A TECHNICAL REPORT ON STUDENT

INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

HELD AT

YARO TECH PHONE REPAIR AND GADGET

BESIDE UBA CHALLENGE ILORIN

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DEDICATION

This report is dedicated to Almighty GOD for making everything easy for me Throughout my Student Industrial Work Experience Scheme (SIWES) programme and to My parent **Mr & Mrs Jimoh** for their contribution to the success of this project. May Almighty God give you long life and prosperity (Amen)

ACKNOWLEDGEMENT

All praise, glory, honour and adoration to Almighty GOD, the author and the giver Of wisdom, knowledge and understanding for the success of this programme.

I appreciate my parents which are my source to this world **Mr &Mrs Jimoh** for their parental and spiritual support because without their maximum understanding and support, this experience would have not come into existence including my brother and Sister for their support.

PREFACE

The Student Industrial Work Experience Scheme (SIWES) is a National Diploma Curriculum of the Department of Electrical Electronics Engineering, Kwara State Polytechnic llorin. The programme was established by the Industrial Training Fund (|TF) in 1973 to 1974.

It is designed to acquire the student with life situation in industries as well as Supplies in a more practical manner and their knowledge in practical activities and other Practical field

DEDICATION

This report is dedicated to God Almighty, my helper, the one who knows the beginning from the end and the end from the beginning.

TABLEOF CONTENTS

CHAPTERONE

INTRODUCTION

Accumulation of theoretical knowledge without its practical demonstration or exposure will only lead to a world of abstract where nothing seems real. It is for this reason the Students Industrial Work Experience Scheme (SIWES) programme was initiated by the Industrial Training Fund (ITF) in 1973, sponsored and started by the Federal Government of Nigeria. It is a tripartite programme involving the higher institutions, students and industries.

This programme aims at bridging the gap between theoretical and practical knowledge, since institutions across the country focus mainly on impacting theoretical knowledge. It also gives students the opportunity to familiarize themselves with the industrial knowledge and experience that they are most likely to meet after graduation.

Knowledge obtained in lecture rooms is sometimes not practicable in the industrial market, this is to support the fact that learning can only be completed and appreciated when one put into practice that which has been acquired in the lecture room. It is also believed that things done are better remembered than heard. It is due to this reason that university students, most especially those in the faculty of science, engineering and those in schools of technology embark on SIWES to be able to put into practice the theoretical knowledge they have acquired as this will help them to fully appreciate the theoretical knowledge they have acquired.

Participation in the programme has become a necessary precondition for the award of Diploma and Degree certification in specific discipline in most institutions of higher learning in the country, in accordance with the educational policy of the government.

OBJECTIVES OF SIWES REPORT

The objectives of Students Industrial Work Experience Scheme (SIWES) are to:

- Emphasize skills acquired during the period of attachment.
- Make recommendations and relevant conclusions from the work-done and operational activities of the organization.
- Help ascertain that the educational knowledge acquired in schools are related to real life situations, thereby bridging the gap between theory and practical.

- Verify that students made maximal use of the period of attachment at respective industries.
- Point out areas students impacted knowledge gained in school at companies during the SIWES programme.
- Also inform the organizers of the programme about the challenges faced by interns during the stipulated period of the SIWES programme.
- Confirm that students partook in the SIWES programme.

ROLE OF THE STUDENT DURING SIWES

1. Arrange their own accommodation during the period of attachment;
2. Avoid changing of place of attachment except in special circumstances and with the permission of your Centre Director and the SIWES Directorate.
3. Comply with the employer's rules and regulations;
4. Keep proper records of training activities and other assignments in the logbook;
5. Submit Log Books, Reports and other documents related to SIWES as required by their institution at the end of the training period;
6. Submit to ITF through their institution, Evaluation Form (ITF Form 8) completed by the students the employer and the institution;
7. To attend institution's SIWES orientation programme before going on industrial attachment;

THELOG BOOK

The log book is use to enter details and record of daily activities during the SIWES Programme.

ORGANIZATIONINVOLVED INTHEMANAGEMENT OF SIWES PROGRAMME AND THEIR ROLES

The bodies involved are: The Federal Government, Industrial Training Fund (ITF). Other supervising agents are: National University Commission (NUC), National Board for Technical Education (NBTE) and National Council for Colleges of Education (NCE). The functions of these agencies above include among others to:

- Supervise students at their places of attachment and sign their log-book and IT forms.
- Vet and process student's log-book and forward same to ITF Area office.
- Ensure adequate funding of the scheme.
- Ensure payment of allowances for the students and supervisors.
- Establish SIWES and accredit SIWES unit in the approved institutions.
- Formulate policies and guideline for participating bodies and institutions as well as appointing SIWES coordinators and supporting staff.

Hence, the success or otherwise of the SIWES depends on the efficiency of the Ministries, ITF, Institutions, Employers of labour and the general public involved in articulation and management of the program.

Therefore, the evaluation of SIWES in tertiary institutions in meeting up with the needs for the establishment of the program is necessary.

CHAPTERTWO

NATURE ANDLITERATUREREVIEWOFYARO TECH PHONE REPAIR AND GADGETS.

HISTORY OF YARO TECH PHONE REPAIR AND GADGETS

Yaro Tech Phone Repair And Gadget is an ICT based organization, established on 17th January, 2012, located beside UBA Challenge, Ilorin, Kwara State where is started her operation.

YARO TECH Phone Repair and Gadgets is one of the fastest growing Information Technology (I.T) firms in Nigeria. Its services over the years have accorded it wide acceptability among Nigerians; subsequently becoming a household name in the I.T Industry. The Company's commitment to first class customer service has made it one of the trusted and most respected Computer sales and I.T support service providers in Nigeria.

