UTM Computing Proceedings
Innovations in Computing Technology and Applications
Volume: 1 | Year: 2016 | ISBN: 978-967-0194-81-3

Wireless Temperature Monitoring System

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Abstract

In today globalization era, people are facing multiple physical, physiological, psychological problems. They have no time to visit doctors repeatedly. Sometimes there is a situation when a patient requires treatment on the spot. As an example, a new born baby need parent full attention regardless of time to raise them. In the past, the previous generation implementing a traditional method in order to take the temperature reading such as using the thermometer to check their baby's body temperature repeatedly within a period of time. This inefficient method is very time consuming, put much effort and even discomfort the baby. Wireless Temperature Monitoring System is one of the solutions to address this problem. This system can be used to improve the old method by monitoring the body temperature remotely from the smartphone. This system only start to monitor the body temperature when the user attempt to do so. By implementing the Internet of Things (IOT) technologies, this system is considered one of the key research areas in computer science and the healthcare application industries for improving the quality of life.

Keywords: Wireless, Temperature Monitoring, Healthcare Application

1.0 Introduction

Although the trends of using mobile healthcare application have been widespread, but for some patients that need further examination they need to make an appointment with the doctor. The appointment is always take a long time, especially for high fever that get treatment in government hospitals. Moreover, current method to take body temperature by using standard thermometer is very time consuming and need much effort. Therefore, the purpose of this project is to overcome the weakness of traditional method to measure body temperature and provide some new features by developing an android based system.

The objectives of the project are i) to study the health monitoring system involving body temperature, ii) to design a portable device system namely Wireless Temperature Monitoring System for monitoring body temperature and iii) to test the effectiveness of the Wireless Temperature Monitoring System in monitoring body temperature.

2.0 Methodology

The methodology that have implemented in this project is Rapid Application Development, in short is RAD. Rapid Application Development is a methodology that is planned to assist developers to grow their project or software in the shortest time while preserving the character of software.

Requirement Planning Phase	• I study the current Wireless Sensor Network technology • Identify existing mobile application • Research on technology and tools used. • Identify hardware and software specification
User design Phase	• Construct a system model with data and processes • Build the system model using Enterprise Architecture • Construct the UML diagram to have better understanding • Develop all function to meet identified requirement
Construction Phase	• Implement system design • Develop the system • Test the developed system
Implementation Phase	• The developed system is finalized • Perform last testing • Provide user manual

3.0 Result

Wireless Temperature Monitoring System is a system that consist of three important modules or application, includes the Wireless Temperature Monitoring System Client android mobile application, Wireless Temperature Monitoring System Web application and Wireless Temperature Monitoring System Administrator module. The main function of Wireless Temperature Monitoring System Client application is to allow the children's family to track and view details information about children's body temperature.

While the Wireless Temperature Monitoring System Client Web application is developed as a web-based application to allow the children's family to track and view detail information body temperature own by the children. Lastly, the Wireless Temperature Monitoring System Administrator modules allow the Parent to execute a command that will start the body temperature reading process. Besides, parent can update the temperature log that contain child's body temperature with additional information such as timestamp.

