

## INTERNET SECURITY AND CYBERCRIME

"Our daily life, economic vitality, and national security depend on a stable, safe and resilient cyberspace." (Department of Homeland Security)

### INTRODUCTION | DEALING WITH CYBERCRIME

#### 1 What would you do if you received the following email?

**Re [Anti-Spam]: Congratulations!**

**Euro-International State Lottery** <contact@eisl.com>  
to me

March 6, 2019, 9:05 (2 days ago)

We are delighted to inform you that your name has been selected by our computer and that you are the winner in our Lottery of the sum of €200,000. We shall forward the contact information of the bank which will enable you to claim the funds. Please be aware that there are some important documents that will be required by the bank to activate the transfer. Please contact us urgently to guarantee safe receipt of your winnings. Congratulations!

#### 2 What type of cyber-crime does the email above illustrate? Can you think of ways to combat this crime?

#### 3 Watch the TEDtalk on this issue. What do you think about the method that was used there? Do you think it would be a good idea to deal with these types of emails in the way presented?

#### 4 What other ways - preventive or not - can you think of doing to ensure that one does not fall victim to such crimes?

### VOCABULARY | TYPES OF CYBERCRIME

#### 5 Besides the threat discussed above, what other cybercrimes can you think of? List a few that come to your mind.

#### 6 For each of the items listed in the exercise above, draw a diagram similar to the one shown below and complete it with appropriate information.

<i>Name of security risk / crime</i> .....	<i>Description of the security risk</i> ..... ..... ..... .....
	<i>Possible effects</i> ..... ..... ..... .....
	<i>Methods to help remove / avoid it</i> ..... ..... ..... .....

#### 7 Which online threat do you think is the most dangerous? Rank the ones mentioned by you and give reasons for your choice.

#### 8 What can users do to avoid these threats?

#### 9 Which of the following words do you know?

spyware	adware	scam	spam
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#### 10 Scan the article below. How many of the words, or derivatives (e.g. *fraudsters*), can you find in two minutes?

**HI-TECH FRAUD** Both the US and the UK are experiencing a rise in 'phishing', pronounced 'fishing'. Fraudsters send an e-mail message that seems to come from a bank (Citibank, Lloyds) or a company like E-bay or Amazon. The message looks genuine, and may direct you to a website which includes a corporate logo. You are asked to send or confirm personal information, such as your bank account number or password. This information is then used for fraudulent activity, such as

online gambling, or to siphon off money from your account. As many as 20% of recipients are fooled by this scam.

This is another example of spamming. The nature of spam is changing from being just a nuisance to more serious financial scams. Financial and pharmaceutical spam now make up an incredible 70% of all spam.

IT managers estimate that over 90% of computers in organizations have been infected by some kind of spyware. Many employees knowingly

download spyware onto their machines. This software, which hides somewhere in your computer, collects information about you and what you do on the internet - it may even record your credit card details if you shop on the internet. On average every PC user has 28 so-called spyware programs installed on it, according to one recent audit by a software firm.

Adware is a form of spyware which installs secret advertising software on your computer, such as annoying pop-up ads. There are government moves in various countries to make spam illegal. As the internet becomes more and more integral part of our lives, so we have to give more time to protecting ourselves against cyber-crime.

# 11 Find words in the text from the definitions below.

- a to move money from one bank account to another illegally or dishonestly \_\_\_\_\_ (paragraph 1)
- b a symbol that represents an organization or company \_\_\_\_\_ (paragraph 1)
- c risking money, often in a game, hoping to win more if you are lucky \_\_\_\_\_ (paragraph 1)
- d made to look like something real in order to trick people \_\_\_\_\_ (paragraph 2)
- e an official examination or situation within a company \_\_\_\_\_ (paragraph 3)

