UNIT 18

Data Security 1

STARTER **1** What stories do you think followed these headlines? Compare answers within your group.

1 Love bug creates worldwide chaos.
2 Hackers crack Microsoft software codes.
3 Web phone scam.

- identity Theft
- Data Trafficking
- Man-in-the-middle attacks
- Hardware Manipulation
- cracking
- vishing
- spoofing
- Spam
- keylogger
- social engineering

2 What other types of computer crime are there? Make a list within your group.

Malware
- Spyware
- Ransomware
- Adware

READING **3** Study this diagram which explains how one type of virus operates. Try to answer these questions.

virus instructions execute before host program

1 What is the function of the Jump instruction?
2 What are the main parts of the virus code?
3 What is the last act of the virus?

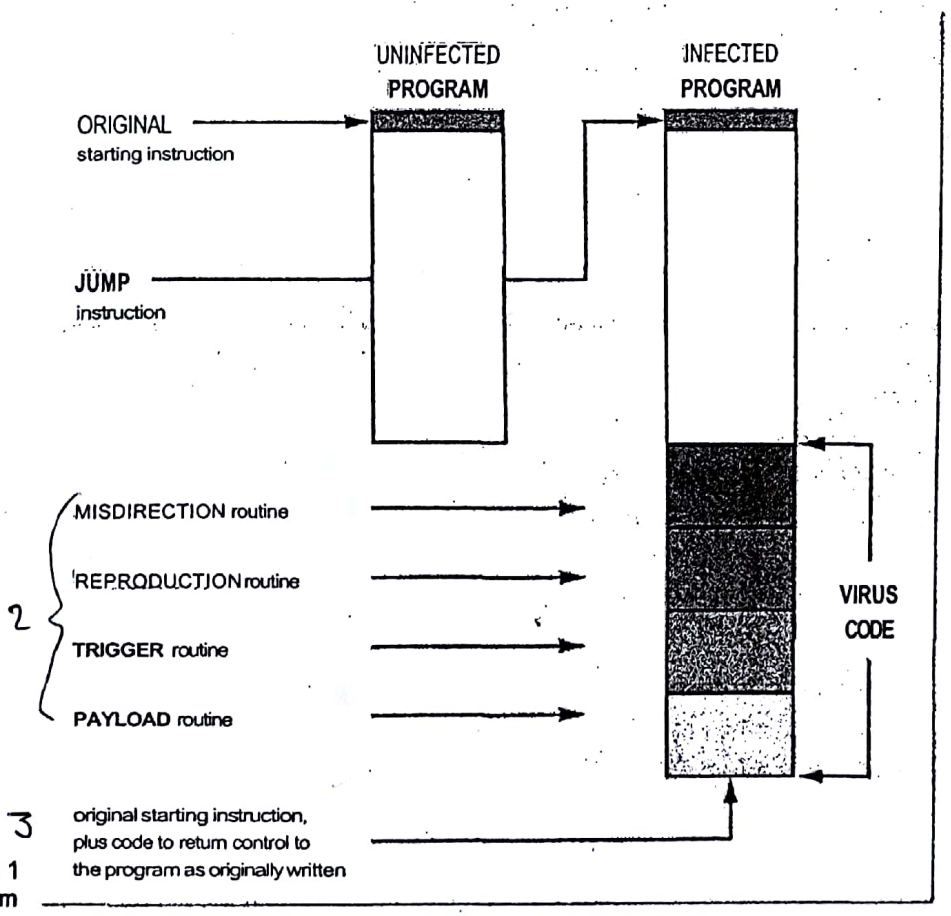

Fig 1 How a virus infects a program

4 Scan this text to check your answers to Task 3. Ignore any parts which do not help you with this task.

THE ANATOMY *OF* A VIRUS

A biological virus is a very small, simple organism that infects living cells, known as the host, by attaching itself to them and using them to reproduce itself. This often causes harm to the host cells.

Similarly, a computer virus is a very small program routine that infects a computer system and uses its resources to reproduce itself. It often does this by patching the operating system to enable it to detect program files, such as COM or EXE files. It then copies itself into those files. This sometimes causes harm to the host computer system.

When the user runs an infected program, it is loaded into memory carrying the virus. The virus uses a common programming technique to stay resident in memory. It can then use a reproduction routine to infect other programs. This process continues until the computer is switched off.

The virus may also contain a payload that remains dormant until a trigger event activates it, such as the user pressing a particular key. The payload can have a variety of forms. It might do something relatively harmless such as displaying a message on the monitor screen or it might do something more destructive such as deleting files on the hard disk.

When it infects a file, the virus replaces the first instruction in the host program with a command that changes the normal execution sequence. This type of command is known as a JUMP command and causes the virus instructions to be executed before the host program. The virus then returns control to the host program which then continues with its normal sequence of instructions and is executed in the normal way.

To be a virus, a program only needs to have a reproduction routine that enables it to infect other programs. Viruses can, however, have four main parts. A misdirection routine that enables it to hide itself; a reproduction routine that allows it to copy itself to other programs; a trigger that causes the payload to be activated at a particular time or when a particular event takes place; and a payload that may be a fairly harmless joke or may be very destructive. A program that has a payload but does not have a reproduction routine is known as a Trojan.

5 Now read the whole text to find the answers to these questions.

1 How are computer viruses like biological viruses?
2 What is the effect of a virus patching the operating system?
3 Why are some viruses designed to be loaded into memory?
4 What examples of payload does the writer provide?
5 What kind of programs do viruses often attach to?
6 Match each virus routine to its function.

Routine		Function	
1	misdirection	a	does the damage
2	reproduction	b	attaches a copy of itself to another program
3	trigger	c	hides the presence of the code
4	payload	d	decides when and how to activate the payload

7 How does a Trojan differ from a virus?