SERVICES OFFER INCLUDE:

1. Cell phone store, Sales and Supply of Laptops, Desktops Computers & Computer Accessories.
2. Sales of apple products, iphone, macbook, etc.
3. Sales and Supply of Mobile Smart Phones. e.t.c.
4. Solar and CCTV sales and installation
5. Software development
6. Professional I. C. T Training.

Yaro Tech Phone repair and gadgets bring solution to costumer doorstep. Satisfactions of our client is our main Goal.

MISSION AND VISION STATEMENTS OF YARO TECH PHONE REPAIR AND GADGETS

MISSION STATEMENTS

- To make provision for the Global ICT needs. This includes the provision of enterprise resource solutions.
- To contribute immensely to the development of ICT industry nation-wide and worldwide by undertaking researches in diverse aspects of Computer, Information, and Communication Technology.
- To provide enabling environment for academic, scientific and technological researches and learning through the provision of adequate access to global bank of electronic information.

VISION STATEMENT

To be a successful global information technology company trusted by its customers for service excellence, caring for its employees and collaborating with our customers to deliver innovative and value driven ICT products and services.

MANAGEMENTSTRUCTURE

OPERATING UNITS IN THEESTABLISHMENT

For proper coordination, Yaro Tech Phone Repair and Gadgets is divided into the following units:

a) Software & Network engineering.

b) Training, Research and development unit.

c) Sales & Services.

d) Solar and CCTV Services Unit.

ORGANIZATIONAL CHART OF THE ESTABLISHMENT

Figure1.1: Management structure of Yaro Tech Phone Repair and Gadgets

ECONOMIC ENVIRONMENT

Yoro Tech Phone Repair and Gadget operates in an environment that has a very high demand for internet access, high demand for solutions to ICT problems, maintenance of institution's portal, networking of firms and universities among others. They offer services to other institutions both far and near.

Numerous features govern the determination and smooth running of an organization, among these features is the economic atmosphere of the organization. Having an organization in a location where the economic activities is standing and recommendable is required for such an establishmenttoprosperwell.Similarly,iftheeconomic environmentalism of favourableeven

though it is well equipped, can lead to bankrupt and collapse of such establishment. This was sensibly action taken into consideration in the set-up of YORO Tech Phone Repair and Gadget where I underwent my SIWES programme.

Yoro Tech Phone Repair and Gadget is oneof the foremost ICT organizations in its environment.

CHAPTERTHREE

BRIEFDESCRIPTIONOFWORKDONE

In my 4-months of Students Industrial Work Experience Scheme (SIWES) at Yoro Tech Phone Repair and Gadget, I was firstly attached to the Development & Software Engineering unit of the company.

During this period of my internship at the Development and Software engineering unit, I was saddled with responsibilities, carried out numerous tasks and also received adequate training through various training sessions organized and taken by the engineers of the unit.

Development and Software engineering unit as the name suggests is a 2-in-1unit comprising of the Software engineering and Networking units. At the Software wing of the unit, I was granted the opportunity of participating in various Software development and some hardware sessions which centers on identifying components in a computer unit. I worked on Presentation designand some basic Web development work via CMS (Content Management System).

At the Network Unit, I participated actively in various networking connections both at the office and on fields/sites such as:

- Networkconnection
- Setting-upoftheconferenceroom/smartclass.
- Networkingandsetting-upof systems.
- Mountingandfixingofanaccess point.
- Crimpingofnetworkcablestositesforaccesstotheinternetafter connection.
- Troubleshootingofnetworkconnectionatthepowerhouseandaswellassitelocations.
- Troubleshootingofnetworkproblem.

I was also taught the various network typologies, IP address classes and chains, shown some sophisticated network devices (switches, routers, call manager, severs, indoor and outdoor unit (IDU & ODU)) and their functions , types of networks, configurations of network devices especially switches, routers, radios and access points using Cisco packet tracer and win box (software application), concepts of VLANS (Virtual Local Area Network), VTP (VLANS Trunking Protocol), NAT (Network Address Translation), STP (Spanning Tree Protocol), CDP(Cisco Discovery Protocol) as well as their merits, demerits, functions and configurations.

I was posted to the software engineering unit after my Second month in the organization. This unit majors in designing and developing software applications. I partook in countless training session taken by the staffs (software engineers) ranging from web design using HTML (Hyper Text Mark-up Language) CSS (Cascading Style Sheet), logic concept of programminglanguages, database, graphic design using Macromedia Fireworks and Adobe Photo shop.

SKILLSDEVELOPEDANDTECHNIQUESLEARNTNETWORKING

Communication seems to improve rapidly at a geometric rate, and people tend to seek better means of transferring and communicating information among themselves.

Various ICT establishments have evolved to ease the means of communication and CRChappens to be one of the establishments. I acquired adequate skills in the field of networking on network types, devices, IP address classes, VLANs, VTPs, telepresence systems among others.

Networking is a concept whereby group of computers and other devices are connected in some ways so as to be able to exchange data. Each of the devices connected on the network can be thought of as a node.

A computer Network: it is said to be the interconnection of independent computer systems forthe purpose of sharing resources. These resources shared can either be hardware resources or software resources. Hardware resources such as scanners and printers while software resourcesof documents and files.

In the networking world, networks are being set up using the OSI model. This model involves stepstakeninordertoestablish a networkconnectionandhowdevicescommunicateandtransfer signals to each other in a network.

