

VIT BHOPAL UNIVERSITY



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SCHOOL OF ELECTRICAL & ELECTRONICS ENGINEERING

B.Tech. Final Presentation

On

“Patient e-Monitoring System”

Date : 16 May, 2021

Guided by

Dr.Rahul Kottath

Assistant Professor



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Presented By:

- Yash Sharma (17BEC10016)
- Samanvay Srivastava (17BEC10005)
- Luv Mahajan (17BEC10056)

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Introduction

- IoT based Patient e-monitoring system is a step to remote health checkup.



- Device consists of sensors of basic body parameters like Temperature, Heart Beat, Blood Pressure in order to monitor the readings of patient.

Introduction

- Readings of parameters will be stored in a software and hosted on a web application which can be seen by the Consulting Doctor from anywhere.

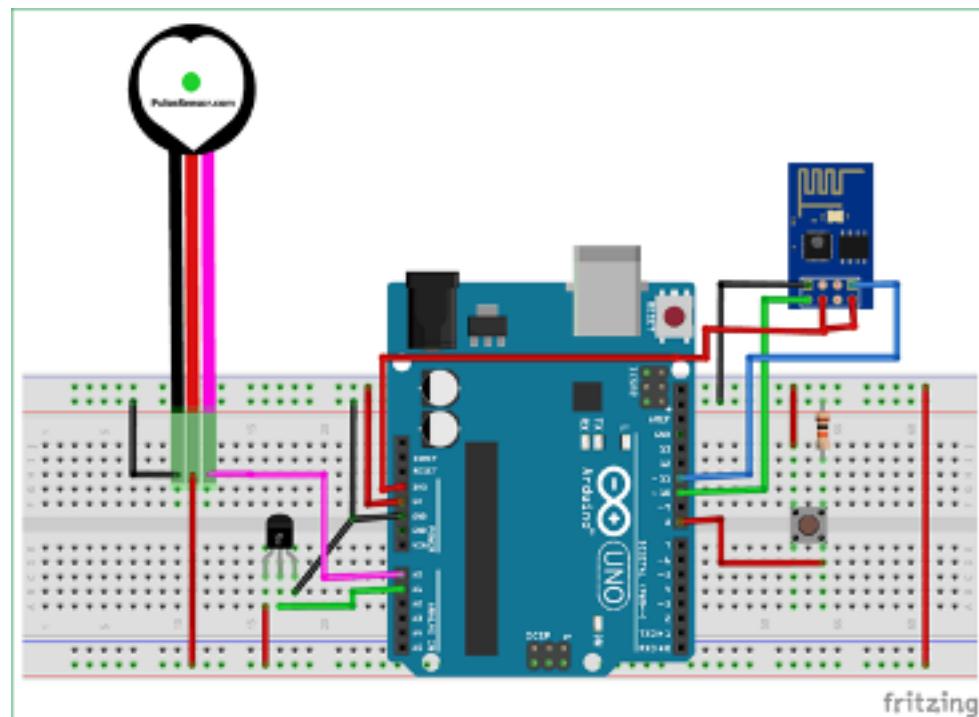


- **Paper 1:**
 - **Shreyasha Chaudhury** in the year 2017/gave a solution to/a comparative study of cloud computing for real time health monitoring/using FTP sever and IoT/having some advantage and disadvantage/runtime restrictions/concluded that betterment of Tele-medical services.
- **Paper 2:**
 - Poornima , Puneet Singh** in the year 2014/gave a solution to/using wi-fi modules and GSM Modules for better response time/constant vital measurements like ECG, Heartbeat& Temperature/using methodology of/Threshold values of ECG and Heartbeat and comparison with threshold values/advantages and disadvantages/reducing hospital visits/concluded that monitoring system to alert hospital staffs.

- **Paper 3:**
Deepesh K Rathore , Ankita Upamanyu ,
Deepanshu Lulla in the year 2013/gave a solution
to/multiple patient monitoring/using methodology of
zig bee and GSM Module/advantages and
disadvantages/have to be in vicinity of the doctor for
its proper functioning/security issues for medical
record data/concluded that it will help to cure deaths
due to delay of emergency services.

Objective

- Develop a hardware system with Microcontroller/Microprocessors, Sensors and WiFi Module.



Objective

- A mobile optimized web application using various Web Development tools and Databases for giving the access of the readings to the doctor sitting in a remote location.



Work Plan

S.NO	Particulars	Duration	Outcome
1	Module1(Research)	2 months	We will come up with all the frameworks and hardware processors and sensors to be used.
2	Module2(Planning)	1 month	We will come up with the proper idea of how to place things where and their interrelation. An on paper design.
3	Module3(Design)	4 months	Designing of hardware Microcontrollers/ Microprocessors coding, Coding of UI Software and Web Application development. This will also be the Testing period
4	Module4(Implementation)	15 days	Interconnecting all the the devices with each other. Testing phase two.
5	Module5(Validation)	10-12 days	Complete working of Project with UI Software, Hardware and Web application all interlinked and completing our Objective,

Problem Formulation

- Most of the Health centres & Pathologies are converted into COVID-19 centres.



- Huge crowd gathering at the hospital open with regular check-ups resulting in the hours of wait and also violating the Social distancing during such disastrous pandemic situation.

Methodology

- Our project will have three different things:
 1. Hardware: This will be a PCB embedded with Microcontrollers , Sensors and Wi-Fi module.
 2. UI Software: This software will be a C# or .NET coded software which will take the readings from the hardware device using IoT and stores it for hosting it later to web application.
 3. Web Application: This will be connected with servers and database which will store/update the readings of a patient and display it to the doctor whenever he/she wants to check for the readings.

