

## ECE-3502 IoT Domain Analyst LAB(L9+L10)

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### *Lab 4*

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#### **Task:**

Design a cloud based IoT based Healthcare application automation through FRED.

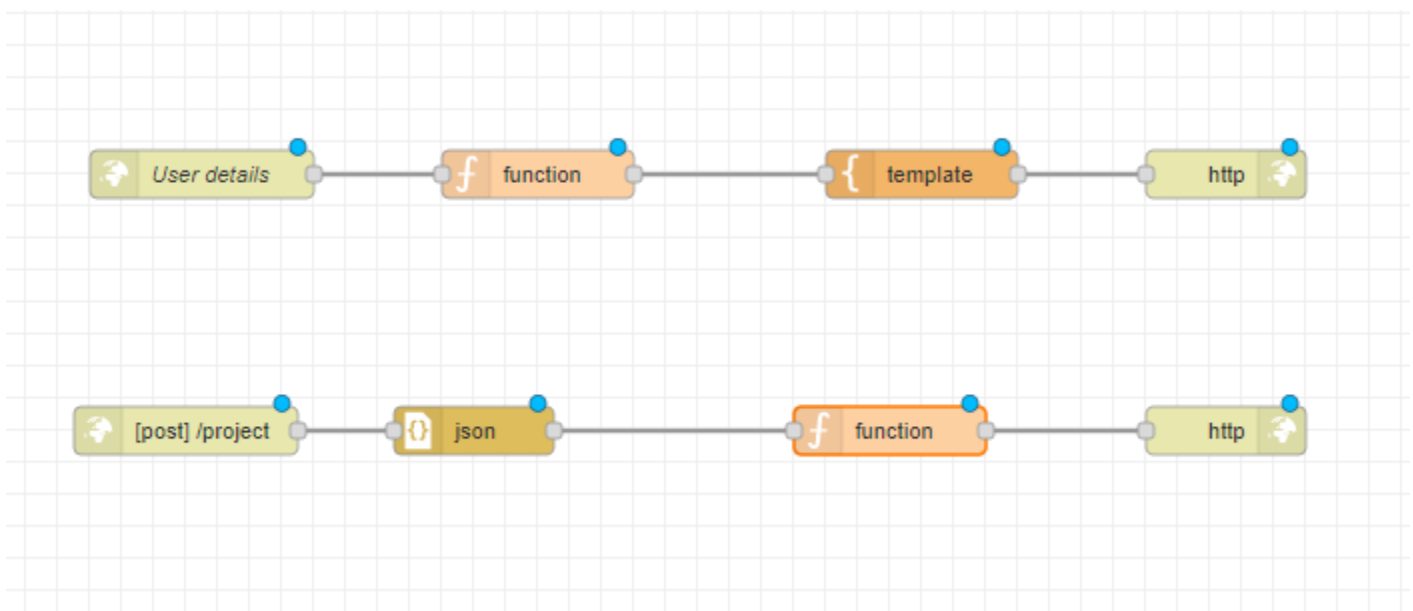
Create a patient registration form, after registration allow the patient from the client side will send the patient monitoring details.

Consider wearables like fitness bands such as blood pressure and heart rate, body temperature etc, I.e, symptoms and there present body status to the server , where the server will send appropriate medical recommendations.

