



HERITAGE GLOBAL ACADEMY

ICT JSS 2 SECOND TERM SCHEME OF WORK

WEEKS	CONTENT	LESSON OBJECTIVE
1	Revision	
2.	File Sharing <ul style="list-style-type: none">▪ Definition of network▪ Types of network▪ Description of the type of network▪ Network topology	<ul style="list-style-type: none">- Define network.- Mention the types of network-Describe the types of network- Describe Network topology and types-
3-4	Computer Virus <ul style="list-style-type: none">▪ Meaning▪ Types of computer virus- Book sector- Executable file virus- Attack on documents Sources of viruses <ul style="list-style-type: none">- Infected diskette- Infected CD -ROMS- E-mail- Digital Liter <ul style="list-style-type: none">• Virus warning signs <p>Examples of virus: Trojan horse, Sleeper, logic bomb, Alabama virus , Christian virus</p>	<ul style="list-style-type: none">-State the meaning of computer virus- State types of computer viruses-List the examples of computer virus-State sources through which a computer can be infected.- State warning signs of a virus
5	Database <ul style="list-style-type: none">▪ Definition of database▪ Database terminologies.▪ Types of database▪ Forms of database	<ul style="list-style-type: none">- Explain the term database- State and explain the database terminologies- identify various forms of database-input, store and retrieve information from a database application
6	Spread Sheet Packages <ul style="list-style-type: none">▪ Examples of spreadsheet packages▪ Uses of spreadsheet packages	<ul style="list-style-type: none">- Name some spreadsheet application packages.- State the uses of the spreadsheet package- Describe the general features of spreadsheet- Load and exit Spreadsheet packages.



	<ul style="list-style-type: none"> ▪ Spreadsheet features and terminologies ▪ Loading and exiting spreadsheet packages 	
7.	Worksheets <ul style="list-style-type: none"> ▪ Starting worksheet ▪ Data Entry ▪ Editing Worksheet ▪ Saving Worksheet ▪ Retrieving Worksheet ▪ Formatting worksheets ▪ Calculations 	<ul style="list-style-type: none"> - Open, enter, edit and save data in a worksheets. - Format text, cells and columns in a worksheet. - Perform Simple calculation - Print data from worksheet.
8.	Graphs (Charts) in Worksheets <ul style="list-style-type: none"> ▪ Types of graphs and their uses ▪ Editing graphs ▪ Formatting graphs 	<ul style="list-style-type: none"> - State the types of graph and their uses. - Construct standard graphs and charts from given records in a worksheet - Edit and format graphs and charts - Identify and select data range and area for graph construction
9	Computer career opportunities <ul style="list-style-type: none"> ▪ Computer professionals ▪ Qualities of a good computer professional bodies ▪ Computer professional bodies and their functions 	<ul style="list-style-type: none"> - Draw a list of career opportunities associated with computer - State the function of each of the professionals - List the Qualities of a good computer professional bodies - List the computer professional bodies - State the functions of the Computer professional bodies and association.
10	Logic Circuit <ul style="list-style-type: none"> ▪ Introduction to logic ▪ Interpreting logic gate and circuit ▪ Construction of truth tables for OR, AND, NOT etc. 	<ul style="list-style-type: none"> - Define logic Circuit - Explain and interpret logic gate. - Construct each of the truth table
11-12	Revision / Examination	

Topic: File Sharing

File sharing is the practice of sharing or offering access to digital information or resources, including documents, multimedia (audio/video), graphics, computer programs, images and e-books. It is the private or public distribution of data or resources in a network with different levels of sharing privileges.

File sharing can be done using several methods. The most common techniques for file storage, distribution and transmission include the following:

1. Removable storage devices
2. Centralized file hosting server installations on networks
3. World Wide Web-oriented hyperlinked documents
4. Distributed peer-to-peer networks
5. Computer Network

A network consists of two or more computers that are linked in order to share resources (such as printers and CDs), exchange files, or allow electronic communications. The computers on a network may be linked through cables, telephone lines, radio waves, satellites, xender, bluetooth or infrared light beams. **A network is defined as a group of two or more computer systems linked together to share resources.**

Computer networks allow you to share information with friends, family, coworkers and customers. **Network file sharing is the process of copying data files from one computer to another using a live network connection.**

Before the Internet and home networks became popular, data files were often shared using floppy disks. Nowadays, some people still use CD-ROM / DVD-ROM disks and USB sticks for transferring their photos and videos, but networks give you more flexible options.

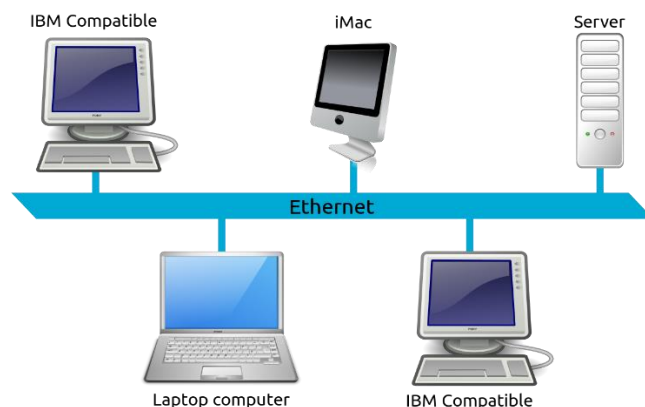
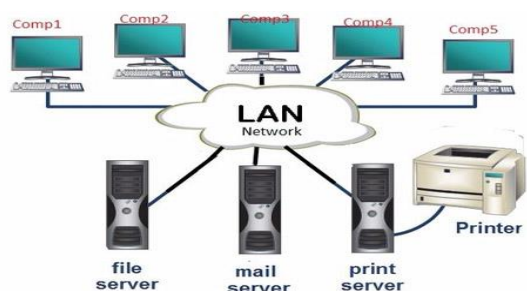
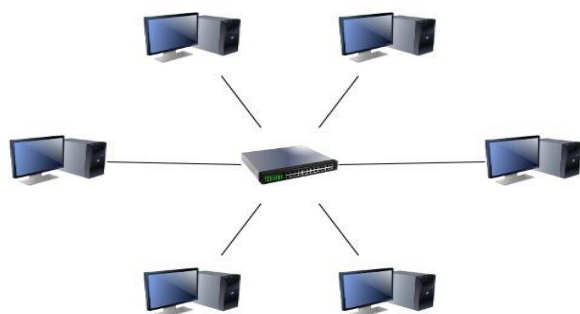
Types of Network

Personal Area Network – The smallest and most basic type of network, a PAN is made up of a wireless modem, a computer or two, phones, printers, tablets, etc., and revolves around one person in one building. These types of networks are typically found in small offices or residences, and are managed by one person or organization from a single device. Often used at home, this network is more on connections between a computer and another gadget such as a telephone or a modem.

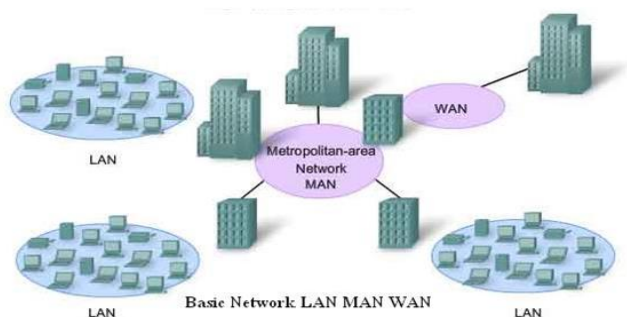


Local Area Network – A connection that's used for groups of computers. This is common in small offices and internet cafes. This is where everyone can share files basically, and is also known to be a good way to connect

between computers whenever they want to share an internet connection, or whenever they want to play games with each other.



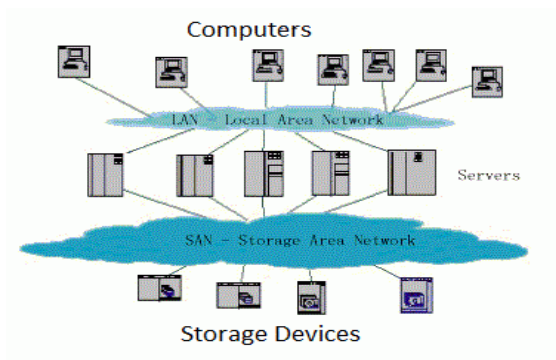
Metropolitan Area Network – A more powerful version of the local area network where it can cover up the whole city in terms of connection. A huge server is usually used for this type of connection.