Project Timeline

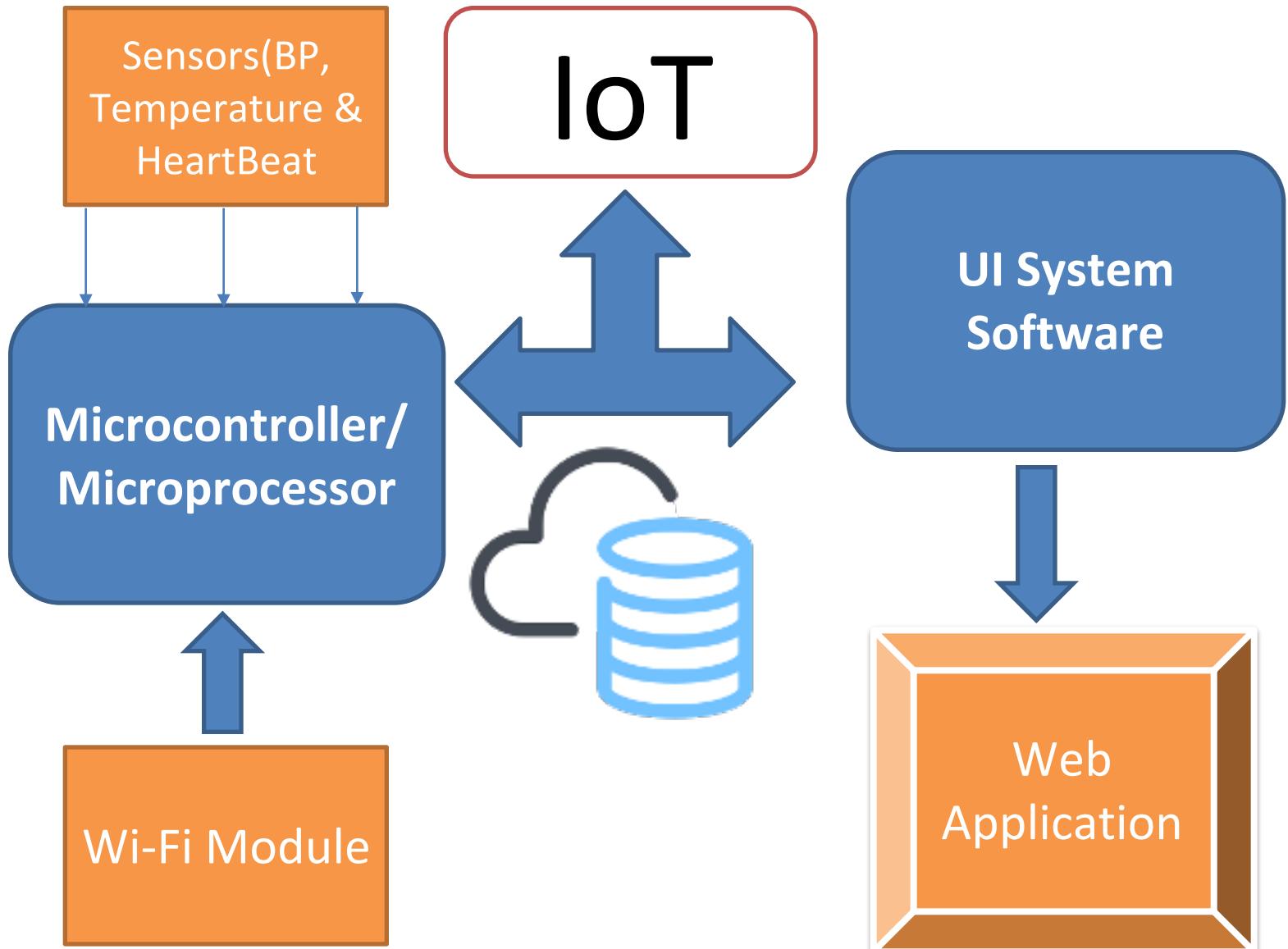
Review 1:
Project Idea
and Block
Diagram

Review 2: Web
Application
designing

Review 3:
Hardware
Design &
Implementation

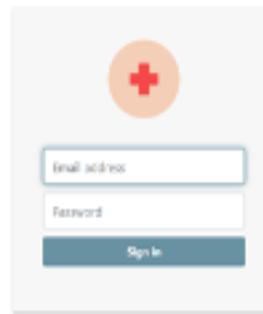
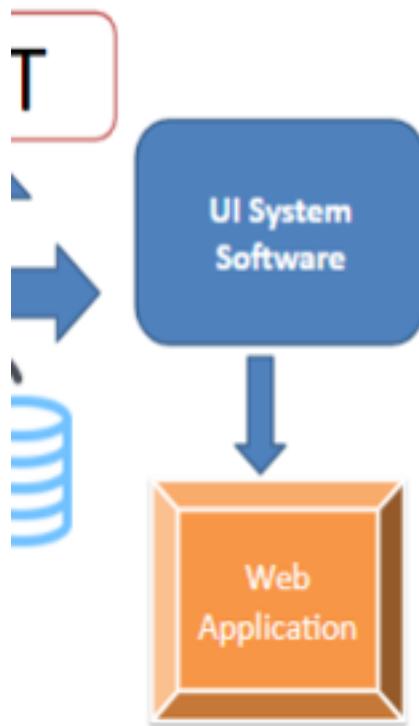
Final Review:
Interconnection
of Hardware &
Software
components
with IoT

Review 1



%

Review 2



A modal dialog box titled "Select Patients" is displayed over a dark background. It contains a list of patients with checkboxes and "View" buttons:

Patient	Action
John Doe	<input type="checkbox"/> View
Jane Smith	<input type="checkbox"/> View
Mary Johnson	<input type="checkbox"/> View
David Lee	<input type="checkbox"/> View

At the bottom right of the dialog are "OK" and "Cancel" buttons.