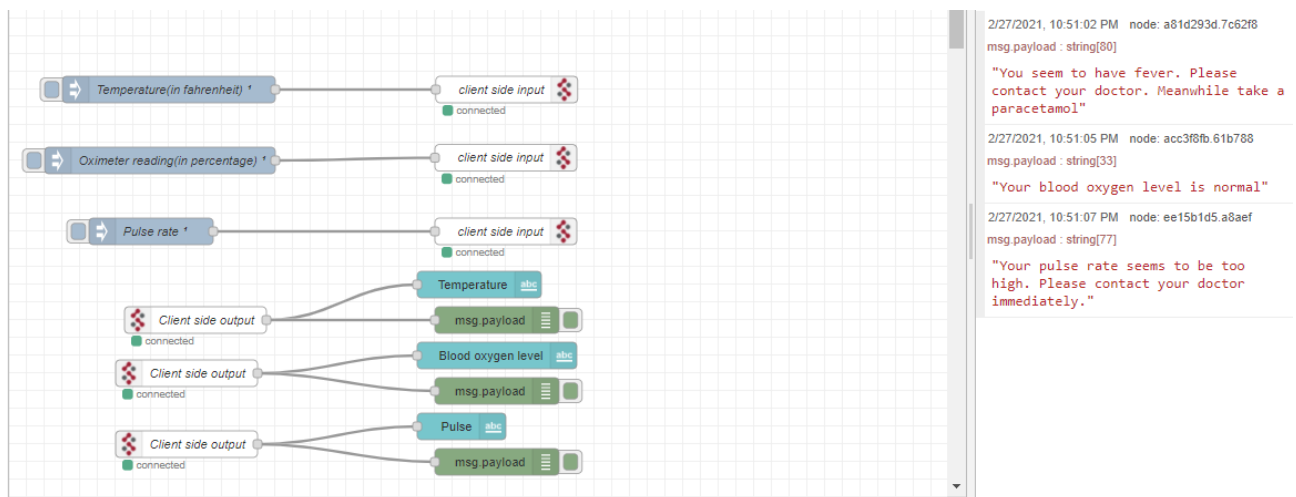
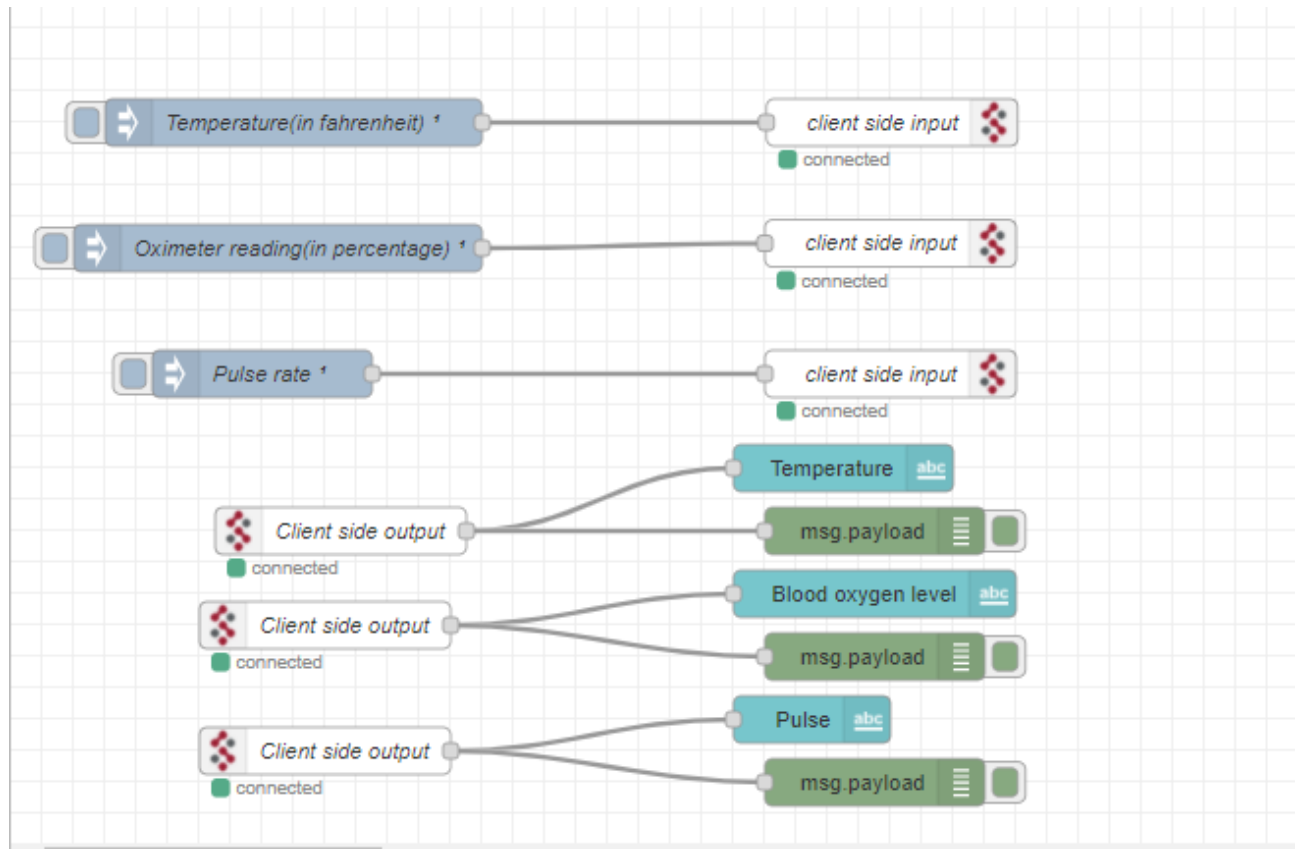
Using appropriate nodes frame the application and display the output in debug and UI>