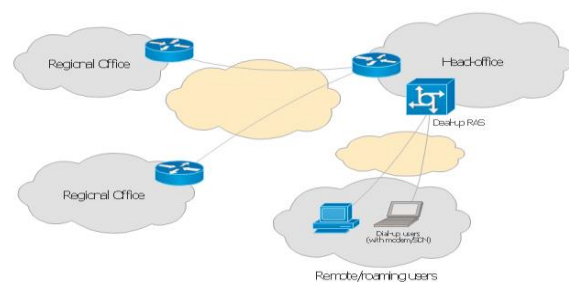
Wide Area Network – This is a common type of network nowadays that's made possible by wireless technology. As the term implies, a WAN spans a large physical distance. The Internet is the largest WAN, spanning the Earth. Usually, a credential or service from a certain company is needed to enter a connection in this type of network, but there are others that can be used for free. This is good for internet connection. The internet is a well-known version of this one. A WAN is a geographically-dispersed collection of LANs. A network device called a router connects LANs to a WAN. In IP networking, the router maintains both a LAN address and a WAN address.



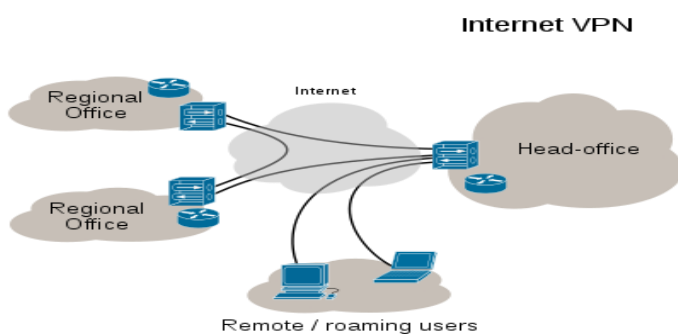
Storage Area Network – A type of network that specializes in file sharing and other matters in storing various software within a group of computers.



Enterprise Private Network – This is a software network that's often used in businesses so that they can have privacy over files and interactions between computers.

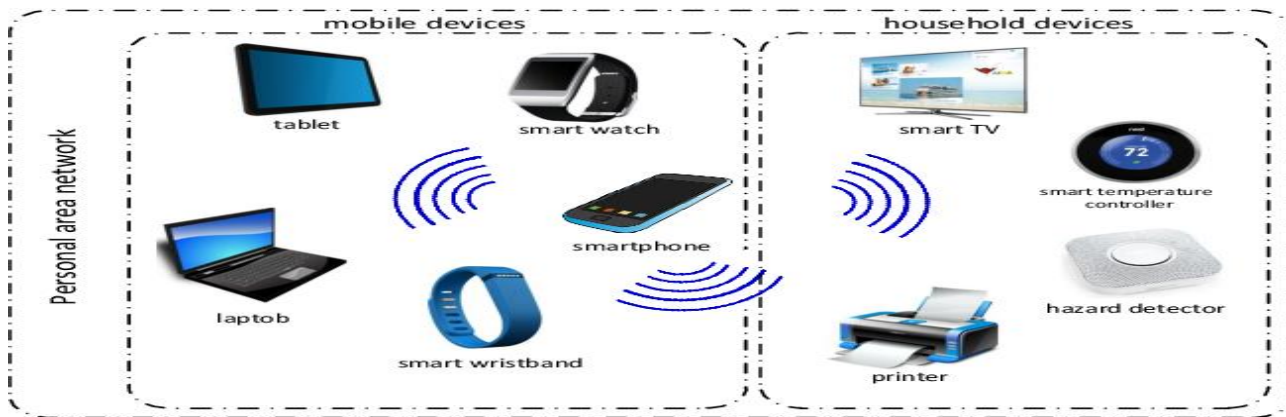


Virtual Private Network – This is a software that's capable of setting up a network where everyone registered in the network using a credential will be able to access each other through other registered computers.



Wireless Personal Area Network (WPAN) which is virtually a synonym since almost any personal area network would need to function wirelessly. Conceptually, the difference between a PAN (personal area network) and a wireless LAN (Local Area Network) is that the former tends to be centered around one person Network

while the latter is a local area network (LAN) that is connected without wires Network and serving multiple users. Wireless Networks



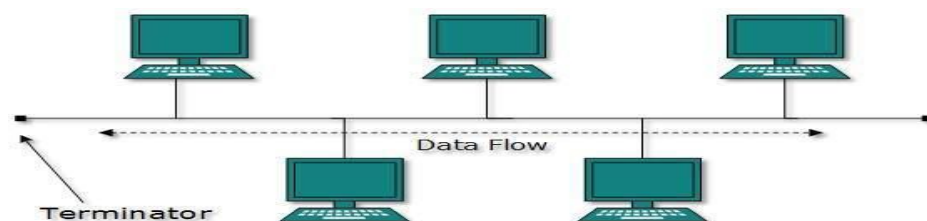
REASONS FOR WIRELESS NETWORKS

- The fastest growing segment of the computer industry is the mobile computers such as notebook computers and personal digital assistant (PDAs).
- The wireless networks are becoming increasingly important because the wired connection is not possible in cars or airplanes.
- Wireless networks can have many applications. A very common example is the portable office
- People traveling on road often want to make use of their portable electronic equipment for telephone calls, e-mails, faxes, read remote files etc.
- Wireless networks can exist on trucks, buses, taxis, aero planes etc. They are used where the telephone systems are destroyed in the event of disasters such as. fires, floods and earthquakes etc.
- The wireless networks are important for military.
- Wireless networks and mobile computing are related but they are not identical because portable computers are sometimes wired and some wireless computers are not portable.

TYPES OF NETWORK TOPOLOGY

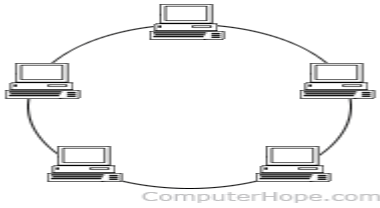
A topology for the network is known to be a layout for the connected devices. This is important because this is used to provide a proper flow of data within the said network. Here are the various topologies:

Bus – This is the type of structure that uses a single medium to connect the computer.



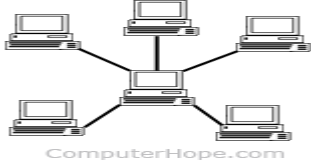
Ring – Each computer is connected to another neighboring computer for data transfer. One failed network can cause all networks to turn off.

Ring Topology

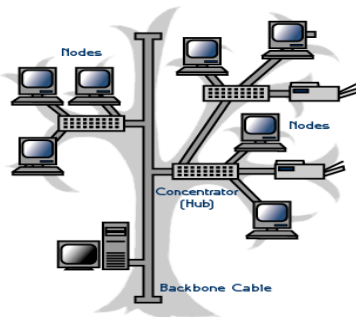


Star – This is a structure that's common in homes. It uses a certain hub or a router to make the network possible.

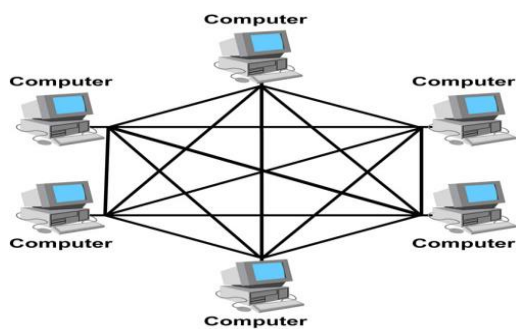
Star Topology



Tree – This is a complicated structure that connects the star into multiple buses. This is common for internet cafes and offices. Is a hybrid network topology which is also called a star-bus topology.



Mesh – this is a connection that leads to various data transmissions which are perfect for routing huge networks.

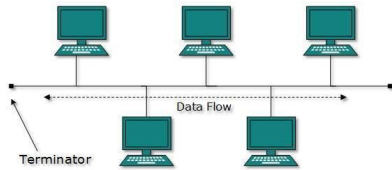


REVIEW QUESTIONS

1. In which topology there is a central controller or hub?
 - a) Star
 - b) Mesh
 - c) Ring
 - d) Bus
2. Which of these describe a network arrangement
 - a) Topology
 - b) Routing

- c) Networking
- d) None of the mentioned

3. The diagram below is a _____ network topology



- a) Star
 - b) Mesh
 - c) Ring
 - d) Bus
4. Data communication system within a building or campus is _____
- a) LAN
 - b) WAN
 - c) MAN
 - d) None of the mentioned
5. Expand WAN?
- a) World Area Network
 - b) Wide Area Network
 - c) Web Area Network
 - d) None Of The Mentioned
6. _____ is an interconnection between two or more computer system for the purpose of sharing resources.
- a) Networking
 - b) Internet
 - c) Web
 - d) Blog
7. The type of networking that covers a city in terms of connection is refers to as _____
- a) WAN
 - b) LAN
 - c) PAN
 - d) MAN
8. The computer network that covers a broad area is refers to as _____
- a) LAN
 - b) WAN
 - c) PAN
 - d) LAW
9. LANs are connected to WANS through the network device called _____
- a) Hub
 - b) Ethernet
 - c) Router
 - d) None of the above
10. Which of the following is not part of the benefit of networking?
- a) File sharing
 - b) Printer sharing
 - c) Internet connection sharing



d) Recording

THEORY

1. Define the following:
 - i. Network topology
 - ii. Computer Network
2. Highlight three types of Network and Topology
3. State three reasons why wireless network is better compare to LAN.



