

THE ROLE OF OPERATING SYSTEM TO THE COMPUTER SYSTEM/SYSTEM COMMUNICATION

A MINI PROJECT

PRESENTED BY:

NAME: OWAN VALENTINE JOSEPH

REGISTRATION NO: DCRM/07/13/1562

DEPARTMENT: COMPUTER REPAIRS AND MAINTENANCE

SUBMITTED TO

MR JULIUS UKAH (COURSE LECTURER)

PACIFIC COMPUTERS AND MANAGEMENT COLLEGE, CALABAR.

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF
DIPLOMA IN COMPUTER REPAIRS AND MAINTENANCE (DCRM)**

DECEMBER, 2013.

CERTIFICATION

I certify that this mini project was carried by OWAN VALENTINE JOSEPH with registration number DCRM/07/13/1562 of the department of COMPUTER REPAIRS AND MAINTENANCE, pacific computers and management college, Calabar.

NAME OF SUPERVISOR:.....

SIGNATURE:.....

DATE:.....

SIGNATURE OF STUDENT:.....

DATE:.....

DEDICATION

This mini project is dedicated to the almighty God and to my beloved parents,

Mr. /Mrs. Owan Joshua N.

TO GOD IS THE ERNEST ADORATION!

ACKNOWLEDGEMENT

I am grateful to the God for giving me the grace and opportunity throughout the period of my education.

On a whole, I sincerely cannot afford forgetting my supervisor Mr. Julius Ukah for his time and energy in trying to constructively criticize and provide valuable suggestions without which this work may not have been a success.

I wish to express my utmost joy and overwhelming happiness to my parents Mr./Mrs. Owan Joshua N. for their parental love and care in giving me the best education I cherished.

My profound gratitude also goes to the entire family of Rev. & Rev. (Mrs.) Steve Owan E. for accommodating me and providing financial support whenever the need arises. Without them, my stay will be questionable.

I wish to humbly thank my younger siblings (Tina Owan, David Owan, Augustine Owan and Ruth Owan) for all the time they missed me and for being there for me.

I can't wait to thank my cousins: Bro.OjongCyprain, Bro. OgriLivinus A., Bro. Humphrey Odey,Bro. Monday Oba(lundi) , Sis. Mercy Ubi, and Bro. AnyenNkpokpo, who all contributed to my education in one way or the other and for providing sound academic advice(s) when I needed them.

My thanks also goes toMaster Moses Onawu who proffered guidelines and advice that led to the success of this work, and for providing me with accommodation when I was faced with a challenge so as to successfully finish my six-month stay in pacific.

Finally, my dearest thanks goes to my friends: Brown Ikeagwuchi, OrokOffiongEkpenyong, Mbey Deborah Offa, Friday OgarAgbor, Sally Daniel Ogar and Agbor John Dominic who all assisted in one form or the other.

I pray that the Lord God should strengthen you in all areas of your weaknesses and give you long life and good health in JESUS NAME Amen!

TABLE OF CONTENTS

❖	Cover page-----	
❖	Certification-----	i
❖	Dedication-----	ii
❖	Acknowledgement-----	iii
❖	Table of contents-----	iv

CHAPTER ONE: INTRODUCTION

- 1.1 Background of the study
- 1.2 Purpose of the study
- 1.3 Area of the study
- 1.4 Operational definition of terms

CHAPTER TWO: LITERATURE REVIEW

- 2.1 Introduction
- 2.2 Role of operating system to hardware components
- 2.3 Operating system and software management
- 2.4 Summary of the literature review

CHAPTER THREE: ROLE OF OPERATING SYSTEM TO THE COMPUTER SYSTEM

3.1 Role of operating system to the computer system

3.2 Advantages of operating system in the computer system

3.3 Disadvantages of the operating system in the computer system

3.4 Conclusion

3.5 Recommendations

3.6 References

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The earliest computers were mainframes that lacked any form of operating system. Each user had sole use of machine for a scheduled period of time and would arrive at the computer with program and data, often on punched cards and magnetic or paper tape. The program will be loaded into the machine, and the machine would be set to work until the program completed or crashed. Programs could generally be debugged via a control panel using toggle switches and panel lights. It is said that Alan Turing was a master of this on the early Manchester mark 1 machine, and he was already deriving primitive conception of an operating system from the principles of the universal Turing machine.

Symbolic languages, assemblers and compilers were developed for programmers to translate symbolic program-code into machine code that previously would have been hand-encoded. Later machines came with libraries of support code on punched cards or magnetic tapes, which would be linked to the

user's program to assist in operations such as input and output. This was the genesis of the modern-day operating system.