#### **Flow:**

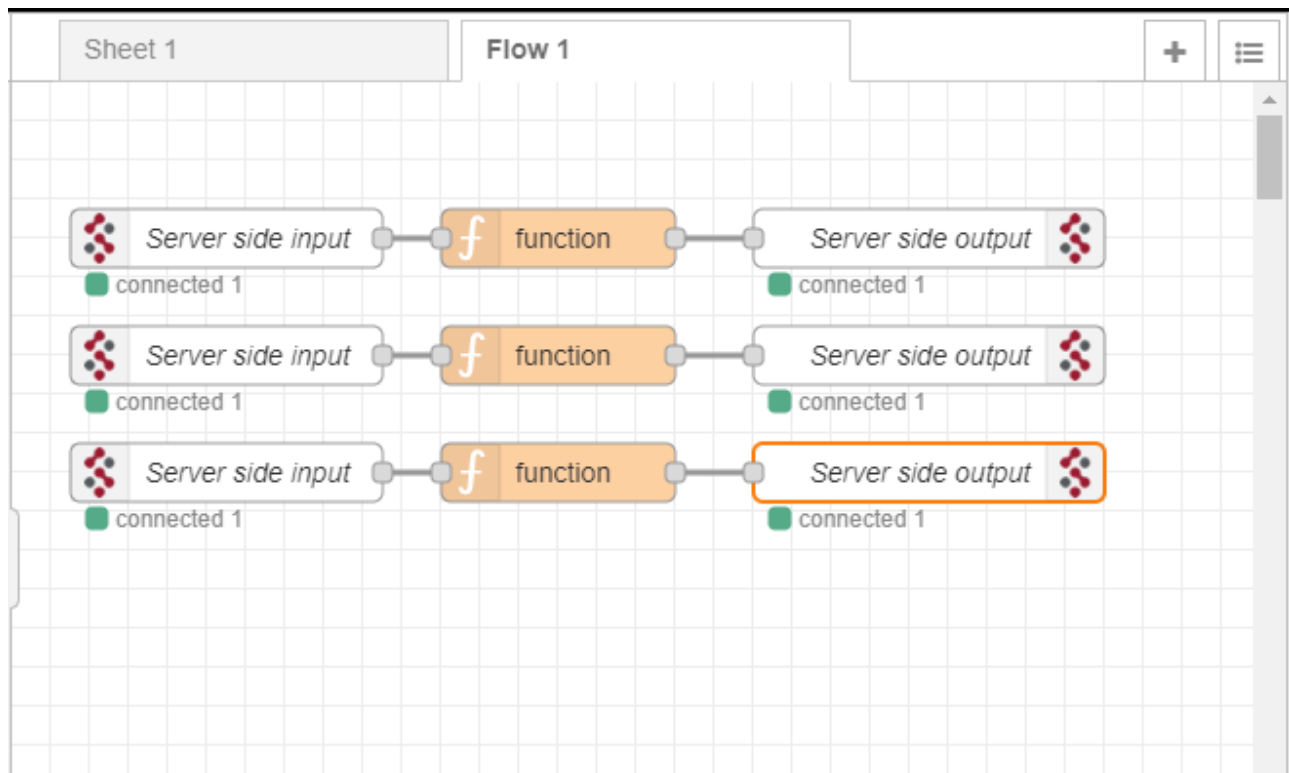
##### **For registration form:**



## Client side for Health Monitoring System:



## Server side for Health Monitoring System:



**Alpanshu Kataria**  
alps  
UPGRADE NOW!

**ACCOUNT** SUBSCRIPTIONS LOGOUT

NODE-RED INSTANCE REFRESH

Your instance has been running for  
**5 m 44 s**

API Key: 2b9144a3b5e98e502890570e4361388e

Enable Public Dashboard PAID FEATURE

Node Count 16/50

Running Time Limit 24 hours

Nodes Installed 6

**STOP INSTANCE** **CONSOLE**

**TOOLS**

Add or Remove Nodes HIDE SIDEBAR

FRED-1.9.0

**FRED - Cloud Hosted Node-RED**

filter nodes

**common**

- inject
- debug
- complete
- catch
- status
- link in
- link out
- comment

**function**

- function
- switch

```
graph LR; subgraph Path1; S1[Server side input] --> F1[function] --> O1[Server side output]; end; subgraph Path2; S2[Server side input] --> F2[function] --> O2[Server side output]; end; subgraph Path3; S3[Server side input] --> F3[function] --> O3[Server side output]; end;
```

