BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

A COIN OPERATED CHARGING SYSTEM FOR MOBILE DEVICES

BY

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DECLARATION

I, Nalwasa Eria, declare that the work described in this project report is, except for citations and quotations, entirely my own work and has not been submitted as an exercise for a degree at this or any other institute of higher learning.

Signature: ……

Name: Nalwasa Eria

APPROVAL

This is to approve that this project report under the title "A Coin Operated Charging System for Mobile Devices" has been fully worked on and submitted to the department of computer engineering, Busitema University, under my supervision:

…….

MR. BWIRE FELIX

Date: ……

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DEDICATION

I dedicate this report to God Almighty who is the ultimate giver of wisdom and to my beloved parents for their financial support and encouragement throughout my stay in school.

Also, to my brothers; Bukenya Ramathan, Waibi Paul, and Napeera Jackson, I dedicate this piece of work.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS

AC	Alternating Current
IC	Integrated Circuit
LCD	Liquid Crystal Display
USB	Universal Serial Bus
IR	Infra-Red
RISC	Reduced Instruction Set Computing
I/O	Input/output
RAM	Random Access Memory
EEPROM	Electronically Erasable Programmable Read Only Memory
SRAM	Static Random Access Memory
ADC	Analog to Digital Converter
CPM	Community Power from Mobile

ABSTRACT

The coin operated charging system for mobile devices, described in this report, provides a unique service that enables individuals to charge their mobile devices from where they are and at any time so that so that their batteries do not go flat. It is also a source of revenue for site providers. The coin operated mobile battery charger can be quickly and easily installed outside any business premises. Many times battery becomes flat in the middle of a conversation particularly at inconvenient times when access to a standard charger is not possible. The coin-based mobile battery chargers are designed to solve this problem.
This project was therefore aimed at developing a system that would solve the above problem.
The work is arranged mainly in six chapters:
Chapter one includes the introduction, problem statement, objectives, justification, and scope of the project, chapter two discusses the literature related to the system, chapter three illustrates the methodologies used in coming up with the working system, chapter four includes system design and analysis, chapter five contains the implementation and testing of the system and chapter six contains the summary of the work, recommendations, and conclusion.

CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter consists of the background of the study, problem statement, objectives of the study, justification, significance of the study, scope and the limitations.

1.1 Background

Africa has experienced an incredible boom in mobile phone use over the past decade. In 1998, there were fewer than four million mobiles on the continent [1]. Today, there are more than 500 million. In Uganda alone, 10 million people, or about 30% of the population, own a mobile phone, and that number is growing rapidly every year. For Ugandans, these ubiquitous devices are more than just a handy way of communicating on the fly: they are a way of life.

Mobile phones carry huge economic potential in undeveloped parts of Africa. A 2005 London Business School study found that for every additional 10 mobile phones per 100 people in a developing country, GDP rises by 0.5%. As well as enabling communication and the movement of money, mobile networks can also be used to spread vital information about farming and healthcare to isolated rural areas vulnerable to the effects of drought and disease [1].

One of the prominent features of mobile devices, particularly phones, is a low battery life time whereby one has to recharge the battery after it has been drained [2]. Currently in Uganda, there are various charging points with attendants where one can take their phone for charging and pays money to the business attendant. This somehow solves the problem of charging mobile devices but a challenge still remains, these charging places may not open up some days and, the attendants are unable to be available all the time. For example, one may need to charge late in the night and there is no one to attend to them. There is need for a system that can be available 24 hours.

Phone charging is a profitable business with a lot of potential for growth. It creates income for the business owner and also, through taxes levied, to the government [3].

1.2 Problem Statement

Many times battery becomes flat in the middle of a conversation particularly at inconvenient times when access to one's charger is not possible. For instance, a person who works over the night may find it hard to find a charging point so as to charge their phone battery in case it becomes flat. This is a problem because people do not normally move with their phone chargers due to the inconvenience involved with carrying them; others forget them at home, in hotels, and other places. On this ground therefore, there is need for a coin-paid mobile battery charging system so as to be able to charge mobile devices' batteries anytime and anywhere.

1.3 Objectives

1.3.1 Main Objective

To design and implement a system that will enable users charge their mobile devices any time, after coin insertion into the system.

1.3.2 Specific Objectives

i) To review relevant information, defining key terms concerning mobile device chargers.

ii) To identify the various mobile battery charging systems in place and their weaknesses.

iii) To specify the proposed system with its main components and the technologies used.

iv) To design and implement the proposed system.

v) To test and validate the system.

1.4 Justification

Mobile phones are now becoming the major source of either business or personal means of communication worldwide [4]. People nowadays often forget and couldn't ascertain the battery percentage of their mobile phones due to the time hassle and a lot more reasonable causes prior leaving their respective houses. Sometimes, they forget their mobile chargers in hotels and other places where they may be. This probably results to low battery level and unfortunately sometimes costing dying of battery once they are at work, school, hospital or any public places, and couldn't reactivate a low or dead battery nowhere else but at home. [5]

Even though kiosks with charging points and attendants are in place, there is no guarantee that they will always be open and that attendants will be available all the time.

1.5 Scope

1.5.1 Content Scope

The scope is limited to developing a system that gives a connected phone the micro-pulse for charging as long as the user slots in the right coin, and counts down for a specified period, for instance, one minute, after which power is cut off and charging stops.

1.5.2 Time Scope

The system was designed and implemented in a period of 8 months.

1.5.3 Geographical Scope

This system applies in public places where the owner of the charging device is in close proximity for example; in hospitals, conference halls, hotels, serviced offices, leisure centres, Health clubs, retail outlets, internet cafes, and airports.

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