MEDICAL PORTAL

Samanvoy Panati

Introduction:

Health is the most important thing that every living being needs. In order to make healthcare easier to access, we here propose a doctor patient handling, managing system that helps doctors in their work and also patients to book doctor appointments and view medical progress. Patients are allowed to book empty slots online and those slots are reserved in their name. The system manages the appointment data for multiple doctors for various date and times. Each time a user visits a doctor his/her medical entry is stored in the database by doctor. Next time a user logs in he may view his/her entire medical history as and when needed. At the same time a doctor may view patient's medical history even before the patient visits him. With this information, the doctor learn more about the patient's medical condition and treat him accordingly .Every time after his appointment with the patient, the doctor adds the proposed treatment through his interface. This allows for an automated patient doctor handling system through an online interface.

Database Definition:

Our application uses a database to store all the data and retrieve it when needed. I used a MySQL database which is stored on the **cloud**. I created an account in freesqldatabase.com and then created the database using phpMyAdmin. FreeSQLDatabase.com is web based service which provides sql database functionality. The database contains five tables with their schema as given below.

LOGIN	
ID – Primary Key	Number(4)
Type	Varchar(1)
Password	Varchar(30)

PATIENT	
Pid - Primary Key, Foregn key(ID)	Int(4)
Firstname	Varchar(20)
Lastname	Varchar(20)
Sex	Varchar(1)

Email	Varchar(30)
phone	Varchar(12)

DOCTOR	
Did - Primary Key, Foregn key(ID)	Int(4)
Firstname	Varchar(20)
Lastname	Varchar(20)
Sex	Varchar(1)
Email	Varchar(30)
phone	Varchar(12)
Address	Varchar(50)
Category	Varchar(20)

BOOKING	
Bid – Primary Key	Int(10)
Did - Foregn key(DID)	Int(4)
Pid - Foregn key(PID)	Int(4)
Category	Varchar(20)
Bdate	Varchar(10)
Time	Varchar(8)

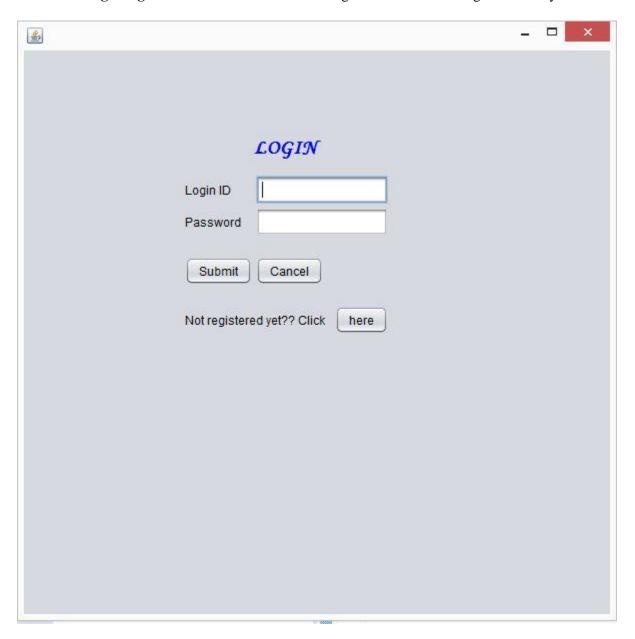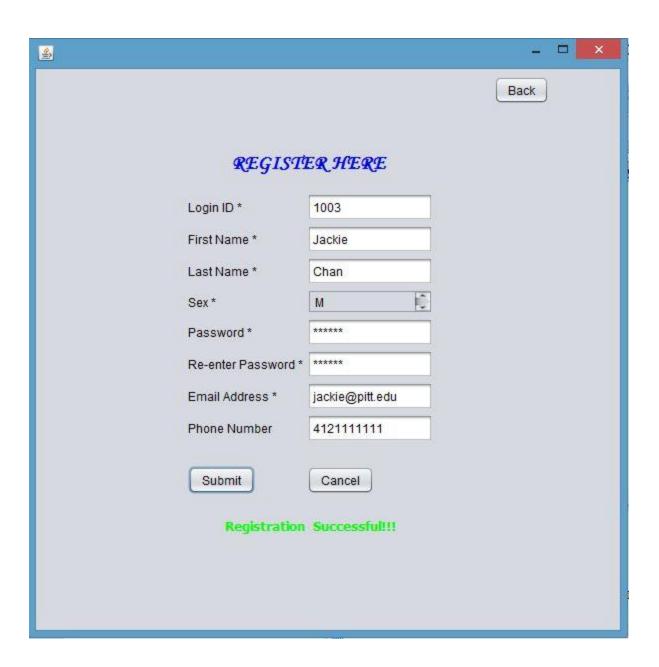| TREATMENT	
Bid – Primary Key, Foregn key(BID)	Int(10)
Did - Foregn key(DID)	Int(4)
Pid - Foregn key(PID)	Int(4)
Category	Varchar(20)
Treatment	Varchar(2000)
Note	Varchar(2000)
Bdate	Varchar(10)
Time	Varchar(8)