## Nodes:

**Edit inject node**

Delete Cancel Done

**Properties**

Name Temperature(in fahrenheit)

msg. payload = 103

msg. topic = a\_z

+ add

☒ Inject once after 0.1 seconds, then

Repeat none

☐ Enabled

**Edit inject node**

Delete Cancel Done

**Properties**

Name Oximeter reading(in percentage)

msg. payload = 96

msg. topic = a\_z

+ add

☒ Inject once after 0.1 seconds, then

Repeat none

☐ Enabled

**Edit inject node**

Delete Cancel Done

**Properties**

Name Pulse rate

msg. payload = 101

msg. topic = a\_z

+ add

☒ Inject once after 0.1 seconds, then

Repeat none

☐ Enabled

**Edit fred out node**

Delete Cancel Done

**Properties**

Endpoint alpanshu1

Name client side input

Edit fred out node > Edit fred-client node

Delete

Cancel

Update

⚙ Properties

⚙

📄

📌 Endpoint

alpanshu1

☐ Private Endpoint (requires FRED API key)

👤 Username

alpsk

Send/Receive payload

▼

By default, **payload** will contain the data to be sent to, or received from FRED. The client can be configured to send or receive the entire message object as a JSON formatted string.

☐ Enabled

📄 4 nodes use this config

On all flows ▼

Edit fred in node

Delete

Cancel

Done

⚙ Properties

⚙

📄

🖼

📌 Endpoint

alpanshu2

▼

✎

📌 Name

Client side output

Edit function node

Delete

Cancel

Done

⚙ Properties

⚙

📄

🖼

📌 Name

Name

📄 ▼

Setup

Function

Close

1 ▾ if(msg.payload>=97 && msg.payload<=99){

2     msg.payload="Body temperature is normal"

3 ▴ }

4 ▾ else if(msg.payload>99){

5     msg.payload="You seem to have fever. Please contact your doctor. Me

6 ▴ }

7 ▾ else if(msg.payload<97){

8     msg.payload="You seem to have hypothermia. Please contact your doct

9 ▴ }

10 return msg;

🔗 Outputs

1

▲

▼

Edit function node

Delete

Cancel

Done

⚙ Properties

⚙

📄

🖨

📁 Name

Name

📄 ▼

Setup

Function

Close

↗

1 ▾ if(msg.payload>=95 && msg.payload<=100){

2     msg.payload="Your blood oxygen level is normal"

3 ▾ }

4 ▾ else if(msg.payload<95){

5     msg.payload="Your blood oxygen level is low.Please contact your doct

6 ▾ }

7     return msg;

Edit function node

Delete

Cancel

Done

⚙ Properties

⚙

📄

🖨

📁 Name

Name

📄 ▼

Setup

Function

Close

↗

1 ▾ if(msg.payload>=60 && msg.payload<=100){

2     msg.payload="Your pulse rate is normal"

3 ▾ }

4 ▾ else if(msg.payload>100){

5     msg.payload="Your pulse rate seems to be too high. Please contact y

6 ▾ }

7 ▾ else if(msg.payload<60){

8     msg.payload="Your pulse rate seems to be too low. Please contact yo

9 ▾ }

10     return msg;

