MAKERERE UNIVERSITY

COLLEGE OF COMPUTING AND INFORMATION SCIENCES

SCHOOL OF COMPUTING AND INFORMATICS TECHNOLOGY

BACHELOR OF INFORMATION TECHNOLOGY

A FIELD ATTACHMENT REPORT FOR INTERNSHIP CARRIED OUT AT WEB INFO-NET LTD

BY
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SUBMITED TO THE COLLEGE OF COMPUTING AND INFORMATION SCIENCES IN FULFILMENT OF THE REQUIREMENTS NEEDED TO ATTAIN A BACHELORS DEGREE OF INFORMATION TECHNOLOGY

SUPERVISED BY

MR. SSEMWOGERERE JOSEPH

(9th June - 8th August 2014)

DECLARATION

I Musoke Ivan firmly declare that the following information written in this report is original and is in no way copied or replicated from an existing report, article or any other written works of any sorts but in case of any similarity with any of the written works, I strongly affirm that it is purely coincidental. I also confidently declare that the information in this report to the best of my knowledge is true and is in no way a forgery but it clearly describes the activities, experiences, works performed and challenges that I experienced during my industrial training at Web Info-net limited.

Signature: Date:

…… ……..

MUSOKE IVAN

APPROVAL

We, the supervisors here by approve and certify that this report submitted by Mr. Musoke Ivan was done under our supervision, is ready for submission and meets the examiners' requirements for the Bachelor of Information Technology Degree of Makerere University.

FIELD-SUPERVISOR

Signature: Date:

…… ……......

MR. MWEBAZE ALEX

ACADEMIC-SUPERVISOR

Signature: Date:

…… ……......

MR. SSEMWOGERERE JOSEPH

DEDICATION

This field attachment report is dedicated to all those who have chosen or selected Information Technology as their ideal field from which they hope to achieve success and believe that with Information Technology they can achieve their goals and expectations.

This report is also dedicated to all those who are hungry for knowledge or who are researching for information in the sector of Information Technology and are eager to learn more in this field.

Finally I dedicate this report to my parents, entire family and all my friends for their help, support, guidance and standing by me during my trying and happy times during the course of my industrial training.

ACKNOWLEDGEMENTS

With all the praise and worship I would like to thank the Lord God Almighty for his kindness, grace and benevolence for blessing me with the life, health, an opportunity and a place from which I was able to do and complete my industrial training which has greatly added and equipped me with more knowledge, skills and expertise needed in my field of Information Technology.

I'd like to heartily acknowledge Mr. Alex Mwebaze and web info-net limited for giving me the opportunity to do my internship at their institute without which I would have not obtained the different skills and expertise needed to excel in the information technology sector or field.

I would also like to extend my heart and sincere gratitude to Mr. Rogers Musinguzi and Mr. Bunje Fosca who ensured that I received all the necessary services, equipment and softwares which I needed during my industrial training.

Finally, I'd like to thank my group members and friends at web info-net limited for their help, assistance, support and encouragement throughout my entire internship period or industrial training process for without them I couldn't have done it.

PREFACE

The documentation covers the industrial training practiced at WEB INFO-NET LIMITED with reference to the Computing and Information technology sector to equip the trainee with skills, work experiences and knowledge necessary for one to succeed in the field of Information technology. The areas of study include among others Computer assembly and disassembly which was comprised of identifying and determining the roles and functions of the different computer parts and components, Computer troubleshooting, repair and maintenance which consisted of determining and looking for faults, shorted out computer components, ensuring that different components function as required, cleaning the different components and also updating the different softwares which are outdated for example antiviruses and Microsoft applications, operating system installation which included the installing, configuration and administration of both windows and Linux operating systems and for both client and server software, networking which was comprised of cable termination, how to set up and monitor a network both wired and wireless and how to configure a Switch and Router, then Database installation management which included coming up with Graphical User Interfaces, Structured Query Language (SQL) database and how to connect it to the Graphical User Interfaces and finally Website design and development which basically included designing and coming up with both commercial and social websites. And as such this report contains literature and information relevant to the areas covered during the industrial training period which are relevant to the Computing and Information technology sector.

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LIST OF SYMBOLS AND ACRONYMS

AC	ALTERNATING CURRENT
BIOS	BASIC INPUT OUPUT SYSYTEM
CD	COMPACT DISK
CPU	CENTRAL PROCESSING UNIT
ROM	READ ONLY MEMORY
DBMS	DATA BASE MANAGEMENT SYSTEM
DC	DIRECT CURRENT
DVD	DIGITAL VERSATILE DISK
IP	INTERNET PROTOCAL
IPV4	INTERNET PROTOCAL VERSION 4
IT	INFORMATION TECHNOLOGY
LCD	LIQUID CRYSTAL DISPLAY
LTD	LIMITED
NIC	NETWORK INTERFACE CARD
NTDLR	NEW TECHNOLOGY LOADER
OS	OPERATING SYSTEM
PC	PERSONAL COMPUTER
RAM	RANDOM ACCESS MEMORY
SQL	STRUCTURED QUERY LANGUAGE
SSID	SERVICE SET IDENTIFIER
VDU	VIDEO DISPLAY UNIT
VGA	VIDEO GRAPHICS ARRAY
WIN	WEB INFO- NET

CHAPTER ONE

INTRODUCTION AND PROFILE OF WEB INFO-NET LTD

1.0 INTRODUCTION

As a second year student at Makerere University offering a bachelor's degree in Information Technology, industrial training is a mandatory requirement which equips a student with the knowledge, skills, expertise and work experience in the IT sector which are gained by practicing the training from a department or organization which in this case is WEB INFO-NET LTD located at Plot 923, Makerere Hill Road, Ham Towers.

1.1 PROFILE OF WEB INFO-NET LTD

1.1.1 BACKGROUND

Web Info-Net ltd is a private limited IT Business Solution company. It was formed in 2010 by IT Experts from Different organizations. It deals in ICT Training, Services and supplies to Universities and other educational institutions, Government organizations, Private companies and individuals.

Web Info-Net Ltd has been prequalified by over 50 big organizations in Uganda, and it has completed several projects in Local area Network (LAN) setup, Computer maintenance and repairs, supply of different ICT equipment's and Developing Different Computer Software's.

Web Info-Net Ltd has offered Internship training to over 500 students from different universities and these include Makerere University, Kyambogo University, Mbarara University, Amity University, Makerere University Business school, Kampala International University, Islamic University in Uganda and Ndejje University, Busitema University, Bishop Stuart University, Mountain of the Moon University, Kabale University and Bugema University.

1.1.2 VISION

"To Meet Each Client's Business Vision- is our mission."

1.1.3 MISSION

To provide and facilitate the delivery of quality, sustainable, customer oriented services efficiently and effectively. To consistently create value for our stakeholders, by providing solutions which enable our customers to achieve excellence and sustainable competitive edge with emerging technologies in IT fields.