Hierarchical Representation:
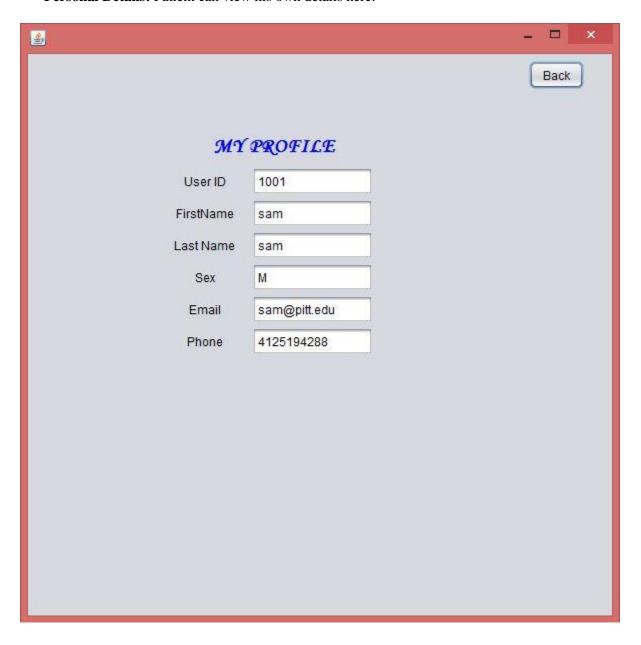
Working of Modules:

Every module is explained below with the corresponding figures.

- **Patient login/registration:** Patients have to first register themselves to login into the system
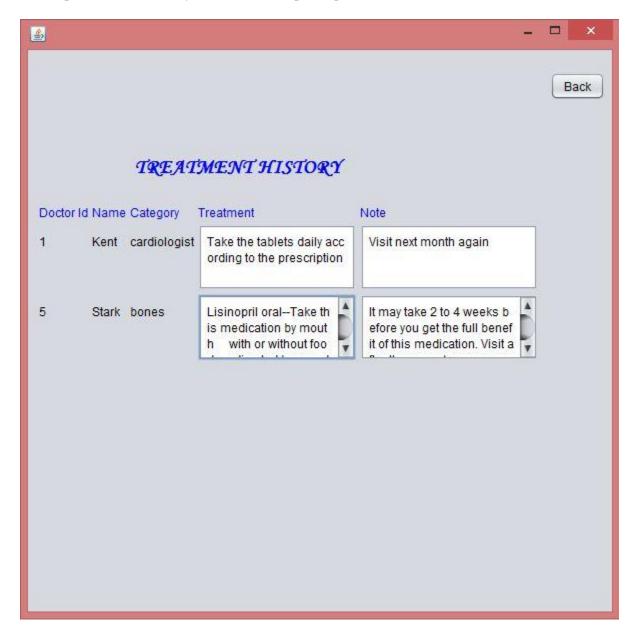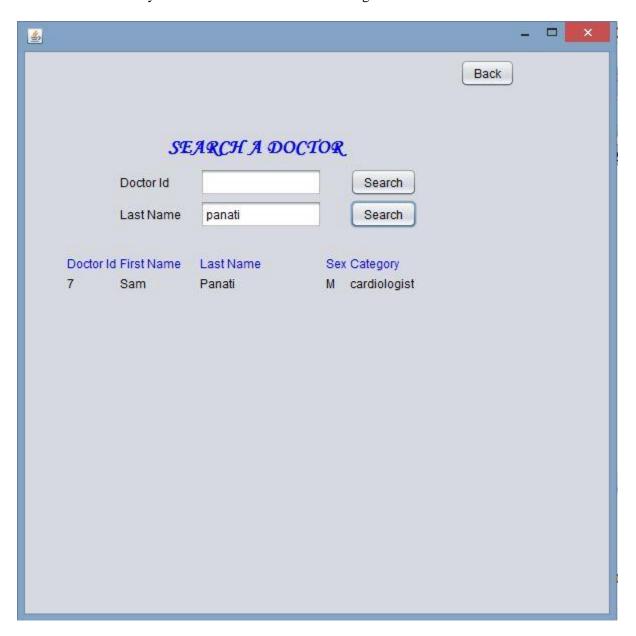
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REGISTER HERE

