
NNAMDI AZIKIWE UNIVERSITY, AWKA

A TECHNICAL REPORT OF
STUDENTS INDUSTRIAL WORK EXPERIENCE
SCHEME (SIWES)

TRAINING PROGRAMME
MAY - OCTOBER, 2018

AT

MANAGEMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY
(MICTU)

BY

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DEDICATION

This work is dedicated to God Almighty, the first and greatest Engineer ever, who made ALL grace to abound towards me and beautified me with all inspirations, insights and excellence as well as given me a vision, purpose and hope to live for.

And to my parents, brothers, and indeed all that craves for knowledge and in pursuit of excellence, this work is humbly dedicated.

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To my fellow IT colleagues, Kunu precious, Mary-blessing, Favor, Oscar, Lewis

ABSTRACT

This report is a detailed account of my six months industrial experience with **MANAGMENT OF COMMUNICATION AND TECHNOLOGY UNIZIK (MICTU)**. A brief history and structure of the firm is given in this report. It covers my activities in all the Information System Department for the period of my attachment. The concluding chapter gives a general appraisal of the programme and recommendation to the SIWES coordinators.

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INTRODUCTION

The Student Work Industrial Scheme (SIWES) is a skilled training program aimed at exposing and

Preparing undergraduate students for industrial working technologies and conditions so as to create a harmony and bridge the gap between the theoretical knowledge and the industrial experience and also in preparation for future employment. It forms part of the approved minimum academic standard in the various degree programmes in Nigerian Universities. The SIWES program was introduced by the Federal Government in 1974.

Industrial Training (IT) has been a mandatory requirement in University's degree, and attracts the highest credit unit. The need for the industrial training arises from the Federal Government's directive and the university's policy on the subject:

"All students in higher institutions of learning must, of necessity undergo a compulsory period of industrial training with reputable and accredited organization in order to satisfy the university requirement".

The Industrial Training Fund (ITF) is the Federal Government agency charged with the responsibility of mediating between the tertiary institutions and the industries in order to enable students to participate in industrial activities prior to their graduation.

The objective of this report is to give a detailed description of the six-month industrial training experience, otherwise known as Student's Industrial Work Experience Scheme (SIWES) at Management of Information and Communication Technology Unizik, Awka. This lasted from May 2nd to October 31st 2018.

INSTITUTIONAL PROFILE (ABOUT NNAMDI AZIKIWE UNIVERSITY AWKA).

Nnamdi Azikiwe University is founded on the philosophy that knowledge should be propagated and disseminated to individuals without let or hindrance. Teaching and Research would be anchored on the needs of the Nigerian and International society generally. Dr. Nnamdi Azikiwe, after whom the University is named, stands out clearly in the history of University education in Nigeria and Africa in general. In the discharge of its mission, the University shall live up to the ideals of this renowned statesman, by making University education pragmatic, and using it to forge unity among the various communities in Nigeria and the International community.

OBJECTIVES OF NNAMDI AZIKIWE UNIVERSITY

To encourage the advancement of all branches of learning and to hold out to all persons without distinction of race, creed, sex or political conviction, an opportunity of acquiring higher and liberal education;

To provide courses of instruction and other facilities for the pursuit of learning in all its branches and to make these facilities available on proper terms to such persons as are equipped to benefit from them;

Summary: These strategies for success will emphasize our desire for high quality education, wise investment of University resources, result oriented and problem solving curricula. These are mediated through the reorientation of staff attitude to effect pragmatic teaching and development, output mix, research, good governance and management.

Put together, the Mission Statement and Decree No. 34 of 1992 identify the Operational Objectives of the University. Our strategies for their success will be clearly tied to our ability to plan expertly and manage the activities of the

University based on extensive internal consultations and consensus building with staff and students through management audit and brain storming sessions. Already many of these are in place and are viable. For instance Academic Planning and Physical Planning Units, Central University Monitoring Committee (which monitors the commitment of staff and students to the objectives of the Decree as well as the tenets of the University's motto) are functioning effectively. Furthermore, the adoption of Management Information System (MIS) to manage change posed by leadership challenges in appropriate socio-economic endeavors and well planned business initiatives will be vigorously pursued.

Profile of Nnamdi Azikiwe University

Nnamdi Azikiwe University came into being as an offshoot of the defunct Anambra State University of Technology (ASUTECH). ASUTECH which was established through Law No. 7 of 30th July 1980 by the Government of the old Anambra operated as a multi-campus university, with campuses in Abakiliki, Enugu, Awka and Nnewi.

In 1991, following the split of the old Anambra State into Anambra and Enugu States, the Awka and Nnewi campuses of the former ASUTECH were constituent into Nnamdi Azikiwe University by the Anambra State Edict No.5 of November 26 1991. Nnamdi Azikiwe University was taken over by the Federal Government by Decree No. 34 of July 15, 1992. The enabling law of the University empowers the Senate to, *inter alia*, make provisions for:

- ¤ The establishment, organization and control of Campuses, Colleges, Faculties, Departments, Schools, Institutes and other teaching and research units of the University and allocation of responsibility for different branches of learning;

- ¤ The organization and control of courses of study at the University and of examinations held in conjunction with those courses, including the appointment of examiners both internal and external;
- ¤ The award of degrees and such other qualifications as may be prescribed in conjunction with examinations held as aforesaid.

Corporate Ideology

Mission

The mission of the University is, thus, to use teaching, research and public service to solve societal problems. In the process of learning, students would be oriented to use education in the solution of practical problems confronting them and the Nigerian society.

Motto

The motto of the University is “Discipline, Self Reliance and Excellence.” The rationale for this motto is that discipline is a pre-requisite condition for the achievement of any goal. Discipline embodies endurance, continuity and determination to start afresh when previous efforts fail.

It is believed that discipline will give rise to self-reliance, which entails confidence in one’s self and abilities. The amalgam of a disciplined mind with self-confidence will yield excellence.

About MICTU Unizik

MICTU is the ICT back-borne of Nnamdi Azikiwe University. We endeavor that all ICT related issues are well attended to ensuring creative methods of solving different administrative problems.

DEPARTMENT MICTU UNIZIK

Management of Information and Communication Technology (MICTU) has various departments which are: Customer Service Support, Networking, Portal Section, Administrative Section, Hardware Section and Website Section.

CUSTOMER SERVICE SECTION

This department is concerned with the responsibility of listing, taking, and resolving the problems of student; both sandwich, diploma, regular and CEP students.

NETWORK SECTION

The department is involved in the networking of the systems and networks, they share out networks to different office, both wire and wireless. They are faced with the responsibility of managing the network server.

