

Course Name: COMPUTER INTERFACING

**CSE360: SECTION 03**

Spring 2022

Group: 04

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Submitted to:

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**Project Based Assignment**

**Project Title:** BodyFitness Observation System

**Introduction:**

This is the era of science and electronics, as medical science is very important we have thought of a project that will help people of all ages to track their health phenomenon every day to day life. A sound and fit body are to be maintained, so the Fitness Observation system is very important. People can be benefitted from this device a lot. A research diagram shows that many people die from heart diseases. So we have added a sensor that reads the data of heart rate and gives us the output as how much beat our heart gives in a second, If anyone has a high temperature he or she can know from this device as well, as it also tells body temperature. It can also tell us our blood pressure is high or low. So basically this device is very important to track our health and maintain a healthy body accordingly**.**

**Equipment:**

* Arduino UNO
* Infrared (IR) Temperature Sensor
* BP (Blood Pressure) Sensor
* Heart Rate Sensor
* Pulse Oximeter
* LCD Display
* Buzzer

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**Application Area:**

In accordance with the project title, the implementation space of this project will be clinical instruments and medical services. The whole world is anxious over keeping up with and working on their wellbeing nonetheless sex, age, or religion. People don't have enough time, cash, or different assets to see the specialist consistently, notwithstanding the way that we really want a wellbeing test. Moreover, extreme spread of corona virus has created a restriction on going to the hospitals. We have relatives with BP (Blood Pressure) issues, respiratory issues, etc. in essentially every family. Not only this, at this time of Covid-19, we’re really in need of different health assistants among them blood oxygen saturation checking is a demand of time. Aside from gamers, different equipped and unarmed power unit individuals, like military, fireman, diver etc. require emergency pulse, blood pressure and different estimations. To resolve the above issues, we will foster the Emergency Physical Observation System as a clinical gear, which will incorporate sensors, GPIO devices and other significant innovation and instruments.

**Technology and Tools:**

We'll use the Arduino UNO as an interfacing IC, an LCD display and a buzzer as IO, and infrared (IR) temperature, blood pressure, Pulse oximeter and heart rate sensors to complete this project.

A brief detail about these tools is given below:

**Infrared (IR) Temperature Sensor:** The IR temperature sensor is a type of sensor that can detect temperature without touching the human body directly. The most common applications for this sensor are to monitor the temperature of the forehead, skin, and other body parts.

**BP (Blood Pressure) Sensor:** Blood pressure is a wonderful device that utilizes non-invasive methods to assess the human body's blood pressure. It detects the pressure in the artery using a sensor. To summarize the advantages of this sensor, it is relatively safe to use due to its non-invasive nature.

**Heart Rate Sensor:** The heart rate sensor uses light reflection technology to measure heartbeats per minute. It's a simple but effective sensor that's easy to put together using Arduino. It uses an optical LED light source that shines through our skin. It determines how much light is reflected by our skin.

**Pulse Oximeter:** A Pulse Oximeter is a non-invasive device that measures the quantity of oxygen in your blood. Infrared light is sent into capillaries of patient’s finger, toe, or earlobe and calculates the amount of light reflected by the gases.

**Arduino UNO:** The Arduino UNO, as we all know, is an open-source microcontroller board with an ATmmega328p chipset. Arduino is a platform for reading and controlling data from sensors, motors, and other devices. The Arduino UNO, as well as all the sensors that will connect and operate all of the components on one board, is the most crucial component in this project.

**LCD Display:** We will use a 2 lines X 16 characters LCD module to display the data of the sensor.

**Buzzer**: Finally, we'll use a buzzer to make a beep sound while some voltages are applied.