Login ID *	1003
First Name *	Jackie
Last Name *	Chan
Sex *	M
Password *	******
Re-enter Password *	******
Email Address *	jackie@pitt.edu
Phone Number	4121111111

Submit   Cancel

Registration Successful!!!

- **Personal Details:** Patient can view his own details here.

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MY PROFILE

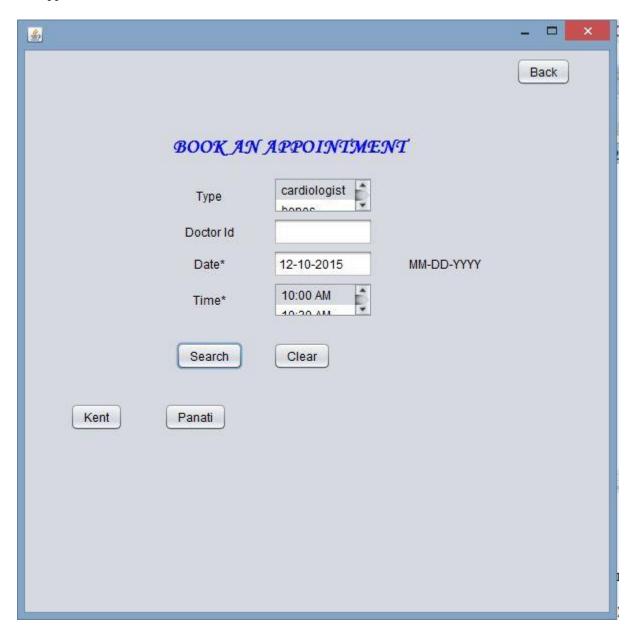|	
User ID	1001
FirstName	sam
Last Name	sam
Sex	M
Email	sam@pitt.edu
Phone	4125194288

- **Treatment History:** System allows to update and view patient's medical history. He can view his past treatments at any time and see the prescription and notes of it.
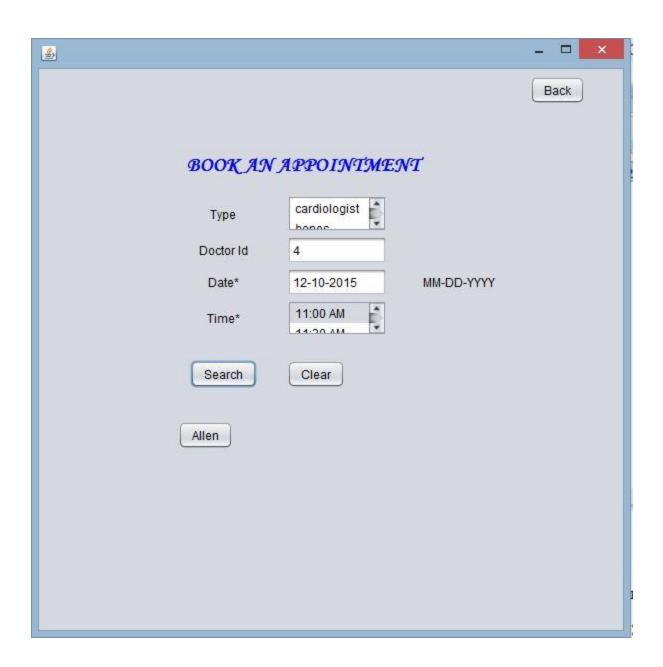

TREATMENT HISTORY

Doctor Id	Name	Category	Treatment	Note
1	Kent	cardiologist	Take the tablets daily according to the prescription	Visit next month again
5	Stark	bones	Lisinopril oral--Take this medication by mouth with or without foo	It may take 2 to 4 weeks before you get the full benefit of this medication. Visit a

- **Doctor Search:** System allows for doctor search through his id or last name.