WEEK THREE AND FOUR

Topic: Computer Virus

What is a Computer Virus?

Computer viruses are small software programs that are designed to spread from one computer to another and to interfere with computer operation. A virus might corrupt or delete data on your computer, use your e-mail program to spread itself to other computers, or even erase everything on your hard disk.

Computer viruses are often spread by attachments in e-mail messages or instant messaging messages. That is why it is essential that you never open e-mail attachments unless you know who it's from and you are expecting it.

A computer virus is a malware program that, when executed, replicates by inserting copies of itself (possibly modified) into other computer programs, data files, or the boot sector of the hard drive; when this replication succeeds, the affected areas are then said to be "infected".

A computer virus is a program or piece of code that is loaded onto your computer without your knowledge and runs against your wishes. Viruses can also replicate themselves. All computer viruses are man-made. A simple virus that can make a copy of itself over and over again is relatively easy to produce. Even such a simple virus is dangerous because it will quickly use all available memory and bring the system to a halt. An even more dangerous type of virus is one capable of transmitting itself across networks and bypassing security systems.

Viruses often perform some type of harmful activity on infected hosts, such as stealing hard disk space or CPU time, accessing private information, corrupting data, displaying political or humorous messages on the user's screen, spamming their contacts, logging their keystrokes, or even rendering the computer useless.

Viruses can be disguised as attachments of funny images, greeting cards, or audio and video files. Computer viruses also spread through downloads on the Internet. They can be hidden in illicit software or other files or programs you might download.

TYPES OF VIRUSES

There are different types of viruses:

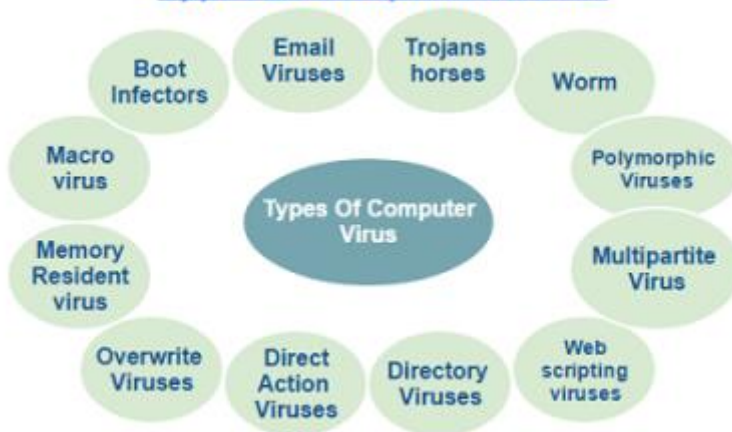
1. Boot Sector Virus – Targets the boot sector of a hard drive and crucially effects the boot process. Boot sector viruses became popular because of the use of floppy disks to boot a computer. The widespread usage of the Internet and the death of the floppy has made other means of virus transmission more effective.

2. File Infection Virus – Coded viruses that attach themselves to .exe files; compressed files such as zip or drive files.

3. Multipartite Virus – Cross between a file virus and a boot sector virus. These type of viruses spread in many different ways. Their actions vary depending on the OS installed and presence of certain files. They tend to hide in the computer's memory but do not infect the hard disk.

4. Network Virus – uniquely created to quickly spread throughout the local area network and generally across the Internet as well. Typically moves within shared resources like drives and folders.

Types of Computer Viruses



5. Macro Virus – infects program files that use macros in the program itself, such as word processors. These viruses infect the files created using some applications or programs that contain macros such as doc, pps, xls and mdb. They automatically infect the files with macros and also templates and documents that are contained in the file. They hide in documents shared through e-mail and networks. Macro viruses include:

6. E-mail Virus – generally this is a macro virus which multiplies by sending itself to other contacts in your address book, in hopes they'll activate the virus as well. This is a virus spread via an email. Such a virus will hide in an email and when the recipient opens the mail.

7. Memory Resident Viruses – They usually fix themselves inside the computer memory. They get activated every time the OS runs and end up infecting other opened files. They hide in RAM. This type of virus is a permanent which dwells in the RAM memory. From there it can overcome and interrupt all of the operations executed by the system: corrupting files and programs that are opened, closed, copied, renamed etc. Memory Resident Viruses Include:

8. Worm: This program is very similar to a virus and has the ability to self-replicate leading to negative effects on your computer. Worm Viruses Include:

- I. Iovgate.F
- II. sobig.D
- III. trile. C
- IV. PSWBugbear.B
- V. Mapson

9. Trojans or Trojan Horses : Another unsavory breed of malicious code (not a virus as well) are Trojans or Trojan horses, which unlike viruses do not reproduce by infecting other files, nor do they self-replicate like worms. Trojans can illegally trace important login details of users online. For example E-Banking is very common among users, therefore, vulnerability of tracing your login details whenever your PC is working without any strong powerful antivirus installed.

10. Browser Hijacker: This virus can spread in many different ways including a voluntary download. If infects certain browser functions especially in form of re-directing the user automatically to certain sites. A good example is the cool web search. This type of virus, which can spread itself in numerous ways



including voluntary download, effectively hijacks certain browser functions, usually in the form of re-directing the user automatically to particular sites

11. Polymorphic Virus : They encode or encrypt themselves in a different way every time they infect your computer. They use different encryption and algorithms. This makes it difficult for the antivirus software to locate them using signature or string searches (since they are very different in each encryption). Polymorphic Viruses Include:

- I. Marburg
- II. tuareg
- III. Satan bug
- IV. elkern

12. FAT Virus : The file allocation table or FAT is the part of a disk used to connect information and is a vital part of the normal functioning of the computer. This type of virus attack can be especially dangerous, by preventing access to certain sections of the disk where important files are stored. Damage caused can result in information losses from individual files or even entire directories.

13. Overwrite Viruses : These types of viruses delete any information in a file they infect, leaving them partially or completely useless once they are infected. Once in the computer, they replaces all the file content but the file size doesn't change. Overwrite Viruses Include:

- I. Trj.Reboot
- II. way
- III. trivial.88.D

14. Companion Viruses : Companion viruses can be considered file infector viruses like resident or direct action types. They are known as companion viruses because once they get into the system they "accompany" the other files that already exist. In other words, in order to carry out their infection routines, companion viruses can wait in memory until a program is run (resident viruses) or act immediately by making copies of themselves (direct action viruses). Some examples include:

- I. Stator,
- II. Asimov.1539,
- III. Terrax.1069

ASSESSMENT

1. What's a computer virus?
2. Highlight SIX types of virus?

VIRUS WARNING SIGNS

Viruses are malicious software – known as malware – that can destroy files, steal personal information and damage your computer.

Here are the top ten signs your PC has a virus.

1. Slow start up and slow performance – If your PC is taking longer than normal to start or programs are taking ages to open, then your PC may have a virus. If your computer's performance is sluggish, check first that it isn't due to a lack of RAM memory or hard disk space. If not, the culprit may be a virus.



2. Applications won't start – How many times have you tried to run an application from the start menu or desktop and nothing happens? Sometimes another program might even run. This could be another type of problem, but at the very least it's a symptom that tells you that something is wrong.

3. Programs opening and closing automatically – Malware can also be present when your programs are opening and closing automatically. However, do check if some programs are meant to behave this way or if they are simply incompatible to run with your hardware first before coming to the conclusion that your computer has a virus.

4. Pop-ups, websites, toolbars and other unwanted programs – These are irritating signs that your computer has a virus. Pop-ups come from clicking on suspicious pages, answering survey questions to access a website's service or installing free applications. Don't click on ads where Jane says she earned \$8000 a month staying at home. When you get pop-ups appearing out of the blue, refrain from clicking anywhere on the pop-up page and just close out of the window and use your anti-malware tool immediately.

5. Suspicious hard drive activity – An excessively active hard disk where it makes continual noise or constantly spins – even though you're not using your computer nor have any programs running – can be a sign your PC is infected with a virus.

6. Crashes and error messages – If programs start opening and closing automatically, your system freezes or shuts down for no reason, or you see odd error messages, then you may have a virus infection.

7. Sudden disappearance of Files – Where have my files gone? Hopefully nobody will be asking this type of question, although there are still some threats around designed to delete or encrypt information, to move documents from one place to another... If you find yourself in this situation, you really ought to start worrying.

8. Email is Hijacked – If friends start receiving emails or instant messages from your social networks asking them to click on an attachment or link, it's likely that a virus is attempting to spread to other computers via your accounts. If so, change your passwords immediately.

9. My antivirus has disappeared, my firewall is disabled - Another typical characteristic of many threats is that they disable security systems (antivirus, firewall, etc.) installed on computers. Perhaps if one thing shuts down it might just be a specific software failure; but if all your security components are disabled, you are almost certainly infected.