Components



Health Log

Email

Enter Email Id

Password

• • •

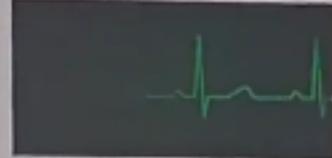
LOG IN

Oscilloscope Reader

Health Care Device

ON

Device Information



Clear

Body Temperature

Properties	Date Time
98	5/15/2021 10:46:24
101	5/15/2021 10:46:21
100	5/15/2021 10:46:13
99	5/15/2021 10:46:10
101	5/15/2021 10:46:02
101	5/15/2021 10:45:45
99	5/15/2021 10:45:30

HeartBeats

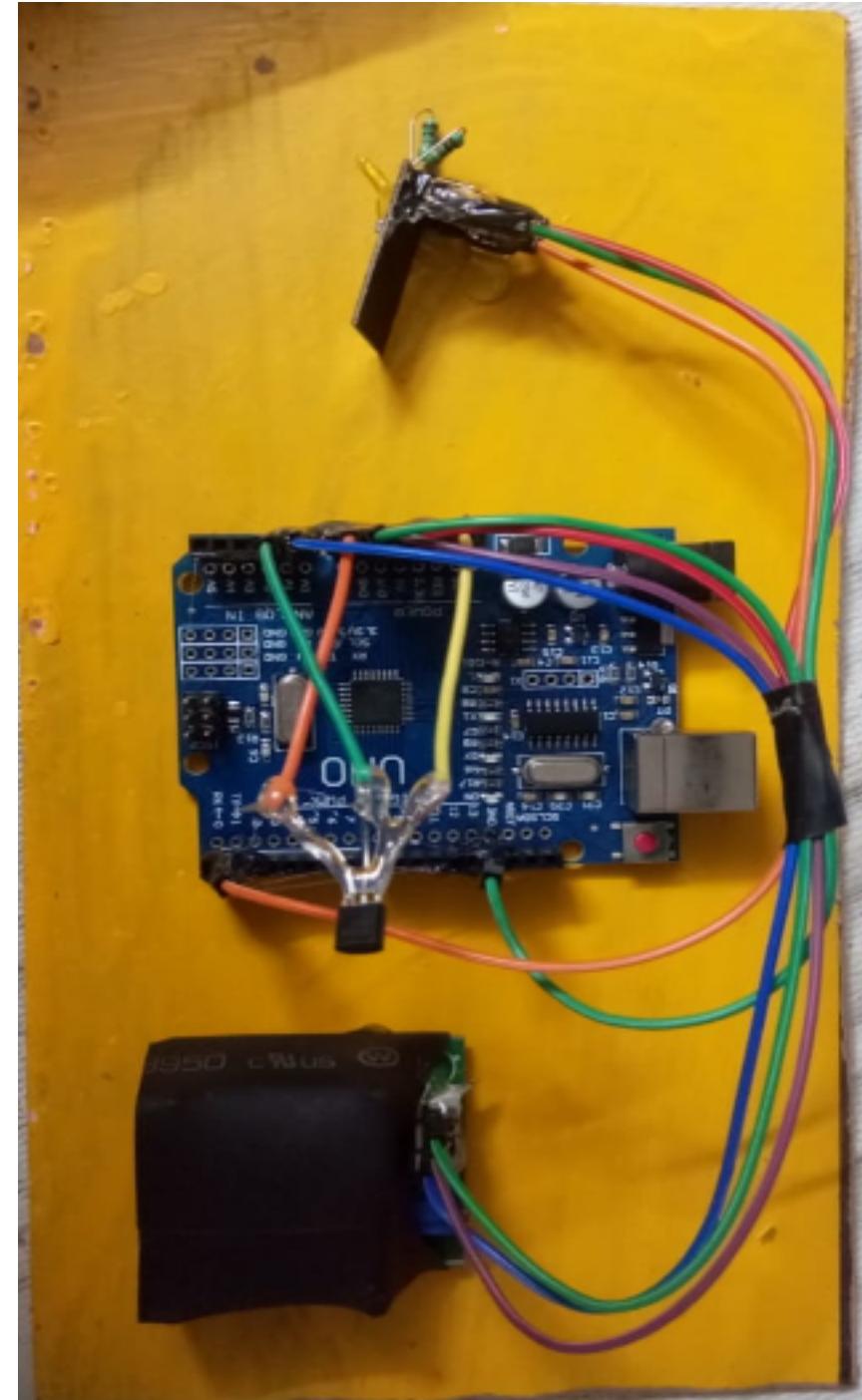
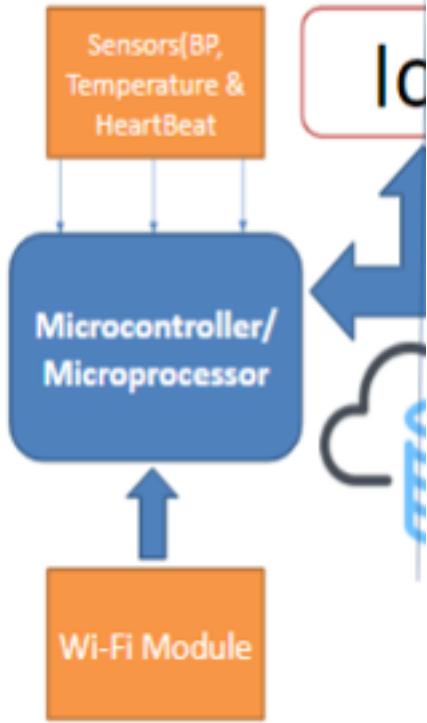
Properties	Date Time
60	5/15/2021 10:46:24
53	5/15/2021 10:46:21
65	5/15/2021 10:46:13
72	5/15/2021 10:46:10
24	5/15/2021 10:46:02
70	5/15/2021 10:45:45
50	5/15/2021 10:45:30

