

## **HEALTH COMPANION (A MOBILE EXERCISE TRACKER AND REMINDER)**

*Muinuddin bin Abdul Wahab<sup>1</sup>, Ruhaidah Samsudin<sup>\*2</sup>*

*Department of Software Engineering, Faculty of Computing, Universiti Teknologi Malaysia,  
81310 Johor Bahru, Johor, Malaysia*

*<sup>1</sup>muinawz@gmail.com, <sup>2</sup>ruhaidah@utm.my*

### **Abstract**

*Healthy lifestyle has become an important thing to be achieved throughout our life. By looking at the current people's way of life, it is hard to achieve it since people nowadays have a very busy lifestyle. They do not have enough time to worrying about body health. Furthermore, people who are aware of this situation are currently having a hard time maintaining a healthy lifestyle. There are several factors that make them facing a hard time and one of them is there is no people or entity to guide them every single second in their life. Therefore, the aims of this project is to develop a mobile based exercise tracker and reminder to improve their way of life by remind them to consume enough water and take a good night sleep in addition with an option to track their exercise and the achievements. Evolutionary Prototyping Process is chosen for development of this project. The exact amount of prototyping will be based on the result of each prototype assessment by the customer. Sublime Text Editor is chosen to be used as the main platform to develop the application. The combination of new alternative languages of Ionic and AngularJs framework allow the code to be compiled into Android-based application and iOS-based application. In short, by completing this project, it is hope that the people awareness towards healthy lifestyle can be increased while improving life qualities.*

**Keywords:** Health Companion, health enthusiast, android-based system

### **1.0 Introduction**

In 16th June 2014, through an article online by Bernama that reporting the Malaysia has been rated as the highest among Asian countries for obesity. Overall in that article, 49% of women and 44% of men in Malaysia were found to be obese. Men or women with a body mass index as known as BMI of more than 30.0 is regarded as obese. There are three stages of obesity defined by the body mass index.

Due to obesity, there will be a high chance that they will get high blood pressure, heart diseases, diabetes, breathing problems, gout, cancer or Osteoarthritis, and additionally, several more diseases (DerSarkissian, 2016). Malaysians nowadays have already forgotten the healthy lifestyle they used to live with. Busy schedule, no one to remind them to take care of their health and no guideline lead our people's lives into an unhealthy lifestyle.

Body health is a very important aspect in human's life. With a good and healthy body, one can push their limit to pursue their dreams. Without a healthy body, a wealth will be no meaning at all. As a quote by Herophilus, a Greek physician, "When health is absent, wisdom cannot reveal itself, art cannot manifest, strength cannot fight, wealth becomes useless, and intelligence cannot be applied". It is completely true that without health, everything else will not matter.

The main objective of the project is to design and develop a prototype for Health Companion using appropriate software engineering principle. Once the system has been developed, the system was validated and tested on the functionality and the usability of the developed system design on at least two platforms which are Windows and Android.

Nowadays, it is important to obtain a healthy body to be used to pursue wealth in order to allow ourselves to keep up to date with technological update, knowledges and happiness. With wealth, one can pursue anything in any field as they seem fit and gain new knowledge. Hence the idea of an application that can help them to stay healthy and fit is very important. The discussion will start in discussing the project's objectives, the methodology used to complete the project, the results of the project which is the Health Companion application, the discussion on the end results of the project and the conclusion.

