**Project plan**

1. **Requirements**
2. **Goals**
3. **Schedule**
4. **Groups**
5. **System design**
6. **Involving device/Technique**
7. **User Requirements**

This mobile system is designed for the pregnant women to monitor their vital signs and help them keep healthy during the pregnancy. To be easy to use for most of the pregnant women, the application should be easy enough to operate and understand.

* **Kernel Requirement**
  1. **Make Connection:** Users could use this application to connect the wearable device (given types)
  2. **Bodyweight management:** Users would receive a caution every day to record the bodyweight and can type the body weight number manually.
  3. **Report receive：**
     1. Users can view kinds of data in the last cycle.
     2. Users can view the visualized data diagrams.
     3. Users can be given guidances of life and health.
     4. User can see the long term data for a period of time.
* **Additional Requirement**
  1. Users can open the application directly without log in. (Easy to start using)
  2. Users can click the bottom menu to select module.
  3. Users can store their reports for further use.
  4. Users can get help by application about operations.
  5. Users can enter the personal body information for more accurate forecast.

**Functional Requirement**

* **Data Capture module**
  1. The mobile system (Android Application) can connect with the wearable devices which include heart rate belts, brain ware, smart scale, temperature sensor, breathing rate sensor, blood pressure sensor.
  2. The vital signs will be measure every minute. The vital data will be sent from wearable device to mobile application every 30 minutes.
  3. The bodyweight data is captured by manual record.
  4. The year and height is recorded from users.
  5. The data will be sent to the integration module for the next step.
  6. The connection between device and system is blue-tooth.
* **Data integration module**
  1. The data will be updated every 30 minutes when the system collects data from wearable device.
  2. The data will be processed and temporarily store in the application's memory.
  3. Multiply types of data can be integration in the mobile system.
  4. The received data will be stored for a month in the application memory for users' views.
  5. The data will be split into different categories and shown to the users.
  6. The data will be sent to the analysis module for the next step.
* **Data report and analysis module**
  1. Application could send a piece of message (every-day report) about the vital status analysis and advices at 8 a.m.
  2. The report is about his/her body vital data. The report will includes every-day vital signs data after processing and will give some advices according to the analysis algorithm such as having more sleep or having abnormal status and need to see doctor.
  3. The system could generate the report by the suggestion data and analysis algorithm daily and monthly (weekly).
  4. The report could be preserved by users and exported.
* **Data storage module**
  1. The data from users should be stored both in PC and mobile system.
  2. Considering the limited memory, the details of past data will be cleaned up and the daily report will be stored in the mobile system.
  3. The user could to connect with the PC monthly and send the data for the long-term storage.
* **Task management module (interface)**
  1. The system will push the every-day reports, suggestions and analysis at 8 a.m.
  2. The system will send a message to user if user does not. wear the devices.
  3. The data capture function can be switch on/off.
  4. The system will send a message if the user does not record the body weight until 8 p.m. every day.
  5. The user can view three mode of application:
     + current/last measured data
     + today's report
     + Long term report
     + Settings

1. **Goals**

The final goal of the project is to develop a monitoring system to receive data from devices.

1. **Bid**

After having learnt the concept and read some resources about mobile device and monitoring system, the team unanimously decide to submit the bid to this project.

1. **Requirements Specification**

Initially, the discussion was done in group to speculate users’ requirements. By attending the workshop with other group of the same project, information from testee was collected and parameters of devices are received. Finally, meeting with supervisor helps to modify requirement and affirm the goals of the subsequent project.

1. **Interim report**

Done by the half-stage of the project. The report should include 3 main parts. Firstly, the **current stage of project** should be mentioned, including **updated and expanded description of problem**, **background information** about the research, **requirement specification** for project, **initial design** (about system, prototype, and implementation) and **key implementation decisions**. The second part is about future, which includes discussion about problem encountered and time plan for the project. The last part is details, covering project name, group members and supervisor and so on.

1. System Design

The system is designed into 5 modules, which can implement respective functions. The details about each module are shown below.

1. Prototype
2. Final System Implementation
3. **Schedule**
4. **Groups (Member Assignment)**

**Software UI:**

**Connection:**

**Algorithm transplantation:**

**Function menu:**

1. **System design**

**Data Capture module**

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2. The vital signs will be measure every minute. The vital data will be sent from wearable device to mobile application every 30 minutes.

3. The bodyweight data is captured by manual record.

4. The year and height is recorded from users.

5. The data will be sent to the integration module for the next step.

6. The connection between device and system is blue-tooth.

**Data integration module**

1. The data will be updated every 30 minutes when the system collects data from wearable device.

2. The data will be processed and temporarily store in the application's memory.

3. Multiply types of data can be integration in the mobile system.

4. The received data will be stored for a month in the application memory for users' views.

5. The data will be split into different categories and shown to the users.

6. The data will be sent to the analysis module for the next step.

**Data report and analysis module**

1. Application could send a piece of message (every-day report) about the vital status analysis and advices at 8 a.m.

2. The report is about his/her body vital data. The report will include ever-day vital signs data after processing and will give some advices according to the analysis algorithm such as having more sleep or having abnormal status and need to see doctor.

3. The system could generate the report by the suggestion data and analysis algorithm daily and monthly (weekly)

4. The report could be persevered by users and exported.

**Data report and analysis module**

1. The data from users should be stored both in PC and mobile system.

2. Considering the limited memory, the details of past data will be cleaned up and the daily report will be stored in the mobile system.

3. The user could connect With the PC monthly and send the data for the long-term storage.

**Task management module (interface)**

1. The system will push the every-day reports, suggestions and analysis at 8 a.m.

2. The system will send a message to user if user does not wear the devices.

3. The data capture function can be switch on/off.

4. The system will send a message if the user does not record the body weight until 8 p.m. every day.

5. The user can view three mode of application:

Current / last measured data

Today’s report

Long term report

settings

1. **Involving Device/Technique**

**Heart rate device**: Polar H10

**Brain ware device**: NeuroSky TGAM

**Smart scale device**: Yunmai

Developing tools: Genymotion simulator, Adobe XD, Android Studio.