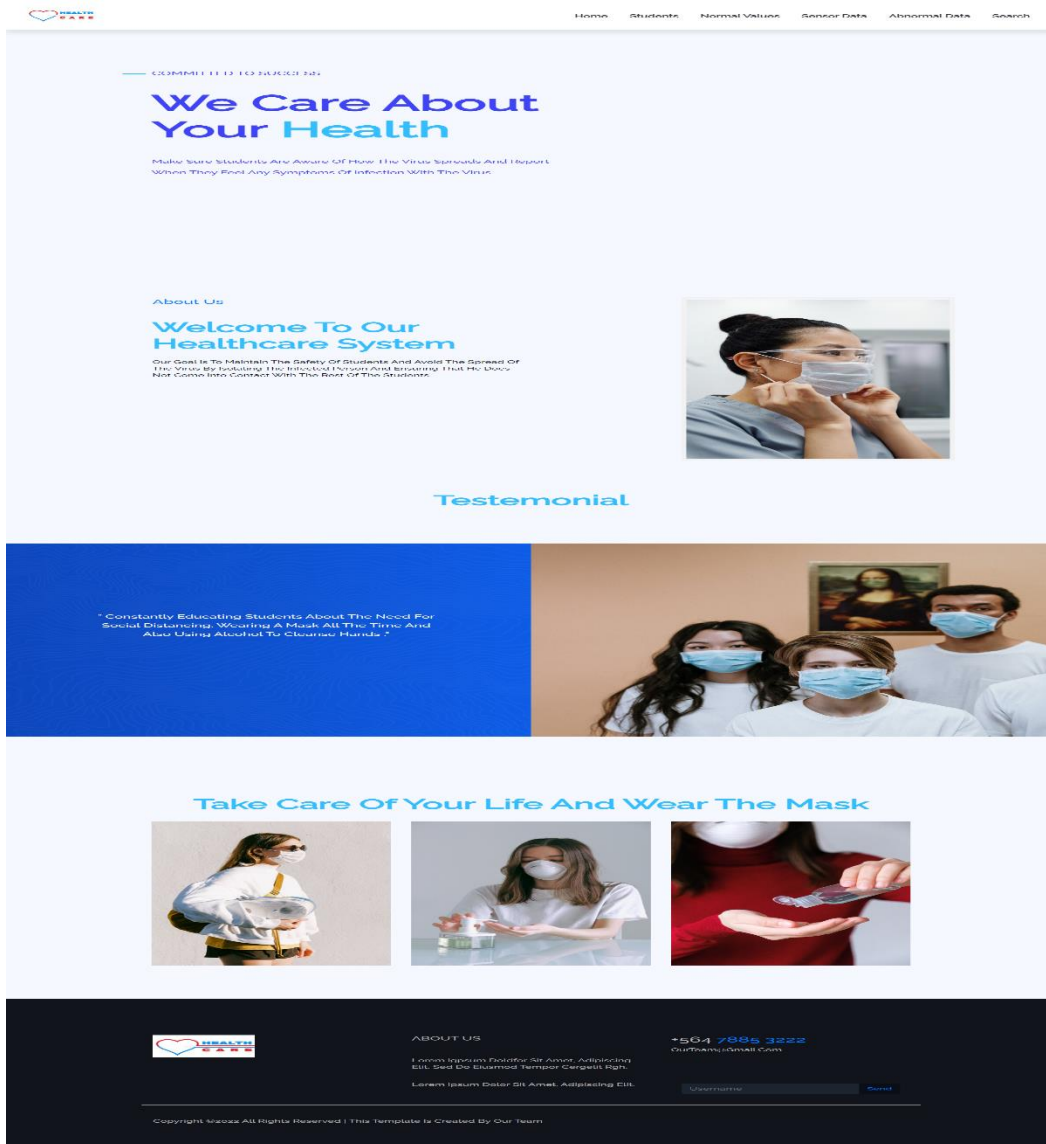
Figure 5.16 : Web Application home

As shown Figure : When you press the students button, the admin will see the information of the students.

Figure 5.17 : Web Application student

As shown Figure : When you press the Normal Values button, the admin will see in this page the normal values of sensors which are (Oxygen , Temperature , Heart Rate) .As normal value of Oxygen (From : 95 , To: 100) Temperature(From :36.78, To : 38) & Heart Rate (From : 60 ,To : 100).

Figure 5.18: Web Application Normal value

As shown Figure : When you press the Sensor Data button, the admin will see Data of All students (Student ID, Student Name) with there Read Data(Oxygen , Temperature , Heart Rate).

Temp	Oxygen	Student ID	Student Name	Heart Rate
32.55	98	1982354343	Sohila	68
36.81	96	2081942150	Salma	73
37.99	99	123922923	Hadeer	86

Figure 5.19 : Web Application sensor page data

As shown Figure : When you press the Abnormal Data button, the admin will in this page the students that there Read Data are Abnormal.

Figure 5.20: Web Application Abnormal sensor page data

As shown Figure : When you press the search t button, the admin will be able to search with type of sensors(Oxygen , Temperature , Heart Rate). From a certain Date

To a certain Date.