NETWORKTYPES

There are many ways in which different networks can be classified, such as their size,capabilities and the geographical distance they cover. Different types of networks provide different services and require different things to work properly. Some of the most common networks known include:

- LocalAreaNetwork (LAN)

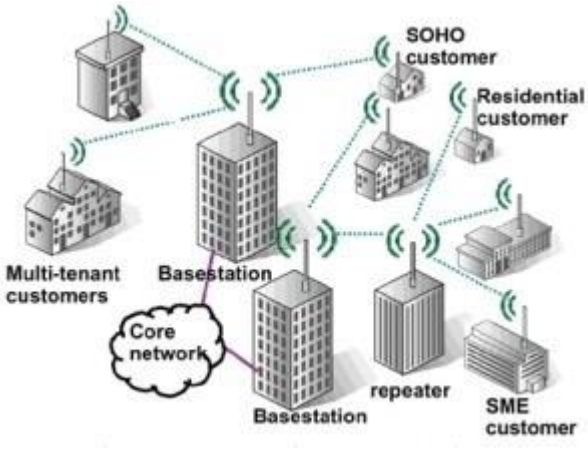
  This is one of the original categories of network, and one of the simplest. LAN networks connect computers together over relatively small distances, such as within a single building or within a small group of building.

- WideAreaNetwork (WAN)

  This is a type of network category and slightly more complex in nature. WAN networks connect computers together over large physical distances, remotely connecting them over one huge network and allowing them to communicate even when far apart. The internet is a good example of a WAN network, and connects computersallaroundtheworld.WANissaidtobetheinterconnectionsofvarious LANs.

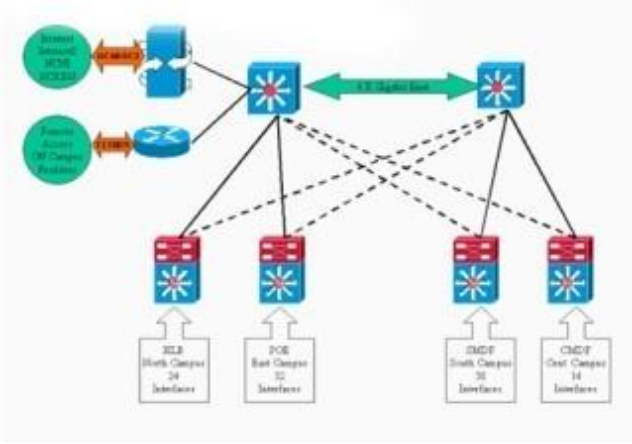
- MetropolitanAreaNetwork(MAN)

  This is a network which is larger than a LAN but smaller than a WAN, and incorporates elements of both. It typically spans a town or city and is owned by a single person or company.



- CampusAreaNetwork(CAM)

  This is a network which is larger than a LAN, but smaller than a MAN. This is typical in areas such as university, large school or small business. It is typically spread over a collection of buildings which are reasonably local to each other. It may have an internal Ethernet as well as capability of connecting to the internet.



- WirelessLocalAreaNetwork(WLAN)

  This is a LAN which works using wireless network technology such as Wi-Fi. This type of network became more popular as wireless technology is further developed and is used more in the home and small business. It means devices do not need to rely on physical cables and wires.

The network type being used at my establishment combines the LAN and WLAN network types over a WAN.

LAN-WANCONNECTION

LANs, such as those within a private home, usually have a modem in their residence which is connected to an Internet Service Provider. This provider assigns an IP address to the modem, which is a unique number that is given to all devices, capable of connecting to the internet, including any computers, phones or consoles within the home too.

While all devices in LAN can communicate with each other without using the internet, if a device wants to communicate with another which is on another LAN, they can connect to the internet and send information over the WAN.

This is achievedusingarouter,which receives datafromdevices androutes itdownthequickest virtual path to its destination, going through a number of gateways on the way. First a central gateway, which divides LAN from WAN, and then others which send the data from one to the net, until it arrives at its final destination – the other devices which is being communicated with.

This all happens at a very fast speed over modem broadband modems, due to efficient and effective protocols and rules being established to control and manage data.

TOOLSANDEQUIPMENTUSEDDURINGNETWORKING

Thefollowingaresomeofthetoolsusedduring networking:

- Screwdriver
- LANtester
- Crimper
- RegisterJack(RJ45)connector
- Trunk
- Twistedpaircable(Cat6)
- Networkrack
- Hammer
- Keyjack ormodule
- Ladder
- Punchdowntool

Screwdriver:isusedfordrivinginandloosingofscrewsfromthebase.

LANtester: TheLANtesterisusedtocheckthestatusofthecableeithergoodorbad.

Crimping tool or Crimper: is used during networking to peel off the outer covering of a cable, and to crimp or tighten the cable into RJ45 after it has been arranged into know standards.

Networkrack:thisreferstoaboxlikestructurewherevariousnetworkdevicessuchas switches, servers, routers are mounted.

- **Punchdowntool**:isusedtoterminatecables intomodulesorpatchpanel.
- **Microwaveradio:**thisisadevicemountedontower,mastorpolefortransmission of data from one location to another.

Key jack ormodule:thisis usedin LANports, placed inside apattress and can beused again to for cable continuity when it is not enough.

Ladder:thisisusedduringtrunkingofcablestoraiseone'sheightduringnetworking.

Registered jack (RJ45): this ismainly usedas aconnector fornetworkcables afterarrangement into known standard. It is the main connector for Ethernet cables.

Hammer:isusedfordrivinginnailswhentrunkingon walls.

NETWORKINGDEVICES HUB

At the simplest side of the equipment scale is the hub. This is very simple device that connects together multiple LAN devices. The only function of the hub is repeating the electrical charges received onport,relaying thosesignalstoallotherconnected ports.Itdoesnothingelse.Hubs are extinct for the most part in modern networks because, while they are inexpensive, they are not much cheaper than a simple switch which provides other functionalities. Hubs work at OSI Layer 1.