BP

Properties	Date Time
77-123	5/15/2021 10:46:24
87-138	5/15/2021 10:46:21
81-130	5/15/2021 10:46:13
78-124	5/15/2021 10:46:10
86-136	5/15/2021 10:46:02
85-135	5/15/2021 10:45:45
80-127	5/15/2021 10:45:30

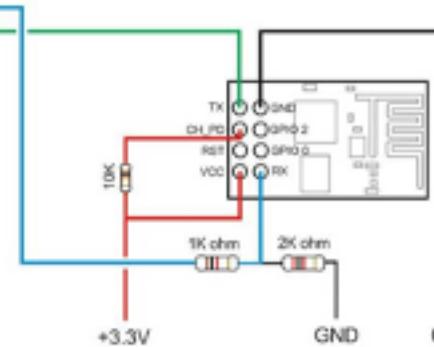
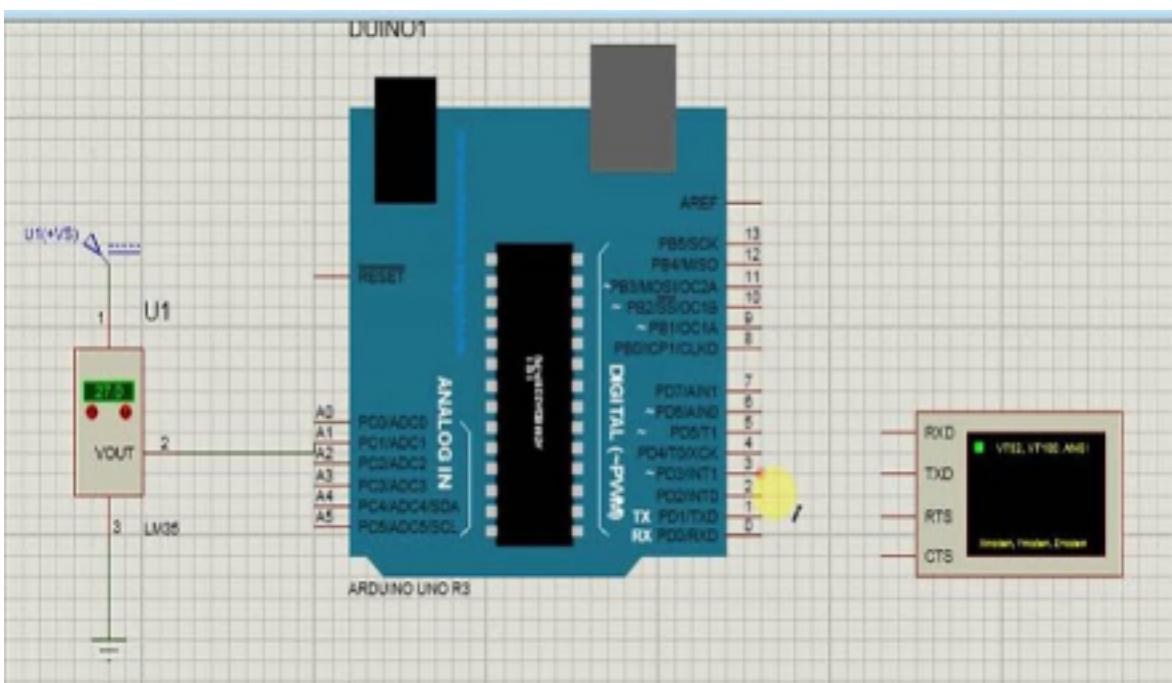
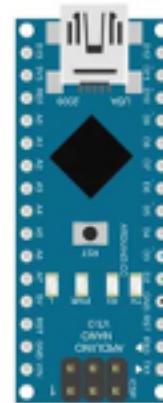
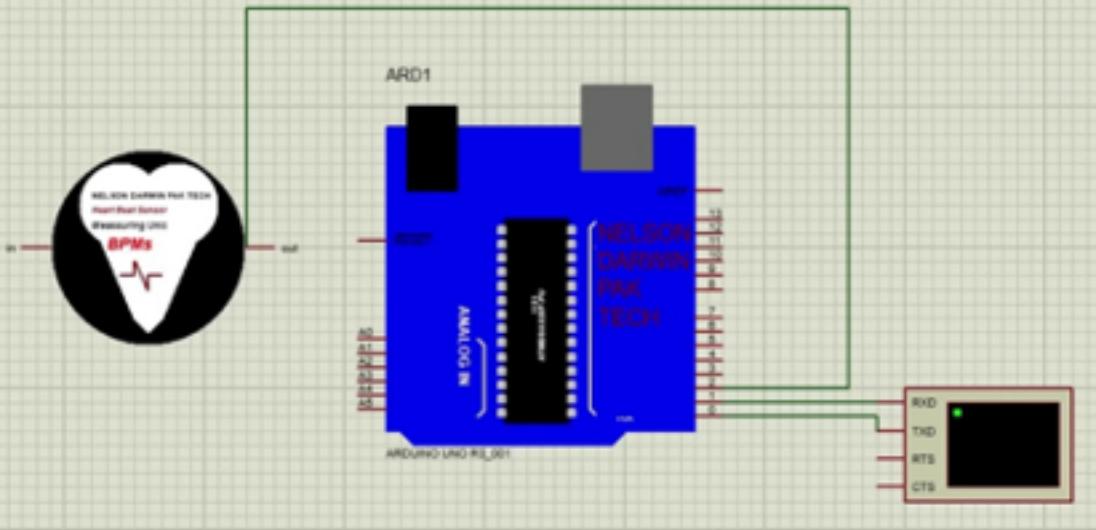