10. My computer is speaking a strange language - If the language of certain applications changes, the screen appears back-to-front, strange insects start 'eating' the desktop... you might just have an infected system.

11. Browser woes – Your web browser becoming sluggish, your home page changing or being redirected to unusual websites are all warning signs of a computer virus infection.

12. Security attacks – Some viruses are designed to disable your computer's protection. So, if you can't open or install an anti-virus program or your firewall, your computer may be infected.

ASSESSMENT

1. Highlight EIGHT signs to know your PC has virus



SOURCES OF COMPUTER VIRUSES

The most potent and vulnerable threat of computer users is virus attacks. Virus attacks hampers important work involved with data and documents. It is imperative for every computer user to be aware about the software and programs that can help to protect the personal computers from attacks. One must take every possible measure in order to keep the computer systems free from virus attacks.

The top sources of virus attacks are highlighted below:

1. Pirated or Cracked Software – Are you aware of software cracking? Well, every time you open a cracked software, your antivirus software might flag it as a malware as the cracks consist of malicious scripts. Always say “No” to cracks as they can inject malicious script into your PC.

2. Downloadable Programs – One of the possible sources of virus attacks is downloadable programs from the web. Unreliable sources and internet newsgroups are one of the main sources of computer virus attacks. Downloadable files are one of the best possible sources of virus. Any type of executable program including games, freeware, screen savers as well as executable files are one of the major sources of computer virus attacks. Executable files having an extension of “.com”, “.exe” and “.coolgame.exe” contain virus sources too. If in the case you want to download programs from the internet then it is necessary to scan every program before downloading them.

3. Internet – One of the easiest ways to get a virus on your device is through the Internet. Make sure to check URL before accessing any website. For a secured URL always look for ‘https’ in it.

4. Email Attachments – Email attachments are one of the other popular sources of computer virus attacks. Hence, you must handle email attachments with extreme care, especially if the email comes from an unknown sender. Installation of a good antivirus assumes prime necessity if one desires to eliminate the possibility of virus attacks. It is necessary to scan the email even if it comes from a friend. There exists a possibility that the friend may have unknowingly forwarded virus along with the email attachment.

5. Removable Storage Devices – Floppies are already out of the league. And, CDs started making their way out as well. Now, the pointer goes to flash drives (often referred to as pen drives or thumb drives) and to external hard disks. You know it is possible to run a program automatically at the time you plug a removable storage device into a PC. The program may be a malware. Always scan your removable media soon after you plug it into the computer. Also, don’t forget to turn off auto play feature. Be sure to install any antivirus program to protect yourself from such auto-run.

6. Malicious Website – It is better to visit a secure website as there are plenty of snares on the internet with loads of malicious codes and programs. Most times we are distracted a lot by popup and popover. Some websites even install an adware (with other software) that you keep seeing unnecessary ads right from the moment you turn the network on.

ASSESSMENT

1. Highlight FIVE top sources of computer virus?



VIRUS DETECTION

An antivirus tool is an essential component of most anti-malware suites. It must identify known and previously unseen malicious files with the goal of blocking them before they can cause damage. Though tools differ in the implementation of malware-detection mechanisms, they tend to incorporate the same virus detection techniques. Familiarity with these techniques can help you understand how antivirus software works.

Antivirus software is a type of utility used for scanning and removing viruses from your computer. While many types of antivirus (or “anti-virus”) programs exist, their primary purpose is to protect computers from viruses and remove any viruses that are found.

Most antivirus programs include both automatic and manual scanning capabilities. The automatic scan may check files that are downloaded from the Internet, discs that are inserted into the computer, and files that are created by software installers. The automatic scan may also scan the entire hard drive on a regular basis. The manual scan option allows you to scan individual files or your entire system whenever you feel it is necessary.

Antivirus software identifies, prevents, and removes malware from a computer system. Malware is any number of viruses and software bits that intend to harm the computer or steal information, such as viruses, adware, rootkits, backdoors, hijackers, keyloggers, spyware, trojans, and worms. Modern antivirus software employs several methods to detect and remove malware. However, no antivirus software can detect and prevent all possible malware.

TYPES OF ANTIVIRUS SOFTWARE

Norton AntiVirus

Norton is one of the most well-known antivirus software. One of its key features is that it updates every 5 to 15 minutes to make sure your system is up to date.

McAfee Virus Scan Plus

McAfee Virus Scan Plus is another software that shields your PC from viruses and spyware, and includes a firewall that can help prevent hacker attacks to your system.

Trend Micro (“PC-Cillin”) Internet Security

Trend Micro provides an award-winning antivirus engine that protects from viruses, spam, spyware, trojans and other online security threats.

Bit Defender

Bit Defender offers protection from viruses, spyware, rootkits, provides anti-phishing help, and offers a gamer and laptop mode. This software is only \$29.99 annually and can be used on up to three computers.

AVG Anti-Virus

AVG is unique in that it provides consumers a completely free version. The free version works extremely well if you are just looking for simple antivirus protection without all the bells and whistles.

1. A computer worm is different from a computer virus because it
 - a) Corrupt computer files
 - b) Does not attach itself to an existing program



- c) Does not prevent unauthorized access to computer
 - d) Replicate itself
2. A computer _____ is a malicious code which self-replicates by copying itself to other programs.
- a) program
 - b) virus
 - c) application
 - d) worm
3. Which of the following is not a type of virus?
- a) Boot sector
 - b) Polymorphic
 - c) Multipartite
 - d) Trojans
4. Which of them is not an ideal way of spreading the virus?
- a) Infected website
 - b) Emails
 - c) Official Antivirus CDs
 - d) USBs
5. _____ gets installed & stays hidden in your computer's memory. It stays involved to the specific type of files which it infects.
- a) Boot Sector Virus
 - b) Direct Action Virus
 - c) Polymorphic Virus
 - d) Multipartite Virus
6. Direct Action Virus is also known as _____
- a) Non-resident virus
 - b) Boot Sector Virus
 - c) Polymorphic Virus
 - d) Multipartite Virus
7. _____ infects the executable as well as the boot sectors.
- a) Non-resident virus
 - b) Boot Sector Virus
 - c) Polymorphic Virus
 - d) Multipartite Virus
8. _____ are difficult to identify as they keep on changing their type and signature.
- a) Non-resident virus
 - b) Boot Sector Virus
 - c) Polymorphic Virus
 - d) Multipartite Virus
9. _____ deletes all the files that it infects.
- a) Non-resident virus
 - b) Overwrite Virus
 - c) Polymorphic Virus
 - d) Multipartite Virus
10. Which of the below-mentioned reasons do not satisfy the reason why people create a computer virus?
- a) Research purpose
 - b) Pranks



- c) Identity theft
 - d) Protection
11. What is “Trend Micro”?
- a) It is anti-virus software
 - b) It is just a program
 - c) It is virus program
 - d) None of the above
12. What is the name of the viruses that fool a user into downloading and/or executing them by pretending to be useful applications?
- a) Cracker
 - b) Worm
 - c) Trojan horses
 - d) Keylogger
13. The virus that spread in application software is called as
- a) Boot virus
 - b) Macro virus
 - c) File virus
 - d) Anti virus
14. What is the virus that spread in computer?
- a) It is hardware
 - b) It is system software
 - c) It is a computer program
 - d) It is a windows tool
15. Computer virus program is usually hidden in a/an
- a) operating system
 - b) application program
 - c) disk driver
 - d) both A and B

ASSESSMENT

1. What is an Ant-Virus Software?
2. State FOUR types of anti-virus software?



WEEK FIVE

DATABASE

A database is a collection of data organized in a manner that allows access, retrieval and uses of data. In a manual database, it can be recorded on paper and stored in a filing cabinet. While in a computerized database, it is stored in an electronic format on a storage media. A **database** is a collection of information that is organized so that it can easily be accessed, managed, and updated. In one view, databases can be classified according to types of content: bibliographic, full-text, numeric, and images.

A **database** is an organized collection of data. It is the collection of schemes, tables, queries, reports, views and other objects. The data is typically organized to model aspects of reality in a way that supports processes requiring information, such as modelling the availability of rooms in hotels in a way that supports finding a hotel with vacancies.

Types of database

There are two types of database namely;

1. Manual database
2. Computerized database

A **manual database** is a hard-file storage system that consists of paper records, folders and filing cabinets or storage boxes. A quality **manual database** system makes it easy to retrieve documents and information when they are needed.

A **computerized database** contains well organized electronic files that is stored in a location that is designed and modeled to allow easy storage and retrieval of data by the user.

CONCEPT OF DATABASE

The concept of database is simply described as the terminologies of database such as

1. FIELD :
2. RECORDS
3. FILE
4. KEY
5. OBJECT
6. PRIMARY KEY

FORMS OF DATABASE

The following are the forms of database

1. **FLAT FILE DATABASE:** flat file database store data in plain text file. Each line of the text file holds one record with field separated by diameters such as command or tabs.