# 12 Read this short article about a computer infection.

Conficker has been in the news a lot recently. It is a (1) \_\_\_\_\_, which unlike a virus does not need to be attached to an existing program to infect a machine, and which seems to receive regularly update instructions from its controllers. It has created a (2) \_\_\_\_\_ - a network of infected machines. Once infected, these machines are known as (3) \_\_\_\_\_. At this point, no one knows what the purpose of Conficker is. At present, it has infected ten million computers. These could be used for a (4) \_\_\_\_\_ attack where all the infected computers attempt to access one site simultaneously. It is probably controlled by criminals who want to steal users' personal information, i.e. (5) \_\_\_\_\_. There are a number of ways of doing this: a (6) \_\_\_\_\_ records information entered via a keyboard, (7) \_\_\_\_\_ literally means harvesting users' information while they are online. We will probably soon see if Conficker consists of this type of passive monitoring (8) \_\_\_\_\_ or whether it will mount a more attractive attack once it receives a new set of instructions.

# 13 Work in pairs or small groups. Decide what these kinds of computer crime are (1-10). Then match the crimes to the short descriptions (A-J) that follow.

- |   |  |
|---|--|
| 1 <input type="checkbox"/> Salami Shaving           | 6 <input type="checkbox"/> Software Piracy |
| 2 <input type="checkbox"/> Denial of Service Attack | 7 <input type="checkbox"/> Piggybacking    |
| 3 <input type="checkbox"/> Trojan Horse             | 8 <input type="checkbox"/> Spoofing        |
| 4 <input type="checkbox"/> Trapdoors                | 9 <input type="checkbox"/> Defacing        |
| 5 <input type="checkbox"/> Mail bombing             | 10 <input type="checkbox"/> Hijacking      |

- A Leaving, within a completed program, an illicit program that allows unauthorized - and unknown - entry.
- B Using another person's identification code or using that person's files before he or she has logged off.
- C Adding concealed instructions to a computer program so that it will still work but will also perform prohibited duties. In other words, it appears to do something useful but actually does something destructive in the background.
- D Tricking a user into revealing confidential information such as an access code or credit-card number.
- E Inundating an email address with thousands of messages, thereby slowing or even crashing the server.
- F Manipulating programs or data so that small amounts of money are deducted from a large number of transactions or accounts and accumulated elsewhere. The victims are often unaware of the crime because the amount taken from an individual is so small.
- G Unauthorized copying of a program for sale or distributing to other users.
- H Swamping a server with large numbers of requests.
- I Redirecting anyone trying to visit a certain site elsewhere.
- J Changing the information shown on another person's website.

## LISTENING & READING | A COMPUTER VIRUS

### 14 Answer the following questions:

- 1 How would you define a computer virus? What could it be compared to?
- 2 How much do you know about the history of computer viruses? How and when were they invented?
- 3 What happens when a virus infects a computer? How is an infected program different from an uninfected one?

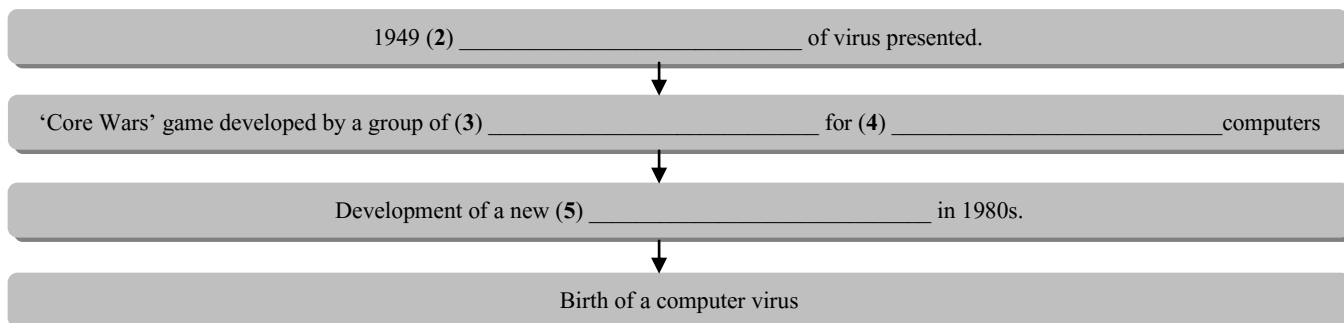
15 You will hear a man talking about computer viruses. Listen and solve the exercises that follow.