1.1.4 CORE VALUES

Innovation: Flexibility is the key to our offerings, and intrinsic to this flexibility, is the spirit of Innovation that we bring to our products and services from the very stage of design to implementation and customer support.

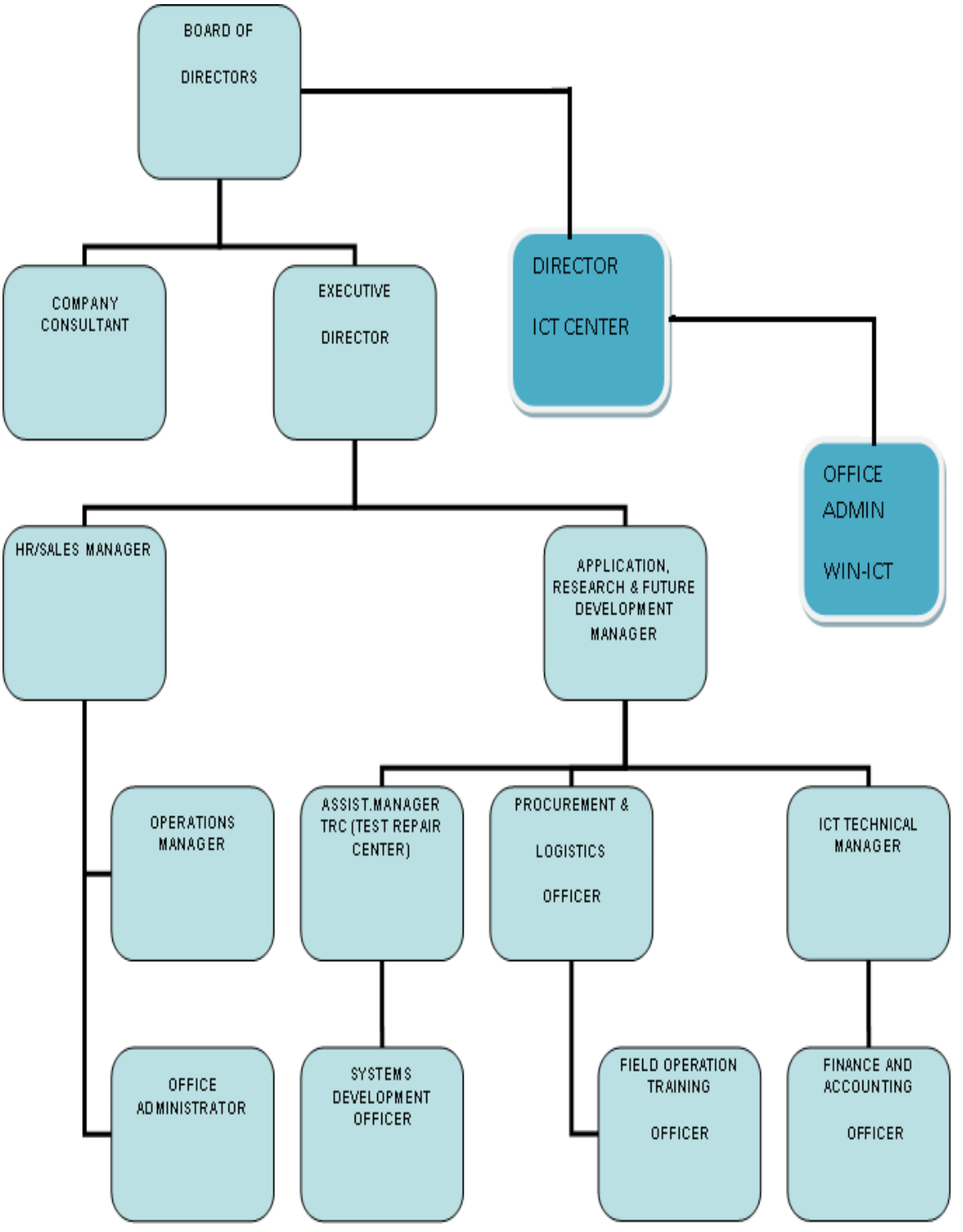
Insight: At Web Info-Net, we have always prided ourselves on the vision, skills, expertise and professionalism of our team. Our team members make use of their keen Insigh**t** to foresee industry trends and meet demanding customer needs.

Integrity: At Web Info-Net, We look at the Core Value of Integrity as the very soul of our company. This is reflected in its finances, the trusted relationship that we share with our customers and business partners, and the faith reposed in them by their stakeholders.

1.1.5 AIMS AND OBJECTIVES OF WEB INFO-NET LTD

i) Carry out consultancy on information technology, enterprise network, office automation and servicing / supply of equipment and consumables therefore.
ii) Provide data and records management services.
iii) Provide IT security that is antivirus, firewalls, and training customer's protection and IT user skills.
iv) Conduct research in co-temporally issues affecting the society and come up with IT solutions to help them mitigate their problems.
v) Provide IT supplies, services and training.

ORGANISATION STRUCTURE



1.2 FUNCTIONS OF WEB INFO- NET LIMITED

i) They offer internet security, IT skill training, consultancy, research and IT supplies.

ii) They offer home and office networking. No matter the size of the project, we deliver exceptional results at a reasonable cost.

iii) They offer service in web hosting.

iv) They design dynamic websites with content management systems

v) They offer reliable web and data applications hosting solutions.

vi) They offer options of shared or dedicated, virtual or physical servers, Linux or windows.

vii) They also offer Networking LAN & WAN services, Network troubleshooting, Network installations and internet configurations.

viii) They offer software development, web designing and information systems, computer upgrades, maintenance and repairs, Network certification, server configurations and maintenance, Backup and recovery, software installation, computer virus protection, service, scanning and spyware removal.

1.3 ON GOING IT PROJECT CONTRACTS.

i) Repairing Makerere University main library Local Area Network
ii) SDV Tran Sami-LAN and fiber Installation & UPS Back-Up System
iii) Fiber Installation at college of Engineering Art Design and Technology, Makerere University
iv) Supply and maintenance of office IT equipment at Reproductive health Uganda (RHU)
v) Maintenance and Repair of IT Equipment at Electricity Regulatory Authority (ERA)
vi) Ministry of Education-software, Computer Maintenance & repairs
vii) Micro Finance Support Center- Computer Maintenance & repairs.
viii) Ministry of ICT - IT Supplies & Services
ix) Ministry of Tourism- Maintenance of Generators & printers.
x) Uganda Prisons- IT supplies & services

xi) Uganda Land Commission- PBAX Maintenance, Networks & Supplies

xii) Uganda Investment Authority- computer Service & Maintenance

1.4 OVERVIEW

Basically WIN is an institute or ICT training center that gives a student hands on training thereby equipping the student with skills, experience, knowledge and expertise such as website design and development, networking, computer repair, troubleshooting and maintenance plus database design and management which are needed for him or her to become successful or excel as well as achieve his or her dreams and goals in the Information Technology sector.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter describes and explains the different activities, works performed, skills, knowledge and work experiences obtained by a student after practicing industrial training. This chapter will also clearly state how the student used the different softwares, computers, networking devices like a switch, cables, tools like a crimping tool and other devices to carry out different jobs, tasks and activities like Database installation and Management, networking, computer repair, troubleshooting and maintenance during his industrial training as described below.

