

Personal Health Monitor System

SE Group #12

Project Website: se1.engr.rutgers.edu/~13group12

Team Leader: Kyle Raucci

Team Profile:

Florian Pranata:	Java and C
Kyle Raucci:	Java and C++
Jie Huang:	C and C++ and basic PHP
Jose Villamor-Delgado:	C++
Cody Goodman:	C++

Problem Diagnosis:

Nowadays, people have a tough time keeping a healthy lifestyle. Some have too much going on in their lives to be bothered to keep track of their daily calories, blood pressure, etc. These people could be very busy with work or family, etc. to find the time to keep track of information about their diet/exercise. Others simply don't know and can't be bothered to read up on what is needed for a healthy lifestyle. Knowing and keeping track of health information is time consuming and requires a considerable amount of knowledge.

For people who have the intention to have a healthy lifestyle, there are challenges that they usually come across. One example is they are unable to put constant effort in keeping up with their exercising routines. Most of the time, what happens is, after a short period of regular exercise they somewhat lose their motivation to carry on the routines. On the other hand, some people who are able to maintain their routines don't do the correct way to exercise as prescribed by professionals, and as the result they have slow progress towards having the healthy lifestyle.

Athletes/Fitness Trainers keep some sort of spreadsheet to track of progress and use various methods to measure fitness level. It would be a great benefit for them if there was a way to crunch all those methods into one single device and to have some way of tracking information easier and faster.

Independence is important for everyone. Many elderly people would love to keep their independence but the fear of an unfortunate accident happening while they are home alone keeps them from being independent. Not only do they need a monitoring device to help them keep their independence, but they could benefit to keep track of their blood sugar, or when they should take their medicine, etc.

Proposed Treatment:

We propose a software program that can be used in tandem with a device that monitors various aspects of the human body.

Aspects to be monitored:

- Heart rate
- Body Temperature
- Calorie intake
- Heat Flux
- Calories burned
- Steps taken

Our software program will provide the knowledge and information about good diet/exercise for the user, by providing a set of instructions based on the inputted parameters. Therefore, users can focus more on themselves and their exercise instead of having to spend a considerable amount of time crunching numbers on a spreadsheet. The program will require users to enter a goal for themselves to monitor their health and exercise. The program will also suggest ways to improve upon user lifestyle, diet and/or exercise. Perhaps the the program will suggest that the user exercise more per day if the data shows that their progress towards their goal is not sufficient. In case the user doesn't exercise for a quite long period of time, it will give an estimated weight gain to motivate the user to carry on his/her exercise.

The monitoring system can also be used to keep track of users' vital signs and current health. The system should have its own healthcare network (such as a nearby hospital/clinic) for emergency purposes. This is especially helpful for elderly users who live on their own. If ever there was an event where the device was being used and could not detect a heartbeat, it would make an emergency call and alert the nearest hospital and could potentially save a life. The device could even be useful as a baby monitor. The system could help worried parents keep tabs on their baby's health and maybe even protect against mysterious infant deaths such as SIDS (Sudden Infant Death Syndrome). In this case, the monitoring device will send an alert to the program if such event happens.

Plan of Work:

With our skills in programming in both java and c++, we will be able to create a program for android/apple devices to help monitor health equipment on various human body parts. Also we will create a webpage to help collect and report back information to the user about their daily routine. We will need to create an app that will retrieve data from health monitoring devices and report back to a system or the web page.

This project will take about 2 months to complete with at least a week to research on how the monitoring devices work and how we shall retrieve data from it. We will also take a few days to research on what is considered health and what people should do in order to become healthy from various health problems or conditions. After completing the research on health, we will construct a way to manage the data to be retrieved from the monitoring devices and return information to the user.

We will create an application for mobile devices to retrieve data using a combination of java and c++ (in locations necessary in the program). After the completion of the application for an android device, we will take a week or two to debug and test out the program. If there are needed improvements in the software, we will take another two weeks to polish the program, if needed. In order to meet the projected date, the "Dates to expect" below shows all the dates of

each section of the project will be completed.

In order to finish our project efficiently, we will split up into 2 groups of 2-3 people that are responsible for corresponding functionalities that we plan to implement. Jose and Jie will work on user feedback, whilst Florian, Kyle, and Cody will work on health management.

The estimated cost of equipment for monitoring is about \$75. The cost of programs and web servers is approximately free. The project is expected to be finished by May 3. We will know that we have succeeded when we are able to collect data from the monitoring devices and have the data process a full report and return a diagnosis and treatment. We shall consult with a physician about the returned data to see if the data returned is what a doctor will tell his patient in a monthly check-up and if the returned data is verified to be true, then we know the program is a success.

Dates to expect:

February 05 - Research on monitoring devices
February 06 - Website to be started
February 12 - Statement of Work & Requirement
February 16 - Start of App development
February 18 - Functional Requirements Spec & UI
February 22 - Full Report # 1
March 1 - Interaction Diagram
March 8 - Class Diagram and System Architecture
March 15 - Full Report # 2
March 16 - Website launch
March 23 - App for android/apple device to be finished
March 24 - Start of testing and debugging
April 2 - Project Demo # 1
April 6 - Implement new changes to program (if necessary)
April 13 - Test and debug new implemented changes of program
April 27 - Full Report
May 1 - Project Demo # 2
May 3 - Finished Product