Bridges/Switches/MultilayerSwitches

A **bridge** is used to connect multiple LAN segments together, forming multiple collision domains. A collision happens on the Ethernet network when multiple devices attempt to 'speak' atthesametime.Byseparatingtwoormoresegmentsintomultiplecollisiondomains,thebridge reduces the number of collisions that could potentially occur on a LAN segment which improves network performance.

Aswitchis amulti-portbridgewithsomeadditional functionality. These is almost completely ended the risk of collisions on hub-centered networks.

Therearefewcategoriesofswitchesdistinguishedbyfunction:

- Unmanaged(Layer2)switch
- Managed(Layer2)switch
- Managed(Layer3)switch(multilayer switch)

UnmanagedLayer2 switches

A modern unmanaged switch provides the functionality of a multiport bridge; each of the switch ports is on its own collision domain.Like bridges, the switch has built-in support for theSpanning Tree Protocol(STP), which provides loop preventionwhen multiple switches (ridges) are connected, introducing the potential for switching loops. A switch also keeps the database of the known MAC addresses connected to each port.

ManagedLayer2 switches

A modern managed switch provides all the functionality of an unmanaged switch; in addition, it can control and configure the behaviour of a device. This typically introduces the ability to support VLANs, which is why almost all organizations deploy managed switches versus their cheaper alternatives.

ManagedLayer3Switches(MultilayerSwitches)

The final type of switch is Layer 3 or multilayer switch (MLS). This type of device provides a mix functionality between that of a managed layer 2 switch and a router. The amount of router function overlap is dependent on the switch model. At the highest level, a multilayer switch provides better performance for LAN routing than almost any standard router because these switches are designed to offload a lot of this functionality to hardware.

ROUTERS

Router performs its functions almost solely at OSI Layer 3. This is because (on modern networks), the router is used to connect Internet Protocol (IP) networks. Since IP is a protocol that runs at OSI Layer 3 and can operate on multiple layer 1 and 2 technologies(including Ethernet), a router is typically used to connect geographically dispersed parts of a network that use technologies other than Ethernet to connect to them. Routers also provide ability to separate IP broadcast domain.

Modern routers support a number of features not limited to OSI layer 3, including support NAT, firewalling services, access control lists (ACL), and many others.

ACCESSPOINTS

An access points is used in wireless Ethernet networks in place of an Ethernet switch. Typical Aps also provide bridging functionality between wired Ethernet and wireless hosts.

ConsumerAPsoftencalled 'wireless routers'areusedtoconnecttogetherthewiredandwireless clients of a home or small business network. They typically also provide a WAN port for connection to an ISP. This WAN port is simply another Ethernet port that is separated in the device's configuration to perform routing between a local network and a remote network. It is typically used as a zone separator for built-in-firewall.

NetworkCables

In wired network, computers are connected together in this network by using cables to carry signals between computers. Cables differ in their capabilities and are categorized according to their ability to transmit data at varying speeds.

Thecategoriesofcablesthatconnectmostnetworks are:

- Twisted-pair
- Coaxial

Twistedpaircable

This is twisted to minimize crosstalk interference. It may be shielded or unshielded. Shielded Twisted Pair (STP) has lower electrical interference than Unshielded Twisted Pair (UTP). Normally UTP contains 8 wires or 4 pair, 100meter maximum length and 4 -100 Mbps speed.

Twisted-pair cabling uses Registered Jack 45 (RJ-45) connectors to connect to a computer. These are similar to Registered Jack 11 (RJ-11) connectors. Examples of twisted pair cable are cat5, cat5e, cat6.

3.1.2.7CONCEPTOFVLANS(VIRTUALLOCALAREA NETWORKS)

VLAN is a concept which allows a network manager to logically segment a LAN into differentbroadcastdomains.Sincethisisalogicalsegmentationandnotaphysicalone,

workstations do not have to be physically located together. Users on different floors of the same building, or even in different buildings can now belong to the same LAN.

VLAN's also allow broadcast domains to be defined without using routers. Bridging softwareisusedinsteadtodefinewhichworkstations aretobeincludedinthebroadcastdomain. Routers would only have to be used to communicate between two VLAN's.

There has been a recent move towards building a set of standards for VLAN products. The Institute of Electrical and Electronic Engineers (IEEE) has drafted a standard protocol to enable VLANs communication using 802.1Q.

MeritsofVLANoverLAN

VLAN'sofferanumberofadvantagesovertraditionalLAN's.Theyare:

1) Performance

Innetworkswheretrafficconsistsofahighpercentageofbroadcastsandmulticasts,VLAN'scan reduce the need to send such traffic to unnecessary destinations.

For example, in a broadcast domain consisting of 10 users, if the broadcast traffic is intended only for 5 of the users, then placing those 5 users on a separate VLAN can reduce traffic.

Compared to switches, routers require more processing of incoming traffic. As the volume of traffic passing through the routers increases, so does the latency in the routers, which results in reduced performance. The use of VLAN's reduces the number of routers needed, since VLAN's create broadcast domains using switches instead of routers.

2) SimplifiedAdministration

Seventy percent of network costs are a result of adds, moves, and changes of users in the network. Everytime a user is moved in a LAN, re-cabling, new station addressing, and reconfiguration of hubs and routers becomes necessary. Some of these tasks can be simplified with the use of VLAN's. If a user is moved within a VLAN, reconfiguration of routers is unnecessary.

In addition, depending on the type of VLAN, other administrative work can be reduced or eliminated. However, the full power of VLAN's will only really be felt when good management

tools are created which can allow network managers to drag and drop users into different VLAN's or to set up aliases.

Despite this saving, VLAN's add a layer of administrative complexity, since it now becomes necessary to manage virtual workgroups.

3) ReducedCost

VLAN'scanbeusedtocreatebroadcastdomainswhicheliminatetheneedforexpensive routers.