FIELD ATTACHMENT ACTIVITIES

2.1 COMPUTER ASSEMBLY AND DISASSEMBLY

This was the first activity a student carried which equipped him with the knowledge and know how about the different components that make up a computer a computer system for example the input devices which included the mouse, keyboard, the output devices like the monitor which displays the information as it is typed or displays the processed result or the output, storage devices like Hard disk and the peripheral devices the projector, printer and others plus the system unit.

The internee was then taught how to open up a system unit, its different components, how to assemble and disassemble it and the roles and functions that each component in the system unit performs in a computer system for example the Motherboard which is printed circuit board with expansion capability mainly comprised of expansion slots, processor slots, hard disk connectors, keyboard and mouse connectors, BIOS chips, CMOS battery, jumpers and dual line package switches, the Hard disk used for permanent storage of data and information, the power supply which is responsible for converting the alternating current(AC) from the switch into direct current(DC) and allocating right amounts of current to the different components in the system unit, the CPU which is used for processing data, commands and information, RAM which temporally stores data and information as it is being worked upon plus CD and DVD drives used to input and out data into the computer system.

2.2 COMPUTER TROUBSHOOTING, REPAIR AND MAINTENANCE

During this session, the student was taught how to detect or look for faults and errors in the computer system and was taught how to correct them for example the student was taught how to trouble shoot if there is a problem with the different components in the system unit and monitor for instance when the monitor is not displaying the student is to first check for right and continuous connectivity of the different cables like the VGA and power cables, if certain system unit components like RAM, hard disk, funs, DVD and CD drives shot out or are not functioning as required he was taught how to remove, replace and add new system unit components where need be.

Furthermore he got to learn how to trouble shoot faults and failure in system unit components like RAM, Mother board, Real-time Clock and others by simply listening to the sounds or Beeps made by the computer as indicated in the table below.

Finally the student was taught how to maintain the computer system by first updating any softwares like antiviruses, the operating system, installing software utilities and then cleaning the computer which was carried out by first blowing the different computer components to remove dust using a blower. Then using a smooth cloth, detergent and brush the different components of the computer system are cleaned and maintained.

Code (repetitive short beeps)	Description
1	BIOS checksum failure. Possible motherboard failure.
2	No memory modules are detected
3	Possible motherboard failure
4	RAM Read/Write failure
5	Real time clock failure. Possible battery failure or motherboard failure.
6	Video BIOS Test Failure
7	CPU cache test failure

2.3 INSTALLING THE OPERATING SYSTEM

An Operating system is a set of programs working together to perform certain tasks while communicating with the hardware . It comprises of fundamental files the computer needs to boot and function. Common desktop operating systems include Windows, Mac OS X, and Linux. While each OS is different, they provide a graphical user interface (GUI) or command line that provide the ability to configure and manage files, applications and folders. This allows the user to install and run programs written for the operating system. While Windows and Linux can be installed on standard PC hardware, Mac OS X can only run on Macintosh computers. Therefore, the

hardware chosen affects what operating system to be installed and during this industrial training the student was taught how to install the Windows and Linux OS as shown below.

2.3.1 INSTALLATION OF WINDOWS 8

Installation of windows 8 was carried out using a CD drive from which the computer booted when it was turned on. Steps of partitioning, formatting the hard disk and also creating and entering account details followed after which the computer was restarted and the windows 8 operating system was installed. After installation, the trainee used a CD software called hiren was used to recover data on copyrighted flash, crack the windows password, perform encryption and other functionalities.

2.3.2 INSTALLATION OF UBUNTU LINUX

Ubuntu CD was inserted into the drive CD/DVD and booted from it, "install Ubuntu" was selected, next "Erase Ubuntu" was selected as installation type and "Install" was clicked. The time zone "Kampala" was selected. Username "WIN" and password as "win123" were entered, "install Ubuntu" was selected leaving the option of "try Ubuntu" and the computer restarted after completing installation and Ubuntu operating system was launched.

Some of the Linux commands the student used to configure and manage files and folders include, mkdir for creating directories, sudo adduser Ivan to a user Ivan, sudo groupadd men to add a group called men, chmod 777 to give owner, group plus other users all the permission of read write and execute, rm filename to remove a file, cp to copy a file and many others. The detailed installation processes of the windows and Linux operating systems are shown in appendix A.

2.4 NETWORKING

2.4.1 TERMINATING CABLES

The first networking concept that the student got to learn first was how to terminate cables both cross over and straight through cables to connect similar and different devices respectively with the cross over cables terminated with T568A at one end and T568B at the other and the straight through terminated with T568A or T568B at both ends using a wire stripper to remove insulation and a crimping tool as shown below in figure 5 was used to crimp the RJ45 tightly on to the cores of the unshielded twisted pair cable wires and later the student used the cable tester to test for cable continuity as such for the entire process he used tools RJ 45, crimping tool, cutter, cable tester.

2.4.2 SETTING UP A WORKGROUP/PEER TO PEER NETWORK

This was carried over a wireless network which involved configuring all the computers which were to connect to the network. This was implemented by first configuring the ip addresses and default gate ways of the computers which was carried out by making the ip address static and using the ip address of the computer which is to act as a server as the default gateway for the rest of the computers. Then the files, folders, drives and resources to be shared were configured to be accessed by the different computers on the network.

2.4.3 CONFIGURATION OF NETWORKING DEVICES (ROUTER)

Router configuration involved first connecting the router to the system unit using a console cable and then installing a software called hyper terminal which enabled and accepted configuration commands for example configuring security, hostname, DHCP, ip addresses of given serial interfaces and many others. A more detailed description and explanation of the different networking activities like the process of terminating cables, setting up a network and the configuration of a router is shown in appendix B.

2.5 SERVER INSTALLATION AND CONFIGURATION

Server configuration involved first setting up a cloned server by installing Microsoft Windows Server 2008 enterprise edition followed by drivers required for it. Then configuring the ip address of the server to be static after which services like DNS, DHCP and Active Directory Domain name Services (ADDS) were configured followed by the addition and removal of roles and features on the server plus remote desktop which enable remote access and administration. The detailed process of installing and configuring a server is shown in appendix C.

2.6 DATA BASE MANAGEMENT

A data base is a collection of logically related data and a database management system(DBMS) is the software used to create, maintain, and control access to a database and in this case the student used Microsoft visual studio and Microsoft SQL server to create and manage the database called Rubaga hospital.