Choose the correct letter a, b or c.

- 1 What does the speaker compare a computer virus to?
  - a a biological organism
  - b a corrupt program
  - c an irritating person

For questions 2-5, complete the flowchart below with NO MORE THAN THREE WORDS for each answer.

*History of computer viruses*



Choose the correct letter a, b or c.

- 6 What does the speaker find surprising?
  - a the rise in the number of software infections
  - b the determination of those who develop viruses
  - c the fact that people blame their own computers

List FOUR ways of combating viruses. Write NO MORE THAN THREE WORDS for each answer.

- 7 \_\_\_\_\_ 9 \_\_\_\_\_
- 8 \_\_\_\_\_ 10 \_\_\_\_\_

16 Study the diagram below which explains how one type of virus operates. Try to answer the questions below:

- 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?

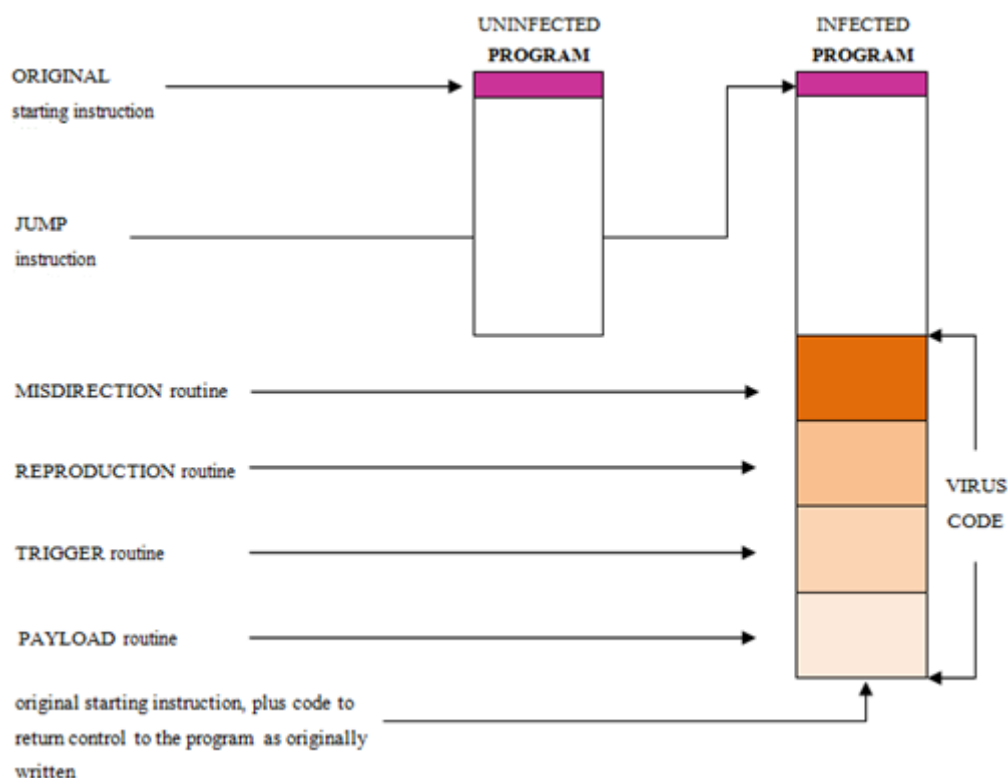


Figure 1  
How a virus infects a program

**17 Scan the 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 remain 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.

**18 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 are 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?

.....