SEARCH A DOCTOR

Doctor Id [   ] Search

Last Name [panati   ] Search

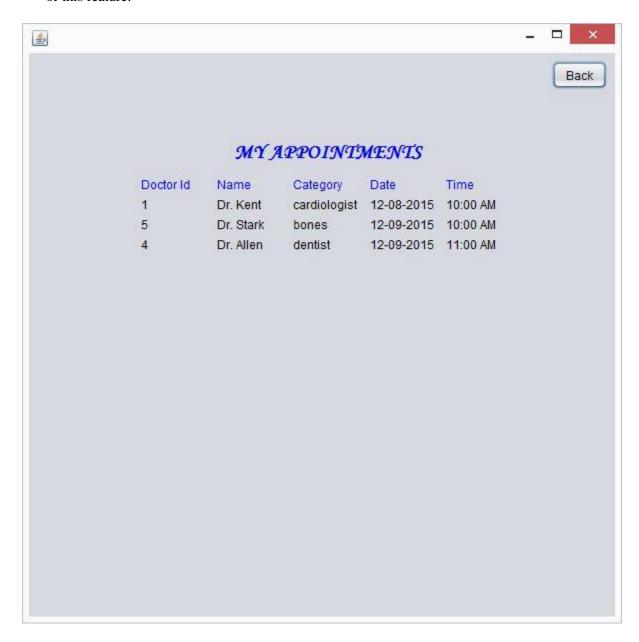| Doctor Id	First Name	Last Name	Sex	Category
7	Sam	Panati	M	cardiologist

- **Appointment booking for date and time:** Users can book appointment for their required date and time. Here he has the flexibility to choose his doctor based on doctor's id or category. He can select one of the categories present (For ex: cardiologist) on his required dates and times. Then the availability of the doctors is shown. He can select any doctor who is available to book an appointment.
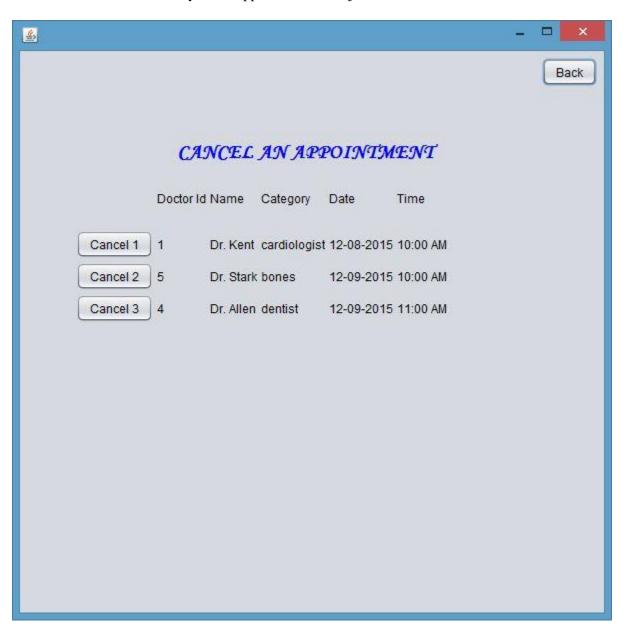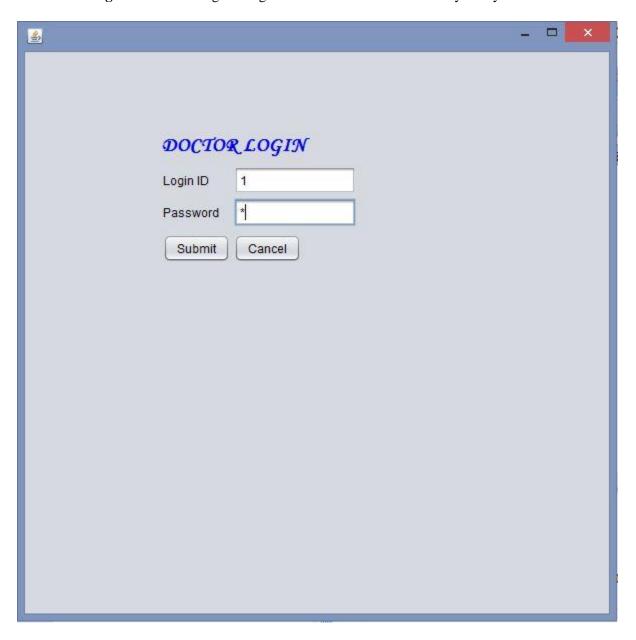
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BOOK AN APPOINTMENT