2.6.1 CREATING GRAPHICAL USER INTERFACES

The internee used a software called Microsoft visual studio visual basic to design and develop interfaces by simply dragging items from the toolbox and defining or configuring their properties by simply clicking onto the item selected from the toolbox and then selecting a property in the property box. This enabled the student to easily and cheaply come up with different variations and

designs of interfaces with different roles and functionalities like performing calculations of profits, losses and many others.

2.6.2 CREATING THE SQL DATASE AND LINKING IT TO THE GIU

The internee first installed Microsoft SQL server software which he used to design and develop a database, populate it with tables with defined different primary keys and then finally went back to Microsoft visual studio to link the developed database with the developed interfaces and also develop an application setup of the whole dataset system which in this case was Rubaga Hospital. The process of creating the GUI interfaces, the SQL database and the two is shown in appendix D.

2.7 COMPUTER SECURITY

This encompassed of getting to know how to secure and protect computer systems, IT systems and networks from security threats, attacks, hackers, malicious codes and malware by maintaining and ensuring an equilibrium between the integrity, confidentiality and availability of computer systems, networks, websites and applications which was achieved by learning how to encrypt and decrypt data, files and folders using softwares like advanced encryption package and Steganography tools like secret layer pro, the use of attributes in windows using command line to secure the operating systems and the use of permission to give and limit access to different users.

2.8 WEBSITE DESIGN AND DEVELOPMENT

Creating an html webpage using notepad was the step, then the use of Dreamweaver text editor followed which made writing tags and code easier and also provided a better environment for developing a website, after which the designing of webpages using cascading style sheets was implemented and after which a simple static website was developed. This was later accompanied by the use of a content management system called joomla which linked the front end (user view/users) to backend (administrator) and then to the database, to easily and cheaply come up with a dynamic website.

CHAPTER THREE

INDUSTRIAL TRAINING OBSERVATIONS, SKILLS, CHALLENGES AND EXPERIENCES

3.0 INTRODUCTION

Industrial training or internship is an experience one opts not to miss out on for it gives the internee a chance to fully get to know what to expect in his or her field, imparts knowledge, skills, techniques and above all work experience in him or her. Although one learns much from industrial training there are some challenges and hindrances one faces some of which a just trials towards achieving ones' goals while others are obstacles ready to fail one from excelling in his career as such it is a chance one should not to opt to pass up.

3.1 OBSERVATIONS AND EXPERIENCES

The internee got a chance to observe the organization of the administration of an ICT Centre or institute which in this case is WEB INFO-NET LTD, the code of conduct of the staff in terms of morals, work ethics and speech in the field in the IT sector and also got exposed of how to use his IT skills, knowledge and expertise to benefit the society and himself since he got to do work or jobs during his industrial training for example setting up network, internet cafe, maintaining computers, installing operating systems on to client computers and also designing a website for a client.

3.2 SKILLS ACQUIRED BY THE INTERNEE

The skill of teamwork, working together and cooperation in the IT field which was as a result of working on different projects in groups such as developing and managing a database, configuring a server, setting up a network and many others which where tasks that needed group work and cooperation to be completed.

Adopting to new and changing technologies such as the use of latest operating systems, server software, security systems and applications which are essential for the proper functioning of Information Systems and computers systems and are highly demanded by the clients.

Oral communication skills, written communication skills and self-confidence were some of the skills obtained as a result of communicating and interacting with different colleges, the field supervisor, staff and clients while carrying out different activities, tasks, works and projects like setting up a network, developing a database, configuring a server and many others.

System and network administration and management were also some the skills acquired which include activities like trouble shooting faults and errors, software installation, system and device configuration, assigning permission and access to different user as well computer and network maintenance and repair.

3.3 CHALLENGES ENCOUNTERED DURING INDUSTRIAL TRAINING

3.3.1 CHALLENGES FACED BY THE INTERNEE

Registering for internship was a problem because it took a long period of time since there was poor communication from the university of when to register, poor services offered by the registrars' office at the college of computing and information sciences with people not being hospital, social and mostly not in office or around.

A challenge in getting or acquiring places where to practice Industrial training from since the university took a long time to deliver internship letters to the students and also took a long period of time to break off which led to the internship places already acquired by the students to be taken away or occupied by students from other universities like Ndejje University.

Long distance to place of training thereby impacting a lot on the changing high transport fares since the University took a long period of time to break off, did not assist the students to acquire industrial training vacancies and also provided Inadequate facilitation as regards to funds needed for transportation and meals.

3.3.2 CHALLENGES ENCOUTERED AT THE ORGANISATION (WEB INFO-NET LTD)

Few out door field trips were done to emphasize the practical knowledge gained, get accustomed to the work environment and also gain more confidence and experience with client interaction.

Limited resources that made it hard for some activities to be finished on time such as termination on a patch panel, networking survey as well as configuration of networking devices like the switch and router there by leading to having limited hands on experience.

Limited time to carry out practice for some practical work for example little time was allocated to database development and management and configuration of networking devices like the switch and router.

3.3.3 CHALLENGES EXPERIENCED AT THE UNIVERSITY

Poor communication about the period of when to register as well as poor services offered in terms of hospitability, sociability as well as interaction with students from workers in the registrar's office at the college of computing and information sciences.

Limited assistance from the university to the students to acquire industrial training vacancies and also provided inadequate facilitation as regards to funds needed for transportation and meals.

CHAPTER FOUR

CONCLUSION AND RECOMMENDATIONS

4.0 INTRODUCTION

This chapter describes and explains the conclusions of the internee's industrial training as wells as recommendations from him suggesting the different ways through which industrial training can better be conducted and implemented so as to further and effectively benefit the students pursuing a Bachelor's degree in Information Technology and other related courses at the college of Computing and Information Sciences and society in the long run.

4.1 CONCLUSION

The industrial training or internship done by the student at WEB INFO-NET LTD from 9th June to 8th August 2014 was greatly productive and educative to him in many ways which included equipping him with work experience, knowledge, skills and expertise in Networking, Database development and management, Computer Assembly and Disassembly, Installing operating systems as well as computer trouble shooting, repair and maintenance which are highly essential and needed in the IT sector where he thrives to be successful and also achieve his goals.

4.2 RECOMMENDATIONS

4.2.1 TO THE UNIVERSITY

In order for students pursuing a Bachelors' in Information Technology and other related courses to effectively and efficiently benefit from industrial training, the university should assist them in acquiring industrial training vacancies which can equip them with the necessary practical skills, establish strong relationships with various traditional companies country wide so as to create more space for students to be recruited and promote more supervisor student interaction from the time industrial training begins to when it ends.

The university should also offer more funding to students to better cater for their transportation and meals during industrial training, improve its means of communicating information to students as regards internship registration by informing students earlier as well as send them emails other than word of mouth and also better provide services by being more hospital and social to students who come for assistance at the college offices.