**WRITING | PROBLEMS TO SOLUTIONS ESSAY & LINKING WORDS**

**19 By now you should have a solid understanding of the different types threats there are in the cyber world. But what can ordinary people and businesses do to ensure that they don't fall victim to cybercrimes? Work in pairs and note down at least five main rules you think people and businesses should follow in order for them to be safe.**

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_

**20 You have been assigned the following writing task by your teacher. Read the instruction and brainstorm a few possible solutions that you could suggest.**

*Many people today are worried about 'cybercrime' such as hacking and identity theft. What problems does 'cybercrime' cause, and what solutions can you suggest for ordinary people and businesses to take? Give reasons for your answer, and provide ideas and examples from your own experience.*

*You should write at least 250 words and spend 40 minutes on this task.*

**21 Below you will find two model answers to the same task. Read both essays and:**

- a** consider the role of each paragraph
- b** identify the main idea(s) / topic sentence in each section
- c** identify the linking words

#### **SAMPLE A**

Crime is a cause of widespread concern today, as so many people use technology to store and transmit sensitive data. There are a number of problems that people suffer as a result of these crimes, but also some straightforward measures we can take to protect ourselves.

Perhaps the worst problem stemming from this is the financial impact. If someone has his or her bank account emptied, or has false credit lines created under their name, they are potentially liable for large sums of money. Even if they can avoid the consequences, their bank or finance company has to cover the losses, which can damage their performance. A further problem is the way in which these stolen funds are used to subsidize other crimes, such as drug distribution or even terrorism. Once the money enters the criminal networks, we have no way of knowing how it will be used. Finally, there is the problem of anxiety and stress caused to the innocent victims of these crimes. The initial shock is often followed by months or years of legal wrangling, paperwork and sense of insecurity.

Turning to possible solutions, probably the most effective measure is to improve personal security, ranging from passwords to the shredding of documents. This denies the criminals the raw materials to work with. Secondly, we should raise awareness of the risks among the elderly or the very young - two groups who are often specifically targeted - via publicity and public education. Ultimately, however, it is the financial companies who can make the greatest contribution, by increasing their security and detection systems - ideally in partnership with the police.

Overall, the problems caused are both financial and social, and the solutions should involve coordinated action by individuals, corporations and the state.

293 words

#### **SAMPLE B**

Cybercrime is an ever-growing problem today, as so many people use various forms of technology to store and transmit sensitive data. These crimes present a number of problems and people are getting more concerned about them. In this essay, I will discuss these issues and the measures as to how we can tackle them.

Firstly, cybercrimes are mostly money oriented. They have huge financial impacts on banks and insurance companies. An individual whose bank account details have been compromised is due a full refund for the amount affected according to the monetary laws of U.S section 181. Furthermore, the money stolen could be used for funding other crimes like terrorism and drug trafficking. The stress caused by these crimes could be gruesome. Individuals who are affected will need to cope up with various issues and fill in loads of paperwork to get their money back. Moreover, it may take weeks or even months before the funds are allocated back to them.

To speak of solutions, the most important thing is to improve security. This can be done by educating people of the causes of cybercrime and providing appropriate measures such as using strong passwords and checking for a website's authentication before filling in your bank details. Stringent laws should be put in place and a universal governing body for the same should be set up as to put everybody under the same set of laws. Most of the crimes committed online are traced to different parts of the world. With more strict policies, criminals will be worrisome of their actions and won't be able to hide behind the barrier of international borders.

In the end, cybercrime is growing at an alarming rate and the problems caused by it are both financial and social. Governments, individuals and corporations should coordinate with each other to prevent any further damages.

307 words

**22 Which of the two versions would receive a higher score? Can you notice any differences between the two essays in terms of:**

- organization
- language & vocabulary
- content
- communicative achievement

23 Put the linking words from the box below under the heading which describes how they are normally used.

<i>although</i>	<i>as a result (of)</i>	<i>because (of)</i>	<i>consequently</i>	<i>despite / in spite of</i>	<i>due to</i>	<i>for instance</i>	<i>finally</i>
<i>first of all</i>	<i>furthermore</i>	<i>however</i>	<i>in addition</i>	<i>in the same way</i>	<i>lastly</i>	<i>in conclusion</i>	<i>moreover</i>
<i>nevertheless</i>	<i>next</i>	<i>on the other hand</i>	<i>provided (that)</i>	<i>similarly</i>	<i>so</i>	<i>so as (not) to</i>	<i>so that</i>
<i>such as</i>	<i>thus</i>	<i>therefore</i>	<i>to conclude</i>	<i>to sum up</i>	<i>unless</i>	<i>whereas / while</i>	<i>yet</i>