However, machines still ran a single job at a time. At Cambridge University in England the job queue was at one time a washing line from which tapes were hung with different colored clothes-pegs to indicate job-priority.

As machines became more powerful, the time to run programs diminished and the time to handoff the equipment to the next user became very large by comparison. Accounting for and paying for machine usage moved on from checking the wall clock to automatic logging by the computer. Run queues evolved from a literal queue of people at the door, to a heap of media on a jobs-waiting table, or batches of punch-cards stacked one on top of another in the reader until the machine itself was able to select and sequence which magnetic tape drives processed which tapes.

All of these features were building up towards the repertoire of a fully capable operating. Eventually, the runtime libraries became an amalgamated program that was started before the first customer job and could read in the customer job, control its execution, record its usage, reassign hardware resources after the job ended, and immediately go on to process the next job. These resident background

programs, capable of managing multi-step processes, were often called monitors or monitor-programs before the term operating system established itself.

The true descendant of the early operating system is what is now called the 'kernel.' In technical and development circles the old restricted sense of an operating system (O.S) persist because of all the continued active development of embedded operating systems for all kinds of devices with a data-processing component, from hand-held gadgets up to industrial robots and real control-systems, which do not run user applications at the front-end. An embedded operating system in a device today is not so far removed as one might think from its ancestor of the 1950s.

The first operating system used for real work was GM-NAA1/0, produced in 1956 by General Motor's research division for its IBM704. Most other early operating systems were very diverse, with each vendor or customer producing one or more operating systems specific to their particular mainframe computer. Every operating system, even from the same vendor could, could have radically different models of commands, operating procedures, and such facilities as debugging aids. Typically, each time the manufacturer brought out a new

machine, there would be a new operating system, and most applications would have to be manually adjusted, recompiled and retested.

During the era of 1960s (third generation), the systems were also batch processing systems, but they were able to take better advantage of the computer's resources by running several jobs at once. So operating system designers developed the concept of multi programming in which several jobs are in main memory at once; a processor is switched from job-to-job as needed to keep several jobs advancing while keeping the peripheral devices in use. Another feature in third generation operating system was the technique called spooling (simultaneous peripheral operation on line). In spooling, a high speed device like a disk interposed between a running program and a low speed device involved with the programing input/output. Instead of writing directly to a printer, for example outputs are written to the disk. Programs can run to completion faster, and other programs can be initiated sooner when the printer becomes available, the output may be printed. Another feature during this era was time sharing technique, a variant of multi-programming technique, in which each user has an on-line (i.e. directly connected), and terminal. Because the user is present and interacting with the computer, the computer system must quickly respond to the user

request, otherwise user productivity could suffer. Time sharing systems were developed to multi-program large number of simultaneous interactive users.

With the development of LSI (large scale integration), circuits, chips, operating system entered in the personal computer and workstation age. Microprocessor technology evolved to the point that it became possible to build desktop computers as powerful as mainframes of the 1970s. Two operating systems have dominated the personal computer scene: MS-DOS, written by Microsoft, Inc. for the IBM PC and other machines using the Intel 8088 CPU and its successors, and UNIX, which is dominant on the large personal computers using the Motorola 6899 family.

Today users can easily stay in their homes, offices and work places and make comfortable use of the operating system. Before the innovation of GUI (graphical user interface), MS-DOS was widely used where commands were to the computer to perform task through the use of keyboards. With this operating system (MS-DOS), jobs or the use of computers cannot be easily operated as it requires some knowledge of commands and programming. But with the advent of present day GUI, the use of computer to perform duties has been highly popularize; even a day old child can make use of the computer.

Through all this historical development of operating system, one common thing is that without an operating system, a computer will not carry out operations. The importance of an operating system to a computer cannot be over-emphasized as it is responsible for both hardware and software drivers.

1.2 PURPOSE OF THE STUDY

This study has been designed to find out the role of operating systems in the computer system/system communication. Given the vast importance of operating system, this study is therefore aimed at:

- (a) Investigating critically into the role of operating system to hardware components
- (b) Finding out the role of operating system in software management.

1.3 AREA OF STUDY

This study will be carried out in calabar municipality, cross river state. Calabar municipal is a local government area of cross river state, Nigeria. It headquarters are in the city of calabar.

It has an area of 142km² and a population of 179,392 at the 2006 census. The postal code of this area is 540. Calabar municipality lies between latitude 04° 15' and 5°N and longitude 8°25'E. In the north, calabar municipality is

bounded by odukpani, in the north-east by the great Kwa river. Its southern shores are bounded by the calabar river and calabar south local government area.