Type	cardiologist
	bones
Doctor Id	4
Date*	12-10-2015 MM-DD-YYYY
Time*	11:00 AM
	11:30 AM

Search   Clear

Allen

- **View my appointments:** The patient can look at his future appointments anytime with the help of this feature.

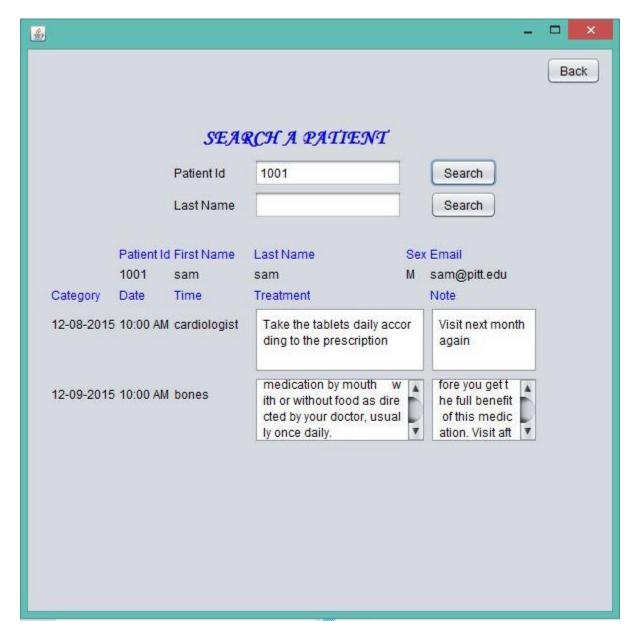| Doctor Id	Name	Category	Date	Time
1	Dr. Kent	cardiologist	12-08-2015	10:00 AM
5	Dr. Stark	bones	12-09-2015	10:00 AM
4	Dr. Allen	dentist	12-09-2015	11:00 AM

