

Chapter 4

SOFTWARE VIRUS



Recall –

Hardware:

It is not affected by the computer virus

Software:

It is affected by the computer virus

Also,

Software is *set* of *instructions* that *tell* computer *what to do*.

These softwares are written in a specific language. Process of writing software instruction is known as ***Coding***.

What is Instruction in computer?

Instruction in general is detailed information about how something should be done or operated.

- To start a car
 - Get in the driver's seat and buckle up.
 - Insert the key into the ignition.
 - Put the gear stick in Neutral.
 - Twist the ignition key to start the car.



Similarly, Computer Instruction is an order given to a computer processor by a computer program. At the lowest level, each instruction is a sequence of 0s and 1s that describes a physical operation the computer is to perform (such as "Add")

- Enter Key
 - This is an **instruction** to execute a command like **Click**.
 - This is also an **instruction** to go to a **new line**.
- Delete Key
 - This is an **instruction** to **delete** whatever is typed into the right side of the computer.
- **Num1 = 5**
Num2 = 2
Result = Num1 + Num2
 - This is a computer program where **Num1** and **Num2** are **variables**.
 - **Num1** contains value **5** and **Num2** contains value **2**
 - **Result** is another **variable** which contains the final result of operation "**Num1 + Num2**" i.e **7**

Computer virus is a software that prevents computer programs to execute instructions as per expectation. Like add may perform as division.

Computer Virus

Computer viruses are also Software programs that are designed to spread from one computer to another computer with the purpose of interfering computer operations.

These Computer Virus Software Programs are popularly known as
“Malicious Software or Malware”

Why Computer Virus are created

Computer viruses are created with the aim to

- ⇒ *Disrupt systems*
- ⇒ *Cause operations issues*
- ⇒ *Result in data loss by corrupting or deleting data on your computer*
- ⇒ *Erase everything on your hard drive*

Computer virus can be **disguised** as attachments of **images, audio, video, executable files** in an **email**. They can also be disguised in a similar fashion across websites or mobile apps.

How Computer Virus are spread

- Viruses are mostly spread by attachments in an email message or similar instant messaging apps like whatsapp.
 - Thus it becomes very essential that you never open email attachments unless you are very sure about it.
- A virus also spread through downloads on the internet. They can be hidden in illegal software or other files you might download.

Common Signs of Computer Viruses

Computer viruses often show signs in your computer system. Some of the signs like performance loss is easily discoverable. Other signs

- 1. Speed of System** - A **computer system running slower** than usual is one of the most common signs that the device has a virus. This includes
 - a.** System itself running very slowly or,
 - b.** Applications i.e installed software are opening and performing slowly or,
 - c.** Internet surfing is very slow.
- 2. Pop-up Windows** - **Unwanted pop-up** windows appearing on a computer or in a web browser are a telltale sign of a computer virus. Unwanted pop-ups are a sign of **malware**, viruses, or **spyware** affecting a device.
- 3. Self Executing Programs or Software** - If computer programs **unexpectedly close** by themselves, then it is highly likely that the software has been infected with some form of virus or malware. Another indicator of a virus is when applications fail to load when selected from the Start menu or their desktop icon.
- 4. Accounts getting self Logged Out** - Some viruses are designed to affect specific applications, which will either cause them to **crash** or force the user to **automatically log out** of the service.
- 5. System Crash** - **System crashes** and the computer itself unexpectedly closing down are common indicators of a virus. Computer viruses cause computers to act in a variety of strange ways, which may include opening files by themselves, displaying unusual error messages, or clicking keys at random.
- 6. Mass Emails** - Computer viruses are commonly spread via email. Hackers can use other people's email accounts to **spread malware** and carry out wider cyberattacks. Therefore, if an email account has **sent emails** in the outbox that a user did not send, then this could be a sign of a computer virus.

Prevent Computer from Viruses

As always, Prevention is better than cure. Computer viruses are nothing but software. Following some best practices can prevent your system from getting infected with Virus.

- 1. Antivirus** - Trusted computer antivirus products are crucial to [stop malware attacks](#) and prevent computers from being infected with viruses. These [antivirus concepts](#) will protect devices from being infected through regular scans and identifying and blocking malware.
- 2. Avoid clicking Pop Ups** - Unwanted pop-up advertisements are more than likely to be linked to computer viruses and malware. Never click on pop-up advertisements because this can lead to inadvertently downloading viruses onto a computer.
- 3. Scan your Email Attachments and Avoid Downloading unwanted them** - A popular way to protect your device from computer viruses is to avoid suspicious email attachments, which are commonly used to spread malware. Computer antivirus solutions can be used to scan email attachments for potential viruses.
 - If you have already downloaded a file from internet or email. Then as a best practice you should scan them using your antivirus.

Kinds of computer viruses

There are different kinds of computer viruses:

- **Macro-virus or script virus**- This is the most common type of computer virus. In this the computer virus software is executed *with the "script" functionality of a program*
- **Boot sector viruses**- infect the [boot sector](#) of floppy disks, hard drives and other media.
- **Executable files and scripts of the operating system**- Including those that are run automatically when a medium is inserted into a drive
- **Cross-site scripting**- Scripts in web pages that replicate to other webpages.

What is Antivirus

Antivirus is also a Computer Program which is intended to Identify and Eliminate Computer Virus.

Virus = Software program to disrupt computer operation



Antivirus = Software program to stop virus from disrupting computer operations

Antivirus is software (computer program) that scans files and your computer's memory (primary & secondary) for certain patterns that may indicate an infection.

The patterns it looks for are based on the signatures, or fingerprints of known viruses.

Once a virus is detected in your computer system the antivirus informs the users and takes the actions like quarantine (isolation) or deletion. Also, if one antivirus company finds a new virus pattern then the company updates the existing software for your computer to use. These new patterns are also shared globally with other Antivirus companies to prevent the virus from damage.

Virus authors or companies releases new updated antivirus on regular basis. Thus it is important to have the latest version of antivirus installed on your computer.

Antivirus Scan Types – Once you have installed an antivirus, you should scan your entire computer periodically. These scans can be customized using.

- **Automatic Scans** – Depending what antivirus software you are using, you may be able to **configure** the scan to “**automatically scan**” specific files or directories at a specific *time* or *period*.
- **Manual Scans** – It is also a good idea to **manually scan** files when you receive them from someone or download it from internet before opening them.