4) Security

Periodically, sensitive data may be broadcast on a network. In such cases, placing only those users who can have access to that data on aVLAN can reduce thechances of an outsider gaining access to the data. VLAN's can also be used to control broadcast domains, set up firewalls, restrict access, and inform the network manager of an intrusion.

5) FormationofVirtualWorkgroups

Nowadays,it iscommontofindcross-functionalproductdevelopmentteamswithmembersfromdifferent departments such as marketing, sales, accounting, and research. These workgroups are usually formed for a short period of time. During this period, communication between members of the workgroup will be high.

To contain broadcasts and multicasts within the workgroup, a VLAN can be set up for them. With VLAN's it is easier to place members of a workgroup together. Without VLAN's, the only way this would be possible is to physically move all the members of the workgroup closer together.

DEMERITSOFVLANS

1) Highriskofvirusissuesbecauseifonesystemisinfected,itsspreadstothewhole VLAN.
2) Equipment limitation in verylargenetworks

3) MoreeffectiveforcontrollinglatencyinWANbutlessefficientthanaLAN.

TypesofVLAN Connections

Devices on aVLAN can be connected in three ways based on whether the connected devices are VLANaware or VLAN-unaware. Recall that a VLAN-aware device is one which understands VLAN memberships (i.e. which users belong to a VLAN) and VLAN formats.

1) TrunkLink

All the devices connected to a trunk link, including workstations, must be VLAN-aware. All frames on a trunk link must have a special header attached. These special frames are called tagged frames.

2) AccessLink

An access link connects a VLAN-unaware device to the port of a VLAN-aware bridge. All frames on access links must be implicitly tagged (untagged). The VLAN-unaware device can be a LAN segment with VLAN-unaware workstations or it can be a number of LAN segments containing VLAN-unaware devices (legacy LAN).

3) HybridLink

This is a combination of the previous two links. This is a link where both VLAN-aware and VLAN-unaware devices are attached. A hybrid link can have both tagged and untagged frames, but all the frames for a specific VLAN must be either tagged or untagged.

WEBDEVELOPMENTANDDESIGN

Skills and experience on how to design and develop websites was also acquired at the software unit of the establishment. Although websites can be designed and developed faster, easily and quickly using Content Management Systems (CMS) which is usually called 'drag and drop', but at CRC we are taught how to hand code websites (designing). Knowledge gained focuses on HTML, CSS, and web programming using JavaScript.

Web designing is the process of planning, creation and updating of websites.A website is a set of related webpages containing content such as texts, images, videos, audios, etc. A website is hosted on at least one web server, accessible via a network such as the internet or a private LAN through an internet address known as a URL (universal resource locator). A group of publicly accessible websites collectively constitute the World Wide Web.

Websites on the internet are designed using HTML (Hyper Text Mark-up Language) or a comparable mark-up language such as XML or XHTML etc.

TYPESOFWEBSITES

a) **Static Websites**: A static webpage (HTML page) is a webpage that contains the same information (content) for all users. Although it may be periodically updated from time to time, it does not differ from users. Static webpages do not require web programming or any database design.

   A static site can be built by simply creating a few HTML pages and publishing them to a Web server.

b) **DynamicWebsites**: Adynamic webpageisonethat providescustom content fortheuser based on the results of a search or some other request. Also known as "dynamic HTML" or "dynamic content," the "dynamic" term is used when referring to interactive Web pages created for each user in contrast to the billions of static web pages that do not change.

INSTRUMENTS/TOOLSUSEDFORWEBDESIGNING

1. **Text Editor:** This is a software package that is used for writing and editing of the HTML codes e.g. Sublime Text, Notepad++, visual studio code etc.
2. **Browser:** This is a software package that is used for reading HTML documents (i.e. documents ending with the **.html** file extension) e.g. Google Chrome, Mozilla Firefox, Opera, UC Browser etc.
3. **Apache Server**: This is a software package used for the parsing and execution of PHP programs; apache is mainly used for web programming.

HTML(HYPERTEXTMARKUPLANGUAGE)

HTML which is an acronym for **Hyper Text Markup Language** is a markup language that is used for designing the World Wide Web pages.

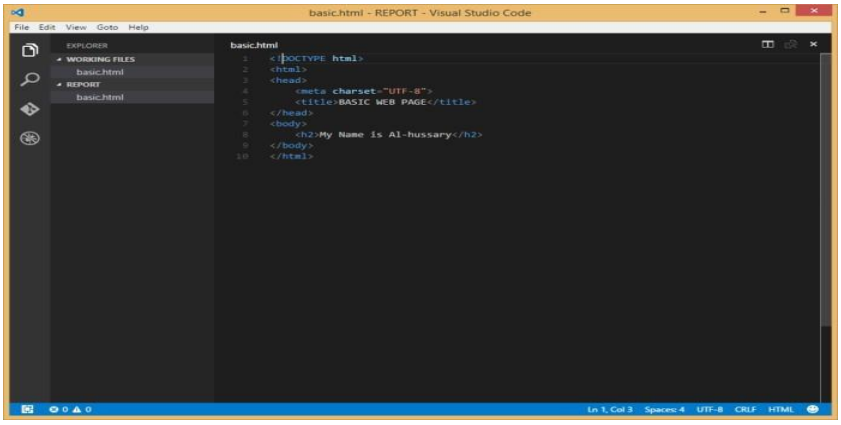
HTML documents are described by HTML tags, and each html tag describes a different content on the webpage. HTML tags are keywords surrounded by angle brackets.

For example:

<tagname>content</tagname>

HTMLtags usually comes inpairse.g. ** **,thefirstpartinthepairistheopeningtag (start tag), while the second part is the closing tag(end tag). End tags are written as the start tags, but with a slash before the tag name in the angular bracket.