SCHOOL PORTAL SECTION

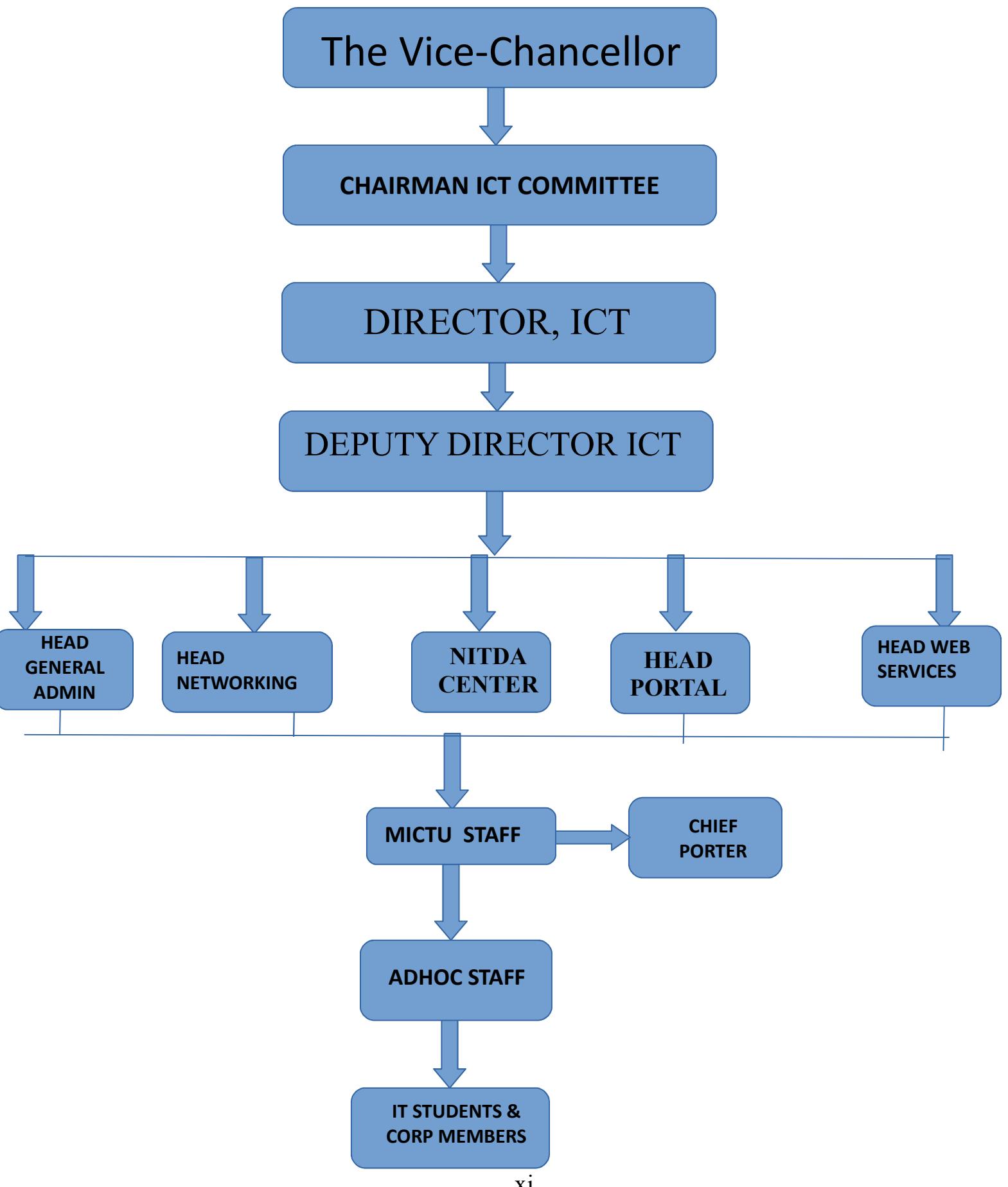
This department deals with the management of the school portal database. They also help in resolving students' database issues. They hold the information of every student.

Hardware

This department is concerned with the repairing and upgrade of all the systems hardware in school administrative block building. They are also concerned with the assembling and setting up of systems to its full functionality before first use.

WEB DESIGN SECTION

This department is involved in the upgrade and building of websites and site pages for school, they also manage the schools entire social network.



CHAPTER TWO

INTRODUCTION TO WEB DESIGN

AN OVERVIEW OF WEB DESIGN USING HTML AND CSS

WHAT IS HTML?

HTML is a computer language devised to allow website creation. It is the standard markup language for creating Web pages.

These websites can then be viewed by anyone else connected to the Internet. It is relatively easy to learn, with the basics being accessible to most people in one sitting; and quite powerful in what it allows you to create. It is constantly undergoing revision and evolution to meet the demands and requirements of the growing Internet audience under the direction of the W3C, the organization charged with designing and maintaining the language.

The definition of HTML is Hyper Text Markup Language.

- **Hypertext** is the method by which you move around on the web — by clicking on special text called hyperlinks which bring you to the next page. The fact that it is *hyper* just means it is not linear — i.e. you can go to any place on the Internet whenever you want by clicking on links — there is no set order to do things in.
- **Markup** is what HTML tags do to the text inside them. They mark it as a certain type of text (italicized text, for example).
- HTML is a *Language*, as it has code-words and syntax like any other language.
- HTML describes the structure of Web pages using markup
- HTML elements are the building blocks of HTML pages

- HTML elements are represented by tags
- HTML tags label pieces of content such as "heading", "paragraph", "table", and so on
- Browsers do not display the HTML tags, but use them to render the content of the page.

HTML is an evolving language. It doesn't stay the same for long before a revised set of standards and specifications are brought in to allow easier creation of prettier and more efficient sites. Let's start at the beginning...

XHTML 2 was taking started to look both boring and unrealistic, and it became pretty clear that a new approach was needed.

It was around this time that a bunch of pragmatic web technology fans, browser programmers and specification writers started building something of their own, outside of the usual W3C procedures. They called themselves the Web Hypertext Application Technology Working Group (WHATWG), and developed a new spec. After some soul-searching, the W3C decided that HTML was still the future of the web. XHTML 2 was discontinued and HTML5 became the new specification that everyone's effort should be poured into.

HTML5 is designed for the web, both now and in the future. This is the specification that we will be working with for the next decade at least, so the process of its development is relatively slow and considered. Many parts will be familiar, but there are also plenty of new elements, attributes and abilities to get excited about.

A Simple HTML Document

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>This is a Heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

Example Explained

- The `<!DOC TYPE HTML>` declaration defines this document to be HTML5
- The `<HTML>` element is the root element of an HTML page
- The `<body>` element contains the visible page content
- The `<h1>` element defines a large heading
- The `<p>` element defines a paragraph

HTML Tags

HTML tags are the hidden keywords within a web page that define how the browser must format and display the content. Most tags must have two parts, an opening and a closing part. For example, <html> is the opening tag and </html> is the closing tag.

HTML Tag Lists

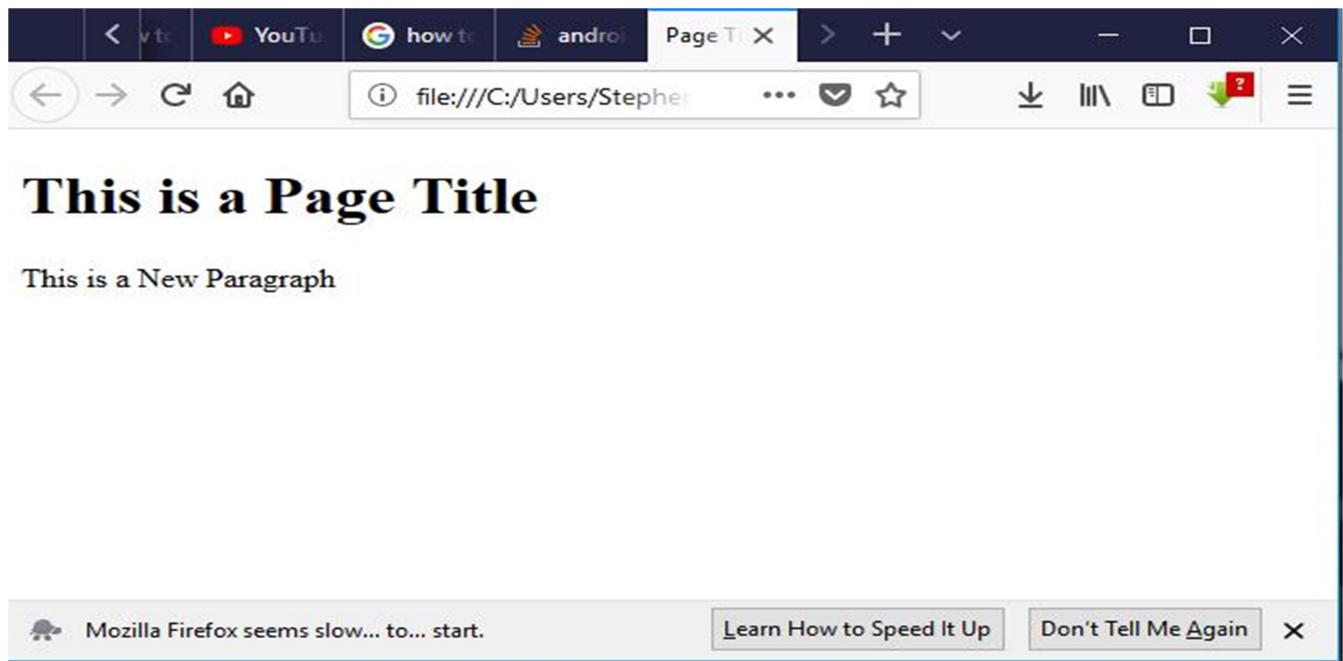
<FORM>	Input form	Essential for data input
<H1>	Level 1 header	Aim to have one H1 on each page, containing a description of what the page is about.
<H2>	Level 2 header	Defines a section of the page
<H3>	Level 3 header	Defines a sub-section of the page (should always follow an H2 in the logical hierarchy)
<H4>	Level 4 header	Etc. Less commonly used
<H5>	Level 5 header	Less commonly used. Only complex academic documents will break down to this level of detail.
<H6>	Level 6	Less commonly used