Figure 5.21 : Web Application search

CHAPTER 6

6.1 Code of Web Application

6.1.1 Index

```
1       <!DOCTYPE html>
2       <html lang="en">
3       <head>
4       <meta charset="UTF-8">
5       <meta name="viewport" content="width=device-width, initial-
        scale=1.0">
6       <link rel="shortcut icon" type="image/x-icon"
        href="images/favicon.ico">

7

8       <!-- bootstrap -->
9       <link rel="stylesheet" href=
"https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.c
                ss" integrity= "sha384-
  JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z"
                        crossorigin

        ="anonymous">

10

11      <link rel="stylesheet" href="style.css">
12      <title>IOT health care </title>
13      <style>

14

15          .uptext{
16          color: #3f45f6 !important;
17          }

18

19          .animated-text{
20          color: #3f45f6 !important;
21          }
22      </style>
23      </head>
24      <body>

25

28      <!-- <a href="index.php">Home Page</a>::
29      <a href="student.php">Student Page</a>::
30      <a href="values.php">Normal Values Page</a>::
31      <a href="sensor.php">Sensor Data Page</a>::
32      <a href="alarm.php">Alarm Page</a>::
33      <a href="search.php">Search Page</a> -->

34

36      <section class="col-lg-12 ">
37      <div class="container-fluid">
```

```html
38          <div class="row">
39          <nav class=" col-lg-12  navbar navbar-expand-lg site-
            navbar-target" id= "ftco-navbar">

40       <a href="index.html"> <img class="  logo-img img-fluid img-
                                        responsive" src=

41
    "back.jpg" width="100px" height="50px" alt="logo-img"></a>

42   <button class="menubtn  navbar-toggler text-dark border-dark  "
     type="button" data-toggle="collapse" data-target="#ftco-nav"
     aria-controls="ftco-nav"

43   aria-expanded="false" aria-label="Toggle navigation">

44   <p class="oi oi-menu"> <p class="text-center text-dark mt-2 fas
     fa-bars" style="color:#0f61ef !important; " > = </p> </p>

45   </button>

46   <div class="collapse navbar-collapse " id="ftco-nav">

47   <ul class="navbar-nav nav  ml-auto" id="menu">

48   <li class="nav-item ml-3 mt-2 "><a href="index.php" class=" nav-
     link"

49   ><span class="text-dark"> Home</span></a></li>

50   <li class="nav-item ml-3 mt-2 "><a href="student.php" class="nav-
     link"

51   ><span class="text-dark">Students </span></a></li>

52   <li class="nav-item ml-3 mt-2 "><a href="values.php" class="nav-
     link"

53   ><span class="text-dark">Normal Values</span></a></li>

     <li class="nav-item ml-3 mt-2 "><a href="sensor.php" class="nav-
     link"
><span class="text-dark">Sensor Data</span></a></li>

<li class="nav-item ml-3 mt-2 "><a href="alarm.php" class="nav-link"

><span class="text-dark">abnormal data</span></a></li>

<li class="nav-item ml-3 mt-2 "><a href="search.php" class="nav-link"

><span class="text-dark">Search</span></a></li>

</ul>

</div>
54          </nav>
55          </div>
56          </div>
57          </section>

58
```

```html
59  <section class="header" id="header"
    style="background:url(../images/gallery/about2.png) center center
    fixed no-repeat    ">

60

61                 <div class="container">
62                 <div class="row">
63                 <!-- col-xl-7 col-lg-5 col-md-8 col-sm-7 -->
64                 <div class=" col-lg-7  col-sm-12" >

65

66                     <h5 class="uptext ">committed to success</h5>
67                     <h1 class=" mt-5 headertext">we care about
                        your <span>health

                        </span></h1>
68                     <p class="mt-5 animated-text "> Make sure
                        students are aware of how the virus spreads
                        and report when they feel any symptoms of
                        infection with the virus </p>

69

70                 </div>
71                 </div>
72                 </div>
73                 </section>

74

75  <br>
76  <br>
77  <br>

78

79                 <section class="About" id="About">
80                 <div class="container mt-5">
81                 <div class="row mt-5">
82                 <div class="col-lg-6 leftDiv mt-5 p-3">
83                 <h4 class="mt-5 text-primary ">about Us</h4>
84                 <h1 class="mr-1 mt-5 "> Welcome to our healthcare
                    system </h1> 85    <p class="mt-4"> Our goal is
                    to maintain the safety of students and

                    avoid the spread of the virus by isolating the
                    infected person and ensuring that he does not
                    come into contact with the rest of the
                    students.</p>
86                     </div>
87                     <div class="col-lg-6 p-3 rightDiv">
88                     <div >
89                     <img class="about-img" width="400px"
                        src="images/gallery/about1.jpg"

                         alt="">
90                     </div>
91                     </div>
```

```
92                    </div>
93                    </div>

94

95    </section>

110

111     <section class="gallary mt-5" id="gallary">
112     <br>
113     <br>
114     <br>
115     <div class=" title-text col-12 text-center mt-5">
116     <h1> testemonial </h1>
117     </div> 118
119             <br>
120             <br>
121             <br>
122             <div class="container-fluid mt-5 ">
123             <div class="row mt-5">
124             <div style="background-
                image:url(images/gallery/section_bg01.png) ;"
                class="teste col-lg-6 bacimg" >
125             <div class="p-5">
126             <h5 class="col-lg-10 text-center text-light  teste-
                Text">
127             " Constantly educating students about the need for
                social distancing, wearing a mask all the time and
                also using alcohol to cleanse hands ."
128             </h5>
133         </div>
134         </div>
135         <!-- ////////////////////////////////// -->
136         <!-- ////////////////////////////////// -->
137         <!-- ////////////////////////////////// -->
138         <div style="background-
                image:url(images/gallery/startup.jpg) ;" class="teste
                col-lg-6 bacimg"></div>
139         <!-- /////////////// -->
140         </div>
141         </div>

142

143     </section>
144     <br>
145     <br>

146

147       <section class="doctors mt-5" id="doctors">
148       <br>
149       <br>
150       <br>
151       <div class=" title-text col-12 text-center mt-5">
```

```html
152        <h1>take care of your life <br> and wear the mask</h1>

153

154    </div>

155

156    <div
class="contain
er mt-3"> 157
<div
class="row">
158            <!-- /////////////// -->
159            <div class="col-xl-4 col-lg-4 col-md-6 col-sm- mt-3
               doctoree" >
160            <div class="doctor">
161            <img class="doc-img img-fluid img-responsive"
               src="images/gallery/team1.jpg" alt= "">
162            </div>

163

164    </div>

165

166            <!-- /////////////// -->
167            <div class="col-xl-4 col-lg-4 col-md-6 col-sm- mt-3
               doctoree" >
168            <div class="doctor">
169            <img class="doc-img img-fluid img-responsive"
               src="images/gallery/team2.jpg" alt= "">
170            </div>

171

172    </div>

173

175            <!-- /////////////// -->
176            <div class="col-xl-4 col-lg-4 col-md-6 col-sm- mt-3
               doctoree" >
177            <div class="doctor">
178            <img class="doc-img img-fluid img-responsive"
               src="images/gallery/team3.jpg" alt= "">
179            </div>

180

181    </div>
185    </div>
186    <br>
187    <br>

188

189    </div>
```

```html
190    </section>
191
192              <br>
193              <br>
194              <br>
195              <section class="Foooter">
196              <div class="container">
197              <div style="overflow: hidden;" class="row">
198              <footer class="">
199              <div class="row p-3">
200              <!--
                 /////////////////////////////////////////////
                 ///////////////// -->
201              <div class="col-xl-4 col-lg-3 col-md-6 mt-3">
202              <a href="index.html"><img src="back.jpg"
                 width="150px" height="80px" alt=""
           ></a>
203              </div>
204              <!--
                 /////////////////////////////////////////////
                 ///////////////// -->
205              <!--
                 /////////////////////////////////////////////
                 ///////////////// -->
206              <div class="col-xl-4 col-lg-3 col-md-6 mt-3">
207              <div>
208              <h5>ABOUT US</h5>
209              <br><br>
210              <p>Lorem igpsum doldfor sit amet, adipiscing elit,
                 sed do eiusmod tempor cergelit rgh.</p>
211              <br>
212              <p>Lorem ipsum dolor sit amet, adipiscing elit.</p>
213              </div>
214
215                          </div>
216                          <!--
                             ///////////////////////////////
                             ///////////////////////////////
                             /// -->
217                          <!--
                             ///////////////////////////////
                             ///////////////////////////////
                             /// -->
218                          <div class="col-xl-4 col-lg-6
                             col-md-6 mt-3">
219                          <h3>+564 <span class="text-
                             primary">7885 3222</span></h3>
220                          <p>ourTeam@gmail.com</p>
221
222              <form action="">
```

```html
223                    <div class="col-auto " style="margin-top:
                       100px;">
224                    <label class="sr-only"
                       for="inlineFormInputGroup">Username</label>
225                    <div class="input-group mb-2">
226
227                        <input type="text" class="form-control
                           inputaya" id=
               "inlineFormInputGroup" placeholder="Username">
228                        <div class="input-group-prepend">
229                        <div class="input-group-text"><a
                           href="#">send</a></div>
230                        </div>
231                        </div>
232                        </div>
233                        </form>
234
235            </div>
236            <!--
               /////////////////////////////////////////////////
               //////////////// -->
237            </div>
238            <hr style="background-color: rgb(151, 151, 151);">
239            <div class="row p-3">
240            <h6 class="mt-3 ml-3 ">Copyright ©2022 All rights
               reserved | This template is  created  by our team
               </h6>
241            <span class="ml-auto mr-3" class="socials">
242            <a target="_blank" href="#"><i class="
               footerSocialIcon mt-3 m-1 fab fa-twitter"></i></a>
243            <a target="_blank" href="#"><i class="
               footerSocialIcon mt-3 m-1 fab fa-facebook"></i></a>
244            <a target="_blank" href="#"><i class="
               footerSocialIcon mt-3 m-1 fab fa-google-
               plus"></i></a>
245            <a target="_blank" href="#"><i class="
               footerSocialIcon mt-3 m-1 fab fa-pinterest"></i></a>
246            <a target="_blank" href="#"><i class="
               footerSocialIcon mt-3 m-1 fab fa-dribbble"></i></a>
247
248        </span>
249        </div>
252    </footer>
253    </div>
254    </div><br>
255    <br>
256    <br>
257    </section>
263
```

```html
<!-- JS, Popper.js, and jQuery -->
<script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"
integrity=
"sha384-
DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj"
crossorigin=
"anonymous"></script>
<script
src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/poppe
r.min.js" integrity="sha384-
9/reFTGAW83EW2RDu2S0VKaIzap3H66lZH81PoYlFhbGU+6BZp6G7niu735Sk7lN"
crossorigin="anonymous"></script>
<script
src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootst
rap.min.js" integrity="sha384-
B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV"
crossorigin="anonymous"></script>


</body>
</html>

        <!-- <center>
        <div style="height:100px;background-
        color:red;color:white">
        <br>
        <h2>
        <a href="index.php">Home Page</a>::
        <a href="student.php">Student Page</a>::
        <a href="values.php">Normal Values Page</a>::
        <a href="sensor.php">Sensor Data Page</a>::316
        <a href="alarm.php">Alarm Page</a>::
        <a href="search.php">Search Page</a>
        </h2>
        <br/>
        <br/>
        </div>

    <p></p>

<img src="back.jpg" alt="">


</center>
</body>
</html> -->
```