CREATINGABASICHTMLDOCUMENT



From thefigureabove,wecanseesomebasicHTMLtagswhichincludesthe**DOCTYPE**, **HTML**, **HEAD**, **TITLE**, **BODY** tags.

The **DOCTYPE** tag doesn't have a closing tag and is used to declare the document type to the browser to be a HTML document.

The **HTML** tag is used to specify to the browser the section of the code which is ought to be treated as **HTML** codes.

The **HEAD** tag specifies the section of the code which is not visible on the webpage, but serves as a definition to the document.

The **TITLE** tag specifies the title of the webpage which is a portion of text that usually appears on the browser's tab.

The **BODY** tag contains the visible contents on the webpage which might be texts, images, links etc.

TABLES

Tables are used for structuring data into rows and columns, in HTML, tables can be created by using the <table> tag and the <tr> tag for creating rows in the table. In the <tr> (table row) tag, columns can be created by using the <td> (table data) tag. The contents in the table are included inthe<td>tag,thecontentcouldbeimages,texts,links,lists,formsetc.Themainimportanceof tables in a web design environment is for **structuring the layout of the website.**

LAYOUTOFAHTML WEBPAGE

The layout of a html webpage is the structural design of a webpage, that is the pattern in which allsectionsofthewebpageisarranged.ThebasicsectionsonmostwebpagesontheWorldWide Web includes the header section, footer section, navigation bars etc.

a) **Header Section:** The header section of a webpage is the topmost section of that webpage; most webpages have the site logo, site name and sometimes a search or navigation bar as contents of their header.

b) **Main Section**: The main section of the webpage is the section that contains the main contents on the webpage.

c) **Navigation Section**: This is any section on the webpage that contains links to navigate through other pages on the website; they can be used multiple times on a webpage.

d) **Footer Section**: The footer section is the bottommost section of the webpage, it contains links to auxiliary information such copyright, privacy statement.

Forms

A **web form**consists of a series of elements that, together, enable us to gather information from your visitors. Forms can be defined by using the HTML <form> tag. HTML forms contain form elements, form elements are different types of input elements, checkboxes, radio buttons, submit buttons and more.

CSS(CASCADINGSTYLESHEET)

CSS is a style sheet language that is used fordescribing the presentation of documents written in a markup language such as HTML. CSS is a mechanism for adding styles (e.g. font size, font colour, spacing, width, height etc.) to HTML elements on our webpages.

INSERTINGCSSTOOURHTMLDOCUMENTS

TherearethreewaysinwhichwecaninsertCSStoour webpages

a) Inlinemethod.

b) Internalmethod.

c) Externalmethod.

Inline Method: The inline method of attaching CSS is a method in which the styles are embedded directly in the HTML elements using the style attribute. An inline style may be used

to apply a unique style for a single element. The style attribute can contain any CSS property. Reusability of codeisdefeated when using theinline method sincethestyleis only foraspecific method.

Stylingaparagraph(**</p>)**usinginline CSS.

```
<pstyle="STYLESDECLARATIONHERE">

</p>
```

InternalMethod: Theinternal method ofattaching CSScanbe used whena certain style is only needed for a single web page. The styles are included on the webpage from the***<head>***tag and all the rules are wrapped between a ***<style>***tag.

```
<head>
<styletype="text/css">
                    CSSDECLARATIONSSTAY HERE
</style>
</head>
```

External method: This is the mostcommon wayof attaching CSS rules to ourwebpages, inthis method, all the CSS declarations are stored in a text file with a **.CSS** file extension and then the file islinked bymaking areference to itfromthe ***<head>***tag using a ***<link>***tag**.**With anexternal stylesheet, we can change the look of an entire website by only changing a single file.

ExternalCSScanbeincludedasbelow:

```
<head>
<linkrel="stylesheet"type="text/css"href="css/style.css" />
</head>
```

In the **<*link*>**tag, the **href** attribute contains the correct path to our CSS file which has beensaved on the server.

STYLINGHTMLELEMENTSFROMOURCSSFILE

HTML elements can be styled with CSS by creating CSS rules that would then overwrite the default styles of elements on the webpage.

A CSS rule consists of a selector and a declaration block, the declaration block encompasses the property to be changed and the vale which it's being changed to.

The selector could either be any HTML element or a DIV (division) or a SPAN. Suppose we wantedtochangethefontcolourofsometextinaparagraph,thentheselector becomes theletter ***p*** which is the **CSS** paragraph selector. The font colour which is referenced by the **colour** property is then declared in the declaration block, then a colon and the value (i.e. the color we want the font color to be).

```
p{
color:red;
}
```

With this CSS declaration, any text wrapped around a **<*p*>**tag automatically becomes red in color.

Morethanonerulecanbecontainedinasingledeclarationblock,todeclaremoreruleswe include them after the semi-colon ending the previous rule;

```
p{
color:red;
font-size:22px;
}
```

The above code changes the color of text in paragraphs to red and also changes the font size tobe 22 pixels.

THEIDANDCLASSSELECTOROFCSS

Fromtheruleabove,wearestylingthe tag,thisaffectsthewholeparagraphsonthewebsite. IDs and CLASSES come in handy when we want to style only specific elements on the website (like just a single paragraph).

TheID Selector

The ID selector is used for styling a single element on a webpage. Once an ID is used on a specific webpage, it cannot be used again on that webpage.

Ina .cssdeclaration**,** wespecify theid's namewith anumber sign(also called a ***hashmark***), like this:

#makethisred{color:red;}

The number sign and the following text specify the name of the id involved (in this case, **makethisred**). The attributes specified between the curly brackets set the appearance of the item the id is assigned to. An ID can be assigned to a HTML element by using the id keyword as an attribute of the HTML element.