header		
<HEAD>	Document head	Essential. Contains information about a page that does not constitute content to be communicated as part of the page.
<HR>	Horizontal rule	Display info with no semantic value – never use it. “Horizontal”, by definition, is a visual attribute.
<HTML>		Core element of every web page.
	Show an image	Vital. Always use the alt or longdesc attributes when the image has content value

Web Browsers

The purpose of a web browser (Chrome, IE, Firefox, Safari) is to read HTML documents and display them.

The browser does not display the HTML tags, but uses them to determine how to display the document:



A Html File Displayed On Browser(Mozilla FireFox).

Since the early days of the web, there have been many versions of HTML:

Version	Year
HTML	1991
HTML 2.0	1995
HTML 3.2	1997
HTML 4.01	1999
XHTML	2000
HTML5	2014

CSS (Cascading Style Sheets)

WHAT IS CSS?

Cascading Style Sheets (CSS) is the language for describing the presentation of Web pages, including colors, layout, and fonts. It allows one to adapt the presentation to different types of devices, such as large screens, small screens, or printers. CSS is independent of HTML and can be used with any XML-based markup language.

CSS was first developed in 1997 as a way for web developers to define the visual appearance of the web pages that they were creating. It was intended to allow web professionals to separate the content and structure of a website's code from the visual design. This separation of structure and style allows HTML to perform more of the function that it was originally based on - the markup of content, without having to worry about the design and layout of the page itself.

CSS didn't gain in popularity until around 2000, when web browsers began using more than the basic font and color aspects of CSS. Today, all modern browsers support all of CSS Level 1, most of CSS Level 2, and even most aspects of CSS Level 3. As CSS continues to evolve and new styles are introduced, web browsers have begun to implement modules that bring new CSS support into those browsers and give web designers powerful new styling tools to work with.

In years past, there were select web designers that refused to use CSS for the design and development of web sites, but that practice is all but gone from the industry today.

WHERE IS CSS USED?

CSS can also be used to define how web pages should look when viewed in other media than a web browser. For example, you can create a print style sheet that will define how

the web page should print out. Because web page items like navigation buttons or web forms will have no purpose on the printed page, a Print Style Sheet can be used to "turn off" those areas when a page is printed.

WHY IS CSS IMPORTANT?

Separation of content and presentation

CSS rules can be provided in a file that is separate to the (content) HTML. If all pages link to this centralized CSS file, then the look of a website can more easily be updated. For example, the color or size of all level-one headings can be changed by updating a single CSS rule.

Smaller web page files sizes

As the code required to style content can be removed from individual webpages, the size of each web-page file is reduced. Depending on the benchmarks, file sizes may be reduced by up to 60%.

Improved web-page downloads speed

Once a style sheet has been downloaded, it is typically stored on the user's computer (cached). For each subsequent web-page viewed, only the HTML needs to be downloaded.

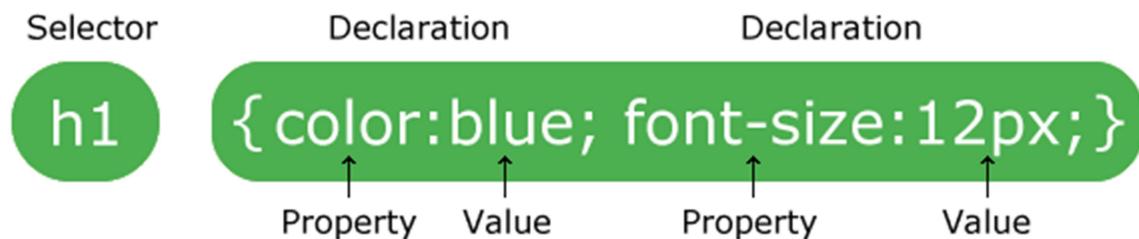
Improved rendering speed

Once a webpage has been downloaded, a browser processes the underlying code to determine how content should be displayed. This process is referred to as 'rendering'.

The time a webpage takes to render is affected by the complexity of the code the browser receives. Using CSS to control the layout of a page typically simplifies the the code structure making it ‘easier’ (faster) for the browser to render.

CSS SYNTAX

A CSS rule-set consists of a selector and a declaration block:



The selector points to the HTML element you want to style.

The declaration block contains one or more declarations separated by semicolons.

Each declaration includes a CSS property name and a value, separated by a colon.

A CSS declaration always ends with a semicolon, and declaration blocks are surrounded by curly braces.

Example

```
p {
    color: red;
    text-align: center;
}
```

Different CSS Stylesheet

Stylesheet 1

Welcome to My Homepage

Use the menu to select different Style sheets

- Stylesheet 1
- Stylesheet 2
- Stylesheet 3
- Stylesheet 4
- No Stylesheet

Same Page Different Style sheets

This is a demonstration of how different stylesheets can change the layout of your HTML page. You can change the layout of this page by selecting different style sheets in the menu, or by selecting one of the following links:

[Stylesheet1](#), [Stylesheet2](#), [Stylesheet3](#), [Stylesheet4](#).

No Styles

This page uses DIV elements to group different sections of the HTML page.

No Style sheet.

Stylesheet 2

Welcome to My Homepage

Use the menu to select different Stylesheets

- Stylesheet 1

- Stylesheet 2
- Stylesheet 3
- Stylesheet 4
- No Stylesheet

Same Page Different Style sheets

This is a demonstration of how different style sheets can change the layout of your HTML page. You can change the layout of this page by selecting different stylesheets in the menu, or by selecting one of the following links:

This is a demonstration of how different stylesheets can change the layout of your HTML page. You can change the layout of this page by selecting different stylesheets in the menu, or by selecting one of the following links:
[Stylesheet1](#),[Stylesheet2](#),[Stylesheet3](#),[Stylesheet4](#).

CHAPTER THREE

PHP & MYSQL

WHAT IS PHP?

PHP is an acronym for "**PHP: Hypertext Preprocessor**".

It is a programming language designed to generate web pages interactively on the computer serving them, which is called a web server. Unlike HTML, where the web browser uses tags and markup to generate a page, PHP code runs between the requested page and the web server, adding to and changing the basic HTML output.

PHP makes web development easy because all the code you need is contained within the PHP framework. This means that there's no reason for you to reinvent the wheel each time you sit down to develop a PHP program; it comes with web functionality built-in. While PHP is great for web application development, it doesn't store information by itself. For that, you need a database. The database of choice for PHP developers is MySQL, which acts like a filing clerk for PHP-processed user information.