🔗 Outputs

1

▲

▼

## **HTML Code:**

```
<!DOCTYPE html>
<html lang="en" >
<head>
<meta charset="UTF-8">
<title>Registration Form</title>
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/normalize/5.0.0/normalize.min.css">
<style>
@import url(https://fonts.googleapis.com/css?family=Lato:300,400,700);
body {
background-color: #e6e6e6;
font-size: 100%;
font-family: 'Lato', sans-serif;
font-weight: 400;
}
div, textarea, input {
-moz-box-sizing: border-box;
-webkit-box-sizing: border-box;
box-sizing: border-box;
}
.container {
max-width: 510px;
min-width: 324px;
margin: 50px auto 0px;
background-color: #fff;
border: 1px solid #cfcfcf;
border-bottom: 3px solid #ccc;
}
.row {
width: 100%;
margin: 0 0 1em 0;
padding: 0 2.5em;
}
.row.header {
padding: 1.5em 2.5em;
border-bottom: 1px solid #ccc;
background: url('https://www.cpajournal.com/wp-content/uploads/2019/02/GettyImages-1001713236-730x330.jpg')
left -80px;
color: #fff;
}
.row.body {
```

```
padding: .5em 2.5em 1em;
}
.pull-right {
float: right;
}
h1 {
font-family: 'Lato', sans-serif;
font-weight: 300;
display: inline-block;
font-weight: 100;
background-color: white;
color: black;
text-shadow: 2px 2px 5px red;
font-size: 3.5em;
border-bottom: 1px solid rgba(255, 255, 255, 0.3);
margin: 0 0 0.1em 0;
padding: 0 0 0.4em 0;
}
h3 {
font-family: 'Lato', sans-serif;
font-weight: 400;
font-size: 1.25em;
color: black;
text-shadow: 2px 2px 5px red;
margin: 1em 0 0.4em 0;
}
.btn {
font-size: 1.0625em;
display: inline-block;
padding: 0.74em 1.5em;
margin: 1.5em 0 0;
color: #fff;
border-width: 0 0 0 0;
border-bottom: 5px solid;
text-transform: uppercase;
background-color: #b3b3b3;
border-bottom-color: #8c8c8c;
font-family: 'Lato', sans-serif;
font-weight: 300;
}
.btn:hover {
background-color: #bfbfbf;
}
.btn.btn-submit {
background-color: #4f6fad;
border-bottom-color: #374d78;
```



```
}  
.btn.btn-submit:hover {  
background-color: #5f7db6;  
}  
form {  
max-width: 100%;  
display: block;  
}  
form ul {  
margin: 0;  
padding: 0;  
list-style: none;  
}  
form ul li {  
margin: 0 0 0.25em 0;  
clear: both;  
display: inline-block;  
width: 100%;  
}  
form ul li:last-child {  
margin: 0;  
}  
form ul li p {  
margin: 0;  
padding: 0;  
float: left;  
}  
form ul li p.right {  
float: right;  
}  
form ul li .divider {  
margin: 0.5em 0 0.5em 0;  
border: 0;  
height: 1px;  
width: 100%;  
display: block;  
background-color: #4f6fad;  
background-image: linear-gradient(to right, #ee9cb4, #4f6fad);  
}  
form ul li .req {  
color: #ee9cb4;  
}  
form label {  
display: block;  
margin: 0 0 0.5em 0;  
color: #4f6fad;
```

```
font-size: 1em;
}
form input {
margin: 0 0 0.5em 0;
border: 1px solid #ccc;
padding: 6px 10px;
color: #555;
font-size: 1em;
}
form textarea {
border: 1px solid #ccc;
padding: 6px 10px;
width: 100%;
color: #555;
}
form small {
color: #4f6fad;
margin: 0 0 0 0.5em;
}
@media only screen and (max-width: 480px) {
.pull-right {
float: none;
}
input {
width: 100%;
}
label {
width: 100%;
display: inline-block;
float: left;
clear: both;
}
li, p {
width: 100%;
}
input.btn {
margin: 1.5em 0 0.5em;
}
h1 {
font-size: 2.25em;
}
h3 {
font-size: 1.125em;
}
li small {
display: none;
}
```