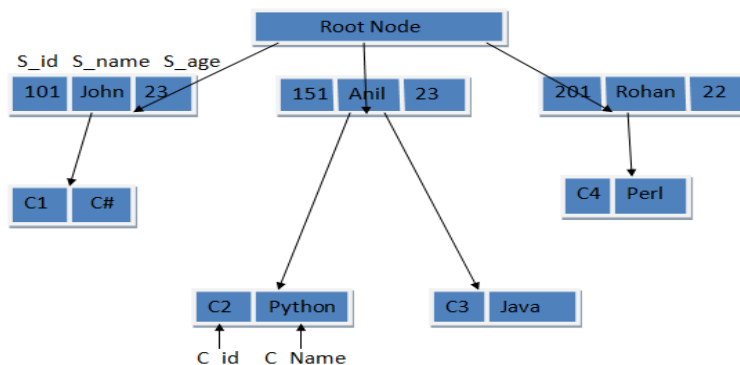
FLAT FILE DBMS

In flat file database management system the user specifies the data attributes for one table at a time, storing data independently from application.

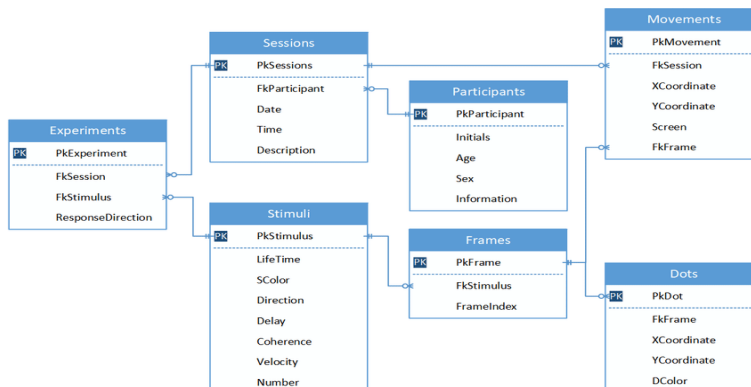
Flat File Model

	Route No.	Miles	Activity
Record 1	I-95	12	Overlay
Record 2	I-495	05	Patching
Record 3	SR-301	33	Crack seal

2. **HIERARCHICAL DATABASE:** in hierarchical database records are linked in a tree like structure and each record type has only one owner. E.g an order is owned by only one customer



3. **RELATIONAL DATABASE:** This is a collection of data items organized is a set formally. Described table from which data can be accessed or reassemble in many different ways without having to recognize the database table. Each table contains one or more data categories in column. Each role contains unique types of data for the categories defined by columns.





DATABASE MANAGEMENT SYSTEMS

A **database management** system (DBMS) is a computer program (or more typically, a suite of them) designed to **manage** a **database**, a large set of structured data, and run operations on the data requested by numerous users. Typical examples of DBMS use include accounting, human resources and customer support systems.

APPLICATION AREAS OF DATA BASE MANAGEMENT SYSTEMS

1. **Banking:** For customer information, accounts, and loans, and banking transactions.
2. **Airlines:** For reservations and schedule information. Airlines were among the first to use databases in a geographically distributed manner – terminals situated around the world accessed the central database system through phone lines and other data networks.
3. **Universities:** For student information, course registrations, and grades.
4. **Credit card transactions:** For purchases on credit cards and generation of monthly statements.
5. **Telecommunication:** For keeping records of calls made, generating monthly bills, maintaining balances on prepaid calling cards, and storing information about the communication networks.
6. **Finance:** For storing information about holdings, sales, and purchases of financial instruments such as stocks and bonds.
7. **Sales:** For customer, product, and purchase information.
8. **Manufacturing:** For management of supply chain and for tracking production of items in factories, inventories of items in warehouses / stores, and orders for items.
9. **Human resources:** For information about employees, salaries, payroll taxes and benefits, and for generation of paychecks

EXAMPLES OF DATABASE APPLICATIONS

The following are examples of database applications:

1. computerized library systems
2. automated teller machines
3. flight reservation systems



4. computerized parts inventory systems

REVIEW QUESTIONS

1. An organized collection of related records is ____
A. field B. record C. cell D. file
2. ____ is a collection of related information.
A. Microsoft Access B. Relational model
C. None of the above D. Database
3. ____ is a selected field in a table that uniquely identifies a record
A. Primary Key B. Secondary key
C. Delete key D. Selected key
4. The following are examples of database program except
A. Dbase 3+ B. Microsoft word
C. Dbase 4 D. Microsoft Access
5. The use of a file cabinet to store information is called
A. the ancient method
B. the computerized method
C. the manual method
D. none of the above

THEORY

1. Write short note on the following database terminologies
 - (i) Table
 - (ii) Primary key
 - (iii) Object
 - (iv) Field
2. Mention and briefly discuss the three main types of database model with the aid of diagram
3. Highlights five areas of database applications
4. What is DBMS?
5. Define Database



WEEK SIX

SPREAD SHEET

A **Spread sheet application** is a productivity software in which a computer user can manage personal and business finance with the help of a spread sheet program.

A **spreadsheet** is an interactive computer application program for organization, analysis and storage of data in tabular form. Spreadsheets developed as computerized simulations of paper accounting worksheets. The program operates on data represented as **cells** of an array, organized in **rows** and **columns**. Each cell of the array is a model-view-controller element that may contain either numeric or text data, or the results of formulas that automatically calculate and display a value based on the contents of other cells.

Spreadsheet users may adjust any stored value and observe the effects on calculated values. This makes the spreadsheet useful for “what-if” analysis since many cases can be rapidly investigated without manual recalculation. Modern spreadsheet software can have multiple interacting sheets, and can display data either as text and numerals, or in graphical form.

Productivity software is a software that assists people to gain more efficiency and effectiveness while performing daily activities. You can **use** a spread sheet program to **perform calculations, analyze data and present information**.

Example of spread sheet

1. **LOTUS 1-2-3** : This is a spread sheet program from lotus software (now part of IBM) which has added integrated charting, plotting and database capabilities
2. **STAT VIEWS** : This is a spread sheet program than can perform many analyses by template. It creates presentation quality graph and table with a singles of the mouse.
3. **MICROSOFT EXCEL**: This is powerful spread sheet that allows you to organize data complete calculate take decision, graph data and develop reports. It is also has basic features to help you create, edit and format worksheet.

Google Sheets - (online and free).

iWork Numbers - Apple Office Suite.

Libre Office -> Calc (free).

Lotus 1-2-3 (discontinued).

Lotus Symphony - Spreadsheets.

Microsoft Excel.

OpenOffice -> Calc (free).

VisiCalc (discontinued).

USES OF SPREAD SHEET

1. Do calculations on data
2. Visualize relationships with dynamic graphs
3. Build and use analytical models
4. Build and use numerical models



Spreadsheet programs also include software that creates graphs and charts from the data provided within the table. This is good for presentations, such as business meetings and research projects, and offers a fresh view of the data.

Exercise

1. List 5 examples of spread sheet
2. Mention four uses of spread sheet
3. Briefly states how program operates in spreadsheet

WEEK SEVEN

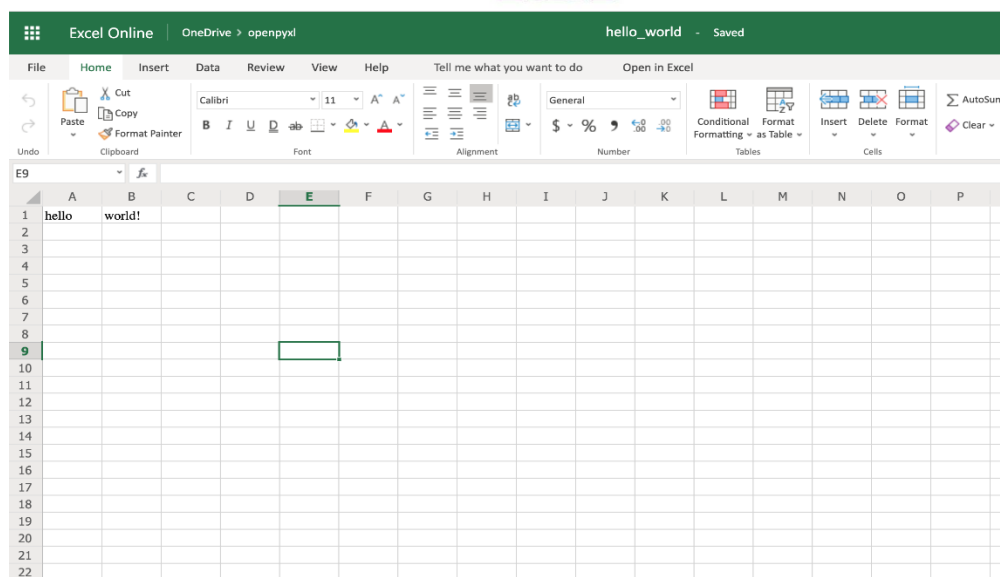
WORK SHEET

Worksheet commonly refers to a sheet of paper with questions for students and places to record answers. The term may also refer to a single array of data in spreadsheet software or an informal piece of paper that an accountant uses to record information.