## **2.0 Methodology**

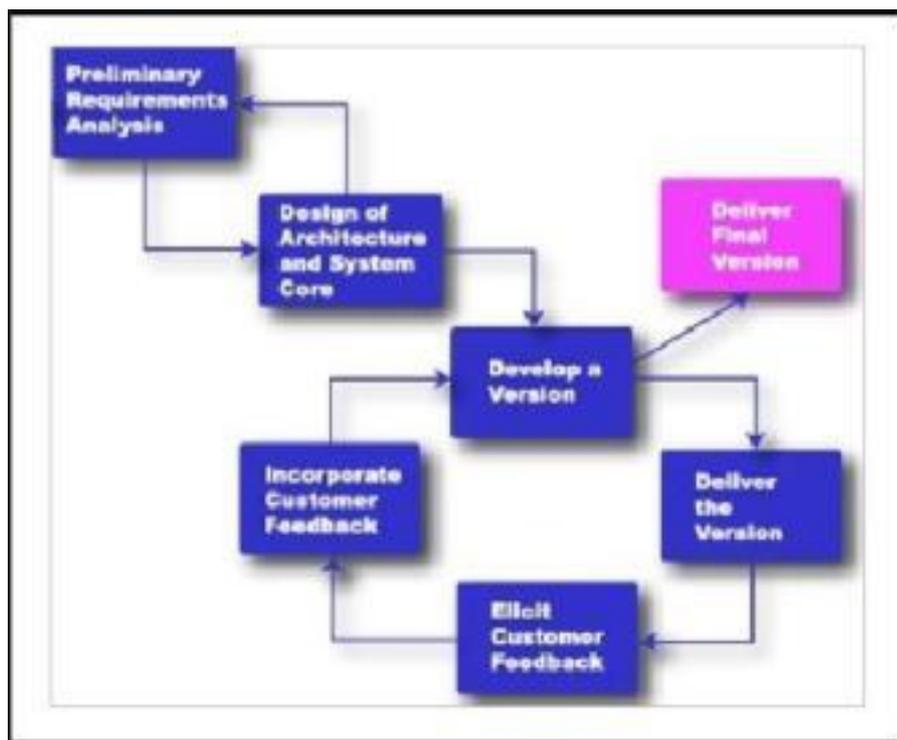
Evolutionary is one of the two approaches exist in prototyping. The important thing in any development process is to meet the user requirements. Prototyping is them method that is used by creating a prototype that acts as some aspects or requirements of the full system.

For evolutionary prototyping, the prototype will be used for towards the full and complete system. Prototype from Evolutionary Prototyping is a functional systems. Evolutionary delivery is a lifecycle model that straddles the ground between evolutionary prototyping and staged delivery." (McConnell, 1996).

This method is suitable because it allows the improvements to be made to each version of prototype. It also allows the change of requirements if it occurs. It is because of the ability to receive refinement, the end product will not deviate from the main purpose or the user's expectation.

The prototype is continually refined and rebuilt into a more functional prototype until the end result is obtained. There are some advantages when using the Evolutionary Prototyping. Evolutionary prototyping can reduce time and costs because it can cope with changes to the requirements if needed. It also can improve and increase user involvement. Besides, it allows the user to see and interact with prototype while allowing them to provide better and more complete feedback and specifications.

The Evolutionary Prototyping involves seven phases as shown in Figure 1 below (Sommerville, 2011). They are preliminary requirements analysis phase, design of architecture and system core phase, develop a version phase, deliver the version phase, elicit customer feedback phase, incorporate customer feedback phase and deliver final version phase.



**Figure 1** Phase in Evolutionary Prototyping Process

Health Companion uses this method since every functions and options created will be tested and the resulting result will affect how the development process will be continued. Any updates will be patched into the new prototype and enhance the user's experience.

In the preliminary requirements analysis stage, the system's requirements were gathered from the users and the architecture design and the system core were made. Later on, it was develop into an early version of software based on the users' requirements. The version was presented to the user and the user's experience and feedbacks were taken into account as another requirements to be added into the next version.

The steps were taken several times to ensure the system is correspond to the users' point of view and the complete version was accepted as the final version and delivered to the users.