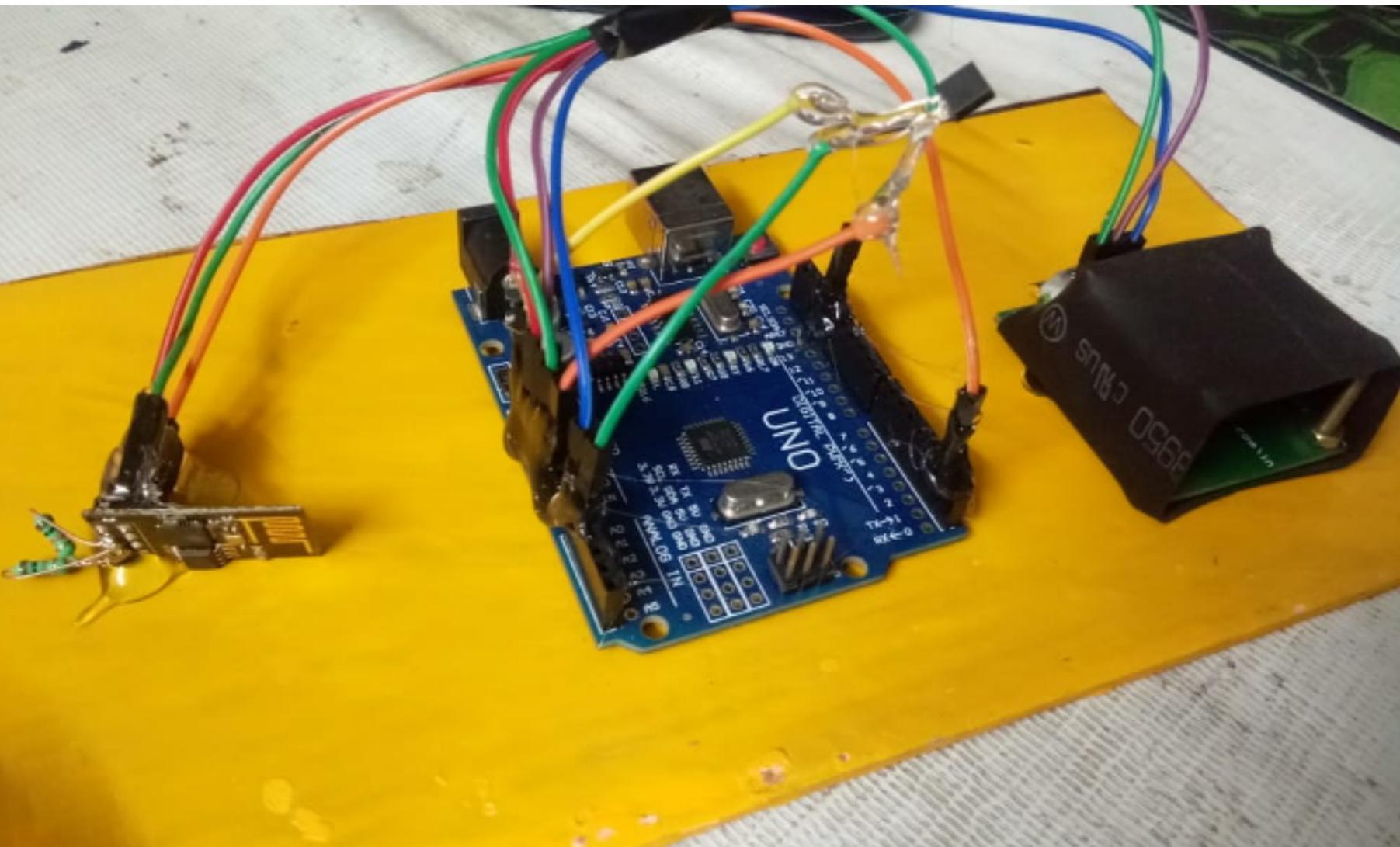
Review 3



List of Components

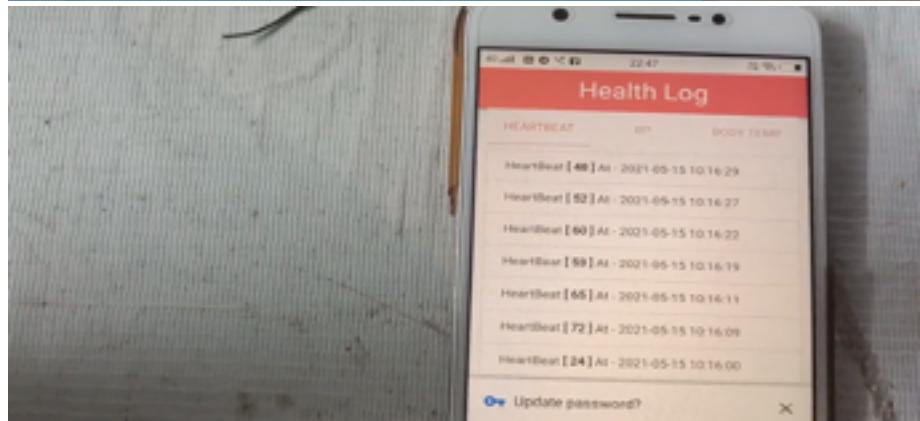
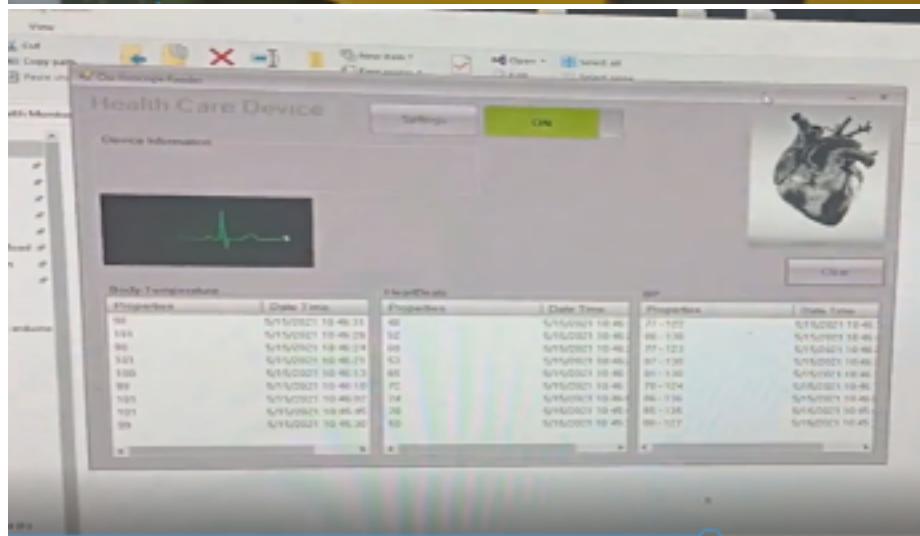
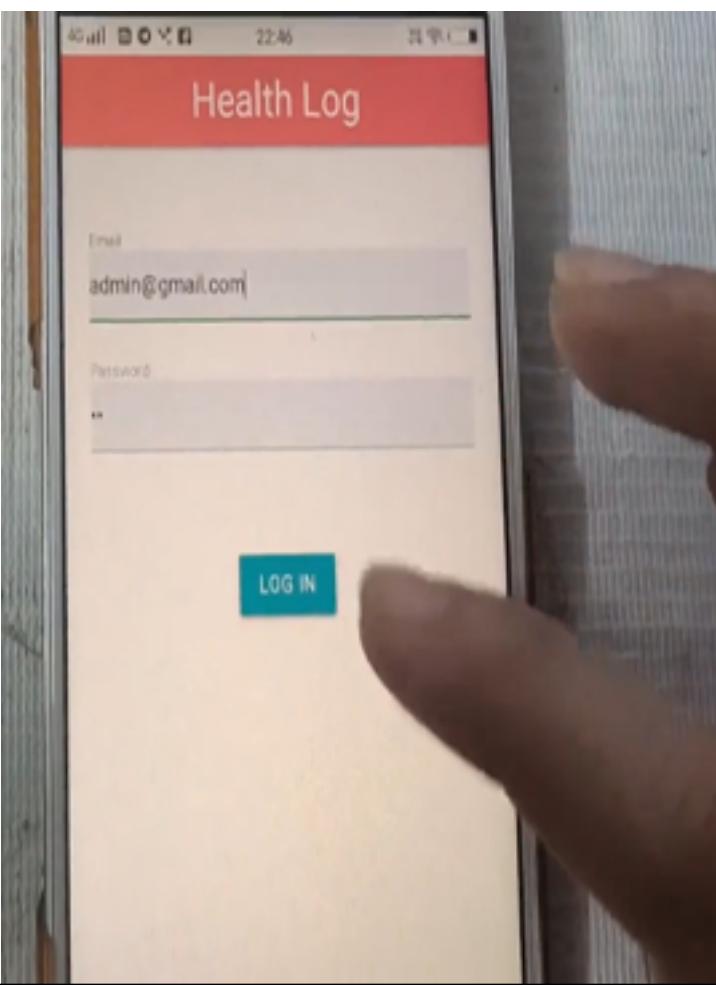