6.1.2 Student

```
3      <!DOCTYPE html>
4      <html lang="en">
5      <head>
6      <meta charset="UTF-8">
7      <meta name="viewport" content="width=device-width, initial-
       scale=1.0">
8      <link rel="shortcut icon" type="image/x-icon"
       href="images/favicon.ico">

9
```

```
10     <!-- bootstrap -->
```

```
11     <link rel="stylesheet" href=
```

```
"https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.c
                 ss" integrity= "sha384-
  JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z"
                         crossorigin
```

```
       ="anonymous">
```

```
12
13     <link rel="stylesheet" href="style.css">
14     <title>IOT health care </title>
15     <style>
```

```
16      .scfrolltable{ 17      overflow: scroll; 18
```

```
overflow-y: hidden;
```

```
22      } 23      .scfrolltable::-webkit-scrollbar { 24
height: 2px; 25      background-color: rgba(255, 255, 255, 0.897);
26      }
```

```
27
```

```
28     .scfrolltable::-webkit-scrollbar-track { 29      box-
shadow: inset 0 0 6px rgba(0, 0, 0, 0.3); 30      }
```

```
31
```

```
32     .scfrolltable::-webkit-scrollbar-thumb { 33
```

```
background-color: #be1a1e; 34      outline: 1px solid
```

```
#000; 35      }
```

```
36     </style>
37     </head>
```

```html
38      <body>

39


40


41          <section class="col-lg-12 ">
42          <div class="container-fluid">
43          <div class="row">
44          <nav class=" col-lg-12  navbar navbar-expand-lg site-
            navbar-target" id= "ftco-navbar">

45  <a href="index.php"> <img class="  logo-img img-fluid img-
    responsive" src=

46  "back.jpg" width="100px" height="50px" alt="logo-img"></a>

    <button class="menubtn  navbar-toggler text-dark border-dark "
    type="button" data-toggle="collapse" data-target="#ftco-nav"
47  aria-controls="ftco-nav" aria-expanded="false" aria-label="Toggle
    navigation">
48
    <p class="oi oi-menu"> <p class="text-center text-dark mt-2 fas
49  fa-bars" style="color:#0f61ef !important; " > = </p> </p>

    </button>
50
    <div class="collapse navbar-collapse " id="ftco-nav">
51
    <ul class="navbar-nav nav  ml-auto" id="menu">

52  <li class="nav-item ml-3 mt-2 "><a href="index.php" class=" nav-
    link"

53  ><span class="text-dark"> Home</span></a></li>

54  <li class="nav-item ml-3 mt-2 "><a href="student.php" class="nav-
    link"

55  ><span class="text-dark">Students </span></a></li>

<li class="nav-item ml-3 mt-2 "><a href="values.php" class="nav-link"

><span class="text-dark">Normal Values</span></a></li>

<li class="nav-item ml-3 mt-2 "><a href="sensor.php" class="nav-link"

><span class="text-dark">Sensor Data</span></a></li>

<li class="nav-item ml-3 mt-2 "><a href="alarm.php" class="nav-link"

                    ><span class="text-dark">abnormal

                    data</span></a></li>
56          <li class="nav-item ml-3 mt-2 "><a href="search.php"
            class="nav-link" ><span class="text-
            dark">Search</span></a></li>
57          </ul>
58          </div>
59          </nav>
60          </div>
```

```html
61            </div>
62            </section>
69 <br><br><br><br>
70 <section class="mt-5 " style="margin-top:120px ">

71

72      <div class=" title-text col-12 text-center mt-5">

73        <h1 class=" mt-5 "> Student Page Data Control </h1>

74      </div>

75

76            <div class="container scfrolltable mt-5">
77            <p></p>
78            <table class="table table-bordered table-hover table-
               striped">
79            <tr class="bg-dark text-light border border-0">
80            <th>

81          id

82            </th>
83            <th>

84          name

85            </th>
86            <th>

87          phone

88            </th>
89            <th>

90          email

91            </th>
92            <!-- <th> 93              password 94
               </th> -->
95            <th>

96          gender

97            </th>
98            <th>
```

```
 99          bdate
100              </th>
101              <th>

102                Delete

103              </th>
104              </tr>

105

106              <?php
107              $servername = "mysql5046.site4now.net";
108              $username = "a87e92_iotheal";
109              $password = "mahmoud773";
110              $dbname = "db_a87e92_iotheal";

111

112              // Create connection
113              $conn = new mysqli($servername, $username, $password,
                 $dbname);
114              // Check connection
115              if ($conn->connect_error) {
116              die("Connection failed: " . $conn->connect_error);
117              }

118

119              $sql = "SELECT * FROM student";
120              $result = $conn->query($sql);

121

122              if ($result->num_rows > 0) {
123                // output data of each row

124              while($row = $result->fetch_assoc()) {



127   ?>
129        <tr>
130        <td>
131        <?php echo $row["id"]; ?>
132        </td>

133

134        <td>
135        <?php echo $row["name"]; ?>
136        </td>
137        <td>
```

```php
138            <?php echo $row["phone"]; ?>
139            </td>
140            <td>
141            <?php echo $row["email"]; ?>
142            </td>

143
144            <td>
145            <?php echo $row["gender"]; ?>
146            </td>
147            <td>
148            <?php echo $row["bdate"]; ?>
149            </td>
150            <td>
151            <a href="deletes.php?id=<?php echo $row["id"];?>"
               class="btn btn-danger">Delete</a>
152            </td>
153            </tr>
157    <?php
158    }
159    } else {
160    echo "0 results";
161    }
162    $conn->close();
163    ?>
165        </table>
166        </div>
167        </section>

169    </center>

172            <br>
173            <br>
174            <br>
175            <section class="Foooter">
176            <div class="container">
177            <div style="overflow: hidden;" class="row">
178            <footer class="">
179            <div class="row p-3">
180                <!-- ///////////////////////////////////////////////////////// -->

181                <div class="col-xl-4 col-lg-3 col-md-6 mt-3">
182                <a href="index.html"><img src="back.jpg" width="150px"
                   height="80px" alt=""

                   ></a>
183                </div>
184    <!-- ///////////////////////////////////////////////////////// --> 185     <!--

///////////////////////////////////////////////////////// --> 186   <div

class="col-xl-4 col-lg-3 col-md-6 mt-3">

187                <div>
```

```
188                <h5>ABOUT US</h5>
189                <br><br>
190                <p>Lorem igpsum doldfor sit amet, adipiscing elit,
                   sed do eiusmod tempor cergelit rgh.</p>
191                <br>

192        <p>Lorem ipsum dolor sit amet, adipiscing elit.</p>

193            </div>

194

195          </div>
196   <!-- ///////////////////////////////////////////////////////////// --> 197    <!--
//////////////////////////////////////////////////////////// -->
198                    <div class="col-xl-4 col-lg-6 col-md-6 mt-3">
199                    <h3>+564 <span class="text-primary">7885
                       3222</span></h3>

200                        <p>ourTeam@gmail.com</p>

201

202                    <form action="">
203                    <div class="col-auto " style="margin-top:
                       100px;">
204                    <label class="sr-only"
                       for="inlineFormInputGroup">Username</label>
205                    <div class="input-group mb-2">

206

207                        <input type="text" class="form-control
                           inputaya" id=
              "inlineFormInputGroup" placeholder="Username">
208                        <div class="input-group-prepend">
209                        <div class="input-group-text"><a
                           href="#">send</a></div>
210                        </div>
211                        </div>
212                        </div>
213                        </form>

214

215          </div>
216                <!-- ////////////////////////////////////////////////////////// -->
217            </div>
218            <hr style="background-color: rgb(151, 151, 151);">
```

```html
219             <div class="row p-3">

220     <h6 class="mt-3 ml-3 ">Copyright ©2022 All rights reserved | This
                template is  created  by our team  </h6>
221             <span class="ml-auto mr-3" class="socials">
222             <a target="_blank" href="#"><i class="
                footerSocialIcon mt-3 m-1 fab fa-twitter"></i></a>
223             <a target="_blank" href="#"><i class="
                footerSocialIcon mt-3 m-1 fab fa-facebook"></i></a>
224             <a target="_blank" href="#"><i class="
                footerSocialIcon mt-3 m-1 fab fa-google-
                plus"></i></a>
225             <a target="_blank" href="#"><i class="
                footerSocialIcon mt-3 m-1 fab fa-pinterest"></i></a>
226             <a target="_blank" href="#"><i class="
                footerSocialIcon mt-3 m-1 fab fa-dribbble"></i></a>

228             </span>
229             </div>
232         </footer>
233         </div>
234         </div><br>
235         <br>
236         <br>
237         </section>

241  <!-- JS, Popper.js, and jQuery -->

242  <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"
     integrity=

     "sha384-
     DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj"
     crossorigin=

     "anonymous"></script>
243  <script
     src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/poppe
     r.min.js" integrity="sha384-
     9/reFTGAW83EW2RDu2S0VKaIzap3H66lZH81PoYlFhbGU+6BZp6G7niu735Sk7lN"
     crossorigin="anonymous"></script>
244  <script
     src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootst
     rap.min.js" integrity="sha384-
     B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV"
     crossorigin="anonymous"></script>

247  </body>
248  </html>

249
```

6.1.3 Normal Value

```html
1

2

3     <!DOCTYPE html>
4     <html lang="en">
5     <head>
6     <meta charset="UTF-8">
7     <meta name="viewport" content="width=device-width, initial-
      scale=1.0">
8     <link rel="shortcut icon" type="image/x-icon"
      href="images/favicon.ico">

9

10    <!-- bootstrap -->
11    <link rel="stylesheet" href=
"https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.c
                    ss" integrity= "sha384-
    JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z"
                         crossorigin

      ="anonymous">

12

13    <link rel="stylesheet" href="style.css">
14    <title>IOT health care </title>
15    <style>

16

17

18    .scfrolltable{
19    overflow: scroll;
20    overflow-y: hidden;

21

23

24    }
25    .scfrolltable::-webkit-scrollbar {
26    height: 2px;
27    background-color: rgba(255, 255, 255, 0.897);
28    }

29

30    .scfrolltable::-webkit-scrollbar-track {
31    box-shadow: inset 0 0 6px rgba(0, 0, 0, 0.3);
32    }

33

34    .scfrolltable::-webkit-scrollbar-thumb {
```

```
35          background-color: #be1a1e;
36          outline: 1px solid #000;
37          }
38      </style>
39      </head>
40      <body>

41


44

45          <section class="col-lg-12 ">
46          <div class="container-fluid">
47          <div class="row">
48          <nav class=" col-lg-12  navbar navbar-expand-lg site-
            navbar-target" id= "ftco-navbar">

49  <a href="index.php"> <img class="  logo-img img-fluid img-
    responsive" src=

50  "back.jpg" width="100px" height="50px" alt="logo-img"></a>

    <button class="menubtn  navbar-toggler text-dark border-dark "
    type="button" data-toggle="collapse" data-target="#ftco-nav"
51  aria-controls="ftco-nav" aria-expanded="false" aria-label="Toggle
    navigation">
52
    <p class="oi oi-menu"> <p class="text-center text-dark mt-2 fas
53  fa-bars" style="color:#0f61ef !important; " > = </p> </p>

    </button>
54
    <div class="collapse navbar-collapse " id="ftco-nav">
55
    <ul class="navbar-nav nav  ml-auto" id="menu">
56
    <li class="nav-item ml-3 mt-2 "><a href="index.php" class=" nav-
    link"
57  ><span class="text-dark"> Home</span></a></li>

    <li class="nav-item ml-3 mt-2 "><a href="student.php" class="nav-
link"

><span class="text-dark">Students </span></a></li>

<li class="nav-item ml-3 mt-2 "><a href="values.php" class="nav-link"
                    ><span class="text-dark">Normal
                    Values</span></a></li>
58                  <li class="nav-item ml-3 mt-2 "><a
                    href="sensor.php" class="nav-link"

                    ><span class="text-dark">Sensor
                    Data</span></a></li>
59                  <li class="nav-item ml-3 mt-2 "><a
                    href="alarm.php" class="nav-link"

                    ><span class="text-dark">abnormal
                    data</span></a></li>
```

```
60                    <li class="nav-item ml-3 mt-2 "><a
                      href="search.php" class="nav-link" ><span
                      class="text-dark">Search</span></a></li>
61                    </ul>
62                    </div>
63                    </nav>
64                    </div>
65                    </div>
66                    </section>

67


68


69        <section>
70        <div class="container scfrolltable" style="margin-top:150px">

71

72            <div class=" title-text col-12 text-center mt-5">
73            <h1 class=" mt-5 "> Normal Values Page Data Control </h1>
74            </div>
75            <br>
76            <p>
77            </p>
78                    <table class="table table-bordered table-hover
                      table-striped">
79                    <tr>
80                    <th>
81                    id
82                    </th>
83                    <th>
84                    From Value
85                    </th>
86                    <th>
87                    To Value
88                    </th>
89                    <th>
90                    Type
91                    </th>
92                    <th>
93                    Delete
94                    </th>
95                    </tr>

96

97                 <?php
98                $servername = "mysql5046.site4now.net";
99                $username = "a87e92_iotheal";
100               $password = "mahmoud773";
101               $dbname = "db_a87e92_iotheal";

102

103            // Create connection
```

```php
104                $conn = new mysqli($servername, $username, $password,
                   $dbname);
105                // Check connection
106                if ($conn->connect_error) {
107                    die("Connection failed: " . $conn->connect_error);
108                }

109

110                $sql = "SELECT * FROM normalvalues";
111                $result = $conn->query($sql);

112

113                if ($result->num_rows > 0) {
114                // output data of each row
115                while($row = $result->fetch_assoc()) {

116

118    ?>

119

120        <tr>
121        <td>
122        <?php echo $row["id"]; ?>
123        </td>

124

125        <td>
126        <?php echo $row["fromvalue"]; ?>
127        </td>
128        <td>
129        <?php echo $row["tovalue"]; ?>
130        </td>
131        <td>
132        <?php echo $row["type"]; ?>
133        </td>

134

135    <td>
136    <a href="deletese.php?id=<?php echo $row["id"];?>" class="btn
       btn-danger">Delete</a>
137    </td>
138    </tr>

139

142    <?php
143    }
144    } else {
145    echo "0 results";
146    }
147    $conn->close();
148    ?>
```

```
149

150    </table>

151

152            </center>
153            <br>
154            <br>
155            <hr>
156            <p></p>
157            <form method="post">
158            <table class="table table-bordered table-hover table-
               striped">
159            <tr>
160            <th>From Value</th>
161            <td>
162            <input type="text" name="txtfrom" class="form-control"
               id="">
163            </td>
164            </tr>
165            <tr>
166            <th>To Value</th>
167            <td>
168            <input type="text" name="txtto" class="form-control"
               id="">
169            </td>
170            </tr>
171            <tr>
172            <th>Type Value</th>
173            <td>
174            <input type="text" name="txttype" class="form-control"
               id="">
175            </td>
176            </tr>
177            <tr>
178            <th colspan="2">
179            <input style="background-color:#0f61ef !important;
               padding:15px;border-radius: 15px; color: white;"
               type="submit" width="20%" value="Add New Normal Value"
               name="btnadd" >
180            </th>

181

182        </tr>
183        <tr>
184        <th colspan="2">

185

186                <?php
187                if(isset($_POST['btnadd']))
188                {
189                $servername = "mysql5046.site4now.net";
190                $username = "a87e92_iotheal";
```

```php
191              $password = "mahmoud773";
192              $dbname = "db_a87e92_iotheal";
193
194              // Create connection
195              $conn = new mysqli($servername, $username, $password,
                 $dbname);
196              // Check connection
197              if ($conn->connect_error) {
198              die("Connection failed: " . $conn->connect_error);
199              }
200
201              $sql = "insert into normalvalues
                 values(Default,'".$_POST['txtfrom']."','".

                 $_POST['txtto']."','".$_POST['txttype']."','')";
202              $result = $conn->query($sql);
203              echo "<div class='alert alert-success'>Value has been
                 added</div>";
204              }
205
206  ?>
207
208      </th>
209      </tr>
210
211  </table>
212
213      </form>
214      </div>
215      </section>
216
219                 <section class="Foooter">
220                 <div class="container">
221                 <div style="overflow: hidden;" class="row">
222                 <footer class="">
223                 <div class="row p-3">
224                 <!--
                    /////////////////////////////////////////////////
                    ////////////////// -->
225                 <div class="col-xl-4 col-lg-3 col-md-6 mt-3">
226                 <a href="index.html"><img src="back.jpg"
                    width="150px" height="80px" alt=""
               ></a>
227                 </div>
```

```html
228              <!--
                 ////////////////////////////////////////////////
                 ///////////////// -->
229              <!--
                 ////////////////////////////////////////////////
                 ///////////////// -->
230              <div class="col-xl-4 col-lg-3 col-md-6 mt-3">
231              <div>
232              <h5>ABOUT US</h5>
233              <br><br>
234              <p>Lorem igpsum doldfor sit amet, adipiscing elit,
                 sed do eiusmod tempor cergelit rgh.</p>
235              <br>
236              <p>Lorem ipsum dolor sit amet, adipiscing elit.</p>
237              </div>
238
239                              </div>
240                              <!--
                                 /////////////////////////////////
                                 /////////////////////////////////
                                 /// -->
241                              <!--
                                 /////////////////////////////////
                                 /////////////////////////////////
                                 /// -->
242                              <div class="col-xl-4 col-lg-6
                                 col-md-6 mt-3">
243                              <h3>+564 <span class="text-
                                 primary">7885 3222</span></h3>
244                              <p>ourTeam@gmail.com</p>
245
246                      <form action="">
247                      <div class="col-auto " style="margin-top:
                         100px;">
248                      <label class="sr-only"
                         for="inlineFormInputGroup">Username</label>
249                      <div class="input-group mb-2">
250
251                          <input type="text" class="form-control
                             inputaya" id=
                 "inlineFormInputGroup" placeholder="Username">
252                          <div class="input-group-prepend">
253                          <div class="input-group-text"><a
                             href="#">send</a></div>
254                          </div>
255                          </div>
256                          </div>
257                          </form>
258
```

```html
259                </div>
260                <!--
                   /////////////////////////////////////////////////
                   /////////////// -->
261                </div>
262                <hr style="background-color: rgb(151, 151, 151);">
263                <div class="row p-3">
264                <h6 class="mt-3 ml-3 ">Copyright ©2022 All rights
                   reserved | This template is  created  by our team
                   </h6>
265                <span class="ml-auto mr-3" class="socials">
266                <a target="_blank" href="#"><i class="
                   footerSocialIcon mt-3 m-1 fab fa-twitter"></i></a>
267                <a target="_blank" href="#"><i class="
                   footerSocialIcon mt-3 m-1 fab fa-facebook"></i></a>
268                <a target="_blank" href="#"><i class="
                   footerSocialIcon mt-3 m-1 fab fa-google-
                   plus"></i></a>
269                <a target="_blank" href="#"><i class="
                   footerSocialIcon mt-3 m-1 fab fa-pinterest"></i></a>
270                <a target="_blank" href="#"><i class="
                   footerSocialIcon mt-3 m-1 fab fa-dribbble"></i></a>

271
272            </span>
273            </div>

274

275

276        </footer>
277        </div>
278        </div><br>
279        <br>
280        <br>
281        </section>

282

283

284

285    <!-- JS, Popper.js, and jQuery -->
286    <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"
       integrity=

       "sha384-
       DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj"
       crossorigin=

       "anonymous"></script>
287    <script
       src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/poppe
       r.min.js" integrity="sha384-
```

```
        9/reFTGAW83EW2RDu2S0VKaIzap3H66lZH81PoYlFhbGU+6BZp6G7niu735Sk7lN"
        crossorigin="anonymous"></script>
288     <script
        src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootst
        rap.min.js" integrity="sha384-
        B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaqhqFfPlYxofvL8/KUEfYiJOMMV+rV"
        crossorigin="anonymous"></script>

289

290

291     </body>
292     </html>

293
```