**<pid="makethisred">HelloWorld! **

The code above assigns the specific rules defined to the**makethisred** selector from the css file on the paragraph.

TheClassSelector

Theclass selector isused forstyling group ofelements on awebpage. UnlikeIDs,classes can be used multiple amount of times within the same webpage.

TheCSS**class**selectorcanbespecifiedbyusingadot(**.**)andthentheclassnamelikethis:

.makethisred{color:red;}

A **class** can be assigned to a HTML element by using the **class** keyword as an attribute of the HTML element.

<pclass=makethisred">HelloWorld!</p>

JAVASCRIPT

JavaScript is a programming language of the web. All modern HTML pages are usingJavaScript. It is one of the most popular and in demand skills in today's job market for good reason. JavaScript not only enables you to add powerful interactions to websites, but is also the foundation of a lot of commonly used libraries (like jQuery) and frameworks (like AngularJS, ReactJS, NodeJS). As a web developer, it is essential that you have a solid understanding of this versatile language.

JavaScript functions like other known programming languages; C++, Java, C. It is a program used to modify the behaviour of web pages.

JavaScript is known for effecting changes in the HTML DOM and browser BOM. A library function of JavaScript known as JQuery helps to simply JavaScript programming.

PROJECTWORK REVIEW

1. PracticallyfixingandservicesofaMotherboard
2. FixingandInstallation ofNetworkCablesfortheInstituteandotherClient Office.
3. ParticipatingintheWebsiteDesignprocessoftheOrganization (https://femtechit.com).

PRACTICALCHALLENGESFACEDAT WORK

- Duringthefirstweekofresumption,Ihaddifficultiesinfamiliarizingmyselfwiththe working conditions of the establishment.
- CrimpingofnetworkcablesinconformitywiththeIEEEstandardswasn'teasyduetothe fact that I had to know and memorize the standards.

- Coupling and fixing of the telepresence system was a very tedious task and time consuming.
- I had a challenge of climbing a ladder during mounting of a client radio because I was afraid of the mast's height.
- I encountered a challenge during a site work during termination of cables. Some terminated cables were discovered to be of shorter length than expected.
- Troubleshooting of systems was very tedious. I had a problem troubleshooting an old Pentium III system was later discovered to have a faulty motherboard.
- Some devices such as switches and routers were not readily available for learning configurations due to their cost and some other factors.
- Itwasnoteasysolderingcablestothepanelofprinterbecauseitwasthefirsttime.
- I encountered the problem of addressing the network ID and broadcast ID of a network which do not match network standards or Protocol.
- Learning a new programming language seems tedious at first due to its structures and syntaxes.

THEORETICALPRINCIPLESLEARNTDURINGSIWESPROGRAMME

This SIWES programme has really enabled and given the opportunity to widen myunderstanding about concepts and courses offered in my school. I was able to learn various theoretical principles and its applications during the 4-months programme.

Theoreticalprincipleslearntinclude:

- I learnt about computer system architectures and organizations. The most common architecture in use was also made known to me.
- I learnt about the OSI (Open System Interconnect) model, its layers and functions. It is a very important model in the networking field.

- Understanding theIEEE cabling standard was alsooneof the knowledge acquired during this programme.
- Ilearnttheconceptofvideoconferencingandtelepresencewiththeinstallationof telepresence systems.
- Radiopolarisationinwirelessconnections.
- Networkaddressingincomputernetworkswasalso learnt.
- System unit circuitry was learnt and the electrical interaction between the components of the system unit.
- Theknowledgeofdeterminingthecontinuityofacircuitwasacquiredusingdigital multi-meter.
- Configurationsofnetworkdevices(switchesandrouters)wasalsolearntusingcisco packet tracer, GNS3 etc.
- Troubleshooting of not only computer systems but also other device; printers, switches, and routers.
- Computerinstallationandmanagementofsystems.
- Logicconceptofprogramminglanguages.
- Ilearnthowtocreate webapplicationsusingHTML,CSS,and JavaScript.
- The concept of subnetting of IP addresses into networks was also an added knowledgeduring my programme.
- Network security and management was part of the skills learnt during site activities andat the organisation during network troubleshooting.

SPECIFICCONTRIBUTIONSMADETOTHE ORGANISATION

During the Four (4) months SIWES programme, I have been able to contribute my quota to the establishment in the following aspects:

- Iwasabletohelpclients of thecompanytoinstalldifferentwindow(OS)ontheirPC.
- IrepairedvariousComputerbroughtfromClientsfortroubleshootingandbasicerror.
- IhelpclientsoftheorganizationinOperatingSysteminstallationandupgrading.
- IhelpclientsinCouplingandfixingoftheLaptop system.

CHAPTERFOUR

4.0 RELEVANCE OF INDUSTRIAL TRAINING EXPERIENCE GAINED TO COMPUTER SCIENCE.

The Industrial Training Programme improves students' awareness in single particular technology. The learners can obtain hands-on experience and know the real job scenario. It cultivates the leadership ability of the students and gives them the responsibility to execute and perform the given task.

The SIWES programme It helps them to update and master their skills. If they are not awareofnewconceptsandtechnology,theindustrialtrainingprogramlets themmasterthelatest advancements.

My experience during the programme will surely help me as computer science student anditalsoimprovemyskills.Theprogrammeisbeneficial tomeasstudentanditpreparesmeto know more in the aspect of my study and also in the aspect of technology. It also exposes me to work experience, and how to relate with people and my supervisor. I learnt how to apply knowledge in oral work situation. I gained more knowledge especially when its practical aspect of the training. I learnt so many things on my SIWES and some theoretical aspect, which I did not know before put with the help of this programme it really exposes me to many things.