4.2.2 TO THE ORGANISATION (WEB INFO-NET LTD)

The organization should purchase more equipment, offer more time for hands on practice of the practical works and also offer more door field trips which better provide the internees with experience and practical knowledge.

REFERENCES

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http://www.en.wikipedia.org

http://www.microsoft.com

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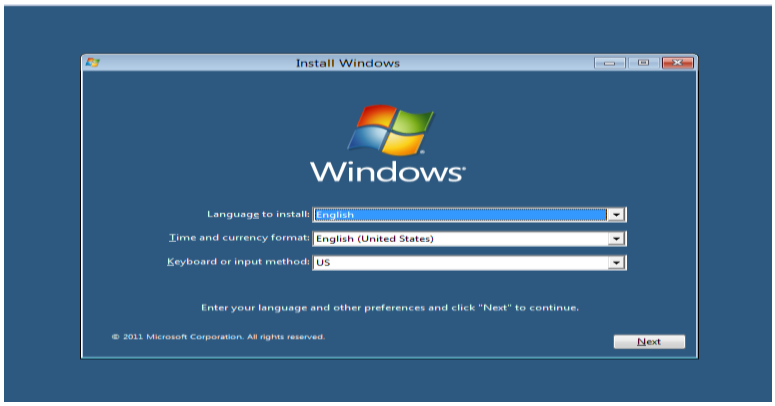
APPENDICES

Appendix A

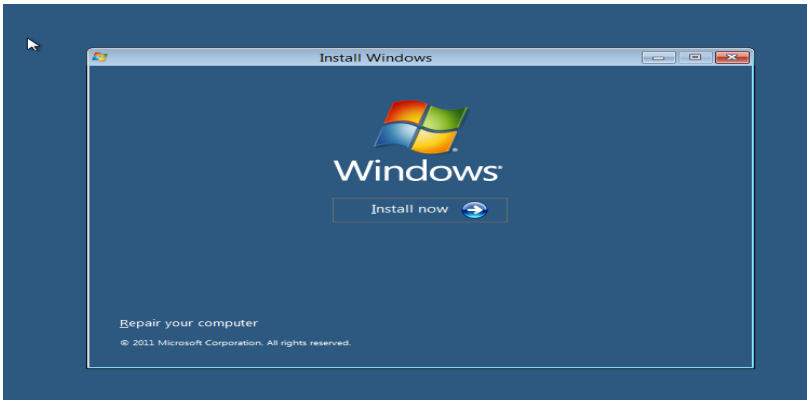
INSTALLATION OF WINDOWS 8

i) The bootable CD was inserted in the computer's CD/DVD drive and F12 was pressed to select a booting device, and then choose from CD/DVD.

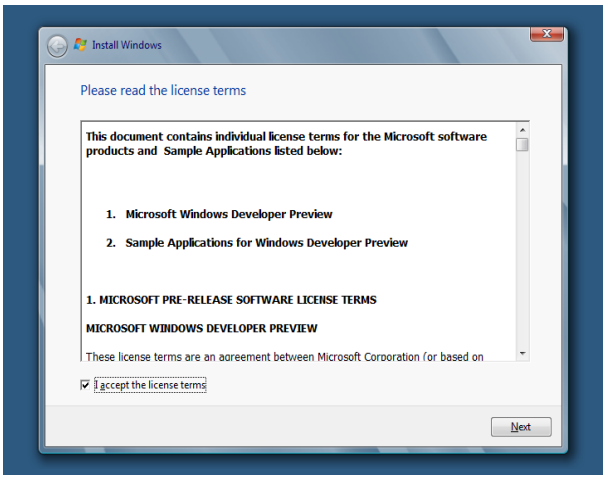
ii) The enter key was pressed to enter setup after which the language of your choice can be selected and the next button clicked.

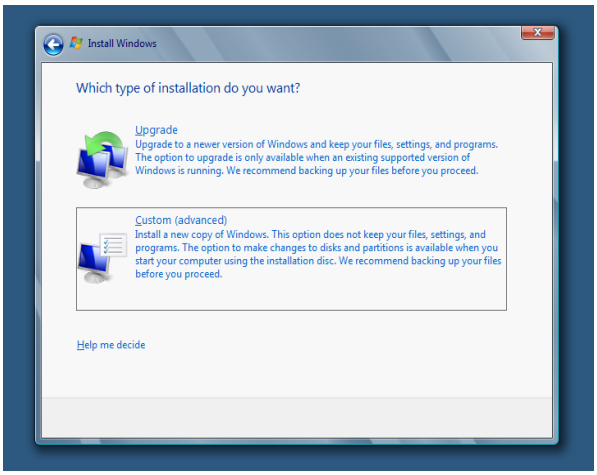


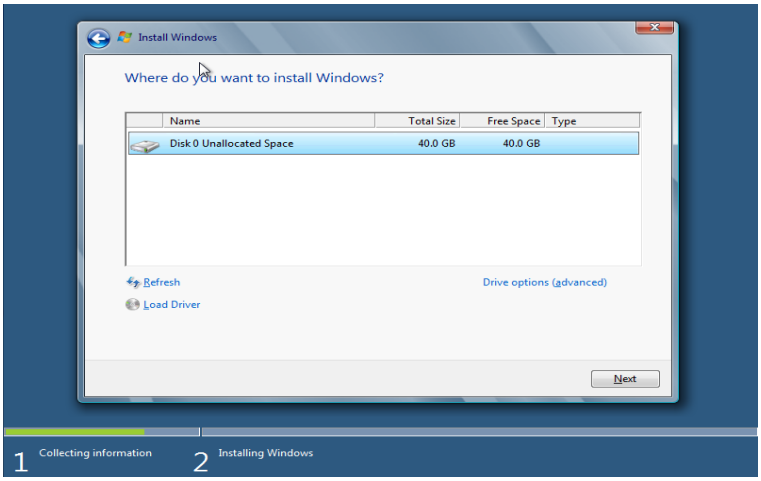
iii) The window with the button of installing is displayed after which the install button is clicked.



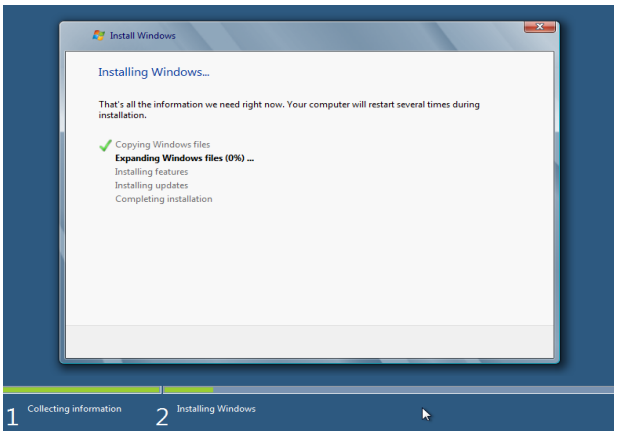
iv) A window showing the license is the displayed and after agreeing to the license, a window with two option of whether to make an upgrade or custom install is displayed but if one wants to do a clean full installation he selects the custom option after which the window where Partitions of different size are created and formatted is displayed and the is hard disk formatted and partitioned and the next button selected.