PHP grew out of a need for people to develop and maintain web sites containing dynamic client-server functionality. In 1994, Rasmus Lerdorf created a collection of open source Perl scripts for his personal use, and these eventually were rewritten in C and turned into what PHP is today. By 1998, PHP was released in its third version, turning it into a web development tool that could compete with similar product such as Microsoft's Active Server Pages (ASP) and Sun's Java Server Pages (JSP). PHP also is an interpreted language, rather than a compiled one. The real beauty of PHP is simplicity coupled with power.

Compiled languages create a binary file such as an .exe, while interpreted languages work directly with the source code when executing, as opposed to creating a standalone file.

PHP is ubiquitous and compatible with all major operating systems. It is also easy to learn, making it an ideal tool for web programming beginners. Additionally, you get to take advantage of a community's effort to make web development easier for everyone.

The creators of PHP developed an infrastructure that allows experienced C programmers to extend PHP's abilities. As a result, PHP now integrates with advanced technologies like XML, XSL, and Microsoft's Component Object Model Technologies (COM).

WHAT IS A PHP FILE

- PHP files can contain text, HTML, CSS, JavaScript, and PHP code
- PHP code are executed on the server, and the result is returned to the browser as plain HTML
- PHP files have extension ".php"
- 3.2.1 The PHP interpreter, MySQL, and the web server cooperate to return the page

Processing PHP on the server is called *server-side processing*.

When a web server detects PHP code, it turns over the processing of the page to the PHP interpreter. The server processes the PHP file and sends the resulting HTML file to the browser.

1. You enter a web page address in your browser's location bar.

2. Your browser breaks apart that address and sends the name of the page to the host. For example, HTTP://www.mictu/login.php requests the page login.php from www.phone.com.
3. The web server process on the host receives the request for login.php.
4. The web server reads the login.php file from the host's hard drive.
5. The web server detects that the PHP file isn't just a plain HTML file, so it asks another process—the PHP interpreter—to process the file.
6. The PHP interpreter executes the PHP code that it finds in the text it received from the web server process. Included in that code are calls to the MySQL database.
7. PHP asks the MySQL database process to execute the database calls.
8. The MySQL database process returns the results of the database query.
9. The PHP interpreter completes execution of the PHP code with the data from the database and returns the results to the web server process.
10. The web server returns the results in the form of HTML text to your browser.
11. Your web browser uses the returned HTML text to build the web page on your screen.

This may seem like a lot of steps, but all of this processing happens automatically every time a web page with PHP code is requested. In fact, this process may happen several times for a single web page, since a web page can contain many image files and the CSS definition, which must all be retrieved from the web server.

WHAT PHP CAN DO?

- PHP can generate dynamic page content
- PHP can create, open, read, write, delete, and close files on the server
- PHP can collect form data
- PHP can send and receive cookies
- PHP can add, delete, modify data in your database
- PHP can be used to control user-access
- PHP can encrypt data

PHP VARIABLES?

In PHP, you define a variable with the following form:

\$variable_name = value;

Pay very close attention to some key elements in the form of variables. The dollar sign (\$) must always fill the first space of your variable. The first character after the dollar sign must be either a letter or an underscore. It can't under any circumstances be a number; otherwise, your code won't execute, so watch those typos

- PHP variables may be composed only of alphanumeric characters and underscores; for example, a-z, A-Z, 0-9, and _.
- Variables in PHP are case-sensitive. This means that \$variable_name and \$Variable_name are different.
- Variables with more than one word can be separated with underscores to make them easier to read; for example, \$test_variable.
- Variables can be assigned values using the equals sign (=).

- Always end with a semicolon (;) to complete the assignment of the variable.

Example

```
<!DOCTYPE html>
<html>
<body>

<?php
echo "My first PHP script!";
?>

</body>
</html>
```

A Simple Example of a PHP Variable

OUTPUT

```
"Hello World";
```

Variable scope

PHP helps keep your code organized by making sure that if you use code that someone else wrote (and you very likely will), the names of the variables in your code don't clash with other previously written variable names. For example, if you're using a variable called \$name that has a value of Bill, and you use someone else's code that also has a variable called \$name but uses it to keep track of the filename *log.txt*, your value could get overwritten. Your code's value for \$name of Bill will be replaced by log.txt, and your code will say Hello log.txt instead of Hello Bill, which would be a big problem.

To prevent this from happening, PHP organizes code into *functions*. Functions allow you to group a chunk of code together and execute that code by its name. To keep variables in

your code separate from variables in functions, PHP provides separate storage of variables within each function. This separate storage space means that the *scope*, or where a variable's value can be accessed, is the local storage of the function.

Example: *The default handling of variable scope*

```
<!DOCTYPE html>
```

```
<html>
```

```
<body>
```

```
<?php
```

```
// Define a function
```

```
function birthday( ){
```

```
// Set age to 1
```

```
$age = 1;
```

```
}
```

```
// Set age to 30
```

```
$age = 30;
```

```
// Call the function
```

```
birthday( );
```

```
// Display the age
```

```
echo $age;
```

```
?>
```

```
</body>
```

```
</html>
```

Types of Variable In PHP

Global Variable

Example

```
<?php
$x = 5;
$y = 10;

function myTest() {
    global $x, $y;
    $y = $x + $y;
}

myTest();
echo $y; // outputs 15
?>
```

Global variables allow you to cross the boundary between separate functions to access a variable's value. The global statement specifies that you want the variable to be the same variable everywhere that it's defined as global. It should be used sparingly because it's easy to accidentally modify a variable without realizing what the consequences are. This kind of error can be very difficult to locate.

OUTPUT

STATIC VARIABLE

Static variables provide a variable that isn't destroyed when a function ends. You can use the static variable value again the next time you call the function, and it will still have the same value as when it was last used in the function.. The easiest way to think about this is to think of the variable as global but accessible to just that function. A static keyword is used to dictate that the variable you're working with is static.

Example

```
<?php
function myTest() {
    static $x = 0;
    echo $x;
    $x++;
}

myTest();
myTest();
myTest();
?>
```

OUTPUT

0
1
2

SUPER GLOBAL VARIABLE

PHP uses special variables called *super globals* to provide information about the PHP script's environment. These variables don't need to be declared as global. They are automatically available, and they provide important information beyond the script's code itself, such as values from a user's input.

Since PHP 4.01, the super globals are defined in arrays.

The PHP super global variables are:

- \$GLOBALS
- \$_SERVER
- \$_REQUEST
- \$_POST
- \$_GET

- \$_FILES
- \$_ENV
- \$_COOKIE
- \$_SESSION

Example:

```
<!DOCTYPE html>
<html>
<body>
<?php
$x= 75;
$y = 25;

function addition() {
$GLOBALS['z'] = $GLOBALS['x'] + $GLOBALS['y'];

echo $z;
}

addition();
</body>
</html>
```

OUTPUT

100

PHP \$_SERVER

`$_SERVER` is a PHP super global variable which holds information about headers, paths, and script locations

PHP \$_GET

PHP `$_GET` can also be used to collect form data after submitting an HTML form with `method="get"`. `$_GET` can also collect data sent in the URL.

WHAT IS MYSQL?

- MySQL is a database system used on the web.
- MySQL is a database system that runs on a server.
- MySQL is ideal for both small and large applications.
- MySQL is very fast, reliable, and easy to use.
- MySQL uses standard SQL
- MySQL compiles on a number of platforms
- MySQL is free to download and use
- MySQL is developed, distributed, and supported by Oracle Corporation
- MySQL is named after co-founder Monty Widenius's daughter: My

MySQL has its own client interface, allowing you to move data around and change database configuration. Note that you should use a password to log in. Assigning database users allows you to limit access to tables based on the logged-in database user. Each MySQL server can host many databases. A web application may use its own proprietary database or a standard database like MySQL.

WHAT IS PHPMyAdmin?

Phpmyadmin is a web application written in PHP; it contains (like most web applications) XHTML, CSS, and JavaScript client code. This application provides a complete web interface for administering MySQL databases, and is widely recognized as the leading application in this field.