Though theknowledgeaffords methechanceto apply academic knowledge toreal world circumstances and problems alongside acquisition of numerous working techniques and skills needed to handle tools, equipment, devices in the aspect of networking and systems engineering.

I was also exposed to profitable opportunities in computer science in the aspects of Hardware engineering. Indeed, SIWES programme actually opened my eyes to better ways of implementing the knowledge I have gained during my previous years in school.

CHAPTERFIVE

5.0 RECOMMENDATIONS

Having recognize the advantages of engaging in the Student Industrial Work ExperienceScheme, I recommend an active involvement in this exercise by all students who are due for it.

Despite the fact that the SIWES undertaken did achieve quite a lot of its detailed objectives, nevertheless, the recommendation arising from the foregoing review of the effectiveness of SIWES in the development of competent and productive technical manpower for the economy are summarized as follows:

- Participationofvariousprofessional,regulatoryandstatutorybodiesinthesupervisionof students.
- Sendingstudentsspecificallytoestablishmentwherethestipulate dams andobjectivesof SIWES would be achieved.

- Payment of befitting student allowance to assist in students finances during the period of training.
- ActiveInvolvementofprivatecorporateorganizationtominimizetheproblemoflow funding as recently complained by the director of ITF.

CONCLUSION

Student Industrial Work Experience Scheme organized by the Federal Government of Nigeria to give much experience and exposing of higher institution in various fields of life. This programme is mainly organised for higher institution students in much department to acquire the students with practical music experience on the field, to prepare students towards the possible challenges after graduation, and also tobe exposed to some equipment's or instruments that may not be available in the school which develop our practical form of learning.

In conclusion the student benefited a lot in the field attachment in a way that the student managed to apply the theoretical knowledge from the university into practice through the many activities/tasks/assignments the intern was instructed to do.

The intern improved the skills like interpersonal, listening, presentation skills, acting freely around people, typing skills, accounting, recording, presentation, typing, conflict resolution, organizational skills to mention but a few.

This schemehas bestowed on me adequate and significant practical experience needed to handlesophisticateddeviceswhichisnotreadilyavailableinmostNigerianInstitutionsof

learning. This acquired knowledge is relevant in the field of computer science and also would enable me compete with other counter parts from various parts of the world.

The student learnt many lessons which included; how to create an accounting system, how the working environment runs,etc. The student got different ideas from the different people (employees) at the Organization and also through interacting with other interns from Makerere University and this contributed a lot on the knowledge and experience.

In conclusion, there are lots of benefits derived by students both directly and indirectly from the programme. These benefits, help students develop information, communication and technological skills needed in the field of computer science. SIWES programme is a good initiative and worth doing in all higher institutions of learning to bridge theexisting gap between theory and practical.

GLOSSARYOF WORDS

- **Bandwidth**: It is the bit-rate of available or consumed information capacity expressed typically in metric multiples of bit per-second.
- **LAN (Local Area Network**):This is a type of network that connect computers together overrelativelysmalldistances,suchaswithinasinglebuildingorwithinasmallgroupof buildings.
- **MAN(**Metropolitan Area Network): This is a network type that is larger than a LAN but smaller than a WAN. It spans across towns and cities.
- **WAN(**Wide Area Network): This is a network type that connects computers over large physical distances. The internet is a typical example.
- **Architecture:**This refers to the view of the whole design with some characteristics that are visible in a computer.
- **Node:**Thisisanyactive, physicalorelectronic deviceattachedtoanetwork.

- **Bottleneck:** is a phenomenon that occurs when too much information or data enters onsource and causes the computer to slow down or become irresponsive.
- **Hologram:** This is an image that is displayed as a 3D image that allows a viewer to see all angles and sides of an image or object.
- **Packet:** refers to a segment of data sent from one computer or device to another over anetwork.
- **Troubleshooting**:istheprocessofdeterminingandsolvingproblemin devices**.**
- **Argument:**isthevaluethatispassedintoacommand,functionor routine.
- **Throughput:** This is a value used to illustrate the total amount of data being transferred through the computer or device at the given time.
- **Crosstalk:** is an electromagnetic interference received by one or more wires in wireless connection.
- **Gateway:**isanaddressusedasanentrypointintoanothernetwork.
- **Protocol:**This is referred to as the access method and also a standard used to define amethod of exchanging data over network.
- **Server:** is an instance of a computer program that accepts and responds to requests made another program, known as client.
- **Uplink:** isaportfoundonswitchesandroutersthatallowsconnectionbetweencomputers. It is also a one-way connection of devices to a network.
- **Interface:**is theconnection betweenpartsofasoftware.
- **Hoisting:** is a JavaScript behaviour of moving all declarations to the top of the currentscope.
- **Subroutine:** this refer to section of code, usuallythe main body of the program whichcan be used at more than one point in a program.
- **Event:**isapossibleactionausercanperformthatonepointinaprogram.
- **Functions:**aresetsofinstructiontoperformaspecifictask(routine).
- **Debug:**isaterminologyusedincomputersciencetosearchforandeliminate malfunctioning elements in a computer program or machines.
- **Broadcast:** refers to information set from one point to all other points that are connected to a specific device.

- **Trunk:** isacommunicationlinkthatcarrymultiplesignalssimultaneouslytoprovide network access between two points.
- **Multicast:** referstoinformation sentfromoneormorepointstoasetofotherpoints.
- **Configure:** istosetupadeviceorsoftwareprogramforaparticulartask.
- **Website Layout:** This is the structural design of a webpage i.e. how each block of thewebpage is organized i.e. (header, footer, navigation bars, body).
- **Class:** Aclassisusedinobjectorientedprogrammingtodefinethebehaviourofthe objects.