**COMPUTER STUDIES JSS 3**

**THIRD TERM**

**SCHEME OF WORK**

1. COMPUTER VIRUS
2. SOURCES OF VIRUS
3. VIRUS WARNING SIGNS
4. VIRUS DETECTION
5. COMPUTER NETWORKING

**WEEK ONE**

**Computer Virus**

A computer virus is a small software program designed to spread from one computer to another, disrupting computer operations. Viruses can corrupt or delete data, use email programs to spread, or even erase entire hard disks. Typically spread through email or instant messaging attachments, it's crucial to avoid opening attachments from unknown sources.

Viruses are malicious programs that replicate by inserting copies of themselves into other computer programs, data files, or the hard drive's boot sector. They can spread through various means, often damaging or stealing data, rendering the computer useless, or disrupting normal operations.

Types of Viruses

1. Boot Sector Virus: Affects the boot process by targeting the hard drive's boot sector.

2. File Infection Virus: Attaches to .exe files and compressed files like zip or drive files.

3. Multipartite Virus: A hybrid of file and boot sector viruses, spreading in diverse ways.

4. Network Virus: Spreads rapidly within local area networks and online.

5. Macro Virus: Infects files with macros, commonly found in word processors.

6. Email Virus: Spreads via email, multiplying through recipients' address books.

7. Memory Resident Viruses: Lodge in computer memory, activating with every OS run.

8. Worms: Self-replicating programs causing negative effects on computers.

9. Trojans: Do not self-replicate but trace users' online login details.

10. Browser Hijackers: Redirect users to specific sites, altering browser functions.

11. Polymorphic Virus: Encrypts differently each time, challenging antivirus detection.

12. FAT Virus: Attacks file allocation tables, preventing access to essential disk sections.

13. Overwrite Viruses: Replace file content, rendering them useless.

14. Companion Viruses: Accompany existing files, acting upon program execution.

SELF EVALUATION

1. What’s a computer virus?

2. Highlight SIX types of virus?

**WEEK 2**

**SOURCES OF VIRUS**

The most potent and vulnerable threat of computer users is virus attacks. Virus attacks hamper important work involved with data and documents. It is imperative for every computer user to be aware of the software and programs that can help to protect 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 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 viruses. Any type of executable program including games, freeware, screen savers as well as executable files is 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 malware. Always scan your removable media soon after you plug it into the computer. Also, don’t forget to turn off the autoplay 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 adware (with other software) that you keep seeing unnecessary ads right from the moment you turn the network on.

**EVALUATION**

1. Highlight FIVE top sources of a computer virus?

**WEEK 3**

**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. **The 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.

**EVALUATION**

1. Highlight EIGHT signs to know your PC has a virus?

**WEEK 4**

**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, key loggers, 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 is provides consumers with 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.

**EVALUATION**

1. What’s an Ant-Virus Software?
2. List FOUR types of anti-virus software?

**WEEK 5**

##### **COMPUTER NETWORKING**

A computer network communication is a system connecting two or more computers that are together to exchange information and share resources.

Complex Networking can be defined as the interconnection of computers within an area for the sharing of data and other computer peripherals.  Each computer system connected to the computer network station is called **WORKSTATION.**

**Network architecture** describes how the network is arranged and how the resources are coordinated and shared.

An environment in which more than one person uses the system at about the same time is referred to as A **MULTI-USER ENVIRONMENT.**  In a multi-user environment, several terminals are attached to only one system unit called **SERVER,** each having access to the system unit.

**ADVANTAGES OF COMPUTER NETWORKING**

1. It allows the sharing of resources.
2. It saves cost.
3. It enhances productivity.

**DISADVANTAGES OF COMPUTER NETWORKING**

1. Lack of security.
2. Easily attacked by a virus.

**CONCLUSION**

Computer networking is the interconnection of computers within an area for the sharing of data and other computer peripherals.

**EVALUATION**

1. What is Computer Networking?
2. State the advantages and disadvantages of computer networking.

##### TYPES OF COMPUTER NETWORK

1. **LOCAL AREA NETWORK (LAN)**

This type of network connects computers in an office or within a building together to share files, information, programs and resources like printer, scanner, etc.

1. **WIDE AREA NETWORK (WAN)**

This is a network of computers within different towns or cities for the purpose of sharing files and information.  For example, computers in a UBA bank in Abuja can be linked together with computers of another UBA branch office in Lagos to share information on customers’ accounts.

1. **INTERNATIONAL NETWORK (INTERNET)**

This is a network that connects computers all over the world to share files and information.  It involves thousands of computers in various countries which provide information in all areas of human endeavour.  Internet users can read on subjects of their interest, carry out research and send or receive messages from every part of the world.

**CONCLUSION**

A computer network connects different computers together to share data, files, information and resources.  There are different types of computer networks which are: Local Area Network (LAN), Wide Area Network (WAN) and International Network (INTERNET).

**EVALUATION**

1. What is a Computer Network?
2. Mention the THREE types of computer networks.

**WEEKEND ASSIGNMENT**

**OBJECTIVES**

1. The main aim of a computer network is ………….

(a) to share information and resources   (b) to browse the INTERNET   (c) to share data alone

1. The system unit that allocates resources to other terminals in a network is called ……. (a) Workstation (b) Server     (c) Node
2. In a multi-user environment, how many persons use the computer at the same time? (a) One (b) Two      (c) More than one person
3. Computer networking saves cost.

(a) Yes      (b) No       (c) No idea

1. If a server is off, can you access a network?

(a) Yes     (b) No     (c) a & b

1. Which among the following is NOT a computer network?

(a) LAN      (b) WAN      (c) CAN

1. Messages can be sent or received through the………..

(a) LAN      (b) WAN      (c) INTERNET

1. The ……….. is a global network that provides access to global information. (a) WAN (b) LAN       (c) INTERNET
2. Which of the following computer networks is best in an office or within a building? (a) LAN (b) WAN      (c) MAN
3. What is the full meaning of WAN

(a) Wide Area Network (b) World Area Network (c) Wide Area News

**THEORY**

1. List the THREE types of computer networks.
2. Write out the full meaning of the following:
   * + (a) LAN
     + (b) WAN
3. What is Computer Networking?
4. List any two advantages and one disadvantage of computer networking.