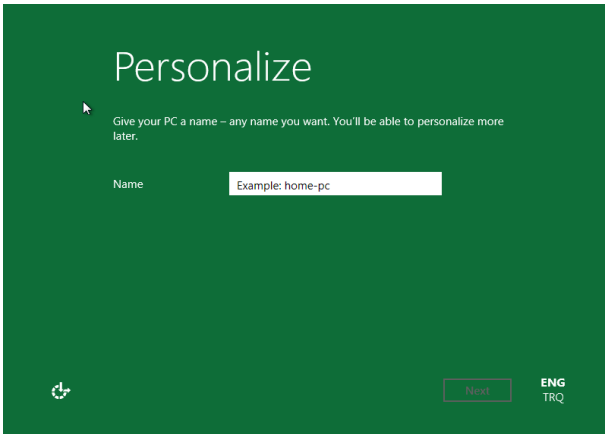






v) The computer then starts copying Window files after which Windows 8 installation begins after which a window which allows one to enter account information like the username is displayed.



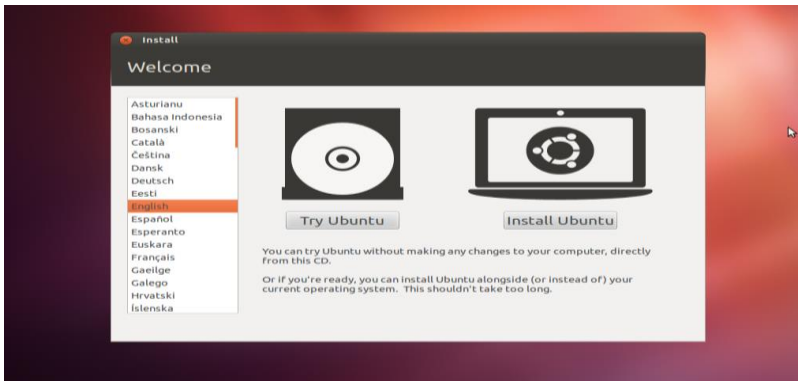


vi) The computer was rebooted after the installation was complete.

INSTALLATION OF LINUX (UBUNTU)

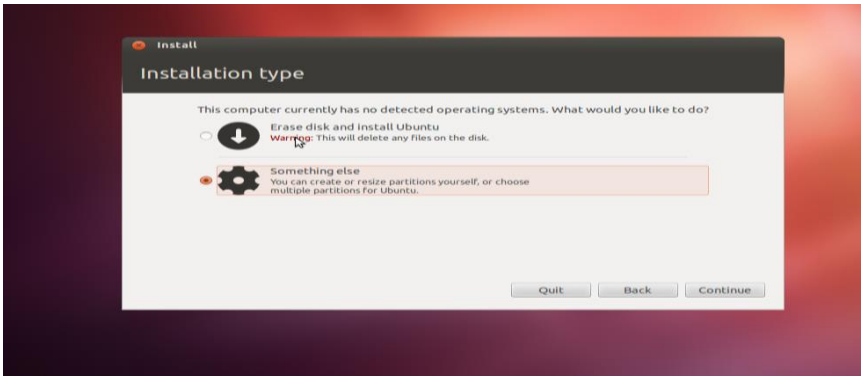
i) The bootable CD was inserted in the computer's CD/DVD drive and F12 was pressed to select a booting device, and then choose from CD/DVD.

ii) The enter key was pressed to enter installation setup after which two options are presented with one asking you want to install the full version of the Linux operating system(Ubuntu) and or install a trail version.

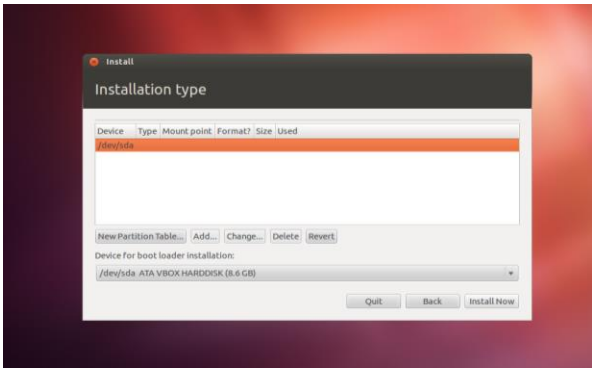


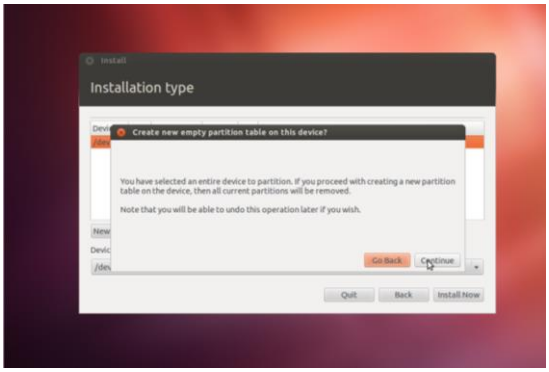
iii) The install Ubuntu button is clicked and another window indicating the requirements that the computer on which Linux is being installed must meet and which the continue button is clicked.

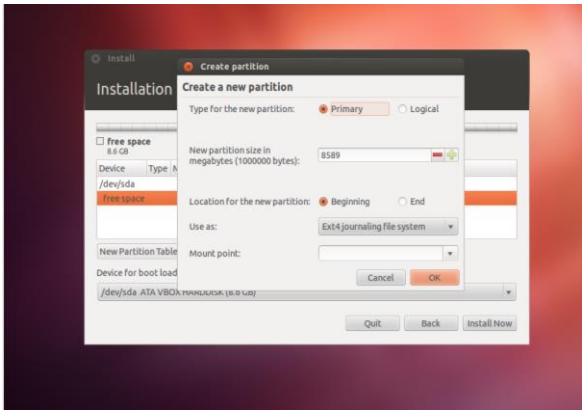
Another windows is then displayed giving an alternative of whether to erase the disk and install ubuntu on do something else which to just install with out erasing the disk and then the continue button is clicked.