6.1.4 Sensor data

```
1

2

3       <!DOCTYPE html>
4       <html lang="en">
5       <head>
6       <meta charset="UTF-8">
7       <meta name="viewport" content="width=device-width, initial-
        scale=1.0">
8       <link rel="shortcut icon" type="image/x-icon"
        href="images/favicon.ico">

9

10      <!-- bootstrap -->
11      <link rel="stylesheet" href=
"https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.c
                          ss" integrity= "sha384-
   JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z"
                              crossorigin

        ="anonymous">

12
13      <link rel="stylesheet" href="style.css">
14      <title>IOT health care </title>
15      <style>

16

17

18      .scfrolltable{
19      overflow: scroll;
20      overflow-y: hidden;

21
```

```
23
24          }
25          .scfrolltable::-webkit-scrollbar {
26          height: 2px;
27          background-color: rgba(255, 255, 255, 0.897);
28          }

29
30          .scfrolltable::-webkit-scrollbar-track {
31          box-shadow: inset 0 0 6px rgba(0, 0, 0, 0.3);
32          }

33
34          .scfrolltable::-webkit-scrollbar-thumb {
35          background-color: #be1a1e;
36          outline: 1px solid #000;
37          }
38          </style>
39          </head>
40          <body>

41
45              <section class="col-lg-12 ">
46              <div class="container-fluid">
47              <div class="row">
48              <nav class=" col-lg-12  navbar navbar-expand-lg site-
                navbar-target" id= "ftco-navbar">

49

49      <a href="index.php"> <img class="  logo-img img-fluid img-
        responsive" src=

50      "back.jpg" width="100px" height="50px" alt="logo-img"></a>

        <button class="menubtn  navbar-toggler text-dark border-dark "
        type="button" data-toggle="collapse" data-target="#ftco-nav"
51      aria-controls="ftco-nav" aria-expanded="false" aria-label="Toggle
        navigation">
5255
        <p class="oi oi-menu"> <p class="text-center text-dark mt-2 fas
56      fa-bars" style="color:#0f61ef !important; " > = </p> </p>

        </button>
57
        <div class="collapse navbar-collapse " id="ftco-nav">

<ul class="navbar-nav nav  ml-auto" id="menu">

<li class="nav-item ml-3 mt-2 "><a href="index.php" class=" nav-link"

><span class="text-dark"> Home</span></a></li>

<li class="nav-item ml-3 mt-2 "><a href="student.php" class="nav-link"

><span class="text-dark">Students </span></a></li>

<li class="nav-item ml-3 mt-2 "><a href="values.php" class="nav-link"

                    ><span class="text-dark">Normal
                    Values</span></a></li>
```

```html
58                    <li class="nav-item ml-3 mt-2 "><a
                      href="sensor.php" class="nav-link"

                      ><span class="text-dark">Sensor
                      Data</span></a></li>
59                    <li class="nav-item ml-3 mt-2 "><a
                      href="alarm.php" class="nav-link"

                      ><span class="text-dark">abnormal
                      data</span></a></li>
60                    <li class="nav-item ml-3 mt-2 "><a
                      href="search.php" class="nav-link" ><span
                      class="text-dark">Search</span></a></li>
61                    </ul>
62                    </div>
63                    </nav>
64                    </div>
65                    </div>
66                    </section>

67
68        <section>
69        <div class="container scfrolltable " style="margin-top:150px;
          margin-bottom:50px ">

70
71            <div class=" title-text col-12 text-center mt-5">
72            <h1 class=" mt-5 ">  Sensor Page Data Control </h1>
73            </div>

74
                      <br>

                      <p>

                      </p>
77                    <table class="table table-bordered table-hover
                      table-striped">
78                    <tr>
79                    <th>
80                    Temp
81                    </th>
82                    <th>
83                    oxygen
84                    </th>
85                    <th>
86                    Student ID
87                    </th>
88                    <th>
89                    Student name
90                    </th>
91                    <th>
92                    Heart Rate
93                    </th>

94
```

```php
 95            </tr>
 96
 97                <?php
 98            $servername = "mysql5046.site4now.net";
 99            $username = "a87e92_iotheal";
100            $password = "mahmoud773";
101            $dbname = "db_a87e92_iotheal";
102
103            // Create connection
104            $conn = new mysqli($servername, $username, $password,
               $dbname);
105            // Check connection
106            if ($conn->connect_error) {
107            die("Connection failed: " . $conn->connect_error);
108            }
109
110                    // $sql = "SELECT * FROM readsdata";
111                    $sql = "SELECT readsdata.temp,
                       readsdata.oxygen, readsdata.studentID,
                       student.name, readsdata.hardRate
112                    FROM readsdata
113                    INNER JOIN student
114                    ON readsdata.studentID = student.id";
115                    $result = $conn->query($sql);
116
117            if ($result->num_rows > 0) {
118            // output data of each row
119            while($row = $result->fetch_assoc()) {
120
121
122   ?>
124            <tr>
125            <td>
126            <?php echo $row["temp"]; ?>
127            </td>
128
129            <td>
130            <?php echo $row["oxygen"]; ?>
131            </td>
132            <td>
133            <?php echo $row["studentID"]; ?>
134            </td>
135            <td>
136            <?php echo $row["name"]; ?>
137            </td>
138            <td>
139            <?php echo $row["hardRate"]; ?>
```

```php
140            </td>

142    </tr>


145     <?php
146     }
147     } else {
148     echo "0 results";
149     }
150     $conn->close();
151     ?>

153        </table>
154        </div>
155        </section>

161                <section class="Foooter">
162                <div class="container">
163                <div style="overflow: hidden;" class="row">
164                <footer class="">
165                <div class="row p-3">
166                <!--
                   /////////////////////////////////////////////////
                   ///////////////// -->
167                <div class="col-xl-4 col-lg-3 col-md-6 mt-3">
168                <a href="index.html"><img src="back.jpg"
                   width="150px" height="80px" alt=""
              ></a>
169                </div>
170                <!--
                   /////////////////////////////////////////////////
                   ///////////////// -->
171                <!--
                   /////////////////////////////////////////////////
                   ///////////////// -->
172                <div class="col-xl-4 col-lg-3 col-md-6 mt-3">
173                <div>
174                <h5>ABOUT US</h5>
175                <br><br>
176                <p>Lorem igpsum doldfor sit amet, adipiscing elit,
                   sed do eiusmod tempor cergelit rgh.</p>
177                <br>
178                <p>Lorem ipsum dolor sit amet, adipiscing elit.</p>
179                </div>

181            </div>
```

```html
182         <!--
            /////////////////////////////////////////////////////
            ///////////// -->
183         <!--
            /////////////////////////////////////////////////////
            ///////////// --> 184    <div class="col-xl-4 col-lg-6
            col-md-6 mt-3">
185                                <h3>+564 <span class="text-
                                   primary">7885 3222</span></h3>
186                                <p>ourTeam@gmail.com</p>
187
188                 <form action="">
189                 <div class="col-auto " style="margin-top:
                    100px;">
190                 <label class="sr-only"
                    for="inlineFormInputGroup">Username</label>
191                 <div class="input-group mb-2">
192
193                     <input type="text" class="form-control
                        inputaya" id=
            "inlineFormInputGroup" placeholder="Username">
194                     <div class="input-group-prepend">
195                     <div class="input-group-text"><a
                        href="#">send</a></div>
196                     </div>
197                     </div>
198                     </div>
199                     </form>
200
201          </div>
202          <!--
             /////////////////////////////////////////////////
             //////////////// -->
203          </div>
204          <hr style="background-color: rgb(151, 151, 151);">
205          <div class="row p-3">
206          <h6 class="mt-3 ml-3 ">Copyright ©2022 All rights
             reserved | This template is  created  by our team
             </h6>
207          <span class="ml-auto mr-3" class="socials">
208          <a target="_blank" href="#"><i class="
             footerSocialIcon mt-3 m-1 fab fa-twitter"></i></a>
209          <a target="_blank" href="#"><i class="
             footerSocialIcon mt-3 m-1 fab fa-facebook"></i></a>
210          <a target="_blank" href="#"><i class="
             footerSocialIcon mt-3 m-1 fab fa-google-
             plus"></i></a>
211          <a target="_blank" href="#"><i class="
             footerSocialIcon mt-3 m-1 fab fa-pinterest"></i></a>
```

```html
212             <a target="_blank" href="#"><i class="
                footerSocialIcon mt-3 m-1 fab fa-dribbble"></i></a>
213
214         </span>
215         </div>
216
218     </footer>
219     </div>
220     </div><br>
221     <br>
222     <br>
223     </section>
227 <!-- JS, Popper.js, and jQuery -->
228 <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"
    integrity=
    "sha384-
    DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj"
    crossorigin=
    "anonymous"></script>
229 <script
    src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/poppe
    r.min.js" integrity="sha384-
    9/reFTGAW83EW2RDu2S0VKaIzap3H66lZH81PoYlFhbGU+6BZp6G7niu735Sk7lN"
    crossorigin="anonymous"></script>
230 <script
    src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootst
    rap.min.js" integrity="sha384-
    B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV"
    crossorigin="anonymous"></script>
233 </body>
234 </html>
```

