

Induze tech foundation

**ESSENTIALS OF
COMPUTING**



ESSENTIALS OF COMPUTING

The Induze tech is an educational innovative nonprofit, dedicated to the vision that every student in every school has the opportunity to learn computer science as part of their core basic education.

This course is for students who don't (yet) consider themselves computer persons. Designed for students who work with technology every day but don't necessarily understand how it all works underneath the hood or how to solve problems when something goes wrong, this course fills in the gaps, empowering students to use and troubleshoot technology more effectively. Through lectures on hardware, the Internet, multimedia, security, programming, and web development as well as through readings on current events, this course equips students for today's technology and prepares them for tomorrow's as well. The students that took this course are in 4 different schools namely.

Government secondary school kuje.

Government secondary school kabusa.

Government secondary school Dei Dei.

Government secondary school Gwagwalada.

ESSENTIALS OF COMPUTING HARDWARE.

The computer was born to solve problems that did not exist before - Bill Gates.

Computer hardware includes the physical parts of a computer, such as the case, central processing unit (CPU), random access memory (RAM), monitor, mouse, keyboard, computer data storage, graphics card, sound card, speakers and motherboard.

This course was divided in to five parts.

- **BINARY OPERATIONS**
- **CPU & MEMORY OPERATIONS**
- **DISPLAY & USB CONNECTORS**
- **WIRELESS COMMUNICATION**
- **OPERATING SYSTEMS**

BINARY OPERATIONS

first we started with Binary Operations were we talked about DECIMAL and BINARY NUMBER SYSTEM.

Decimal Number system Understandable by humans
Represented in powers of tens

Binary Number System Machine readable
Represented in powers of twos (0's and 1's)

Other things we also discussed about.

“Bit” stands for binary digit and is the smallest unit of binary information.

One byte = collection of 8 bits

Why binary number system is suitable for computing.

Use of the binary number system

ASCII Table

ESSENTIALS OF COMPUTING HARDWARE.

CPU & MEMORY OPERATIONS

CPU Functions

CPU cores

A System on a Chip (SoC)

RAM

HARD DRIVE (HDD)

FLASH MEMORY

Cache

DISPLAY & USB CONNECTORS

we talked about all the ports and connections in a computer which includes,

Displayport

USBType-C, Thunderbolt

HDMI

WIRELESS COMMUNICATION

some of the things we discussed was

Bluetooth

WiFi

OPERATING SYSTEMS

What are operating systems?

Different kinds of OS, windows. IOS, Linux Chrome OS

Device drivers.

VISUAL HARDWARE DEMONSTRATION

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ESSENTIALS OF COMPUTING HARDWARD.



ESSENTIALS OF COMPUTING INTERNET.

The spread of computers and the Internet will put jobs in two categories. People who tell computers what to do, and people who are told by computers what to do"

— MARC ANDREESSEN

INTERNET

The Internet, sometimes called simply "the Net," is a worldwide system of computer networks -- a network of networks in which users at any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users at other computers).

This course was divided into four.

- **THE INTERNET OVERVIEW**
- **NETWORK DEVICES**
- **INTERNET PROTOCOLS**
- **UNDERSEA CABLING**

We started with defining internet

Servers vs Client, peer-to-peer network, Client server model

THE INTERNET VS THE WORLD WIDE WEB (WWW)

INTERNET

The internet is the physical network of computers all over the world.

WORLD WIDE WEB

WWW is a virtual network of web sites connected by hyperlinks (or "links"). Web sites are stored on servers on the internet.

ISP AND IP, DHCP Server

INTERNET PROTOCOLS

TCP Transmission Control Protocol/IP Internet Protocols

TPC/IP protocol stack

ipV4 vs ipV6

UDP - User Datagram Protocol

domain name server (DNS server)

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WEB BROWSERS. opera, google chrome, fire fox, safari

HTTP (Hypertext Transfer Protocol)

HTTPS (Hypertext Transfer Protocol Secure)

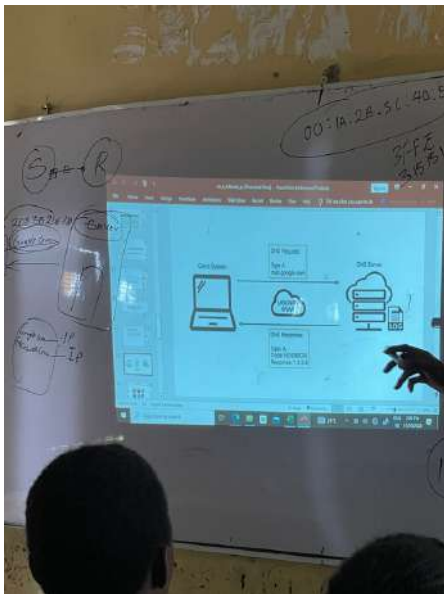
URL (Uniform Resource Locator)

Password combination.