Calabar municipal government area plays a dual role. Apart from being the capital city of cross, it also plays the role as headquarters of the southern senatorial district.

There are ten wards in the local government viz:

- (1) Ward 1
- (2) Ward 2
- (3) Ward 3
- (4) Ward 4
- (5) Ward 5
- (6) Ward 6
- (7) Ward 7
- (8) Ward 8
- (9) Ward 9
- (10) Ward 10

Two ethnic groups form the indigenous population these are the Quas and the Efiks. However, because of its cosmopolitan status, there abound people from all parts of the state and Nigeria in the city.

By virtue of its location along the water front, the Efiks embraced western culture. They carried on successful trade with early Europeans. Fishing is another occupation identified with them. The Quas on the other hand occupy the bulk of the hinterland of calabar where farmers, hunters, traders and blacksmiths are found.

It was discovered that the development of operating system has help the people/wards of calabar municipality in numerous ways. It has help in the development of ATM machines which e the inhabitants of calabar municipality and its environs are enjoying today. It has helped the local government council headquarters as well as the capital of cross river state to maintain and keep accounts and records of budget and other allocations safe and accurate. It has provide an enabling environment for those living in the area to make and receive calls, send emails, chat on social networks like 2go, Facebook, twitter etc.

1.4 OPERATIONAL DEFINITIONS OF TERMS

in order for this study to be properly understood, some terms that are strange and others that have their original meaning deviated based on how they are being used on this topic are defined here . Below is a list of some terms and their contextual/operational definitions.

- (1) **ROLE:** role as used here refers to those functions as well as importance of an element. Example operating system to computer
- (2) **OPERATING:** to control functioning of (a machine, process, or system).
- (3) **SYSTEM:** A system is a set of interacting or independent components forming an integrated whole.
- (4) **PROGRAMMERS:** These are people who writes computer software.
- (5) **COMPUTER:** A computer is an electronic device that inputs data, process data through the operating system and processor, store data (if necessary) and brings out desired output or result using some set of application packages that are driven by the operating system.
- (6) **HARDWARE:** computer hardware are collection of physically accessible elements that constitutes a computer system.

- (7) **SOFTWARE:** Software is any program that can be run on an operating system that enables hardware components of their kind to be run on a computer system.
- (8) **MAINTENANCE:** This is a routine (day-to-day) care we give to our computer and its components to enable them function effectively.
- (9) **MACHINE:** This is a tool that consist of one or more parts, and uses energy to meet a particular goal.
- (10) **PUNCH CARDS:** These are pieces of stiff papers them contains digital information represented by the presence or absence of holes in predefined positions.
- (11) **CIRCUITS:** A circuit is composed of individual electronic components such as resistors, transistors, inductors, diodes etc.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter is concern with review of other authors' opinions, findings, and contribution to the role of operating system to the computer system. Therefore this chapter will be sub-divided into two parts, namely:

1. Role of operating system to hardware components of a computer.
2. Role of operating in software management.

2.2 ROLE OF OPERATING SYSTEM TO HARDWARE COMPONENTS OF A COMPUTER

Operating system as we all know performs a vital role to hardware components in a computer system. Without the operating system, hardware components cannot be driven by their software because only operating system offers a platform for software to be installed and run. In line with this importance, Barnsley [2009] averred that an operating

system provides the operating system provides the environment within which programs are executed. Internally, operating systems vary greatly in their make-up, since they are organized along many different lines.

Laban [2000] opined that operating system provides services to programs and to the users of those programs.

According to Ali [2012], A computer without an operating system is a piece of electronic ornament. He went further to explain that every computer needs an operating system to become or be called a computer.

Eriacy [2000] observed that most hardware components of a computer are unable to be identified by the computer because of missing operating system drivers.

Cote [2006]; Bernard [2005]; and Lee [2009], conducted a research on impact of modern operating systems to the societal development of computer technology. In their research/study, they found out that operating system plays a vital role in correlation to the functioning of hardware components. They explained that a computer needs an operating system in order to be called a explained computer otherwise, it is more or less equivalent to a mere gadget.

According to Pius [2006], he specifically pointed out that an operating system acts as a director to the hard disk drives, RAM, CD-ROM and even the processor. He explained that the computer cannot be booted to desktop without an operating system, the RAM will not have any information to store temporarily when the computer doesn't boot to desktop and finally, the CD-ROM drives cannot be used to copy files, folders or document to or from a CD storage device.