6.1.5 Abnormal

```html
3       <!DOCTYPE html>
4       <html lang="en">
5       <head>
6       <meta charset="UTF-8">
7       <meta name="viewport" content="width=device-width, initial-
        scale=1.0">
8       <link rel="shortcut icon" type="image/x-icon"
        href="images/favicon.ico">

9

10          <!-- bootstrap -->

11      <link rel="stylesheet" href=
"https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.c
                    ss" integrity= "sha384-
    JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z"
                        crossorigin

        ="anonymous">

12
13      <link rel="stylesheet" href="style.css">
14      <title>IOT health care </title>
15      <style>

16

17
18      .scfrolltable{
19      overflow: scroll;
20      overflow-y: hidden;

21

23
24      }
25      .scfrolltable::-webkit-scrollbar {
26      height: 2px;
27      background-color: rgba(255, 255, 255, 0.897);
28      }

29
30       .scfrolltable::-webkit-scrollbar-track {
31       box-shadow: inset 0 0 6px rgba(0, 0, 0, 0.3);
32       }

33
34      .scfrolltable::-webkit-scrollbar-thumb {
35      background-color: #be1a1e;
36      outline: 1px solid #000;
37      }
38      </style>
39      </head>
```

```
40      <body>

41


42
43          <section class="col-lg-12 ">
44          <div class="container-fluid">
45          <div class="row">
46          <nav class=" col-lg-12  navbar navbar-expand-lg site-
            navbar-target" id= "ftco-navbar">

47  <a href="index.php"> <img class="  logo-img img-fluid img-
    responsive" src=

48  "back.jpg" width="100px" height="50px" alt="logo-img"></a>

    <button class="menubtn  navbar-toggler text-dark border-dark "
    type="button" data-toggle="collapse" data-target="#ftco-nav"
49  aria-controls="ftco-nav" aria-expanded="false" aria-label="Toggle
    navigation">
50
    <p class="oi oi-menu"> <p class="text-center text-dark mt-2 fas
51  fa-bars" style="color:#0f61ef !important; " > = </p> </p>

    </button>
52
    <div class="collapse navbar-collapse " id="ftco-nav">
53
    <ul class="navbar-nav nav  ml-auto" id="menu">

54  <li class="nav-item ml-3 mt-2 "><a href="index.php" class=" nav-
    link"

55  ><span class="text-dark"> Home</span></a></li>

    <li class="nav-item ml-3 mt-2 "><a href="student.php" class="nav-
56  link"

    ><span class="text-dark">Students </span></a></li>

<li class="nav-item ml-3 mt-2 "><a href="values.php" class="nav-link"

><span class="text-dark">Normal Values</span></a></li>

<li class="nav-item ml-3 mt-2 "><a href="sensor.php" class="nav-link"

                    ><span class="text-dark">Sensor
                    Data</span></a></li>
57                  <li class="nav-item ml-3 mt-2 "><a
                    href="alarm.php" class="nav-link"

                    ><span class="text-dark">abnormal
                    data</span></a></li>
58                  <li class="nav-item ml-3 mt-2 "><a
                    href="search.php" class="nav-link" ><span
                    class="text-dark">Search</span></a></li>
59                  </ul>
60                  </div>
61                  </nav>
62                  </div>
63                  </div>
64                  </section>
```

```
65
66          <section>
67          <div class="container scfrolltable " style="margin-top:150px;
            margin-bottom:50px ">
68
69              <div class=" title-text col-12 text-center mt-5">
70              <h1 class=" mt-5 ">     abnormal Sensor Page Data Control
                </h1>
71              </div>
72              <br>
73              <p>
74              </p>
75                      <table class="table table-bordered table-hover
                        table-striped">
76                      <tr>
77                      <th>
78                      Read Value
79                      </th>
80                      <th>
81                      Student ID
82                      </th>
83                      <th>
84                      Student name
85                      </th>
86                      <th>
87                      date
88                      </th>
89                      <th>
90                      Type
91                      </th>
92
93          </tr>
94
95              <?php
96              $servername = "mysql5046.site4now.net";
97              $username = "a87e92_iotheal";
98              $password = "mahmoud773";
99              $dbname = "db_a87e92_iotheal";
100
101             // Create connection
102             $conn = new mysqli($servername, $username, $password,
                $dbname);

103               // Check connection

104             if ($conn->connect_error) {
105             die("Connection failed: " . $conn->connect_error);
106             }
```

```php
110        // $sql = "SELECT * FROM readsdata where temp not between 36.78 and 38";

111    $sql = "SELECT readsdata.temp, readsdata.oxygen,
readsdata.studentID,readsdata.date,student.name, readsdata.hardRate 112
FROM readsdata
113                    INNER JOIN student
114                    ON readsdata.studentID = student.id
115                    where readsdata.temp not between 36.78 and
                       38";
116                    $result = $conn->query($sql);

117

118            while($row = $result->fetch_assoc()) {

119

120

121    ?>

122
123            <tr>
124            <td>
125            <?php echo $row["temp"]; ?>
126            </td>
127            <td>
128            <?php echo $row["studentID"]; ?>
129            </td>
130            <td>
131            <?php echo $row["name"]; ?>
132            </td>
133            <td>
134            <?php echo $row["date"]; ?>
135            </td>
136            <td>
137            Temperature
138            </td>
139            </tr> 140
141     <?php
142      }

143
146    $conn->close();
147    ?>

148
150                <?php
151                $servername = "mysql5046.site4now.net";
152                $username = "a87e92_iotheal";
153                $password = "mahmoud773";
154                $dbname = "db_a87e92_iotheal";

155
156                // Create connection
```

```php
157             $conn = new mysqli($servername, $username, $password,
                $dbname);

158              // Check connection
159             if ($conn->connect_error) {
160             die("Connection failed: " . $conn->connect_error);
161             }

162

164
165             $sql = "SELECT * FROM readsdata where oxygen not
                between 95 and 100";
166             $result = $conn->query($sql);

167

168             while($row = $result->fetch_assoc()) {

169

171   ?>

172
173         <tr>
174         <td>
175         <?php echo $row["oxygen"]; ?>
176         </td>
177         <td>
178         <?php echo $row["studentID"]; ?>
179         </td>
180         <td>
181         <?php echo $row["date"]; ?>
182         </td>
183         <td>
184         Oxygen
185         </td>
186         </tr>

187
188    <?php
189     }

190

192
193   $conn->close();
194   ?>

195
197             <?php
198             $servername = "mysql5046.site4now.net";
199             $username = "a87e92_iotheal";
200             $password = "mahmoud773";
201             $dbname = "db_a87e92_iotheal";

202
203             // Create connection
```

```php
204              $conn = new mysqli($servername, $username, $password,
                 $dbname);

205                // Check connection
206              if ($conn->connect_error) {
207              die("Connection failed: " . $conn->connect_error);
208              }

209

211

212    $sql = "SELECT * FROM readsdata where hardRate not between 60 and
100";

213              // $sql = "SELECT readsdata.temp, readsdata.oxygen,

                 readsdata.studentID, student.name, readsdata.hardRate 214

                 //      FROM readsdata 215         //      INNER JOIN student

                 216    //      ON readsdata.studentID = student.id";

217              $result = $conn->query($sql);

218

219              while($row = $result->fetch_assoc()) {

220

222    ?>
224          <tr>
225          <td>
226          <?php echo $row["hardRate"]; ?>
227          </td>
228          <td>
229          <?php echo $row["studentID"]; ?>
230          </td>
231          <td>
232          <?php echo $row["date"]; ?>
233          </td>
234          <td>
235          Heart Rate
236          </td>
237          </tr> 238
239     <?php
240      }

241

244    $conn->close();
245    ?>

248    </table>

249

250    </div>
```

```html
251    </section>
252
257          <section class="Foooter">
258          <div class="container">
259          <div style="overflow: hidden;" class="row">
260          <footer class="">
261          <div class="row p-3">

262          <!-- ///////////////////////////////////////////////////////////// -->

263              <div class="col-xl-4 col-lg-3 col-md-6 mt-3">
264              <a href="index.html"><img src="back.jpg" width="150px"
                 height="80px" alt=""

                 ></a>
265              </div>

266   <!-- ///////////////////////////////////////////////////////////// --> 267

<!-- ///////////////////////////////////////////////////////////// -->

268              <div class="col-xl-4 col-lg-3 col-md-6 mt-3">
269              <div>
270              <h5>ABOUT US</h5>
271              <br><br>
272              <p>Lorem igpsum doldfor sit amet, adipiscing elit,
                 sed do eiusmod tempor cergelit rgh.</p>
273              <br>
274              <p>Lorem ipsum dolor sit amet, adipiscing elit.</p>
275              </div>

276

277         </div>

278   <!-- ///////////////////////////////////////////////////////////// --> 279

<!-- ///////////////////////////////////////////////////////////// -->

280                          <div class="col-xl-4 col-lg-6
                             col-md-6 mt-3">
281                          <h3>+564 <span class="text-
                             primary">7885 3222</span></h3>
282                          <p>ourTeam@gmail.com</p>

283
284              <form action="">
285              <div class="col-auto " style="margin-top:
                 100px;">
286              <label class="sr-only"
                 for="inlineFormInputGroup">Username</label>
287              <div class="input-group mb-2">

288
```

```html
289                           <input type="text" class="form-control
                              inputaya" id=
              "inlineFormInputGroup" placeholder="Username">
290                           <div class="input-group-prepend">
291                           <div class="input-group-text"><a
                              href="#">send</a></div>
292                           </div>
293                           </div>
294                           </div>
295                           </form>

296

297               </div>

298        <!-- //////////////////////////////////////////////////////////// -->

299               </div>
300               <hr style="background-color: rgb(151, 151, 151);">
301               <div class="row p-3">
302               <h6 class="mt-3 ml-3 ">Copyright ©2022 All rights
                  reserved | This template is  created  by our team
                  </h6>
303               <span class="ml-auto mr-3" class="socials">
304               <a target="_blank" href="#"><i class="
                  footerSocialIcon mt-3 m-1 fab fa-twitter"></i></a>
305               <a target="_blank" href="#"><i class="
                  footerSocialIcon mt-3 m-1 fab fa-facebook"></i></a>
306               <a target="_blank" href="#"><i class="
                  footerSocialIcon mt-3 m-1 fab fa-google-
                  plus"></i></a>
307               <a target="_blank" href="#"><i class="
                  footerSocialIcon mt-3 m-1 fab fa-pinterest"></i></a>
308               <a target="_blank" href="#"><i class="
                  footerSocialIcon mt-3 m-1 fab fa-dribbble"></i></a>

309

310           </span>
311           </div>

312
314       </footer>
315       </div>
316       </div><br>
317       <br>
318       <br>
319       </section>

320

323  <!-- JS, Popper.js, and jQuery -->

324   <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"
      integrity=
```

```
                                                     "sha384-
      DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj"
                                                   crossorigin=

      "anonymous"></script>
325   <script
      src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/poppe
      r.min.js" integrity="sha384-
      9/reFTGAW83EW2RDu2S0VKaIzap3H66lZH81PoYlFhbGU+6BZp6G7niu735Sk7lN"
      crossorigin="anonymous"></script>
326   <script
      src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootst
      rap.min.js" integrity="sha384-
      B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV"
      crossorigin="anonymous"></script>
327

328
329   </body>
330   </html>
331
```