A worksheet or sheet is a single page in a file created with an electronic spreadsheet program such as Excel or Google Spreadsheets. A worksheet is used to store, manipulate, and display data. A worksheet is a collection of cells where you keep and manipulate the data. By default, each Excel workbook contains three worksheets. Each worksheet is composed of a very large number cells – which are the basic storage unit for data in a file or workbook. The cells are arranged in a grid pattern using rows and columns.

In Excel 2013:

1. There are 1,048,576 rows per worksheet;
2. There are 16,384 columns per worksheet;
3. By default, each new file contains only one worksheet;
4. The number of sheets per file is limited only by the amount of memory available on the computer. In earlier versions of Excel, the default number of worksheets per file was three.



For Google Spreadsheets:

1. There is a maximum of 256 columns per sheet;
2. The maximum number of cells for all worksheets in a file is 400,000;
3. The current default number of worksheets for new files is one;
4. There is a maximum of 200 worksheets per spreadsheet file.
5. Each worksheet also has a name. By default, the worksheets are named sheet1, Sheet2 , Sheet3 and so on.

STARTING A WORKBOOK FILE

Workbooks are file that can be created in excel. You can start workbook any time you want to create a new file for your excel data. Steps are;

1. Open a new workbook in Excel
2. Point start on the screen of your monitor
3. Click on all programs
4. Point to Microsoft office tab
5. Select Microsoft excel (this will take you to the excel environment)

A good example of how a spreadsheet may be used is creating an overview of your bank's balance.

Below is a basic example of what a Microsoft Excel spreadsheet looks like, as well as all the major portions of a spreadsheet highlighted .

What is an active worksheet?

An active worksheet is the worksheet that is currently open. For example, in the picture above, the sheet tabs at the bottom of the window show “Sheet1”, “Sheet2”, and “Sheet3”, with Sheet1 being the active worksheet. The active tab usually has a white background behind the tab name.



WEEK EIGHT

GRAPH IN EXCEL

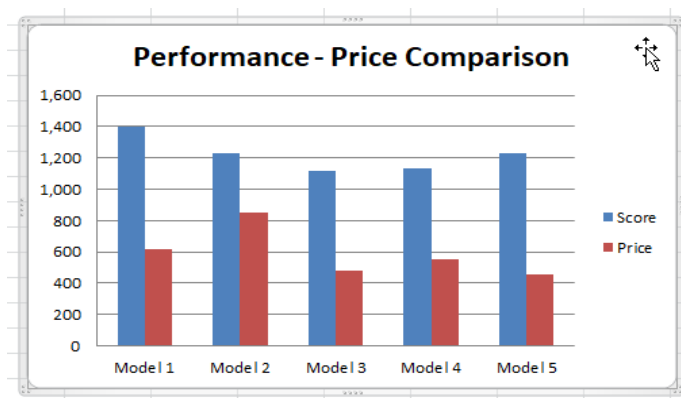
A graph is a great way of representing your data. With graph, data are easily understood and also they are easily edited for better data presentation. You can create dozens of different charts, from pie chart to bar chart and more.

DATA CHART: This is the foundation of any chart in the worksheet that you use to create. Chart data is the content of a group of related cells, such as one row or column of data in your worksheet.

CUSTOMIZED CHARTS: Any chart created can be customized and can also change to the formatting of the chart, text, change the chart type and much more.

CHART TYPES

1. COLUMN
2. BAR
3. LINE GRAPH
4. PIE
5. SCATTER
6. AREA
7. DOUGHNUT E.T.C



These graphs and charts are customizable and can be specific or general depending on the settings and options chosen.

Creating and Editing Graphs

Charts are used to display series of numeric data in a graphical format to make it easier to understand large quantities of data and the relationship between different series of data.

To create a chart in Excel, you start by entering the numeric data for the chart on a worksheet. Then you can plot that data into a chart by selecting the chart type that you want to use on the Insert tab, in the Charts group.

1. Worksheet data
2. Chart created from worksheet data

Excel supports many types of charts to help you display data in ways that are meaningful to your audience. When you create a chart or change an existing chart, you can select from a variety of chart



types (such as a column chart or a pie chart) and their subtypes (such as a stacked column chart or a pie in 3-D chart). You can also create a combination chart by using more than one chart type in your chart.

Example of a combination chart that uses a column and line chart type.

Elements of a Chart

A chart has many elements. Some of these elements are displayed by default, others can be added as needed. You can change the display of the chart elements by moving them to other locations in the chart, resizing them, or by changing the format. You can also remove chart elements that you do not want to display.

1. The chart area of the chart.
2. The plot area of the chart.
3. The data points of the data series that are plotted in the chart.
4. The horizontal (category) and vertical (value) axis along which the data is plotted in the chart.
5. The legend of the chart.
6. A chart and axis title that you can use in the chart.
7. A data label that you can use to identify the details of a data point in a data series.

Modify a basic chart to meet your needs

After you create a chart, you can modify any one of its elements. For example, you might want to change the way that axes are displayed, add a chart title, move or hide the legend, or display additional chart elements. To modify a chart, you can do one or more of the following:

- Change the display of chart axes. You can specify the scale of axes and adjust the interval between the values or categories that are displayed. To make your chart easier to read, you can also add tick marks to an axis, and specify the interval at which they will appear.
- Add titles and data labels to a chart To help clarify the information that appears in your chart, you can add a chart title, axis titles, and data labels.
- Add a legend or data table, You can show or hide a legend, change its location, or modify the legend entries. In some charts, you can also show a data table that displays the legend keys and the values that are presented in the chart.
- Apply special options for each chart type Special lines (such as high-low lines and trendlines), bars (such as up-down bars and error bars), data markers, and other options are available for different chart types.
- Apply a predefined chart layout and style for a professional look

Instead of manually adding or changing chart elements or formatting the chart, you can quickly apply a predefined chart layout and chart style to your chart. Excel provides a variety of useful predefined layouts and styles. However, you can fine-tune a layout or style as needed by making manual changes to the layout and format of individual chart elements, such as the chart area, plot area, data series, or legend of the chart. When you apply a predefined chart layout, a specific set of chart elements (such as titles, a legend, a data table, or data labels) are displayed in a specific arrangement in your chart. You



can select from a variety of layouts that are provided for each chart type. When you apply a predefined chart style, the chart is formatted based on the document theme that you have applied, so that your chart matches your organization's or your own theme colors (a set of colors), theme fonts (a set of heading and body text fonts), and theme effects (a set of lines and fill effects). You cannot create your own chart layouts or styles, but you can create chart templates that include the chart layout and formatting that you want.

Formatting a Chart

In addition to applying a predefined chart style, you can easily apply formatting to individual chart elements such as data markers, the chart area, the plot area, and the numbers and text in titles and labels to give your chart a custom, eye-catching look. You can apply specific shape styles and WordArt styles, and you can also format the shapes and text of chart elements manually. To add formatting, you can use one or more of the following:

- Fill chart elements; You can use colors, textures, pictures, and gradient fills to help draw attention to specific chart elements.
- Change the outline of chart elements; You can use colors, line styles, and line weights to emphasize chart elements.
- Add special effects to chart elements; You can apply special effects, such as shadow, reflection, glow, soft edges, bevel, and 3-D rotation to chart element shapes, which gives your chart a finished look.
- Format text and numbers ; You can format text and numbers in titles, labels, and text boxes on a chart as you would text and numbers on a worksheet. To make text and numbers stand out, you can even apply Word Art styles.

Creating Chart Templates For Reuse

If you want to reuse a chart that you customized to meet your needs, you can save that chart as a chart template (*.crtx) in the chart templates folder. When you create a chart, you can then apply the chart template just as you would apply any other built-in chart type. In fact, chart templates are custom chart types — you can also use them to change the chart type of an existing chart. If you use a specific chart template frequently, you can save it as the default chart type.