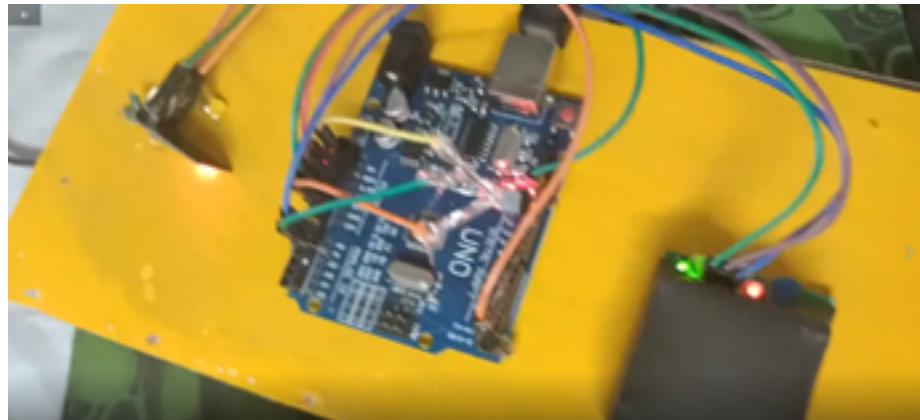
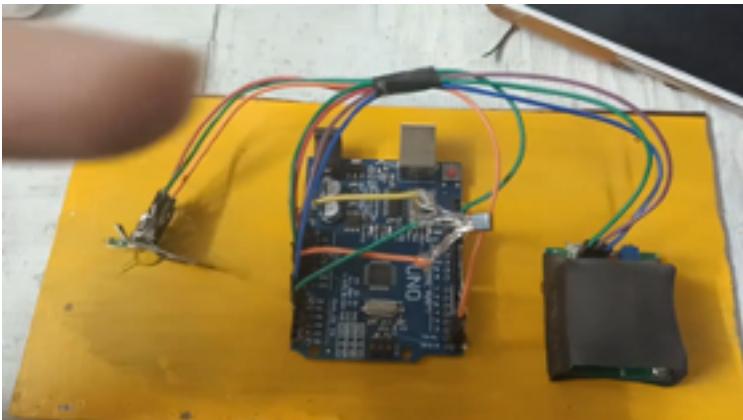
- Arduino UNO (Microcontroller Atmega328p)
- P24 Pulse Sensor
- LM35 Temperature Sensor
- Wi-Fi ESP 8266 module
- 12V adaptor