Being open source since its birth, it has enjoyed support from numerous developers and translators worldwide (being translated into 65 languages at the time of writing this book). The project is currently hosted at SourceForge.net and developed using their facilities by the phpMyAdmin team.

The popular c Panel (a website control application) contains phpMyAdmin. In addition, we can install our own copy of phpMyAdmin on our web server as long as our provider's server satisfies with the minimum requirements.

The goal of phpMyAdmin is to offer a complete web-based management of MySQL servers and data, and to keep up with MySQL and web standards evolution. While the product is always evolving, it supports all standard operations along with extra features.

PhpMyAdmin offers features that cover basic MySQL database and table operations. It also has an internal system that maintains metadata to support advanced features.

Finally, system administrators can manage users and privileges from phpMyAdmin.

PhpMyAdmin goes into Database view (shown in the following screenshot) every time we click on a database name from the navigation panel.

This is where we can see an overview of the database—the existing tables, a dialog to create a table, the tabs to the Database view pages, and some special operations we might

do on this database to generate documentation and statistics. There is a checkbox beside each table to make global operations on that table. The table is chosen by using the checkbox or by clicking anywhere on the row's background. We can also see each table's size, provided \$cfg['ShowStats'] is set to TRUE. This parameter also controls the display of table-specific statistics in the Table view.

The initial screen that appears here is the database Structure page. We note here that almost every column header—such as Table, Records, and Size—is a link which can be used to sort the corresponding column. While sorting by descending table name might not be that useful, sorting by descending size is definitely something we should do from time to time.

TABLE VIEW

This is a commonly used view, giving access to all table-specific pages Note that the header for this screen always shows the current database and table names. We also see the comments set for the table, next to the table name:

SERVER VIEW

This view is entered each time we go back to the home page. A privileged user will, of course, see more choices in the Server view. The Server view panel was created to group together related server management pages, and enable easy navigation between them.

CHAPTER FOUR

WORD PRESS

WHAT IS OPEN SOURCE?

The term "open source" refers to something people can modify and share because its design is publicly accessible. The term originated in the context of software development to designate a specific approach to creating computer programs. Today, however, "open source" designates a broader set of values—what we call "the open source way."

Generically, open source refers to a program in which the source code is available to the general public for use and/or modification from its original design free of charge, i.e., open. Open source code is typically created as a collaborative effort in which programmers improve upon the code and share the changes within the community. Open source sprouted in the technological community as a response to proprietary software owned by corporation

WHAT IS OPEN SOURCE SOFTWARE?

Open source software is software with source code that anyone can inspect, modify, and enhance.

"*Source code*" is the part of software that most computer users don't ever see; it's the code computer programmers can manipulate to change how a piece of software—a "program" or "application"—works. Programmers who have access to a computer program's source code can improve that program by adding features to it or fixing parts that don't always work correctly.

Difference between open source software and other types of software.

Some software has source code that only the person, team, or organization who created it—and maintains exclusive control over it—can modify. People call this kind of software "proprietary" or "closed source" software.

Only the original authors of proprietary software can legally copy, inspect, and alter that software. And in order to use proprietary software, computer users must agree (usually by signing a license displayed the first time they run this software) that they will not do anything with the software that the software's authors have not expressly permitted. Microsoft Office and Adobe Photoshop are examples of proprietary software.

Open source software is different. Its authors make its source code available to others who would like to view that code, copy it, learn from it, alter it, or share it. LibreOffice and word press Program are examples of open source software.

WHAT IS WORDPRESS?

Word Press started in 2003 with a single bit of code to enhance the typography of everyday writing and with fewer users than you can count on your fingers and toes. Since then it has grown to be the largest self-hosted blogging tool in the world, used on millions of sites and seen by tens of millions of people every day.

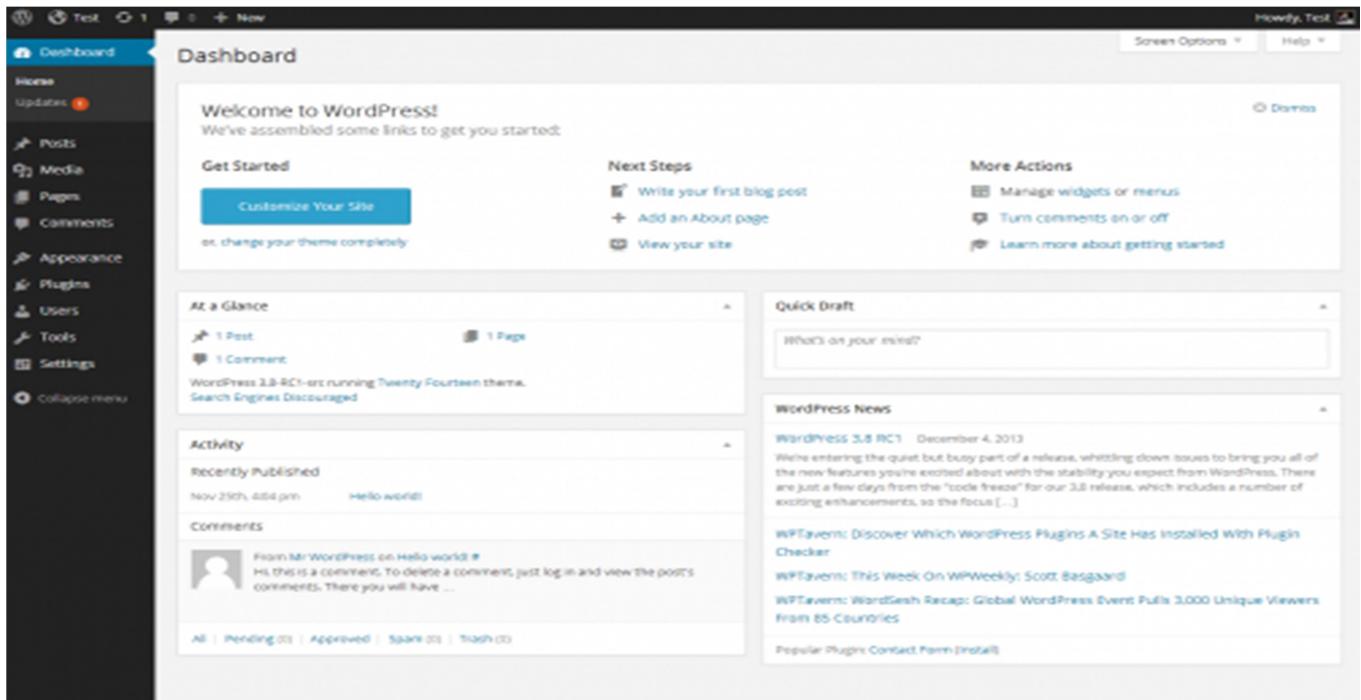
It is a free and open-source content management system (CMS) based on PHP and MySQL. Word Press is installed on a web server, which either is part of an Internet hosting service or is a network host itself; the first case may be on a service like WordPress.com, for example, and the second case is a computer running the software package WordPress.org

Benefits of word press

- ❖ Themes allow you to change the design of your website quickly. There are thousands of themes available for Word Press.
- ❖ Plugins allow you to extend the functionality of your Word Press site without knowing how to program. There are over 10,000 plugins available that help you add all kinds of functionality to your site, like social media sharing, SEO, photo slideshows, and much more.