Types of network Devices. Hub, access point, Router, modem

UNDERSEA CABLING

What are undersea cables used for?



ESSENTIALS OF COMPUTING INTERNET SECURITY.

The only truly secure system is one that is powered off, cast in a block of concrete and sealed in a lead-lined room with armed guards."

— GENE SPAFFORD

INTERNET SECURITY refers to security designed to protect systems and the activities of employees and other users while connected to the internet, web browsers, web apps, websites, and networks.

THIS COURSE WAS DIVIDED INTO FOUR

- DATA & PRIVACY
- AUTHENTICATION VIA PASSWORDS
- COOKIES AND SESSIONS
- NETWORK SECURITY

DATA & PRIVACY

DATA / PRIVACY (IN THE CONTEXT OF INTERNET SECURITY)

DELETING FILES

HARD DISK DRIVE / SOLID STATE DRIVE (IN THE CONTEXT OF DELETING FILES)

COOKIES AND SESSIONS

WHAT ARE HTTP COOKIES

SETTING COOKIES

SENDING COOKIES

LOGIN SESSION

SECURITY WITH HTTP COOKIES

AUTHENTICATION VIA PASSWORDS

PASSWORDS

PASSWORD SECURITY CONVENTIONS

PASSWORD MANAGER

TWO-FACTOR AUTHENTICATION (2FA)

ESSENTIALS OF COMPUTING INTERNET SECURITY.

NETWORK SECURITY

NETWORK SECURITY CONCEPTS
COMMUNICATION SECURITY ANALOGY
ENCRYPTION
TRANSPORT LAYER SECURITY
VPN (VIRTUAL PRIVATE NETWORKS)
DISADVANTAGES OF VPNS
FIREWALLS
PHISHING
MALWARE



ESSENTIALS OF COMPUTING MULTIMEDIA.

MULTIMEDIA

Multimedia (MM) refers to applications and technologies that manipulate text, data, images, sound and full-motion-video objects. Given the usage of multiple formats, multimedia is capable of delivering a stronger and more engaging message than standard text.

This course was divided into two

AUDIO

GRAPHICS

AUDIO

AUDIO FILE FORMATS

USE CASES OF AUDIO FILE FORMATS

GRAPHICS

GRAPHICS - FORMS

RASTER GRAPHICS

JPEG

PNG

GIF

BMP

TIFF

VECTOR GRAPHICS

SVG

EPS

PDF

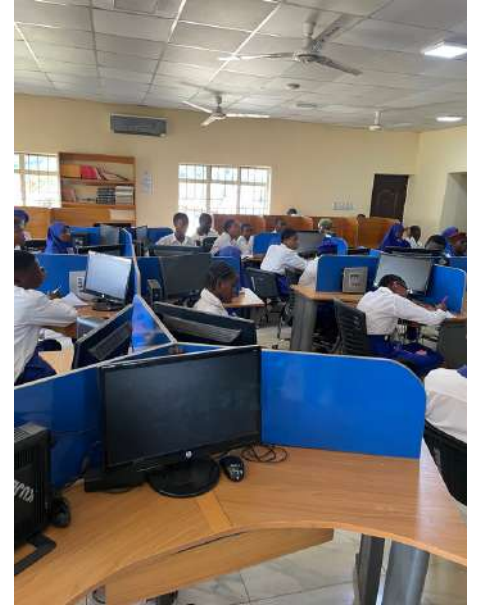
AI

RGB COLOR MODEL

MULTIMEDIA GRAPHICS - VIDEO

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ESSENTIALS OF COMPUTING MULTIMEDIA.



ESSENTIALS OF COMPUTING WEB DEVELOPMENT.

HyperText Markup Language (HTML)

HyperText Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser. It defines the content and structure of web content. It is often assisted by technologies such as Cascading Style Sheets and scripting languages such as JavaScript.



ESSENTIALS OF COMPUTING CERTIFICATE.

Certificate program for GSS kabusa

At the end of the course essentials of computing, we had an capstone project which was titled 'our school website home page' this project was carried out using html and css languages to design the website. this project was crried out my the students as a group work.

Induze hosted a school event which other students came together for the unveiling of the school website home home page.



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ESSENTIALS OF COMPUTING CERTIFICATE.

Certificate program for GSS kabusa



ESSENTIALS OF COMPUTING CERTIFICATE.

Certificate program for GSS Dei Dei

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