Brianson & Peters [2008], explained from their investigation into operating system and hardware maintenance that every computer hardware need an operating system to perform its duties and responsibilities, but where there is failure in O.S (operating system), all hardware components will not assume their responsibilities and hence, remain in a static and unfunctioning state.

In trying to point out the functions of operating system to computer users,

Sven and Larson [1998] pinpointed that an operating system performs the following functions to users of computers:

1. Ease of use
2. High graphics quality
3. Ability to multi-task

4. It provides platform and environment for both hardware and software components to be driven
5. It develops the system to be useable.

From the functions above, Sven and Larson added that an operating system is the coordinator of both the hardware and the software.

According to Wikipedia, an operating system is a collection of software that manages computer hardware resources and provides common services for computer programs. Wikipedia the free encyclopedia explained further that for hardware functions such as input and output and memory allocation, the operating system acts as an intermediary between programs and the computer hardware. Although the application code is usually executed directly by the hardware and will frequently make a system function or be interrupted by it. Operating system found on almost any device that contains a computer- from cellular phones and video game consoles to super computers and web servers. Accordingly, Curt Franklin and Coustan [2009], opined that the purpose of an operating system is to organize and control hardware and software so that the device it lives in behaves flexible but predictable way.

According to www.computerhope.com, revealed that without computer operating system, a computer and all its hardware components as well as software programs would be useless.

3.3 ROLE OF OPERATING SYSTEM IN SOFTWARE MANAGEMENT

Just like in hardware, operating system performs and plays a vital role in software management. All application packages [software] are being installed on a computer through the operating system. Without an operating system, packages like Corel draw, Photoshop, MS office, etc. will not work on a computer. All software drivers that enable hardware to work are installed on the operating system environment.

In view of this, Adnan [2003] advocated that an operating system provides services to programs and to users of those programs. It is provided by one environment for the execution of programs. The services provided by one operating system are difficult to understand because it encompasses so many functions to the computer system. Every computer must have an operating system to run other programs.

According to Bhor; Rote and Umesh[1999], outlined that operating system is designed to serve two basic purposes.

- 1) It controls the allocation and use of the computing system's resources among the various users and tasks.
- 2) It provides an interface between the computer hardware and the programmer that simplifies and makes feasible for coding, creation, debugging of application programs.

Jabby [200 2] wrote that the operating system must support the following tasks;

- 1) Provides the facilities to create, modification of program and data files using an editor.
- 2) Access to the compiler for translating the user program from high level language to machine language.
- 3) Provide a loader program to move the compiled program code to the computer's memory for execution.
- 4) Provides routines that handle the details of I/O programming.

Barkley [1998] clarified that for any application to be effectively installed into a computer, the computer needs to be already equipped with an operating system in order to provide an environment for the applications to run.

Accordingly, Athenia [2012] posted that all software applications are written to run on a particular operating system. A computer user may change operating system to be able to run new software or take advantage of advanced features of new versions.

Bayero [2007] wrote that an operating system manages all the basic functions of a computer. The operating system runs other programs such as word processing, or graphics editor, manages other storage of your own documents and coordinate the functions of the computer itself and all the devices connected to the computer.

According to Nidpy[2009], An operating system is the most fundamental of all system software programs that performs the following rules:

- ❖ Hiding the complexities of hardware from the user
- ❖ Managing between the hardware's resources which include the processor, memory, data storage and input/output [I/O] controllers.
- ❖ Handling "interrupts" generated by the input/output [I/O] controllers.
- ❖ Sharing of input/output [I/O] between many programs using the CPU

Similarly, www.en.kioshekea.net[2005], posted that an operating system is responsible for the smooth execution of applications by allocating the resources required for them to operate. The site explained further that an operating system

manages reading and writing in the file system and the user and application file access authorizations.

Wazza [1996], contributed that the operating system underpins the entire operation of the modern computer.

2.4 SUMMARY OF THE LITERATURE REVIEW

Having thoroughly reviewed other authors opinion on the role of operating system to both hardware and software management, it will be pertinent to insinuate that an operating system is the chief director of any modern computer. Without an operating system installed on a computer, that computer will not be able to detect the presence or absence of a hardware component. On the other hand, no application package(s) can be able to run smoothly on a computer without an operating system. Therefore, there is the need for every modern computer to have an operating system installed in it so that components like RAM, CD-ROM, processors, hard disk, USB, memory cards etc. and application software like office suite, corel draw, pagemaker, konami, etc. can be successfully identified and driven.

The importance of an operating system to the computer cannot be over-emphasized given that every computer needs operating system.