Final Review





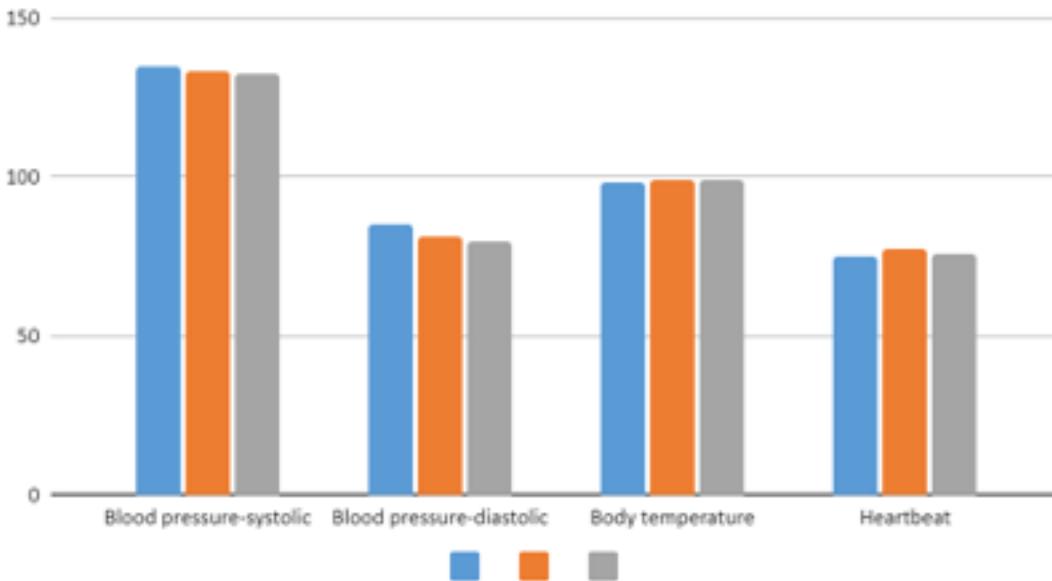
Results (Patient Monitoring Device)

Patient Name-	Vimal Mahajan			
Blood pressure-	Blood pressure-	Body	Heartbeat	Time
systolic	diastolic	temperature		
135	85	98	75	13/5/21-- 6.30pm
133	81	99	77	13/5/21-- 6.31pm
132	80	99	76	13/5/21-- 6.32pm

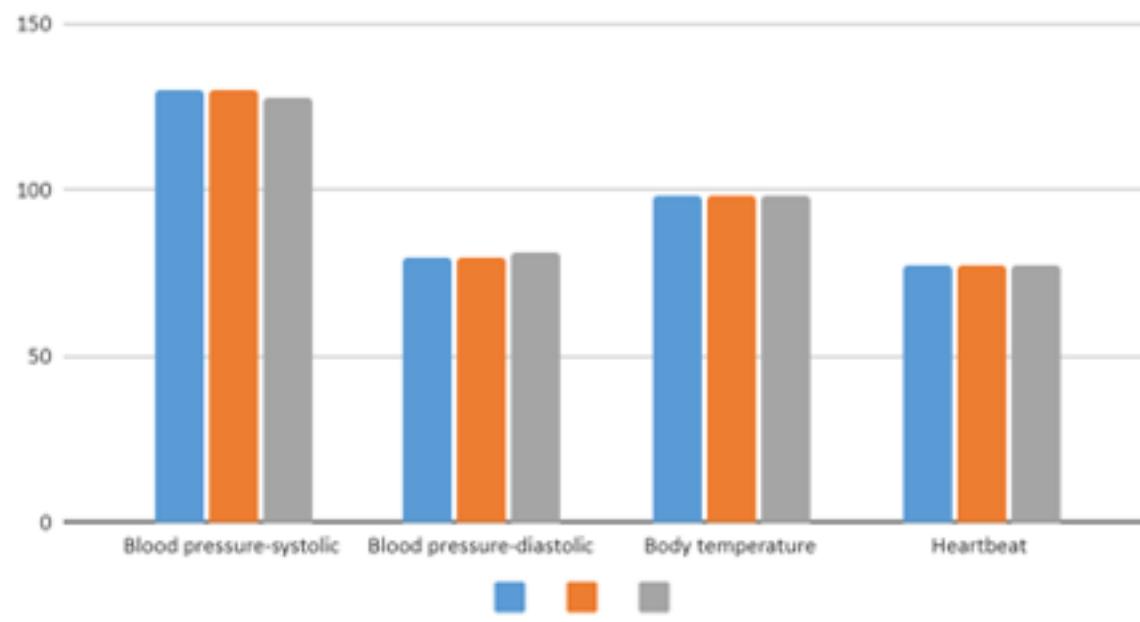
Results (Existing Device)

Patient Name-	Vimal Mahajan			
Blood pressure-	Blood pressure-	Body	Heartbeat	Time
systolic	diastolic	temperature		
130	80	98	77	13/5/21-- 6.35pm
130	80	98	77	13/5/21-- 6.40pm
128	81	98	77	13/5/21-- 6.50pm

Health Monitoring System



Standard devices



How data shows in Application?