Sequencing ideas	Expressing conditions	Expressing contrast
<i>firstly, secondly</i>	<i>If</i>	<i>but</i>
Adding further support	Stating results	Expressing similarities
<i>besides</i>	<i>thus</i>	<i>likewise</i>
Providing reasons	Giving examples	Concluding statements
<i>(in order to)</i>	<i>for example</i>	<i>in summary</i>

24 Using the table above if necessary, replace the linking words from the essays above with an appropriate alternative. (*Rephrase the sentence if necessary*)

- 1 There are a number of problems that people suffer **as a result** of these crimes.
- 2 A further problem is the way in which these stolen funds are used to subsidize other crimes, **such as** drug distribution or terrorism.
- 3 **Finally**, there is the problem of anxiety and stress caused to the innocent victims of these crimes.
- 4 **Secondly**, we should raise awareness of the risks among the elderly or the very young.
- 5 **Overall**, the problems caused are both financial and social, and the solutions should involve coordinated action by individuals, corporations and the state.
- 6 **Furthermore**, the money stolen could be used for funding other crimes **like** terrorism and drug trafficking.
- 7 **In the end**, cybercrime is growing at an alarming rate and the problems caused by it are both financial and social.

#### PARTNER FILES

##### STUDENT A

Complete the gaps 1-4 in the text with the words below.

*denial of service*   *BotNet*   *worm*   *zombies*

Now ask your partner questions to complete gaps 5-8. For example:

*What is stealing users' personal information known as?*

#### PARTNER FILES

##### STUDENT B

Complete gaps 5-8 in the text with the words below:

*pharming*   *spyware*   *keylogger*   *identity theft*

Now ask your partner questions to complete gaps 1-4. For example:

*What is the difference between a virus and a worm?*

Read the following text and complete the gaps with one of the words / phrases from the box below. Not all words need to be used.

<i>agree</i>	<i>building</i>	<i>even</i>	<i>every</i>	<i>inventing</i>
<i>investigation</i>	<i>lucrative</i>	<i>monitoring</i>	<i>multiple</i>	<i>privacy</i>
<i>security</i>	<i>suspicious</i>	<i>though</i>	<i>virtually</i>	<i>while</i>

### SOFTWARE CAN MONITOR EMAIL AND DELETE DOCUMENTS

Right now, your boss, your spouse or the government could secretly be reading all your typed words, even the ones you deleted while secretly snapping your picture. Sounds alarming? The man who makes it possible is the first to (1) \_\_\_\_\_.

"It's horrifying!" said Richard Eaton, who develops, markets and answers the technical help line for the WinWhatWhere Corp. software.

"I'm normally the person people expect to guard their (2) \_\_\_\_\_, so it's kind of ironic" said Eaton, a lanky 48-year-old with a diamond stud earring. "Every time I add a feature into it it's usually something that I've fought for a long time."

His qualms haven't stopped him from selling the product, (3) \_\_\_\_\_, more than 200,000 copies of it, to everyone from (4) \_\_\_\_\_ husbands to the FBI. And Eaton is (5) \_\_\_\_\_ ever-more-detailed tricks into his Investigator software. The latest version, released this month, can snap pictures from a WebCam, save screenshots and read keystrokes in (6) \_\_\_\_\_ languages.

Investigator can already read every email, instant message and document you send and receive, even if you delete, or never even saved what you typed.

The \$99 downloadable program runs "hidden in plain sight." It changes names (7) \_\_\_\_\_ so often, and files containing the information it gathers are (8) \_\_\_\_\_ given old dates to make them difficult to find.

The monitor can choose to have a user's every move sent to an e-mail address, or the program can be instructed to look for keywords like "boss", "pornography" or "terrorist" and only send records when it finds those prompts.

Software like the Investigator was (9) \_\_\_\_\_ unknown two years ago. Now it's become a (10) \_\_\_\_\_ niche market, attracting plenty of complaints and at least one product that aims to track down the snooping