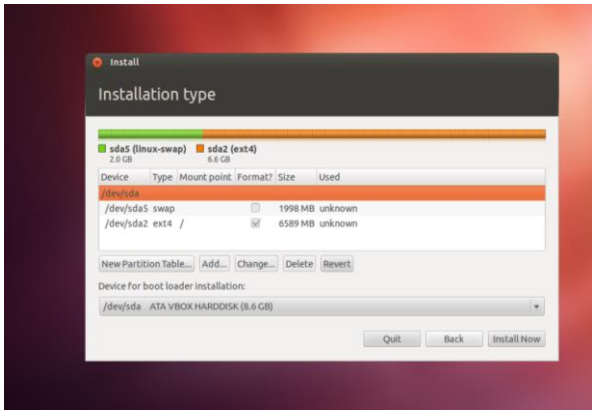


Next is a window where the partitioning of the disk as shown in the four figures below is carried out which the install Now button is clicked.

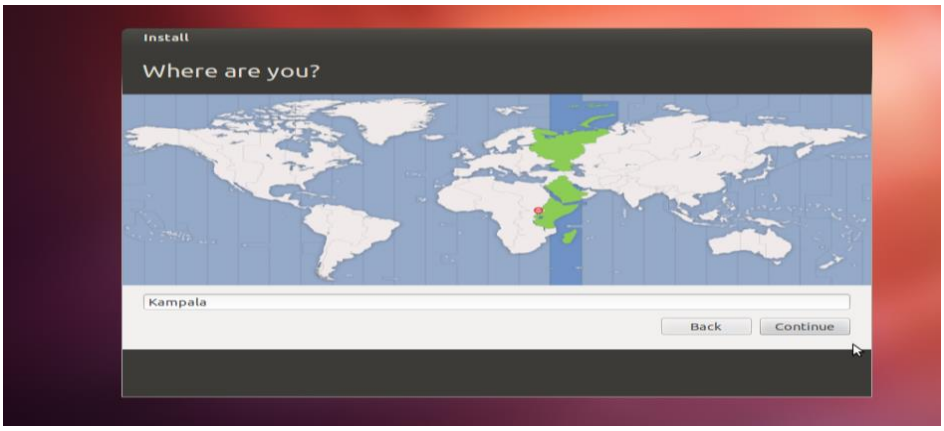




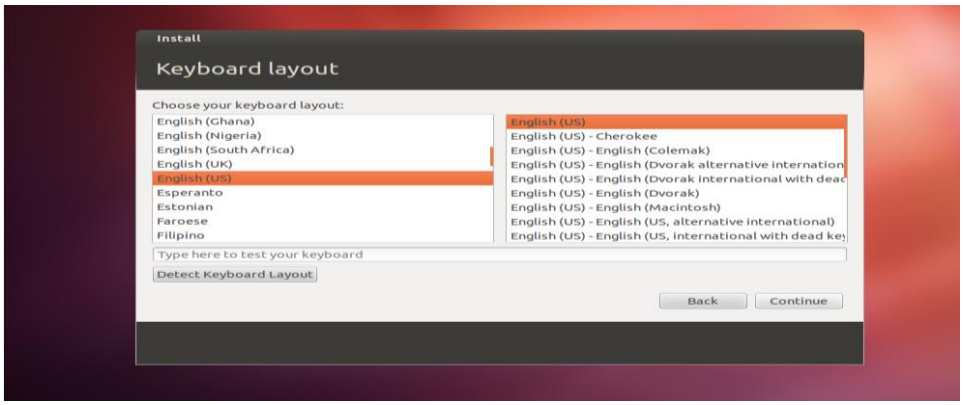




A window displaying the map of the world is displayed from which the city in which you the installer is located is selected and the continue button clicked.

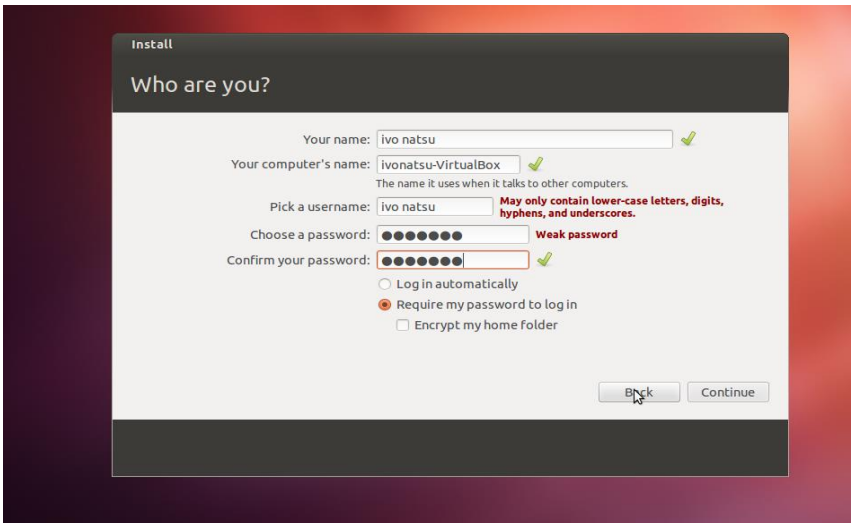


A window displaying the choices of keyboard layout is displayed and a choice is made in this case English (us) and the continue button clicked.



A window which then allow the installer input credentials or account information is displayed and after entering this data, the continue button clicked and a window showing that Ubuntu is installing

is displayed and when it finishes, the computer is restarted with the Linux (Ubuntu) operating system installed.



Appendix B

TERMINATING CABLES

Terminating cables involves making both cross over and straight through cables to connect similar and different devices respectively with the cross over cables terminated with T568A at one end and T568B at the other and the straight through cables terminated with T568A or T568B at both ends using tools like a cable stripper, crimping tool, cable tester, RJ 45 and a cutter.

RJ 45

CRIMPING TOOL

CABLE STRIPPER

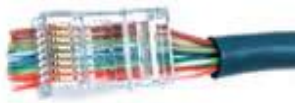
You start by using a Crimping Tool to trim the end of the cable you're terminating, to ensure that the ends of the conducting wires are even.

Then by being careful so as not to damage the inner conducting wires, strip off approximately 1 inch of the cable's jacket, using a modular crimping tool or a UTP cable stripper.

Separate the 4 twisted wire pairs from each other, and then unwind each pair, so that you end up with 8 individual wires. Then flatten the wires out as much as possible, since they'll need to be very straight for proper insertion into the connector.

Holding the cable with the wire ends facing away from you. Moving from left to right, arrange the wires in a flat, side-by-side ribbon formation, placing them in the order of their colours depending on whether you a using T568A or T568B.

Holding the RJ45 connector so that its pins are facing away from you and the plug-clip side is facing down, carefully insert the flattened, arranged wires into the connector, pushing through until the wire ends emerge from the pins. For strength of connection, also push as much of the cable jacket as possible into the connector.



Insert the prepared connector/cable assembly into the RJ45 slot in your crimping tool. Firmly squeeze the crimper's handles together until you can't go any further. Release the handles and repeat this step to ensure a proper crimp.