6.1.6 Search

```
 1
 2
 3       <!DOCTYPE html>
 4       <html lang="en">
 5       <head>
 6       <meta charset="UTF-8">
 7       <meta name="viewport" content="width=device-width, initial-
         scale=1.0">
 8       <link rel="shortcut icon" type="image/x-icon"
         href="images/favicon.ico">
 9
10       <!-- bootstrap -->
11       <link rel="stylesheet" href=
"https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.c
                   ss" integrity= "sha384-
   JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z"
                         crossorigin

         ="anonymous">

12
13       <link rel="stylesheet" href="style.css">
```

```
14          <title>IOT health care </title>

15          <style>
18      .scfrolltable{

19        overflow: scroll;

20         overflow-y: hidden;

24      }

25      .scfrolltable::-webkit-scrollbar {

26        height: 2px;

27         background-color: rgba(255, 255, 255, 0.897);

28      }
29

30      .scfrolltable::-webkit-scrollbar-track {

31        box-shadow: inset 0 0 6px rgba(0, 0, 0, 0.3);

32      }


33  .scfrolltable::-webkit-scrollbar-thumb {
 background-color: #be1a1e;
36        outline: 1px solid #000;
37      }
38  </style>
39  </head>
40  <body>
45          <section class="col-lg-12 ">
46          <div class="container-fluid">
47          <div class="row">
48          <nav class=" col-lg-12  navbar navbar-expand-lg site-
            navbar-target" id= "ftco-navbar">
```

```
49    <a href="index.php"> <img class="  logo-img img-fluid img-
      responsive" src=

50    "back.jpg" width="100px" height="50px" alt="logo-img"></a>

      <button class="menubtn  navbar-toggler text-dark border-dark "
      type="button" data-toggle="collapse" data-target="#ftco-nav"
51    aria-controls="ftco-nav" aria-expanded="false" aria-label="Toggle
      navigation">

52    <p class="oi oi-menu"> <p class="text-center text-dark mt-2 fas
      fa-bars" style="color:#0f61ef !important; " > = </p> </p>
53
      </button>

54    <div class="collapse navbar-collapse " id="ftco-nav">

55    <ul class="navbar-nav nav  ml-auto" id="menu">

      <li class="nav-item ml-3 mt-2 "><a href="index.php" class=" nav-
56    link"

57    ><span class="text-dark"> Home</span></a></li>

      <li class="nav-item ml-3 mt-2 "><a href="student.php" class="nav-
link"

><span class="text-dark">Students </span></a></li>

<li class="nav-item ml-3 mt-2 "><a href="values.php" class="nav-link"

                     ><span class="text-dark">Normal
                     Values</span></a></li>
58                   <li class="nav-item ml-3 mt-2 "><a
                     href="sensor.php" class="nav-link"

                     ><span class="text-dark">Sensor
                     Data</span></a></li>
59                   <li class="nav-item ml-3 mt-2 "><a
                     href="alarm.php" class="nav-link"

                     ><span class="text-dark">abnormal
                     data</span></a></li>
60                   <li class="nav-item ml-3 mt-2 "><a
                     href="search.php" class="nav-link" ><span
                     class="text-dark">Search</span></a></li>
61                   </ul>
62                   </div>
63                   </nav>
64                   </div>
65                   </div>
66                   </section>

67

68    <center class=" " style="margin-top:150px; margin-bottom:50px " >

69

70          <div class=" title-text col-12 text-center mt-5">
71          <h1 class=" mt-5 "> Search </h1>
72          </div>
73          <br>
```

```php
74              <form method="post">
75              <!-- <?php
76              $example = $_POST["cmb"];
77              ?> -->
78              <h5>

79          Please Choose The Type <br>

80                  <br>
81                  <select name="cmb" id="" class="form-control"
                    style="width:25%">
82                  <option value="Temp" <?php if (isset($example) &&
                    $example=="Temp") echo

                    "selected";?>>Temp</option>
83                  <option value="Oxygen" <?php if (isset($example) &&
                    $example=="Oxogen") echo

                    "selected";?>>Oxygen</option>
84                  <option value="Heart Rate" <?php if (isset($example)
                    && $example=="Heart

                    Rate") echo "selected";?>>Heart Rate</option>
85                  </select>
86                  <br>
87                  <br>

88       From Date <br>

89      <input type="date" name="txtfrom" class="form-control"
        style="width:25%">
90      <br>
91      <br>

92       To Date <br>

93      <input type="date" name="txtto" class="form-control"
        style="width:25%">
94      <br>
95      <br>

96
97              <input type="submit" name="btn" value="Search By Type"
                class="btn btn-primary" style="background-color:#0f61ef
                !important; padding:15px;border-radius: 15px; color:
                white;">
98              <br>
99              </h5>
100             <br>
101             <p>
102             </p>

101
104                 <table class=" container table table-bordered table-
                    hover table-striped">
105                 <tr>
```

```php
106              <th>

107          Value

108              </th>
109              <th>

110           Student ID

111              </th>
112              <th>

113          Date

114              </th>

115

116          </tr>

122
123              <?php
124              if(isset($_POST["btn"]))
125              {
126              $servername = "mysql5046.site4now.net";
127              $username = "a87e92_iotheal";
128              $password = "mahmoud773";
129              $dbname = "db_a87e92_iotheal";

130
131              // Create connection
132              $conn = new mysqli($servername, $username, $password,
                 $dbname);
133              // Check connection
134              if ($conn->connect_error) {
135              die("Connection failed: " . $conn->connect_error);
136              }

137

138

139

140                  $sql = "SELECT * FROM readsdata where date between
'".$_POST["txtfrom"].

                     "' and '".$_POST["txtto"]."'";

141

142

143              $result = $conn->query($sql);

144
145              if ($result->num_rows > 0) {
146              // output data of each row
147              while($row = $result->fetch_assoc()) {
```

```php
149
150    ?>
151
152            <tr>
153            <td>
154            <?php if($_POST["cmb"]=="Temp") echo $row["temp"]; else
               if($_POST["cmb"]==

   "Oxygen") echo $row["oxygen"]; else if($_POST["cmb"]=="Heart Rate")
                                                      echo $row[

               "hardRate"]; ?>
155            </td>
156
157
158            <td>
159            <?php echo $row["studentID"]; ?>
160            </td>
161            <td>
162            <?php echo $row["date"]; ?>
163            </td>
164            </tr>
164
167            <?php
168            }
169            } else {
170            echo "0 results";
171            }
172            $conn->close();
173            }
174            ?>
175
176    </table>
177
178    </center>
179
180    </form>


190
191              <section class="Foooter">
192              <div class="container">
193              <div style="overflow: hidden;" class="row">
194              <footer class="">
195              <div class="row p-3">
```

```html
196                     <!--
                        ////////////////////////////////////////////////
                        ////////////////// -->
197                     <div class="col-xl-4 col-lg-3 col-md-6 mt-3">
198                     <a href="index.html"><img src="back.jpg"
                        width="150px" height="80px" alt=""
                    ></a>
199                     </div>
200                     <!--
                        ////////////////////////////////////////////////
                        ////////////////// -->
201                     <!--
                        ////////////////////////////////////////////////
                        ////////////////// -->
202                     <div class="col-xl-4 col-lg-3 col-md-6 mt-3">
203                     <div>
204                     <h5>ABOUT US</h5>
205                     <br><br>
206                     <p>Lorem igpsum doldfor sit amet, adipiscing elit,
                        sed do eiusmod tempor cergelit rgh.</p>
207                     <br>

208                         <p>Lorem ipsum dolor sit amet, adipiscing elit.</p>

209                 </div>

210
211                     </div>
212                     <!--
                        ////////////////////////////////////////////////
                        /////////////////// -->
213                     <!--
                        ////////////////////////////////////////////////
                        /////////////////// -->
214                     <div class="col-xl-4 col-lg-6 col-md-6 mt-3">
215                     <h3>+564 <span class="text-primary">7885
                        3222</span></h3>

216                                 <p>ourTeam@gmail.com</p>

217
218                         <form action="">
219                         <div class="col-auto " style="margin-top:
                        100px;">
220                         <label class="sr-only"
                        for="inlineFormInputGroup">Username</label>
221                         <div class="input-group mb-2">

222
223                             <input type="text" class="form-control
                            inputaya" id=
                    "inlineFormInputGroup" placeholder="Username">
```

```html
224                              <div class="input-group-prepend">
225                              <div class="input-group-text"><a
                                 href="#">send</a></div>
226                              </div>
227                              </div>
228                              </div>
229                              </form>

230
231                 </div>
232                 <!--
                    ////////////////////////////////////////////////
                    /////////////// -->
233                 </div>
234                 <hr style="background-color: rgb(151, 151, 151);">
235                 <div class="row p-3">

236      <h6 class="mt-3 ml-3 ">Copyright ©2022 All rights reserved | This

                    template is  created  by our team  </h6>

237                 <span class="ml-auto mr-3" class="socials">
238                 <a target="_blank" href="#"><i class="
                    footerSocialIcon mt-3 m-1 fab fa-twitter"></i></a>
239                 <a target="_blank" href="#"><i class="
                    footerSocialIcon mt-3 m-1 fab fa-facebook"></i></a>
240                 <a target="_blank" href="#"><i class="
                    footerSocialIcon mt-3 m-1 fab fa-google-
                    plus"></i></a>
241                 <a target="_blank" href="#"><i class="
                    footerSocialIcon mt-3 m-1 fab fa-pinterest"></i></a>
242                 <a target="_blank" href="#"><i class="
                    footerSocialIcon mt-3 m-1 fab fa-dribbble"></i></a>

243
244                 </span>
245                 </div>

246
248         </footer>
249         </div>
250         </div><br>
251         <br>
252         <br>
253         </section>

254

255

256
257     <!-- JS, Popper.js, and jQuery -->
258     <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"
        integrity="sha384-
        DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj"
        crossorigin="anonymous"></script>
```

```html
259    <script
       src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/poppe
       r.min.js" integrity="sha384-
       9/reFTGAW83EW2RDu2S0VKaIzap3H66lZH81PoYlFhbGU+6BZp6G7niu735Sk7lN"
       crossorigin="anonymous"></script>
260    <script
       src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootst
       rap.min.js" integrity="sha384-
       B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV"
       crossorigin="anonymous"></script>
261
263    </body>
264    </html>
265
```