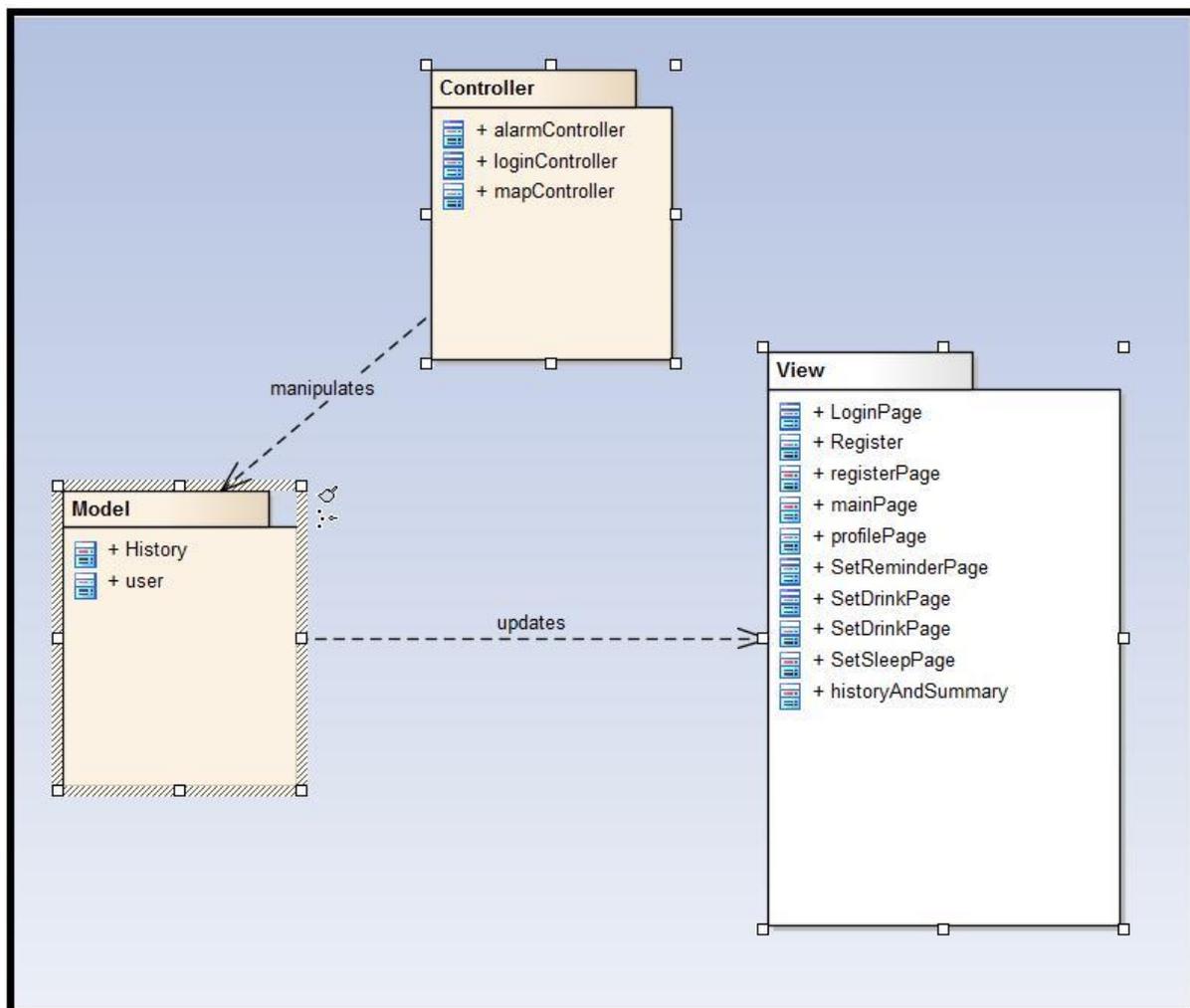
### 3.0 Result

Below is an achievement achieve by Health Companion. Some functionalities and features of the system is compared.