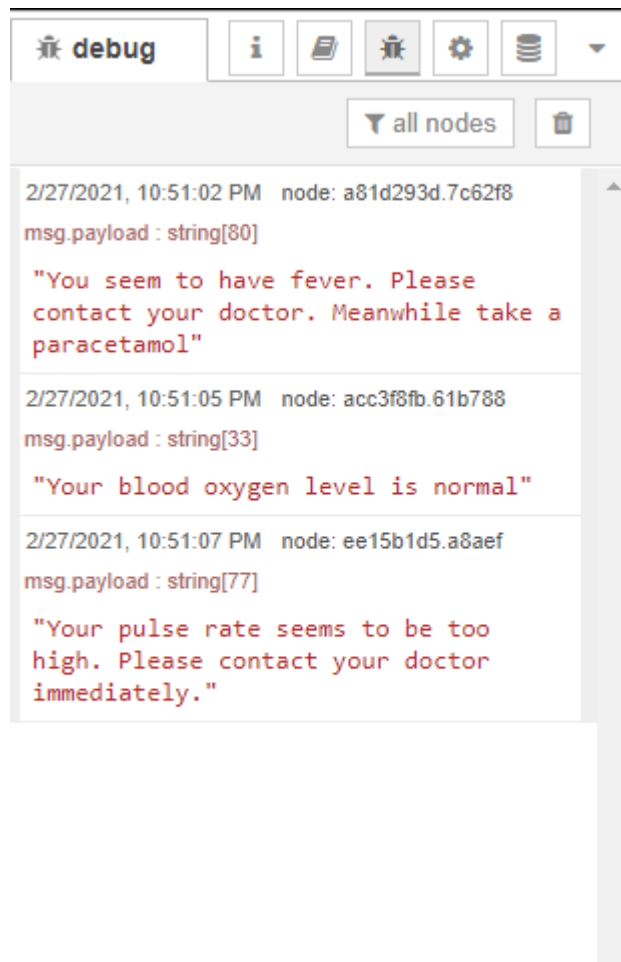
```

}
}
</style>
</head>
<body>
<!-- partial:index.partial.html -->
<div class="container">
<div class="row header">
<h1>Registration Form &nbsp;</h1>
<h3>Fill out the form below!</h3>
</div>
<div class="row body">
<form method="post" action="/ui">
<ul>
<li>
<p class="left">
<label for="first_name">first name</label>
<input type="text" name="first_name" placeholder="Alpanshu" />
</p>
<p class="pull-right">
<label for="last_name">last name</label>
<input type="text" name="last_name" placeholder="Kataria" />
</p>
</li>
<li>
<p>
<label for="email">email <span class="req">*</span></label>
<input type="email" name="email" placeholder="alpanshu.kataria@gmail.com" />
</p>
</li>
<li>
<p>
<label for="Mob. No.">Mob. No.<span class="req">*</span></label>
<input type="Mob. No." name="Mob. No." placeholder="Mob. No." />
</p>
</li>
<li>
<p>
<label for="Being diagnosed for:">Being diagnosed for:<span class="req">*</span></label>
<input type="Being diagnosed for:" name="Being diagnosed for:" placeholder="Being diagnosed for:" />
</p>
</li>
<li><div class="divider"></div></li>
<li>
<label for="Address">Address</label>
<textarea cols="46" rows="3" name="Address"></textarea>

```

```
</li>
  <li>
    <input class="btn btn-submit" type="submit" value="Submit" />
    <small>or press <strong>enter</strong></small>
  </li>
</ul>
</form>
</div>
</div>
<!-- partial -->
</body>
</html>
```

### Debug monitor:



The screenshot shows a 'debug' window with a toolbar containing icons for information, logs, a selected bug icon, settings, and a database. Below the toolbar is a filter button labeled 'all nodes' and a trash icon. The main area displays three log entries, each with a timestamp, node ID, and a message payload. The messages are displayed in a red monospace font.

Timestamp	Node ID	Message Payload
2/27/2021, 10:51:02 PM	node: a81d293d.7c62f8	msg.payload : string[80] "You seem to have fever. Please contact your doctor. Meanwhile take a paracetamol"
2/27/2021, 10:51:05 PM	node: acc3f8fb.61b788	msg.payload : string[33] "Your blood oxygen level is normal"
2/27/2021, 10:51:07 PM	node: ee15b1d5.a8aef	msg.payload : string[77] "Your pulse rate seems to be too high. Please contact your doctor immediately."

## Web Page for registration form:

127.0.0.1:1880/index

# Registration Form

Fill out the form below!

first name  last name

email \*

Mob. No.\*

Being diagnosed for:\*

Address

or press enter

## Dashboard:

Lab 4

<p>Temperature</p> <p>Temperature</p> <p>You seem to have fever. Please contact your doctor. Meanwhile take a paracetamol</p>	<p>Oximeter reading</p> <p>Blood oxygen level</p> <p>Your blood oxygen level is normal</p>	<p>pulse rate</p> <p>Pulse</p> <p>Your pulse rate seems to be too high. Please contact your doctor immediately.</p>
---	--	---