Health Log

HEARTBEAT	BP	BODY TEMP
BodyTemp. [100] At - 2021-05-13 18:16:57		
BodyTemp. [98] At - 2021-05-13 18:16:56		
BodyTemp. [100] At - 2021-05-13 18:16:55		
BodyTemp. [99] At - 2021-05-13 18:16:54		
BodyTemp. [101] At - 2021-05-13 18:16:53		
BodyTemp. [99] At - 2021-05-13 18:16:52		
BodyTemp. [101] At - 2021-05-13 18:16:51		
BodyTemp. [100] At - 2021-05-13 18:16:50		
BodyTemp. [98] At - 2021-05-13 18:16:49		
BodyTemp. [100] At - 2021-05-13 18:16:48		

Health Log

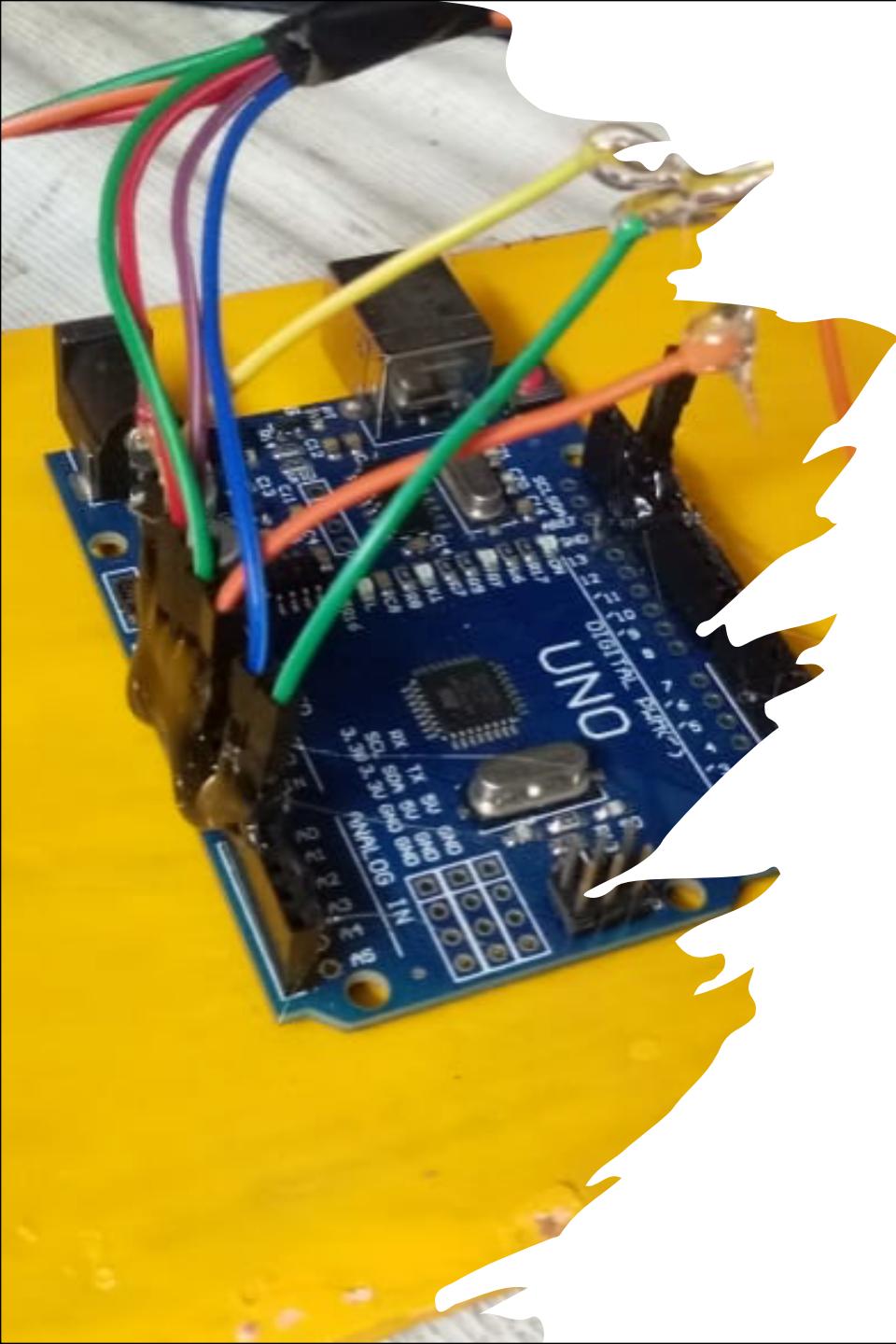
HEARTBEAT	BP	BODY TEMP
B.P [81 - 130] At - 2021-05-13 18:16:57		
B.P [76 - 121] At - 2021-05-13 18:16:56		
B.P [83 - 133] At - 2021-05-13 18:16:55		
B.P [78 - 124] At - 2021-05-13 18:16:54		
B.P [85 - 136] At - 2021-05-13 18:16:53		
B.P [80 - 127] At - 2021-05-13 18:16:52		
B.P [87 - 139] At - 2021-05-13 18:16:51		
B.P [82 - 130] At - 2021-05-13 18:16:50		
B.P [76 - 121] At - 2021-05-13 18:16:49		
B.P [84 - 133] At - 2021-05-13 18:16:48		

Health Log

HEARTBEAT	BP	BODY TEMP
HeartBeat [115] At - 2021-05-13 18:16:57		
HeartBeat [115] At - 2021-05-13 18:16:56		
HeartBeat [115] At - 2021-05-13 18:16:55		
HeartBeat [115] At - 2021-05-13 18:16:54		
HeartBeat [115] At - 2021-05-13 18:16:53		
HeartBeat [115] At - 2021-05-13 18:16:52		
HeartBeat [115] At - 2021-05-13 18:16:51		
HeartBeat [115] At - 2021-05-13 18:16:50		
HeartBeat [115] At - 2021-05-13 18:16:49		
HeartBeat [115] At - 2021-05-13 18:16:48		

Conclusion

- Prevention is better than cure.
- Time to promote Tele-Health services in India.
- Flexibility in Health check-ups.
- Delay won't lead to any Emergency now.



Future Scope

- Integration of Oximeter sensor.
- Integration with Practo application
- Integration with emerging technologies like 5G, Artificial Intelligence/ Machine Learning

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Thank You