6.1.7 Delete for normal value

```php
1                <?php
2                $servername = "mysql5046.site4now.net";
3                $username = "a87e92_iotheal";
4                $password = "ABC@123456";
5                $dbname = "db_a87e92_iotheal";

6

7                // Create connection
8                $conn = new mysqli($servername, $username, $password,
                 $dbname);
9                // Check connection
10               if ($conn->connect_error) {
11               die("Connection failed: " . $conn->connect_error);
12               }

13

14                   $sql = "delete  FROM normalvalues where
                     id='".$_GET['id']."'";
15                   $result = $conn->query($sql);
16                   header("Location:values.php");

17

18

?>
```

6.1.8 Delete for student

```php
1              <?php
2              $servername = "mysql5046.site4now.net";
3              $username = "a87e92_iotheal";
4              $password = "ABC@123456";
5              $dbname = "db_a87e92_iotheal";

6

7              // Create connection
8              $conn = new mysqli($servername, $username, $password,
               $dbname);
9              // Check connection
10             if ($conn->connect_error) {
11             die("Connection failed: " . $conn->connect_error);
12             }

13

14                 $sql = "delete  FROM student where
                   id='".$_GET['id']."'";
15                 $result = $conn->query($sql);
16                 header("Location:student.php");

17

18

19     ?>
```

6.1.9 Api

```php
1   <?php
2   //Connect to database
3   // require 'connectDB.php';
4   $servername = "mysql5046.site4now.net";
5   $username = "a87e92_iotheal";
6   $password = "mahmoud773";
7   $dbname = "db_a87e92_iotheal";
8
9   $conn = mysqli_connect($servername, $username, $password,
    $dbname);
10
11      if ($conn->connect_error) {
12      die("Database Connection failed: " . $conn->connect_error);
13      }
14
15
16          if (isset($_GET['studentID']) && isset($_GET['temp']) &&
            isset($_GET['oxygen']) && isset(
    $_GET['hardRate'])) {
17          // var_dump($_GET);
18          $studentID = $_GET['studentID'];
19          $temp = $_GET['temp'];
20          $oxygen = $_GET['oxygen'];
21          $hardRate = $_GET['hardRate'];
22          $sql = "INSERT INTO `readsdata`(`studentID`,`temp`,
            `oxygen`, `hardRate`) VALUES ( $studentID, $temp, $oxygen,
            $hardRate)";
23          if(mysqli_query($conn, $sql)){
24          echo "Records inserted successfully.";
25          } else{
26          echo "ERROR: Could not able to execute $sql. " .
            mysqli_error($conn);
27          }
28
29   } else {
30   echo 'you should enter all requied fileds with
    key'; 31    }
```

6.1.10 Style of Web Application

```css
1    @import
     url('https://fonts.googleapis.com/css2?family=Raleway:wght@50
     0&display=swap');
2    *{
3    margin: 0;
4    padding: 0;
5    box-sizing: border-box;
6    text-decoration: none;
7    text-transform: capitalize;
8    font-family: 'Raleway', sans-serif; 9
10   }
11   body{
12   background-color: #F5F8FF!important;
13   }
```