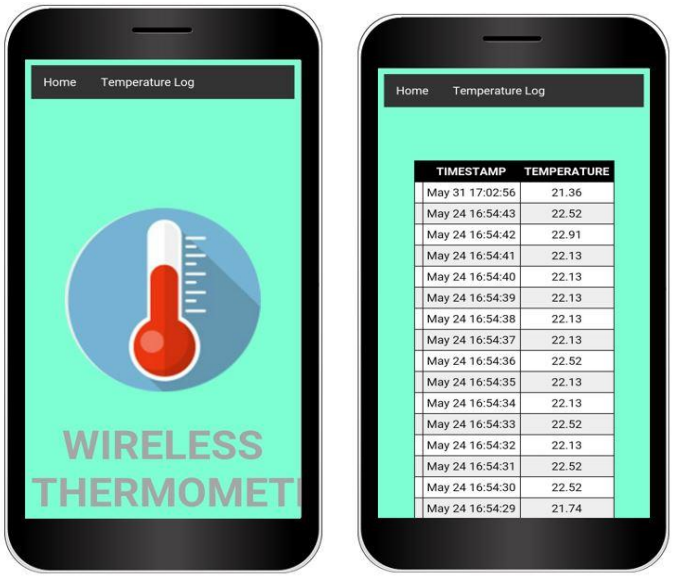

Figure 1: Interface of the system

4.0 Discussion

At the end of this project, the Wireless Temperature Monitoring System is successfully build to meet the objectives, specification and requirements that has been identified in the early stage of this project. The Wireless Temperature Monitoring System is built from three major module, the Wireless Temperature Monitoring System Client Android Application, Wireless Temperature Monitoring System Client Web Application and Wireless Temperature Monitoring System Administrator module.

The Wireless Temperature Monitoring System Client is an Android mobile application that run on a user's smartphone who are the children's family. On the other hand, the Wireless Temperature Monitoring System Administrator module is a terminal hosted on a RaspberryPi and the children's parent is the only user of this module. All these three module are essential in order to provide the full functionality of Wireless Temperature Monitoring System.

5.0 Conclusion

Wireless Temperature Monitoring System is a system that consist of three important modules or application, includes the Wireless Temperature Monitoring System Client android mobile application, Wireless Temperature Monitoring System Web application and Wireless Temperature Monitoring System Administrator module. The main function of Wireless Temperature Monitoring System Client application is to allow the children's family to track and view details information about children's body temperature. While the Wireless Temperature Monitoring System Client Web application is developed as a web-based application to allow the children's family to track and view detail information body temperature own by the children. Lastly, the Wireless Temperature Monitoring System Administrator modules allow the Parent to execute a command that will start the body temperature reading process. Besides, parent can update the temperature logs that contain child's body temperature with additional information such as timestamp.

The Wireless Temperature Monitoring System Mobile application is anticipated to aid the parent in monitoring the body temperature of their children. This application is anticipated to become an alternative method used to read body temperature. In conclusion, this project is successfully completed as all the identified objectives has been achieved and full filled. Further enhancement and future works will be continued to improve the Wireless Temperature Monitoring System in multiple aspects, includes the reliability, functionality and compatibility as well.

References

Matthew D'Souza, Montserrat Ros, Adam Postula, "Wireless Medical Information System Network for Patient ECG Monitoring" Digital System Design: Architectures, Methods and Tools, 2006, DSD 2006, 9th EUROMICRO Conference, 2006, pp.617-624.

Yuce, M. R. and H. Chee Keong, "Implementation of body area networks based on MICS/WMTS medical bands for healthcare systems", Engineering in Medicine and Biology Society, 2008, EMBS 2008, 30th Annual International Conference of the IEEE, 2008, pp.3417-3421.

Arun E, Marimuthu V,Marimuthu V, Pradeep E, Karthikeyan M, "Remote Patient Monitoring-An Implementation in ICU Ward", Software Engineer, Department of Electrical and Electronics Engineering, Value Source Technologies, US Technologies, Kathir College of Engineering, Anna University, 2011, pp.1-5.

Zulhani Rasin, Mohd Rizal Abdullah, "Water Quality Monitoring System using Zigbee Based Wireless Sensor Network", Faculty of Electrical Engineering, Universiti Teknikal Malaysia, UTeM, International Journal of Engineering & Technology IJET Vol. 9 No. 10, 2007, pp.24-29.

P. Khanja, S Wattanasirichaigoon, J. Natwichai, L. Ramingwong, "A Web Base System for ECG Data Transferred using Zigbee/IEEE Technology", Department of Computer Engineering, Chiang Mai University, Faculty of Medicine, Srinakharinwirot University, 2005, pp. 46-49.