If your crimper doesn't automatically trim the wire ends upon termination, carefully cut wire ends to make them as flush with the connector's surface as possible. The closer the wire ends are trimmed, the better your final plug-in connection will be.

After the first termination is complete, repeat process on the opposite end of your cable then using a test the cable to check the connectivity or check whether it continuously connects.

SETTING UP A WORKGROUP/PEER TO PEER NETWORK

i) On all computers, “Network” was right clicked and “properties” selected, then change adapter settings was clicked, then Wi-Fi icon was right clicked and “properties” was selected. Then IPv4 was double clicked and IP address was changed to be statically allocated. The computer which is to act as the server its ip address was obtained and used as the default gateway by the other computers on the network.

ii) The files to be share were right clicked and “properties” selected then sharing tab was clicked and later share was clicked, everyone was selected on the dropdown and add clicked but for hard drives and CD and DVD drives, they are right clicked and “properties” selected then sharing tab was clicked and later advanced sharing and finally the checkbox of share this folder is selected after which the network is created which was troubleshot for connectivity and continuity using the ping and tracert (trace route) commands.

CONFIGURATION OF A NETWORKING DEVICE (ROUTER)

The student connected the router to the system unit using a console cable. Then installed a software called hyper terminal which he later clicked and selected gambit was entered, "COM1 properties" was selected.

Default was restored, "Enter" was pressed once and the number was selected. Originally the router was in user mode i.**e. Router>.** Command **en** was added to change from user mode to privileged mode i.e. **Router#** where all the router configurations are run from and shown from.

The globa1 configuration mode was looked at where all the router configurations are made from by typing command config t that brings Router (config) # as configuration mode.

For Security, user and save configurations on a router the following were used.

<*host name Ivan*> was typed to put user name as Ivan

<*enable secret win123* > was typed to put a password where win 123 is the password and typed exit to go back to user mode.

< *enable win123*> was typed to go to privileged mode.

<*show run*> was typed to see all configurations made.

To Add users on a router <*username ivan password* win1234> was typed, where ivan is the username and win1234 is the password.

To Encrypt passwords on a router <*service password encryption*> was typed

To Save configuration <*copy run start*> or <*wr*> was typed and to Erase configurations <erase nvram>, then <reload> was typed.

To configure interfaces on a router the following configurations were used.

To start configuring interfaces, you have to first be in the global configuration mode after which you type interface name you want to configure and then press enter as shown below.

Router (config) #

Router (config) # interface fao 2 (for fast Ethernet) or Router (config) # interface gigabit Ethernet 2 (for gigabit ethernet) where 2 is number or the ethernet port.

You then type the ip address for the interface followed by its subnet mask and then press enter as shown. Router (config-if) # ip address 192.168.12.5 255.255.255.0

You then type no shutdown and then you press enter to activate the interface after which exit is typed and enter pressed to exit the configuration mode of the interface then copy run start is typed and enter pressed to save the configurations as shown below.

Router (config-if) # no shutdown

Router (config-if) # exit

Router (config) # copy run start

Appendix C

SERVER INSTALLATION AND CONFIGURATION

During the installation a client server network was created where two computers were connected on the network. Windows server software (server 2008) was installed on the server machine of which windows 8 was installed on the client machine.

On the client machine,

- My computer was right clicked, properties were selected, and the computer name was changed to Musoke-pc, domain as WORKGROUP, ok was pressed.

On server machine

- Start menu was clicked, control panel was selected, user accounts was selected, then password was changed to win1234@.Then I configured the static IPV_4 for wireless connection.
- Server manager was clicked; Add roles was selected, **active directory domain services was chosen** and installed. **Domain DNS server** was installed by running dc promo
- Domain name in the forest was created e.g. Ivan.com and DNS server was installed.

On client machine

- My computer was clicked and put domain "Ivan" was entered (similar to domain name created on server machine.), then I put the server's administrator password and password to log off.

On server machine

- Under all programs, administrative tools was selected, domain was chosen, Add was clicked, username and password were entered of which were to be used by the client to log on the server machine.

On client machine

The created username and password that were created on a server machine were entered in a client machine to log on Ivan domain thus created a client server network.

CREATING A REMOTE DESKTOP

- On client machine, under all programs the following procedure was followed: accessories was selected, remote network connections was selected and IP address of the server was entered
- The client machine was first logged off, and then logged in with the name "administrator" and server password were used to be able to logon the client computer as the server computer but at the same time, the server logged off.

CREATING A ROAMING PROFILE

On server machine

A new folder called profile was created properties were selected, then the following order was followed was followed;

- Sharing, advanced, share, add, new user e.g. client and full control was given to that user.
- Then under all programs , administrative tools was selected, active users and computers was selected, users was selected, client was chosen, profile was right clicked, then // 192.168.2.6/profile/client was typed where 192.168.2.6 was the IP address of the server machine.

On client machine

- The client computer was logged off, and windows 8 original password was entered to login.

- The control panel was double clicked and the following order was followed;< user accounts, advanced, users, right click users, new user, client& password was entered where “client is the new user name” and create was clicked.
- The machine was first logged off and then logged on using “client” as user name, the created password was entered, and “on this computer” was selected.
- Under my computer, advanced was selected, profile settings was selected, user profiles was selected, e.g. Ivan/client, “copy to” was selected, browse was clicked, my networks was selected, client was selected, then a roaming profile was created.

Appendix D

CREATING GRAPHICAL USER INTERFACES

First the student pressed the start button and selected Microsoft Visual Studio and created a new project called Rubaga Hospital was created. Under its properties, back color was selected and a color was chosen. Then the student created a form by simply dragging tools like labels, checkbox, radio buttons, checkboxes, combo box, menu strip, button and others from the toolbox and changed their properties which included things like their names, text and others by simply click on them then later clicking on a given property in the property box. More settings like calculating the total, difference, product and even some complex calculations were set or configured by double clicking the button you want to generate the result after which you type the code stating the formula which is to carry out the calculation for example Profit. Text = cint (Bprice.Text) – cint (Cprice.Text).

CREATING THE SQL DATASE AND LINKING IT TO THE GIU

First Microsoft SQL server was installed then SQL server management was opened and Connect to server was clicked. Database was right clicked and "add new database" was selected which was called "Rubaga Hospital". Database Rubaga Hospital was right clicked and item called "new table" was selected and the table called patient with columns (PName, PNo, PAge) was created and other tables like drug and were created and primary keys selected.

The database that was created in SQL was saved, the server name copied and SQL server was closed. A new project was opened, then "data" was selected on the menu bar, "Add new source" selected, followed by "database" and next was clicked.

A new connection was created, a server name was requested and the server name of SQL was pasted. The database name supermarket was selected from the list and next was clicked, table was selected and then finish was clicked.

Under "data" on main menu, "show data sources" was selected, and the table (item) to the new form 1.the table was then expanded and items were viewed and adjusted to one's choice. The build tab was selected and a setup of an application was created.