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FACULTY OF ENGINEERING
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A GSM-Based Customer Water Meter Monitoring and Control System

BY

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Declaration

I, JJUUKO ARNOLD, hereby declare that this final year project report is my original work except where explicit citation has been made and it has not been presented to any Institution of higher learning for any academic award.

Signature.....*Jjuuko*.....

Date: *05th June -16*.....

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Approval

This is to certify that the project report under the title “A GSM-Based Customer Water Meter Monitoring and Control System” has been done under my supervision and is now ready for submission.

Sign: 

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Acknowledgement

First and fore most I would like to take this opportunity to thank the almighty Lord for providing protection and life to me and everyone around me during the time of my research. For it was through the health and strength I had that I was able to make it to this level. Secondly I would like to thank my parents and family who have looked after my welfare and finances and assured that I carried on my education successfully may the good Lord award them abundantly.

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Abstract

A water meter is a device used to measure the volume of water consumed by either a residential or a commercial establishment. Analog meters is usually installed within the area of the consumer and readings from the odometer are read on a monthly basis by hired personnel from the National Water and Sewerage Company. Manual reading of the water meter is a tedious job and throughout the years this method has shown a lot of noticeable disadvantages, also, sometimes water meters are read and the Company (NWSC) fails to deliver the bills in the minimum time possible also when taps are disconnected, due to failure of users to pay the water bills, the company takes so long to reconnect the users back after they have cleared their water bills-which affects users and rendering the company un-reliable.

This project is therefore aimed at developing a GSM-Based Customer Water Meter Monitoring and Control System that will enhance the Analog water meter data collection by utilizing wireless technology using GSM module system for sending water bills directly to customers/users in addition to connecting and disconnecting water flow.

The work is mainly arranged in six chapters; Chapter one includes the introduction of GSM-Based Customer Water Meter Monitoring and Control System. Chapter two discusses the literature related to the systems, Chapter three illustrates the methodologies used in coming up with the working prototype of the system, Chapter four includes system design and analysis, Chapter five is containing the implementation and testing of the system and chapter six contains the summary of the work, , discussions and recommendations.

List of Acronyms

GSM Global System for Mobile communication, an international standard for mobile phones

GPRS General Packet Radio Service

SMS Short text Messages

List of figures

FIGURE 1 THE VENTURI TUBE AND ITS PRESSURE DROP**ERROR!**

BOOKMARK NOT DEFINED.

FIGURE 2 THE ANALOGUE WATER METER**ERROR!** **BOOKMARK NOT**

DEFINED.

FIGURE 3 HARDWARE ARCHITECTURAL VIEW OF THE PROPOSED
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CHAPTER ONE: INTRODUCTION

1.1 Background

Out of the earth's surface almost 71% surface is covered with water. Only 3% of water can be used as drinking water or fresh water and 97% water is sea water which cannot be used by human out of the 71% available water on earth (Uganda Beaurau Of Statistics, 2014). Tremendous population growth, climate, global warming, and irresponsible water usage cause insufficient and uneven distribution of drinking water. So measuring the water usage and providing it with proper amount will limit the wastage of water in society.

Traditionally the usage of water was measured by use mechanical meters in which water flow drives mechanical gears which drives moving arrow pointer on the water meter scale, such meters need to be read, in a sequence not exceeding thirty 30 days, in customer premises which is a time consuming process (Raner N. Dita Paolo Pedro C, 2013). The billing was computed basing on approved water rates according to the amount of water consumed by the user, the water bills/invoices were then delivered to the customers. Users who failed to meet their obligations were manually disconnected and reconnected after clearing their water bills.

In Uganda, National Water and Sewerage Corporation (NWSC) was contracted to control the usage of water, that is, extension of water service all over Uganda, measuring, billing as well as connection and disconnection of water taps in Uganda (Howard, Justine, & Justine, 2014). The process of measuring water usage all over Uganda requires recruitment of a number of personnel and starting up a number office branches in order to provide water services all over the whole country. To control the water usage, NWSC installed analog water meters to measure the water usage and to bill the users according to the amount of water being used and bills/invoices sent to customers in a few days after billing. Here, a number of personnel are employed, to carry out the activity of reading, billing, monitoring and controlling water taps, and a lot of money is spent on both transport and remuneration for the employees.

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