14 /* //////////////navBar////////////// */

```css
17   .navbar{
18   width: 100%;
19   margin: 0 auto!important;
20   background-color: #fff!important;
21   position: relative;
22   padding: 27px 0;
23   left:0;
24   margin:auto;
25   position:fixed;
26   top:0;
27   width:100%;
28   box-shadow:0 10px 15px rgba(25,25,25,0.1);
29   z-index:9999;
30   animation:300ms  fadeInDown!important;
31   background:#fff;
32   transition: 1s;
33   }
34   .logo-img{margin-left: 30px;}
35   .menubtn{margin-right: 30px;}
36   .navbar-nav{margin-right: 30px;}
37   .nav-btun{padding: 15px 20px;background-color: #35befd; font-
     weight: 700;}
38   .nav-btun:focus{
39   border:#75e498 ;
40   }
41   .nav-item span {font-size: 17px; font-weight: 700;text-
     decoration: none;}
42   .menubtn{border: none;}
43   .fa-bars{font-size: 35px;}
```

```css
44        .title-text {
45        color: #35befd !important;
46        }
47         /* .sticky-bar{
48            left:0;
49    margin:auto;

50    position:fixed;

51    top:0;

52    width:100%;

53    box-shadow:0 10px 15px
rgba(25,25,25,0.1);

54    z-index:9999;

55    animation:300ms
fadeInDown!important;

56    background:#fff;

57    transition: 1s;

58 } */

59 /* /////////////Header///////////// */

60 /* /////////////Header///////////// */

61 /* /////////////Header///////////// */

62   .nav-link{color: black!important;}

63

64   .uptext{

65

66
text-
transform:upp
ercase; 67
```

```css
margin-top:
40%;

68

color:

#3f45f6!impor

tant; 69
70        }
71        .uptext::after {
72        content: '';
73        position: absolute;
74        top: 266px;
75        left: -28px;
76        width: 35px;
77        height: 3px;
78        background-color: #35befd;

79

80    }
84        .headertext
85        {
86        font-weight: 700;
87        margin-top: 15px;
88        font-size: 80px;
89        color: #3f45f6!important;

90

91    }
92    .headertext span{
93    color: #35befd !important;
94    font-weight: 700;
95    margin-top: 50%;
96    font-size: 80px;
97    }
98    .animated-text{

99            /* color: #d0eafe; */

100       font-size: 18px;
101       font-weight: 400;
102       line-height: 40px;

103

104       }
105       .fa-bars{
106       color: #0f61ef !important;

107            /* border-radius: 15px; color: white; */

108

109       }
```

```css
110        #back-top{
111        background:#0f61ef;
112        height:50px;width:50px;
113        right:31px;bottom:18px;
114        position:fixed;color:#fff;
115        font-size:20px;text-align:center;
116        border-radius:50%;
117        line-height:48px;
118        border:2px solid transparent;
119        box-shadow:0 0 10px 3px rgba(75, 66, 66, 0.2)
120        }
121
122            #back-top a .fa-level-up-alt{
123            color:white;
124            }
125


126 /* /////////////About///////////// */


127 /* /////////////About///////////// */


128 /* /////////////About///////////// */

129

130        #About{
131        width: 100%;
132        height: auto;

133            /* background-color: tomato; */

134

135

136   }

137

138        .About .leftDiv h1{
139        font-size: 50px;
140        font-weight: 700;
141        color: #35befd;
142        }
143        .About .leftDiv p{
144        color: #040f14;

145

146        }
147        .About .leftDiv .about-btun.active{
148        display: block;
```

```css
149        width: 220px;
150        padding: 15px 30px;background-color: #35befd; font-weight:
           700; 151        text-align: left;
152         }
153        .About .leftDiv .about-btun{
154         display: block;
155         width: 220px;
156         border: none;
157         outline: none;
158         padding: 15px 30px;
159         background-color: #8c8e9d;
160         font-weight: 700;
161         text-align: left;
162         }
163        .About .leftDiv .about-btun .fa-arrow-right{
164         margin-left: 35px;
165         }
166        .About .leftDiv .about-btun.active:focus,
167        .About .leftDiv .about-btun:focus{
168         background-color: transparent;
169         border: none;
170         outline: none;
171         }
172        .About .leftDiv .about-btun.active:hover,
173        .About .leftDiv .about-btun:hover{
174         background-color: transparent;
175         border: 1px solid #35befd; 176        outline: none;

177        transition: all 0.6s ease;

178

179        }
180        .rightDiv{
181        width: 80%;
182        height: 650px;
183        background:url(../images/gallery/about2.png) no-repeat ;
184        background-size: cover;
185        }

186


187

188        .about-img {
189        border: 7px solid #f2f2f2;
190        position: absolute;
191        top: 1px;
192        left: 220px;
193        }

194
```

```css
195  /* //////////////OUR
GELLARY///////////// */

196  /* //////////////OUR
GELLARY///////////// */

197  /* //////////////OUR
GELLARY///////////// */

198
199  #gallary{
200  width: 100%;
201  height: auto;
202  position: relative;
203  }

204
205      .gallary-img{
206      position: relative;
207      overflow: hidden;
208      margin-bottom: 30px;
209      transition: all 1.2s ease;

210
211  }

212
213      .big-photo{
214      position: relative;
215      height: 690px;
216      background-size: cover;
217      background-repeat: no-repeat;
218      transition: all 1.2s ease;

219
220  }

221
222      .small-photo{
223      background-repeat: no-repeat;position: relative;
224      height: 330px;
225      background-size: cover;
226      background-repeat: no-repeat;
227      transition: all 1.2s ease;

228
229  }
```

```css
230
231        .gallary-img::before{
232        position: absolute;
233        top: 0;
234        left: 0;
235        right: 0;
236        height: 100%;
237        width: 100%; 238        content: "";
239        background-color: rgba(1,10,28,0.3);
240        opacity: 0;
241        z-index: 1;
242        }
243
244    .gallary-img:hover{opacity: 1;}
245
246    .gallary-img:hover .big-photo,
247    .gallary-img:hover .small-photo{
248    opacity: 1;
249    transform: scale(1.1);
250
251    }
252
253        .teste{
254        background-repeat: no-repeat;
255        background-position: center center;
256        background-size: cover;
257        }
258
259        .teste-Text{
260        margin-top: 200px;
261        line-height: 32px;
262        margin-left: 50px;
263        }
264        /* .testedata{ 265        margin-left: 40px;
266

267    } */

268    /* //////////////OUR doctors////////////// */
269    /* //////////////OUR doctors////////////// */
270    /* //////////////OUR doctors////////////// */
271        #doctors{
272        width: 100%;
```

```css
273        height: auto;
274        position: relative;
275        }
276        .doctor{overflow: hidden; }
277        .doc-img{transform: scale(1);transition: all 0.8s ease;}
278        .doc-img:hover{transform: scale(1.07);}
279

280            .doctor-infos {
281            width: 100%;
282            border: 1px solid #eee;
283            border-top: none;
284            }
285            .doctor-infos p{
286            color: #272727!important;
287            }
288            .doctor-infos:hover
289            {
290            background-color:#0f61ef;
291            color: #fff;
292            transition: all 0.8s ease;
293            }
294            .doctor-infos:hover p{
295            color: white!important;
296            transition: all 0.8s ease;
297            }
298

299        .doctor-infos:hover .icon{
300        color: white!important;
301        transition: all 0.8s ease;
302

303        }
304        .doctoree:hover .doctor-infos
305        {
306        background-color:#0f61ef;
307        color: #fff;
308        transition: all 0.8s ease;
309        }
310

311

312        .doctoree:hover p,
313        .doctoree:hover .doctor-infos .icon{
314        color: #fff!important;
315        transition: all 0.8s ease;
316        }
```

```
317   /* ////////// applay ////////////// */


318   /* ////////// applay ////////////// */


319   /* ////////// applay ////////////// */
320        #applay{
321        width: 100%;
322        height: auto;
323        position: relative;
324        }
325        input,textarea,.wide {
326        border: none!important;
327        border-bottom: 1px solid #a39898!important;
328        outline: none;
329        background-color: transparent!important;
330        border-radius: 0px;
331        margin: 10px 0;
332        }
333        .input:focus{
334        border: none;
335        outline: none;
336        }
337        .submitBtn{
338        border-radius: 20px;
339        color: #000;
340        font-weight: 700;
341        }

342


343   /* ////////// Blog ////////////// */


344    /* ////////// Blog ////////////// */


345   /* ////////// Blog ////////////// */
346        #Blog{
347        width: 100%;
348        height: auto;
349        position: relative;
350        }
351        .blog-details,
352        .img-blog{overflow: hidden;}
353        .img-blog img{transform: scale(1);transition: all 0.8s ease;}
354        .blog-info-container{width: 100%; border: 1px solid
        #eee!important;}
355        .blogH4{text-decoration: none!important;color: #042d41; font-
        weight: 700;} 356    .blogH4:hover{color: #042d41;}
357   .blog-details:hover .img-blog img{transform: scale(1.1);}
```

```
358    .readMore{color: rgb(173, 162, 162)!important;transition: all
       0.8s ease;}
359    .blog-details:hover .readMore{color: #0f61ef!important;}

360  /* ////////// footer //////////// */


361  /* ////////// footer //////////// */


362  /* ////////// footer //////////// */
363         .Foooter{
364         width: 100%;
365         height: auto;
366         position: relative;
367         color: #b7b7b7!important;
368         background-color:#11141b!important; 369

370

371         }
372         footer{
373         background-color:transparent!important ;
374         color: #b7b7b7!important;
375         height: auto;
376         margin-top: 100px;
377         }
378         .inputaya{
379         background-color: #1c242f!important;
380         border: none!important;
381         }
382         .input-group-text{margin-top: 10px;background-color:
           #0a0f17;border: none;font-size:15px ;}
383         .footerSocialIcon{font-size: 20px;color: white;}
384         .footerSocialIcon:hover{
385         transform:rotate(360)!important;
386         transition: all 0.8s ease;
387         }
388         .input-group-text a {text-decoration: none!important;}
           /* /////////////////////////////////// */
           389       /* .row{overflow: hidden!important;} */
408    @media screen and
(max-width: 1199px) { 409
410            .uptext{
411            font-size: 17px;
412            }
413            .uptext::after{
414            width: 42px; 415              top: 111px;
416            left: -38px;
417            }
418            .about-img{
419            top: 111px;
420            left: 150px;
```

```css
421              }
422              }
423
425          @media screen and (max-width: 991px) {
426          .nav-btun{
427          display: none;
428          }
429          .uptext::after{
430          display: none;
431          }
432          .headertext{
433          font-size: 60px;
434          }
435          .rightDiv{
436          background-image: none;
437          }
438
439          .about-img{
440          top: 23px;
441          left: 14px;
442          }
443          .teste-Text{
444          line-height: 32px;
445          }
446          .testedata{
447          margin-left: 50px;
448
449          }
450          .teste-Text{
451          margin-left: 0;
452
453          }
454          .applay-photo {
455          display: none;
456          }
457          .uptext,
458          .headertext,
459          .animated-text{
460          font-size: 21px;
461          }
462          .animated-text span{
463          font-size: 21px !important;
464          }
466    }
470          @media screen and (max-width: 767px) {
471          .About .leftDiv h1{
472          font-size: 40px!important;
473          }
```

```css
474            .doctor-infos {
475            width: 71%;
476            border: 1px solid #eee;
477            border-top: none;
478            }
479            .applay-photo {
480            display: none;
481            }
482            .blog-info-container{
483            width: 70%;
484            }
485            .blog-info-container{
486            border: none!important;
487            }
490    }

492    }

495    @media screen and
(max-width: 575px) {

496

497            .doctor-infos {
498            width: 76%;
499            border: 1px solid #eee;
500            border-top: none;
501            }
502            .applay-photo {
503            display: none;
504            }
505            }

506

507    @media screen and
(max-width: 350px) {

508

509            .teste-Text{
510            margin-top: 80px;
511            margin-left: 0;

512

513            }
514            .doctor-infos {
515            width: 100%;
516            border: 1px solid #eee;
517            border-top: none;
518            }
519            .applay-photo {
520            display: none;
521            }
522            }
```

CHAPTER 7

7.1 Conclusion

Due to the ongoing COVID-19 pandemic, Internet of Things- (IoT-) based health monitoring systems are potentially immensely beneficial for COVID-19 patients. This study presents an IoT-based system that is a real-time health monitoring system utilizing the measured values of body temperature, heart rate, and oxygen saturation of the patients, which are the most important measurements required for critical care. This system has a liquid crystal display (LCD) that shows the measured temperature, pulse rate, and oxygen saturation level and can be easily synchronized with a mobile application for instant access. The proposed IoT-based method uses an Arduino Uno-based system, and it was tested and verified for four human test subjects. The results obtained from the system were promising: the data acquired from the system are stored very quickly. The results obtained from the system were found to be accurate when compared to other commercially available devices. IoT-based tools may potentially be valuable during the COVID-19 pandemic for saving people's lives.

7.2 Future work

7.2.1 The Parent student

1. A notification appears to the parent student when he is outside the application

A. Create a part for the chat so that the user can talk with the admin and follow up on the latest developments

7.2.2 The Admin

1. The admin sends an email to the student's parent on the email registered in the database to alert him of the need to take his son to the doctor

2. An alarm should appear when a certain number of students infected with the Corona virus appear

3. Creating types of alerts, such as green when a small number appears, yellow when a medium number appears, and red when a good number appears, which means the spread of the disease

4. Allowing the admin to modify the student's data in case the student changes his phone number, address or e-mail

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