REVIEW QUESTIONS

1. The _____ is the sheet that you work on
A. active sheet B. slow sheet
C. manipulation sheet D. formula sheet
2. The following are examples of spreadsheet package except



- A. Lotus 1-2-3 B. Word star
C. Lotus smart suite D. Start view
3. The cross-like shape in a cell is called a _____
A. cell B. row
C. row D. cell pointer
4. The following are the advantages of electronic spreadsheet except that
A. it is used for painting graphics
B. it is highly potable
C. it has in-built manipulation tools
D. it is use for analysis
5. Which of these packages is appropriate for organization, analysis and storage of data in a tabular form?
A. CorelDraw B. Microsoft Excel
C. Microsoft word D. page-maker
6. Word Processing, spreadsheet and Corel draw are examples of _____ software.
A. application B. operating system
C. system D. internet
7. _____ is a spread sheet program than can perform many analyses by template
A. STAT VIEWS B. LOTUS 1-2-3
C. ORACLE D. MYSQL
8. _____ is a single page in a file ' created with an electronic spreadsheet program
A. Active cell B. Worksheet
C. Microsoft Excel D. Datasheet

	A	B	C	D	E	F
1		M				
2						P
3		G				
4						
5						
6						

9. The shaded parts M, G and P are called
A. Cell Pointer B. Range of cells
C. Cell Referenced D. Cell Width
10. The shaded range M is referenced as
A. B1:D3 B. B1:D1
C. B1:A1 D. B1:F1
11. The range of cells P is called
A. F2:F6 B. F2:F4
C. F1:P1 D. F1:F6
12. The range of cells G is referenced as
A. B1:D5 B. B3:D5
C. C3:D4 D. B3:D4
13. The maximum number of characters that the value of a filed may assume is known as
A. field range B. field width
C. float width D. index range
14. The formular (A5+A6+A7)*C2 is equivalent to
A. DIVIDE(A5:A7)*C2 B. SUM(A5:A7)*C2



C. COUNT(A5:A7)*C2

D. PRODUCT(A5:A7)*C2

15. Which of the following is not an example of a chart?

A. Histogram

B. Excel

C. Pie chart

D. Bar chart

Evaluation

1. State three elements of a chart
2. State the steps to modify a chart
3. List five types of chart



WEEK NINE

COMPUTER CAREER OPPORTUNITIES

CAREERS IN COMPUTER INDUSTRY

Now a day's computer industry is the largest industry where jobs are created for thousands of people and primary business people and primary businesses which are computer related jobs.

Computers have become a ubiquitous part of modern life, and new applications are introduced every day. The use of computer technologies is also commonplace in all types of organizations, in academia, research, industry, government, private and business organizations. As computers become even more pervasive, the potential for computer-related careers will continue to grow and the career paths in computer-related fields will become more diverse.

The career opportunities for computer science graduates can be classified into different categories. Examples are:

1. General business and IT development
2. Computer equipment field
3. Computer software field
4. Computer service and repair field
5. Computer sales
6. Computer education and training field
7. IT consultation
8. Programming and Software Development.
9. Information Systems Operation and Management.
10. Telecommunications and Networking.
11. Computer Science Research.
12. Web and Internet.
13. Graphics and Multimedia.
14. Training and Support.
15. Computer Industry Specialists.

Programming and Software Development



- 1. Systems analyst** – Determines an organization's needs and designs programs to meet them. Acts as a problem solver who specializes in how information flows from information sources to computers. Supervises lower-level programmers.
- 2. Systems consultant** – Works under contract to install or configure hardware or software, write or customize programs, or otherwise help solve information processing problems for an organization. Business-related courses are helpful.
- 3. Software engineer** – Designs and writes complex computer programs as part of a software development team. Applies principles of computer science to solve practical problems.
- 4. Systems programmer** – Designs and writes programs that interface with a computer's low-level operating system, such as device drivers and utilities.
- 5. Database analyst** – Designs and creates programs used to collect, maintain, and analyze data needed by business, government, or other institutions. Adapts programs to changing business needs.
- 6. Artificial Intelligence programmer** – Applies principles of artificial intelligence to design and implement systems that perform complex tasks. Applications include: expert systems that apply rules to making decisions, such as scheduling freight shipments or diagnosing disease; pattern recognition systems that give robots the ability to see and understand objects in their environment; neural network programs that can learn to perform tasks by constantly re-evaluating their performance.
- 7. Scientific applications programmer** – Works closely with scientists and engineers to write programs that simulate natural phenomena or analyze experimental results, or apply scientific or engineering principles to research or manufacturing.
- 8. User interface designer** – Designs the menus, icons, and other features that people will use to interact with a computer program or operating system. Needs to have empathy with computer users and artistic sense of composition.
- 9. Embedded systems application programmer** – Designs and develops applications for appliances and entertainment products such as PDA, mobile phone, mp3 player.

Information Systems Operation and Management

- 10. Electronic data processing (EDP) auditor** – Closely examines data processing operations to guard against loss through mistakes, carelessness, or fraud. Often work in banks, insurance companies, accounting firms, and other organizations that use a large amount of financial data.
- 11. Database administrator** – Takes overall responsibility for the usage, accuracy, efficiency, security, maintenance of an organization's database systems. Coordinates development and use of data resources.



12. Systems administrator – Responsible for managing the operation of a multi-user computer system or network so that it runs reliably and meets user's needs; updates and configures software and hardware; provides assistance to users and managers.

13. Computer security specialist – Protects computer systems from illegal intrusions, viruses, data theft, fraud, or other forms of tampering.

14. Management/IT consultants – Uses problem solving skills and computer knowledge to solve business and management problems for organizations and foster improvement in areas such as organization structure, business communication, and productivity. Defines and analyzes problem, interviews employees, develops possible solutions, and presents options to client.

15. Information systems manager – Oversees all operations in an organization's information system department, including technical support, training, network, and database operations. Ensures that everyone in the organization has timely, reliable access to the computer system and its databases and other resources.

16. Chief information officer (CIO) – Serves as the highest information services executive for a major corporation. Responsible for long-term planning and setting organization-wide policy and standards relating to all computer-related activities.

Telecommunications and Networking

1. Network engineer/consultant - Plans for the installation or expansion of local or wide-area computer networks. Performs complex configuration of servers, hubs, routers, and other network communications equipment. Writes scripts or programs to automate network operations.

2. Network administrator - Takes overall responsibility for the operation and planning for a local or wide-area computer network. Plans expansion; selects appropriate network operating system and software tools; configures major features; deals with connection between local network and Internet; establish procedures for support staff and users.

Computer Science Research

1. Computer scientist/researcher - Applies theoretical expertise to complex problems and develop innovative ideas necessary for the application or creation of new technology. They usually work in research labs or academic institutions.

2. Computer science professor - Teaches college courses in computer science theory, performs research and supervises student research. May serve as consultant to government or business.

3. Artificial Intelligence researcher - Develops programs to imitate the thinking and reasoning processes of the human brain; for example, recognize voices and objects, speak in a humanlike voice.



4. Data miner - Analyzes databases in business, government, or scientific applications in order to extract additional information or find useful patterns. Needs familiarity with major database and statistical packages.

5. Bioinformatics specialist - Organizes and manipulates information relating to genetic sequences, molecular structure, and other data relevant to the biological sciences. Should be familiar with genetics and biochemistry.

6. Medical imaging specialist - Develops image processing and pattern recognition algorithms for analyzing medical images to diagnose disease.

Web and Internet

1. Internet applications programmer- Develops programs that add features such as forms and animation to Web sites or that provide tools to help users get the most out of Internet.

2. Internet consultant- Uses some combination of analysis, design, programming, and support skills to help clients with the design of Internet sites and configuration of Internet software and connections.

3. Webmaster- Creates or maintains a Web site. Provides content and programming or supervises writers and programmers. Monitors the performance and popularity of the site. Provides secure forms and transactions for Internet-based businesses.

4. Internet advertising designer - Creates effective advertising features for Web sites, including animation, sound, and text.

Graphics and Multimedia

1. Animation/Special effects developer- Develops software programs for creating sequences of computer images for games or movies.

2. Multimedia developer - Uses design and programming skills to create interactive multimedia products that combine sound, images, and text.

3. Computer game designer/programmer - Designs or writes computer games or game engines. Develop algorithms that make the characters realistic and intelligent.

4. Electronic sound producer - Creates the music, voice, and sound effects for multimedia or computer games. Integrates sound into the overall design of the multimedia product.

Training And Support

1. Technical support representative - Answers questions from computer users and solves problems with the installation or operation of software. Researches problems using manuals, help files, and online knowledge bases.



2. Trainer, software applications - Teaches specific courses in computer software or operating systems. May work within a corporation or at a school.

3. Technical writer -Writes instructional guides and other materials that explains how to use computer systems, software, operating systems, or programming tools. Researches and writes reviews and feature articles suited to specific reader profiles.

CERTIFICATE : This is the process of verifying the technical knowledge of an individual who has demonstrated competence in a particular area, today there are more than 200 certificates available, such as.

1. MICROSOFT CERTIFIED APPLICATION SPECIALIST
2. MICROSOFT CERTIFIED APPLICATION PROFESSIONAL
3. MICROSOFT CERTIFIED DESKTOP TECHNICIANS and so many more.

Qualities of a Good Computer Professional

Computer professionals are information technology. The definition has extended to those involved in the internet industry too. those who deal with the computer industry to develop something. They may design, build, write or sell software.

A computer professional may be:

1. A person working in the field of information technology
2. A person who has undergone training in a computer-related field colleges, universities and computer institutes
3. A person who has an extensive knowledge in the area of computing.

Some of the qualities needed to be most successful in the computer and IT world include the following:

1. Excellent Analytical Skills

Great computer professionals have excellent analytical skills that can be applied to solve problems or develop new ideas.