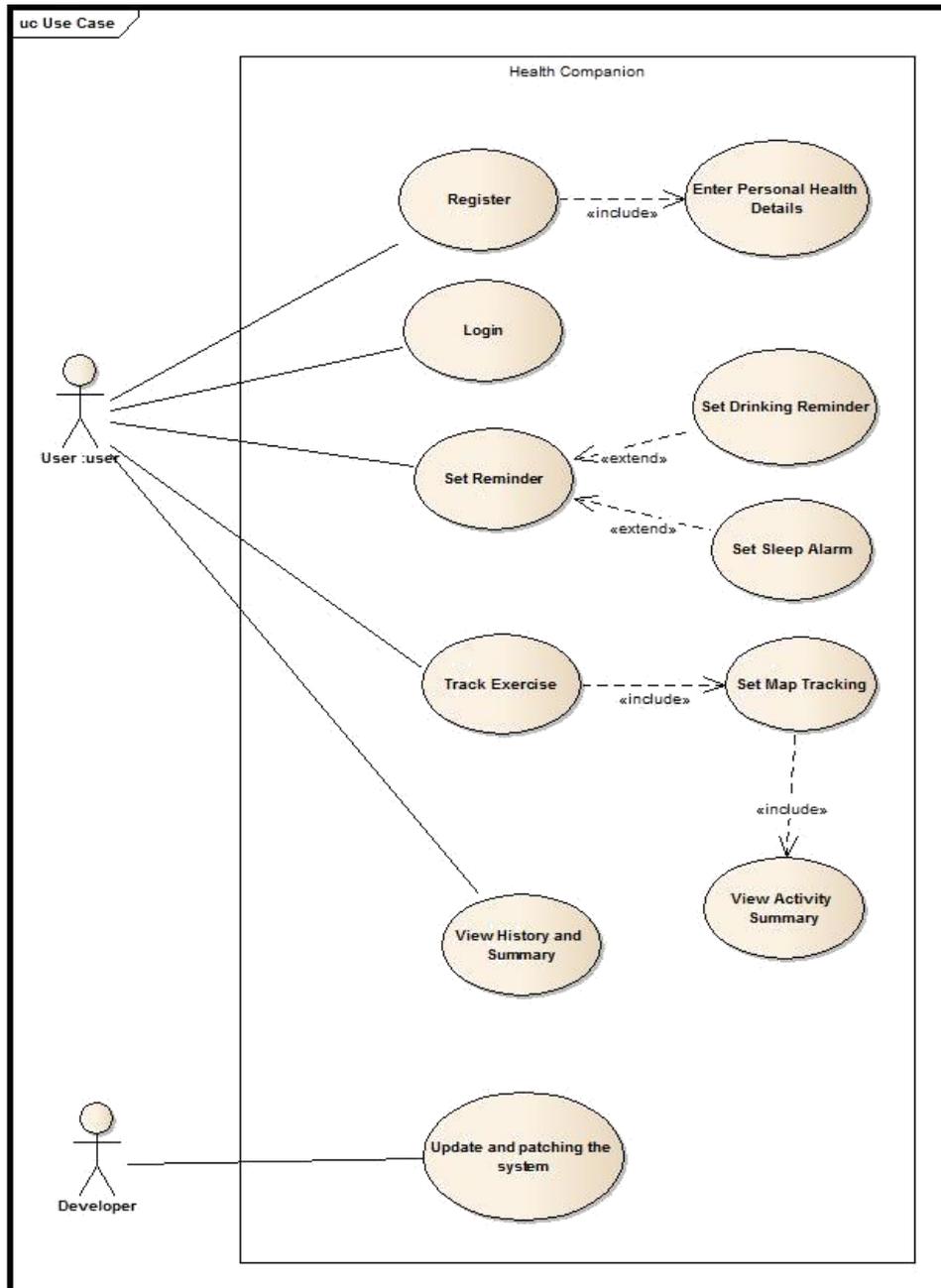
**Table 1:** Health Companion achievement compared to other websites

Features/ Functionality	Health Companion	Google Fit	Aqualert	Runtastic	Endomondo
User friendly	YES	YES	YES	YES	YES
Exercise Tracking	YES	NO	NO	YES	YES
Map assistance	YES	NO	NO	YES	YES
Summary and history of activities	YES	YES	NO	YES	YES
Readability (graphical presentation)	YES	YES	YES	YES	YES
Sleep alarm with reminder	YES	NO	NO	NO	NO
Drink Reminder	YES	NO	NO	NO	NO

Table 1 discuss the comparison between Health Companion with other competitors of their functionalities against each other. The results shown in the table represents the added bonus of the Health Companion compared to other rivals. Figure 2 below represents the whole architecture design of Health Companion that utilizes the MVC architectural design that allows separation of classes to each of their own specialties.



**Figure 2** Health Companion MVC architecture



**Figure 3** Use Case Diagram for Health Companion

Figure 3 above represents the functionalities of Health Companion. It showed that Health Companion consists of six(6) main functions that will help the users to undergoing their exercises.

## 6.0 Discussion

Health Companion is an android-based application that offers exercise tracking to health enthusiast. In addition to that, the functions to remind the user to drink properly and take a good and adequate sleep will be a major changes in the user experience.

Health Companion will make sure the user will have their health taken care of. The requirements were mostly elicited from numerous existing application especially, those four that were mention earlier in the Table 1.

The development of Health Companion utilizes the AngularJS 1.0 with Ionic presentation to easily add new features since reusability for this method is high. With the help of Evolutionary Prototyping method, new and updated features can be easily recognizes and instantly modified.

The testing of the Health Companion was done using android based mobile phone by some students from Faculty of Computing, Universiti Teknologi Malaysia. Although the application can't fight the user interface of others, the functionalities were new to the market and that was a viable point to fight those that exist. Hence, the Health Companion will bring goods to the user once the user is into it.

## 7.0 Conclusion

Development of Health Companion has achieved its objectives. Features, and functionalities of a key criteria of an application were identified and implemented on it. This development system is design by using Model-View-Controller (MVC) architecture and the methodology is Evolutionary Prototyping. Health Companion can support users from anywhere around the world since it uses the Google Map API for exercise tracking.

Hopefully, Health Companion able contribute in order to solve problem among expected users which is group of people that loved to exercise as their outdoor. Several improvements also can be considered as future work such as social interaction, sharing to social media, working in online mode and most especially improved user interface.

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