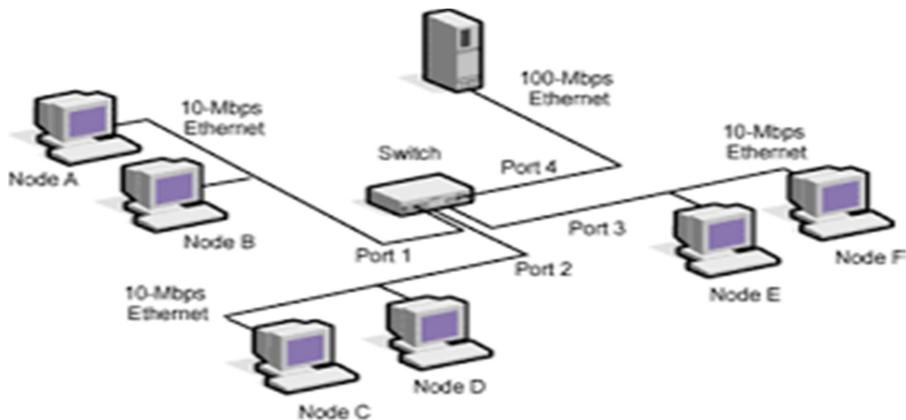
- ❖ They are easy to update. If you can create a Word document, you can publish a new article to your Word Press website. Once it is set up, you can update it any time you want, and that is important for engagement with your visitors and for the search engines.
- ❖ Google loves Word Press sites. Because they are updated more frequently, and the content tends to be structured well, you can get a Word Press site ranking very quickly compared to a static website. Google has even gone on record as recommending Word Press for business sites.
- ❖ Word Press is supported by a thriving, engaged community. A recent study estimates that approximately 8% of the sites on the Internet are run by Word Press. There are thousands of designers, developers and enthusiasts out there to help if you get stuck. Help is just a Google or Bing search away.

Word press Dashboard



NETWORKING SECTION

A computer Network can be described as a system of interconnected devices that can communicate using some common standard (called protocols). This Device communicates to exchange information and resources (eg. Files and printers) and services. Two computers can be connected together using a cable. This small network can be used to exchange data between the two computers. Then when we want to expand the network we either use a Switch or a Hub to connect more than two Computers.



The LAN connection is segmented logically using VLAN technique. Each active VLAN is used to manage different sections and department of the company based on the functionality of the system on the network. The design implementation is configured on two layer 3 switches, one which is the core switch and the other a distribution switch

From the distribution switch, Ethernet cables are used to transmit the signal to each floor of the building and it terminates at the patch panel.

SETTING UP A LOCAL AREA NETWORK

Setting up LAN requires first a physical topology: a map to show location of host and its connection to network, showing wiring location.

Secondly, a logical topology: a map showing specification of hosts and configuration should be drawn.

Thirdly, basic tools and utilities such as: device or computer running windows operating system with a functioning network interface card(has Ethernet port interface), RJ-45 connector, twisted pair cable, switch, router, hub, cable tester, crimping tool, a measuring tape, a cable clipper.

STEPS USED FOR SETTING UP A LOCAL AREA NETWORK

- Verify presence of working Ethernet port on network interface card of computer system.
- Set location of switch and/hub and computers (not more than 100m from computers)
- Connect RJ-45 connectors to ends of Unshielded Twisted Pair cable (UTP) using a cable crimping tool. Cables should run from computers to switch (NO joining of cable).
- Use Cable Tester to test for proper crimping.
- Connect tested cable to Ethernet ports of switch/hub to respective computer systems.
- Set a private IP address, subnet mask, work group name to computer systems.
- Turn on file sharing.
- Use command prompt interface, with ping command to test and verify connectivity.

View my network places on my computer menu.

CONNECTING TO THE INTERNET

The Internet is a worldwide, publicly accessible network of interconnected computer networks that transmit data by using internet protocol (IP). It enables individuals and businesses alike, through interconnected computer networks, to share information, resources, and services.

Regardless of the type of device that an individual or business uses to connect to the Internet, the device must connect through an Internet service provider (ISP). An ISP is a company or organization through which a subscriber obtains Internet access. A subscriber can be a business, a private consumer, a government body, or even another ISP.

In addition to offering connection to the Internet, an ISP can offer other services to subscribers including:

- **Equipment co-location:** A business may opt to have some or all internal network equipment physically located on the ISP premises.
- **Web hosting:** The ISP provides the server and application software for storing web pages and web content for the business website.
- **FTP hosting:** The ISP provides the server and application software for the FTP site of a business.
- **Applications and media hosting:** The ISP provides the server and software to allow a business to provide streaming media such as music, video or applications, such as online databases.
- **Voice over IP:** A business can save on long distance telephone charges, especially for internal calls between geographically distant offices, by using Voice over IP (VoIP).

To gain access to the Internet, it is first necessary to have a connection to an ISP. ISPs offer various connection options with varied speeds and bandwidth (the amount of data that can be carried from one point to another in a given time period, expressed as bytes per second (Bps)).

The main connection methods used by home and small business users are:

Dialup access: Dialup access is an inexpensive option that uses any phone line and a modem. To connect to the ISP, a user calls the ISP access phone number. Dialup is the slowest connection option, and is typically used by mobile workers and in areas where higher speed connection options are not available.

Wireless connection: wireless connection uses and omnidirectional antenna provided by the internet service provider connected to a modem for reception. Usually of high speed but only suitable if ISP is close by.

Cable modem: A cable modem is a connection option offered by cable television service providers. The Internet signal is carried on the same coaxial cable that delivers cable television to homes and businesses. A special cable modem separates the Internet signal from the other signals carried on the cable and provides an Ethernet connection to a host computer or LAN.

Satellite: Satellite connection is an option offered by satellite service providers. The user's computer connects through Ethernet to a satellite modem that transmits radio signals to the nearest POP within the satellite network.



FIG 3 Racked Switches and Server Equipment's

The WAN connection comprise the Telco radios (telecommunication IDU), the internet service provider indoor unit device, a switch, a router, an ISA system and a gateway switch (layer 3 switch) interconnecting the WAN and LAN

SERVERS

In most common use, a **server** is a physical computer (a computer hardware system) dedicated to run one or more services (as a host), to serve the needs of the users of other computers on a network. Depending on the computing service that it offers it could be a database server, file server, mail server, print server, web server, gaming server, or some other kind of server.

In the context of client-server architecture, a **server** is a computer program running to serve the requests of other programs, the "clients". Thus, the server performs some

computational task on behalf of "clients." The clients either run on the same computer, or they connect through the network.

In the context of Internet Protocol (IP) networking, a **server** is a program that operates as a socket listener.

Servers often provide essential services across a network, either to private users inside a large organization or to public users via the Internet.

A network server is a computer designed to process requests and deliver data to other (client) computers over a local network or the Internet. Network servers typically are configured with additional processing, memory and storage capacity to handle the load of servicing clients.



FIG 4. Servers

- **File server**

In computing, a **file server** is a computer attached to a network that has the primary purpose of providing a location for shared disk access, i.e. shared storage of computer files (such as documents, sound files, photographs, movies, images, databases, etc.) that can be accessed by the workstations that are attached to the same computer network

- **Printer server**

A **print server**, or **printer server**, is a device that connects printers to client computers over a network. It accepts print jobs from the computers and sends the jobs to the appropriate printers.

Print servers may support a variety of industry-standard or proprietary printing protocols including Internet Printing Protocol, Line Printer Daemon protocol

- A print server may be a networked computer with one or more shared printers. Alternatively a print server may be a dedicated device on the network, with connections to the LAN and one or more printers. Dedicated server appliances tend to be fairly simple in both configuration and features. Print server functionality may be integrated with other devices such as a wireless router, a firewall, or both.^[1] A printer may have a built-in print server.

- **Mail server**

A **mail server** is a computer that serves as an electronic post office for email. Mail exchanged across networks is passed between mail servers that run specially designed software. This software is built around agreed-upon, standardized protocols for handling mail messages and the graphics they might contain.

Terms mail server, mail exchanger, and MX host may also refer to a computer performing the MTA¹ function. The Domain Name System (DNS) associates a mail server to a domain with mail exchanger (MX) resource records containing the domain name of a host providing MTA services.