- **Booking cancellation:** User may even cancel their bookings by login into the system anytime. After clicking this option, the user is shown his future appointments with a cancel button for each of them. He can cancel any of the appointments with just one click.
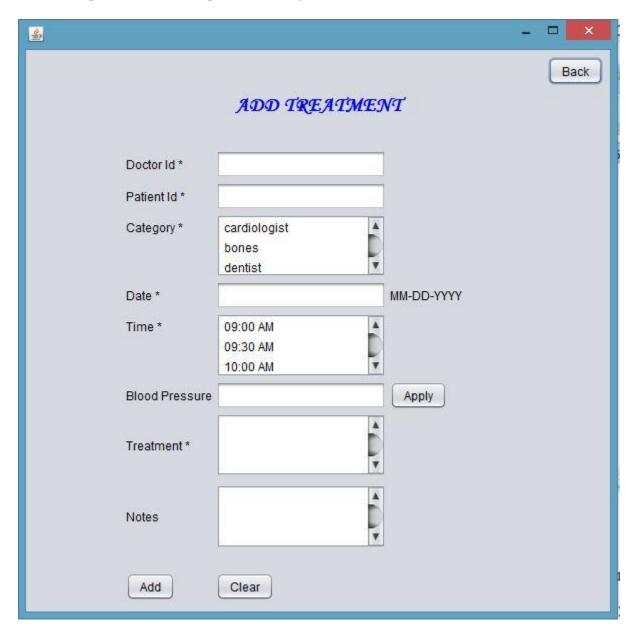
- **Doctor Login**: Doctor can login using his credentials which are already set by the admin.
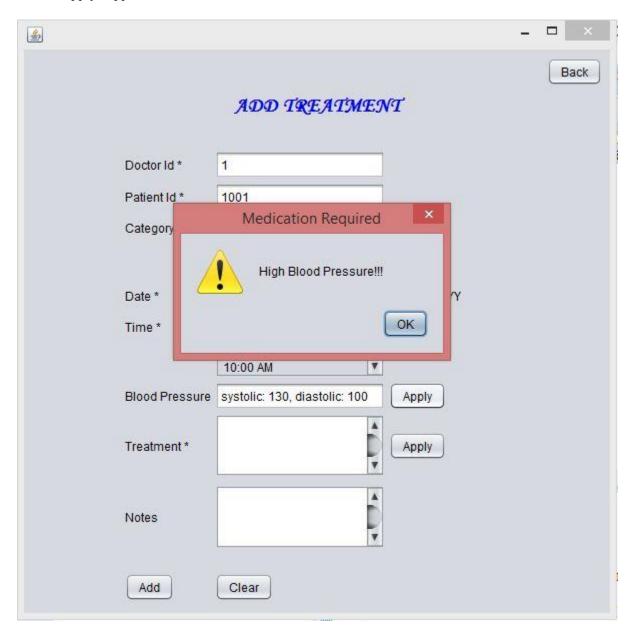
- **Patient Search:** Doctor can search a patient by giving the patient's id or his last name. Then he can view the patient details. Along with those details, he can also see the patient's treatment history with the dates and times. By looking at this, the doctor can get to know more about the patient's medical condition. In this way, he can be ready for the patient even before his appointment.
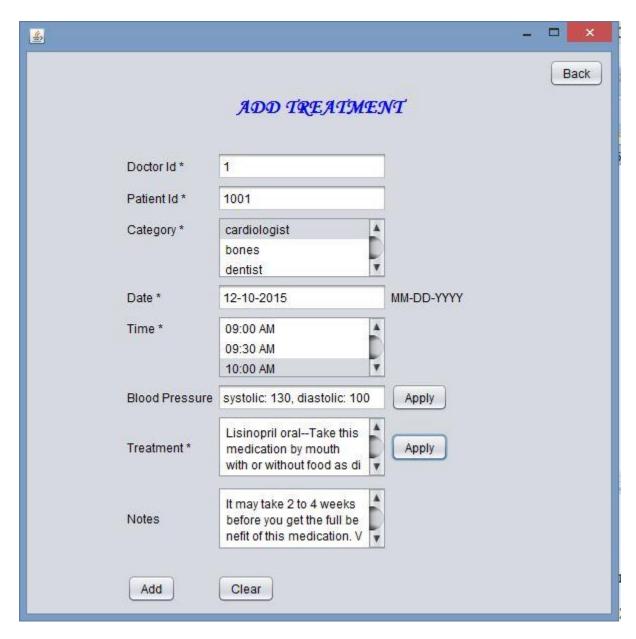
- **Add a treatment**: The doctor can add a treatment to the patient after he meets the patient. Here there is an option to enter blood pressure reading.

We have assumed the sensor reading will be written to a file. The doctor can just click one button and then **automatically** the **simulated sensor reading** will be appeared in the text field. If the patient has a normal blood pressure, a normal pop-up message will be shown. Suppose if the patient has a high/low blood pressure, a warning message is shown stating the same and a new button "apply" appears beside text area of the 'treatment'.

On clicking this, the **default treatment** for the blood pressure problem automatically appears on the 'treatment' and 'notes' text areas. The doctor can just click 'add' and then the treatment will be added.

All the required corresponding messages are shown after the operations are done. Some of the screen shots are given below. Positive messages are shown in green and the negative messages are shown in red.

Conclusion:

This application can help the patients to easily manage their appointments. It also helps them to see their treatment history whenever needed. It helps the doctors to search for a patient and see his treatment history even before meeting him. He can also add the treatments in an easy way. It makes use of the simulated blood pressure sensor data and helps the doctors to automatically add the default treatment for that disease. As this application's database is on the cloud, it can be accessed from anywhere at any time. It works as an efficient portal between doctor and patient. The demo of the application can be found at https://www.youtube.com/watch?v=lydpcbhJQmQ. The source code of the application can be found and

downloaded from the following shared folder .

Future Work:

The data from some other sensors like SPO2, EKG, heart rate can be integrated into this application. Also, these values required some data cleaning before integration. The application can be developed for mobiles so that the users can access it on the fly.