2. Versatility

A computer professional must be versatile, it is a necessary requirement needed by a professional who wants to be successful. The most successful computer professionals will be the ones who have skills that extend beyond information technology, such as skills in business and finance.

3. Commitment to Learning



Technology is constantly changing, and those who keep abreast of the latest developments in information technology are the ones who will be the most successful. Knowledge and keeping up with the latest trends is the key to success; there is no single person who knows everything.

4. Good Knowledge of Math

Strong mathematical skills are necessary because math is used in many computer applications, such as when dealing with circuits or programming.

5. The Ability to Learn & Memorize Programming Languages

Computer professionals must know many programming languages and how to use a wide variety of computer software programs. A great memory helps keep work efficient. There is a wide range of programming languages that are widely used for coding and writing programs, so memorizing all of them is what a decent specialist should be able to do.

6. Good Communication Skills

The soft skills of verbal and written communication are increasingly important as non-techies rely on technological tools for their everyday business. Understanding a client's needs and the ability to meet those needs depend heavily on a steady stream of open communication. Those who are not familiar with technology can be confused when the computer technology specialist uses a lot of industry register, so you have to be able to switch between work speech and casual speech quickly.

7. Attention to Detail

The slightest mistake can affect how a web page looks or how a program runs. Computer personnel must pay close attention to detail to ensure everything works correctly and efficiently.

8. Multi-tasking Ability

People working with computers are often involved in many tasks at once and must be able to manage all of their responsibilities simultaneously. Time management skills and an ability to prioritize are assets as well.

9. Solid Problem Solving/Troubleshooting Capabilities

Computer professionals are called upon to solve problems with networks, software, and other programs. They are expected to solve these problems very quickly, and having sharp troubleshooting skills most definitely is a benefit.

10. Technical Writing Skills

Technical writing skills help a computer-savvy person explain complex concepts to those who have limited knowledge of the computer world.



QUALITIES OF A GOOD COMPUTER PROFESSIONAL

1. COMPUTER MANAGER

1. Must have ability to control, coordinate and manage things.
2. High level of Computer literacy.
3. Versatility in the field of Computer
4. Good decision maker when it comes to computer related issues

2. COMPUTER SCIENTIST

1. Good knowledge of a Computer
2. Ability to repair and maintain a computer
3. Must be able to identify good computers

3. COMPUTER ENGINEER/HARDWARE ENGINEER

1. Excellent knowledge of Computer repair
2. Computer parts assemblage board.

4. PROGRAMMER/SOFTWARE ENGINEER

1. Good computer programmer must be able to give instruction to computer.
2. Use of computer programming language to develop program.
3. Ability to develop a good and durable program.
4. Must be able to detect or debug problem in a program.

5. COMPUTER INSTRUCTOR/EDUCATOR

1. Teaches and trains people on the use, misuse and care of computer
2. Imparts knowledge into computer illiterates
3. Good knowledge of computer and effective operation

6. COMPUTER TECHNICIANS

1. Good computer technician repairs computer



2. Assemblage of computer parts
3. Troubles shooting of Computer problems
4. Computer hardware maintenance and repair

7. COMPUTER ANALYST/ SYSTEM ANALYST

1. Ability to analyze data
2. Train people on computer usage
3. Solve computer problems. schools

8. NETWORKING ENGINEER

1. Computer networking
2. Troubleshooting of faulty networks
3. Network configuration.
4. Internet networking.
5. Network update knowledge

9. COMPUTER OPERATOR

1. Fast typing skills.
2. Use of graphics package for design
3. Excellent use of computer for documents
4. Effective operation of the Computer

REVIEW QwUESTIONS

1. ISPAN means
 - A. Internet Service Providers Association of Nigeria
 - B. Internet Set of Programs for Nigeria
 - C. Internet Service Protocol and Nigeria
 - D. Internet Set of Providers Association of Nigeria
2. NCC means
 - A. Nigeria Communication and Commission
 - B. Nigeria Communication Commission
 - C. Nigeria Communication Council
 - D. National Community Commissiorn



3. Which of these professional bodies can a computer professional belong to in Nigeria?
 - A. Institute of Chartered Computer Expert o
 - B. Microsoft institute of Management Information system
 - C. Nigeria Computer Society
 - D. Nigeria institute of Management
4. These are some of the examples of computer professionals except
 - A. computer users
 - B. computer programmers
 - C. computer operators
 - D. computer analysts
5. NIG means
 - A. Nigeria Internet Group
 - B. Niger Interest Group
 - C. Nigeria International Group
 - D. Nile Internet Group

THEORY

1. State five qualities needed to be most successful in the computer and IT world
2. State five general qualities of a good Computer Professional
3. List ten career opportunities in computer industry



WEEK TEN

LOGIC CIRCUIT

A logic gate is an elementary building block of a digital circuit. Most logic gates have two inputs and one output. At any given moment, every terminal is in one of the two binary conditions low (0) or high (1), represented by different voltage levels. The logic state of a terminal can, and generally does, change often, as the circuit processes data. In most logic gates, the low state is approximately zero volts (0V), while the high state is approximately five volts positive (+5V).

There are seven basic logic gates: **AND, OR, XOR, NOT, NAND, NOR, and XNOR.**

The **AND gate** is so named because, if 0 is called “false” and 1 is called “true,” the gate acts in the same way as the logical “and” operator. The following illustration and table show the circuit symbol and logic combinations for an AND gate. (In the symbol, the input terminals are at left and the output terminal is at right.) The output is “true” when both inputs are “true.” Otherwise, the output is “false.”

AND gate

Input 1	Input 2	Output
0	1	0
1	0	0
1	1	1

The **OR gate** gets its name from the fact that it behaves after the fashion of the logical inclusive “or.” The output is “true” if either or both of the inputs are “true.” If both inputs are “false,” then the output is “false.”

OR gate

Input 1	Input 2	Output
0	1	1
1	0	1
1	1	1

The **XOR** (exclusive -OR) gate acts in the same way as the logical “either/or.” The output is “true” if either, but not both, of the inputs are “true.” The output is “false” if both inputs are “false” or if both inputs are “true.” Another way of looking at this circuit is to observe that the output is 1 if the inputs are different, but 0 if the inputs are the same.

XOR gate

Input 1	Input 2	Output
0	1	1
1	0	1
1	1	0

A logical inverter, sometimes called a **NOT gate** to differentiate it from other types of electronic inverter devices, has only one input. It reverses the logic state.

Inverter or NOT gate



Input 1	Output
1	0
0	1

The **NAND gate** operates as an AND gate followed by a NOT gate. It acts in the manner of the logical operation “and” followed by negation. The output is “false” if both inputs are “true.” Otherwise, the output is “true.”

NAND gate

Input 1	Input 2	Output
0	0	1
1	0	1
1	1	0
0	1	1

The NOR gate is a combination of OR gate followed by an inverter. Its output is “true” if both inputs are “false.” Otherwise, the output is “false.”

NOR gate

Input 1	Input 2	Output
0	0	1
0	1	0
1	0	0
1	1	1

The **XNOR (exclusive-NOR)** gate is a combination of XOR gate followed by an inverter. Its output is “true” if the inputs are the same, and “false” if the inputs are different.

XNOR gate

Input 1	Input 2	Output
0	0	1
1	0	0
0	1	0
1	1	1

Using combinations of logic gates, complex operations can be performed. In theory, there is no limit to the number of gates that can be arrayed together in a single device. But in practice, there is a limit to the number of gates that can be packed into a given physical space. Arrays of logic gates are found in digital integrated circuits (ICs). As IC technology advances, the required physical volume for each individual logic gate decreases and digital devices of the same or smaller size become capable of performing ever-more-complicated operations at ever-increasing speeds.

Uses of standard Logic Circuit

1. Logic gates are building blocks of hardware electronic components.
2. It is used in activation of door bells.
3. The AND gates use to combine multiply signals
4. The NOT gate is used in building a switch.

REVIEW QUESTIONS

Using the tables below, identify the truth table for the gates in questions 1- 4

(I)

A	B	X
0	1	0
1	0	0
1	1	1

(II)

A	B	X
0	1	1
1	0	1
1	1	1

(III)

A	B	X
0	0	1
1	0	1
1	1	0

(IV)

A	B	X
0	0	1
0	1	0
1	0	0
1	1	1

(V)

A	B	X
0	0	1
1	0	0
0	1	0
1	1	1

- Which of the tables stands for NOR gate?
A. I B. III C. IV D. V
- Which of the tables stands for AND gate?
A. I B. III C. IV D. V
- Which of the tables stands for OR gate?
A. I B. II C. IV D. V
- Which of the tables stands for NAND gate?
A. I B. II C. IV D. III
- _____ is an elementary building block of a digital
A. Building gate B. electric gate
C. analytical gate D. logic gate

THEORY

- State three uses of standard Logic Circuit
- State and briefly explain five (5) basic logic gates with the aid of a table each