- **Hub:** Seldom used, this splits the connection between multiple PC's, which may regenerate the signal.it floods its messages to all computers connected to it.
- **Switch:** used to split multiple pcs into different groupings based on logical needs or security needs, within the same subnet or LAN. It has rows of RJ-45 ports for networking using twisted pair cables.
- **Router:** used to send data between physical networks. It also performs security functions using its fire wall and encryption.



Fig 5 A network switches connected with twisted pair cables connected to its RJ-45 ports

Electrical Power Section

The power distribution is managed by four different mains: PHCN supply, 360KVA, 200KVA & 45KVA generators. Only the 45KVA uses automated switching system for connection into the building distribution board system.

Besides, four inverters (rated 5KVA each) and a UPS, Un-interrupted Power Supply, (rated 60KVA and 80KVA respectively) are installed to retain power at any time in some crucial part of the building should the supplies are down ensuring un-interrupted operations. The power infrastructure is designed in such a way that irrespective of any unforeseen circumstance, power is made available at all times thus reducing downtime due to power related issues and hence increasing maximum up-time of critical servers and infrastructure.



FIG 6

ELECTRICAL POWER SECTION

CONNECTION ORIENTATION

GENERATORS AND PHCN

The 360KVA, 200KVA generators and PHCN are 3-phase (connected in star fashion), 1-neutral cables are terminated in the change-over switch (rated 800KVA) from where connection is made to the outdoor distribution board and supplied into the power room, via a sub-change over switch. In the power room, a monitoring power device is installed to determine the operating voltage and frequency of the power supplied. From the monitoring device it is connected to a control panel (which serves to manage the equipment power distribution). When the 360KVA is powered ON, it charges both the inverter and UPS batteries.

The Inverter batteries are connected in such a way that the batteries are charged irrespective of whether the supply is from the generators or PHCN. The inverter and distribution panel has a LED powered display that monitors and displayed real-time the operating voltage, frequency of power supplied, power factor and the amperage of both mains input and output. In the same vein, inverter has a LCD panel that displays real-time the operating voltage, frequency, time check for battery discharge, event log etc. This helps in troubleshooting in case of any unexpected failure and also to track the performance of the batteries.



FIG 7 DISTRIBUTION AND CONNECTION PANELS, INVERTER SYSTEMS

A **power inverter**, or **inverter**, is an electrical power converter that changes direct Current (DC) to alternating current (AC); the converted AC can be at any required voltage and frequency with the use of appropriate transformers, switching, and control circuits. (Jude, 2007)

Solid-state inverters have no moving parts and are used in a wide range of applications, from small switching power supplies in computers, to large electric utility high-voltage direct current applications that transport bulk power. Inverters are commonly used to supply AC power from DC sources such as solar panels or batteries.

The inverter performs the opposite function of a rectifier. The electrical inverter is a high-power electronic oscillator. It is so named because early mechanical AC to DC converters was made to work in reverse, and thus was "inverted", to convert DC to AC.

There are 4 inverters managing the building power backup. They are rated 5KVA each. One of which is dedicated to the server room air conditioning while the rest are distributed to different parts of the building. The UPS is used to back up the critical servers and infrastructures and the entire power points of the building and it is rated 60KVA and 80 KVA respectively

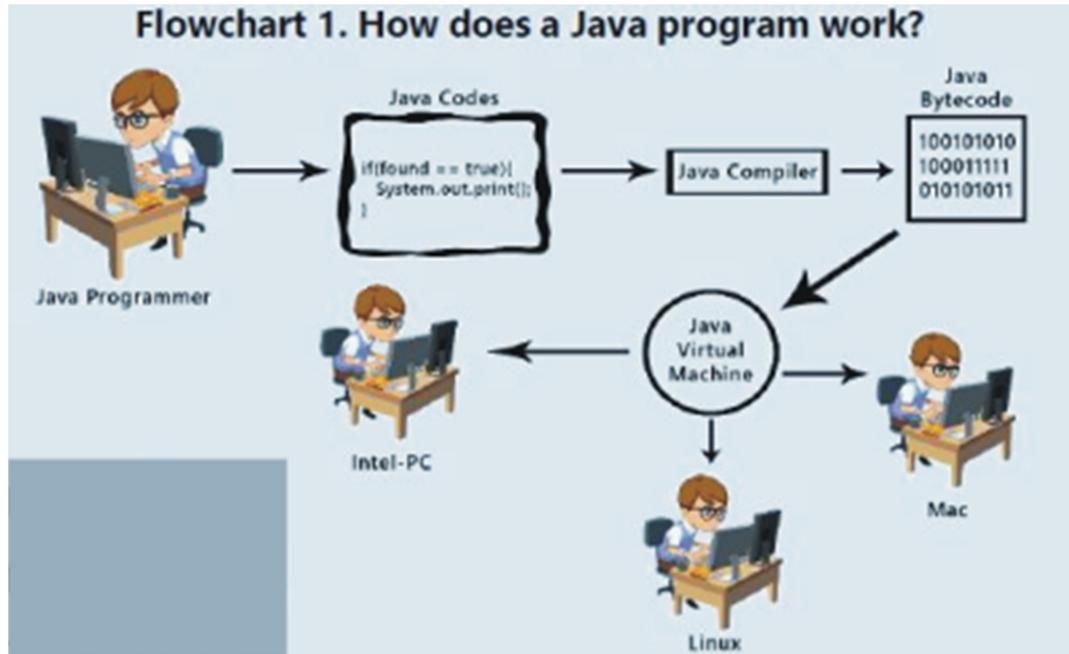
INTRODUCTION TO JAVA PROGRAMMING

What is Java?

Java is an object oriented programming language developed by Sun Microsystems as a core part of its Java platform which was released in 1995. Java development was led by James Gosling in 1991. The language lets the developers to “write once, run anywhere”(WORA), and this gives Java the characteristic of being platform-independent. Its application to real world solutions ranges from personal computer up to mobile devices.

How does a Java program work?

Like other computer programs, Java source codes are translated into a machine language binary language. This binary language is a set of zero that only the computer can understand. However, there is a distinction to a Java-written program. Yes, it is translated into binary codes but it does not run directly under the computer system. Java programs run under the Java Virtual Machine installed in a computer system (*download and installation of Java Runtime Environment is needed*). For better understanding, refer to the illustration (Figure1) on how a Java program compiles and runs.



Characteristics of Java

Before diving straight into programming, it is important to know the characteristics

Of the language that we are about to use.

- **Object-oriented.** Everything in Java is an object.
- **Simple.** Easy to learn and use.
- **Platform-independent.** Java can execute in any computer system provided there is a Java run-time system present in it.
- **Architecture neutral.** Java programs are not compiled for a specific processor and /or operating system. This is because Java programs run under the *JavaVirtualMachine* or JVM.
- **Secure.** It enables to develop virus-free programs or software.
- **Multi-threaded.** Java programs can perform several tasks simultaneously.
- **Case-sensitive.** In Java, “Name” is different from “name”.

First Sample Program

Download and install the Java Development Kit and Net Beans IDE. Then, you can create and run your first Java sample program in five simple steps . Necessary illustrations are provided for your easy understanding. The NetBeans IDE8.0.2 will be used for developing the sample programs.

1. Launch NetBeans 8.0.2 and create a “New Project” by selecting “Java” in the Categories and “Java Application” in the Projects (Figure1).
2. For the Project Name, enter “Chatbot”; for Project Location, choose any directory you would like to use .Then check the “Create Main Class”. Click “Finish” afterwards (Figure2).
3. Now that you have successfully created a new project, type these codes in the main method (Figure3).
4. Run your first sample program by pressing *F6* in the keyboard or clicking the *Run* button in the NetBeans IDE.
5. As it would ask you your name, type your name in, and then press *Enter* in the keyboard. You would get this result (Figure4).

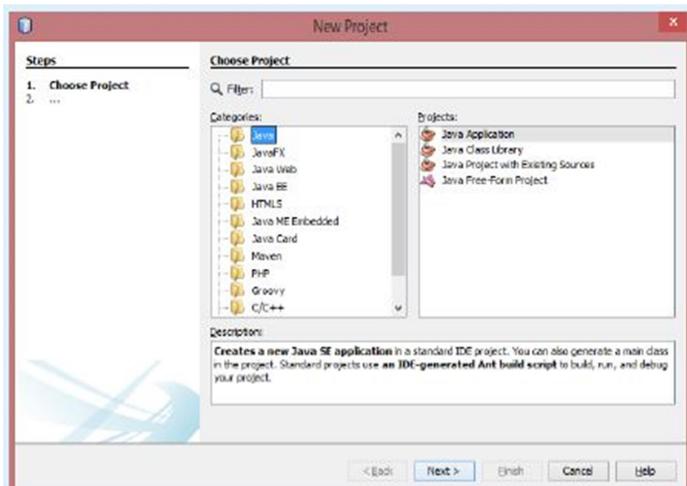


Figure 1. NetBeans 8.0.2: New Project Dialog Window

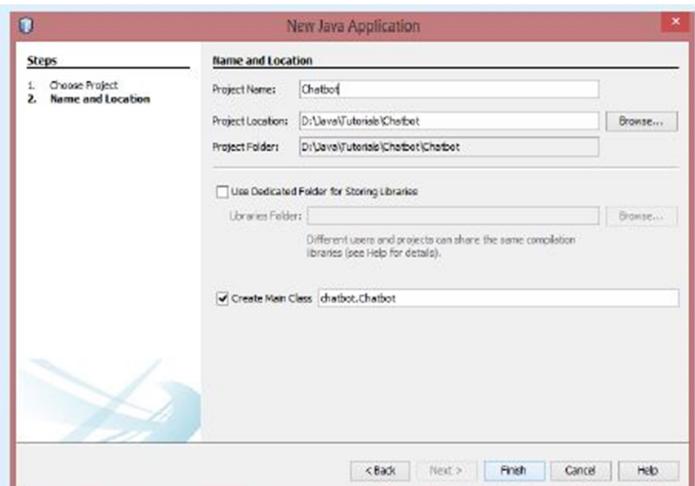


Figure 2. NetBeans 8.0.2: New Java Application Dialog Window

```
1 package chatbot;
2
3 import java.util.Scanner;
4
5 public class Chatbot {
6
7     public static void main(String[] args) {
8         Scanner in = new Scanner (System.in);
9         String name;
10        System.out.print("Who are you? ");
11        name = in.nextLine();
12        System.out.println("Hello, " + name + "!");
13    }
14 }
15 }
```

Figure 3. Chatbot.java: Source code

The screenshot shows an IDE's output window titled "Output - Chatbot (run) x". It displays the following text:
run:
Who are you? Jiminy Timy
Hello, Jiminy Timy!
BUILD SUCCESSFUL (total time: 10 seconds)

Below the window, the caption "Figure 4. Chatbot.java: Output" is centered.

Java As Object Oriented Programming

Java is an Object-Oriented Language. As a language that has the Object-Oriented feature, Java supports the following fundamental concepts:

- Polymorphism
- Inheritance
- Encapsulation
- Abstraction
- Classes
- Objects
- Instance
- Method

In this chapter, we will look into the concepts - Classes and Objects.

Object - Objects have states and behaviors. Example: A dog has states - color, name, breed as well as behaviors – wagging the tail, barking, eating. An object is an instance of a class.

Class - A class can be defined as a template/blueprint that describes the behavior/state that the object of its type support.

Objects in Java

Let us now look deep into what are objects. If we consider the real-world, we can find many objects around us, cars, dogs, humans, etc. All these objects have a state and a behavior.

If we consider a dog, then its state is - name, breed, color, and the behavior is - barking, wagging the tail, running.

If you compare the software object with a real-world object, they have very similar characteristics.

Software objects also have a state and a behavior. A software object's

4. Java – Objects & Classes

state is stored in fields and behavior is shown via methods.

So in software development, methods operate on the internal state of an object and the object-to-object communication is done via methods.

Classes in Java

A class is a blueprint from which individual objects are created.

Following is a sample of a class.

```
public class Dog{  
    String breed;  
    int age;  
    String color;  
    void barking(){  
    }  
    void hungry(){  
    }  
    void sleeping(){  
    }  
}
```

A class can contain any of the following variable types.

□ **Local variables:** Variables defined inside methods, constructors or blocks are called local variables. The variable will be declared and initialized within the method and the variable will be destroyed when the method has completed.

□ **Instance variables:** Instance variables are variables within a class but outside any method. These variables are initialized when the class is instantiated. Instance variables can be accessed from inside any method, constructor or blocks of that particular class.

□ **Class variables:** Class variables are variables declared within a class, outside any method, with the static keyword.

A class can have any number of methods to access the value of various kinds of methods. In the above example, barking(), hungry() and sleeping() are methods.

Following are some of the important topics that need to be discussed when looking into classes of the Java Language.

Constructors

When discussing about classes, one of the most important sub topic would be constructors. Every class has a constructor. If we do not explicitly write a constructor for a class, the Java compiler builds a default constructor for that class.

Each time a new object is created, at least one constructor will be invoked. The main rule of constructors is that they should have the same name as the class. A class can have more than one constructor.

Following is an example of a constructor:

```
public class Puppy{  
    public Puppy(){  
    }  
    public Puppy(String name){  
        // This constructor has one parameter, name.  
    }  
}
```

Creating an Object

As mentioned previously, a class provides the blueprints for objects. So basically, an object is created from a class. In Java, the new keyword is used to create new objects.

There are three steps when creating an object from a class:

- **Declaration:** A variable declaration with a variable name with an object type.
- **Instantiation:** The 'new' keyword is used to create the object.
- **Initialization:** The 'new' keyword is followed by a call to a constructor. This call initializes the new object.

```
public class Puppy{  
    public Puppy(String name){  
        // This constructor has one parameter, name.  
        System.out.println("Passed Name is :" + name );  
    }  
    public static void main(String []args){
```

```
// Following statement would create an object myPuppy  
Puppy myPuppy = new Puppy( "tommy" );  
}  
}  
}
```

If we compile and run the above program, then it will produce the following result:

Passed Name is :tommy

Accessing Instance Variables and Methods

Instance variables and methods are accessed via created objects. To access an instance variable, following is the fully qualified path:

```
/* First create an object */  
Object Reference = new Constructor();  
/* Now call a variable as follows */  
ObjectReference.variableName;  
/* Now you can call a class method as follows */  
  
ObjectReference.MethodName();
```

CHAPTER FIVE

RECOMMENDATION AND CONCLUSION

Problems Encountered

The following are the problems I encountered during the period of my industrial attachment with the Management and Information Communication Technology Unit (MICTU) of the great University, Nnamdi Azikiwe University, Awka.

- I had problems relating to transportation to office during the holiday period
- I had issues with the learning process because the systems are limited, and some of them were attacked by viruses, and the remaining ones most times are been occupied by academic staffs on research.
- At a time we had a network issue when our server room got burnt, and it delayed and made many works stagnant for one full week.

5.2 RECOMMENDATION

The following are the things I feel will make learning better for other industrial trainees in the same firm.

- The trainers should make out time to impact to their IT students of much of the things they have to offer.
- A well-structured class should be organized for the trainees to properly educate them about what they are going into.
- A little token should be given to the trainees at least at the of every month for their up-keep

CONCLUSION

Having acquired all these knowledge and experiences, I would say that the SIWES programme is an eye-opener for students. It unravels the skill requirements of the industry to the students so that on their return to school, they would seriously seek extra knowledge other means and their academics as well to get themselves ready for work after graduation.

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