

TOPIC: Fundamentals of cyber security: Malicious Code

LEARNING OBJECTIVES:

- **Computer viruses**
- **Malware**
- **Adware**
- **Trojan**
- **Spyware**

	Teacher Activity	Pupil Activity
Starter activity (5-10 mins) [individual/ paired or group]	<p>Discuss what is a computer virus</p> <p>Viruses are programmes that can attack computers, tablet, phones and other digital devices. A virus is a small programme designed to cause trouble by gaining access to your device.</p> <p>What is it used for?</p> <p>Viruses can copy your personal data or slow your device down, they spread by duplicating and attaching itself to other files. Viruses are one type of malware.</p> <p>How can you get one?</p> <p>You can get a computer virus by downloading malicious files! These could be disguised as other common files such as word documents or pictures.</p>	<p>Discuss (individual/paired or group)</p> <p>Has anyone been a victim of a computer virus and what happened as a result?</p> <p>Activity:</p> <p>A game on the internet called pandemic can be used as a good analogy.</p> <p>Travel links = Internet links http://pandemic3.com/</p>

<p>Main activity one (15 mins)</p>	<p>Malware:</p> <p>What is it?</p> <p><i>Malware is the software that infects and tries to take control of a device or information stored on a computer. It is very common for Malware to be ignored for the scarier media name, Computer Virus.</i></p> <p>How can it be protected against?</p> <p><i>Programmes are available such as AVG virus scan and Malwarebytes. These programs will protect your device in real time against threats that are trying to gain access.</i></p> <p><i>The best protection is prevention. So educating yourself to not install suspicious content from websites, not to open unknown files in emails and using unknown USB pen drives. Malware can install from an executable file or even within the code of a file to automatically install or run a process when the device is installed or file is opened. A feature to turn off is Auto Enable macros as this would prevent auto running scripts from running in the background while you're trying to open a file/ folder.</i></p> <p>Adware:</p> <p>What is it?</p> <p><i>This is generally malware that targets a computer with ads.</i></p> <p><i>Sometimes it can be completely legitimate (targeted ads on Facebook/ website) and illegitimate (pop-ups). The illegitimate versions are normally installed by accidentally clicking a website banner on a poor website.</i></p> <p><i>You may also notice ads that pop up with the message "You are the 1 millionth visitor" when you know a website like Facebook has more than that in an hour.</i></p> <p>What is it used for?</p> <p><i>These are targeted ads that either sell really poor quality products or will installed additional malware once installed onto your device. It can be used for targeted marketing and pushing the user to illegitimate websites. In most cases, pop-ups take over the computer, rendering it useless.</i></p> <p>What types of programs/devices use it?</p> <p><i>This is more targeted than actually used, but it can target all devices that have user input and control such as a Smart TV, Phone, Tablet, Computer, Laptop, etc...</i></p>	<p>Discuss (individual/paired or group)</p> <p>What is malware?</p> <p>How can you protect against malware?</p> <p>What is adware?</p> <p>Practical activities</p> <ul style="list-style-type: none"> • Line students up in 2 lines (Guard of honour style), leave around 6 students spare • Have 1 student walk up the middle • Give the remaining students slogans/ popular adverts and block the way of the student • At the end, make the ad students to completely block the way of the passing student.
---	--	--



<p>Plenary one (5-10 mins)</p>	<p><i>Assess learning against the learning objectives</i></p> <ul style="list-style-type: none"><i>This is an open activity whereby the teacher will decide on the best approach to do this based on the pedagogical approach your school takes on assessment.</i>	<p>For example:</p> <ul style="list-style-type: none">5 minute timed writing exercise on what has been learned so farFill in class notesHave a discussionAnswer open questionsAnswer directed questions <p>On: Malware and adware</p>
---	--	--

<p>Main activity two (15 mins)</p>	<p>What is a Trojan?</p> <p><i>A Trojan virus takes its name from the Greek attack on Troy with a wooden Trojan horse. It attacks a computer from within and it normally gets onto a computer by masking itself as something else, normally a programme downloaded from the internet or attached to an email.</i></p> <p>What is it used for?</p> <p><i>Normally this is the delivery method of getting malware onto a computer. A Trojan will then attempt to take over the computer, be it by crashing, overheating or stealing the data on the computer. Most Trojans can be found with anti-virus/ malware software as they all have a very similar signature.</i></p> <p>What types of programmes/devices use it?</p> <p><i>This can attack anything. A computer can be taken over, a mobile phone can be bugged, a tablet can be shut down, and a connected fridge can be turned off / up.</i></p> <p>Spyware:</p> <p>What is Spyware?</p> <p><i>Spyware is malicious software, often installed without the user consent, which aids in gathering information about a person or organisation.</i></p> <p>What is it used for?</p> <p><i>Spyware is used to collect information about a person or organisation to be relayed to advertisers or other interested parties. This could include internet activity, keystrokes (also known as a key logger), passwords and other valuable information.</i></p>	<p>Discuss (individual/paired or group)</p> <p>What is a Trojan?</p> <p>Practical activities</p> <p>Puzzle</p> <p>The purpose of this is to showcase how a person (Trojan) can infiltrate a group (device) and modify it by taking data away or even closing it down.</p> <ul style="list-style-type: none"> • Split students up into groups (max 5-6) • Give each group a puzzle/ something to build • Give each person in the group part of a different team puzzle • Assign 1 student in each group to become a 'Trojan' and infiltrate the other team(s) • Task could be to find out what the finished product will be and report back to the original team or to sabotage the puzzle by either putting pieces in different places or taking pieces <p>Groups</p> <ul style="list-style-type: none"> • Chinese whisper style game, split students up into groups of 5-6 if possible • Assign each student a number 1-n • In each group, assign a 'Trojan', but must be a different number to each group • Give leader of group an easy message • Ask #1/2/3/n to move group so people in the other groups cannot identify the Trojan • Trojan tries to infiltrate the group message and either retrieves it for their own group or changes the message so that team can't win
---	--	---

Plenary two (5-10 mins)	<i>Assess learning against the learning objectives</i> <ul style="list-style-type: none"> <i>This is an open activity whereby the teacher will decide on the best approach to do this based on the pedagogical approach your school takes on assessment.</i> 	For example: <ul style="list-style-type: none"> • 5 minute timed writing exercise on what has been learned so far • Fill in class notes • Have a discussion • Answer open questions • Answer directed questions On: Trojan and Spyware
Homework (optional)	<i>Teacher choice based on homework policy of school.</i>	For example: See above for ideas

Key Terms: Fundamentals of cyber security: Malicious Code	
Computer Virus	<p>Viruses are programmes that can attack computers, tablet, phones and other digital devices. A virus is a small programmes designed to cause trouble by gaining access to your device.</p> <p>What is it used for?</p> <p>Viruses can copy your personal data or slow your device down, it spreads by duplicating and attaching itself to other files. Viruses are one type of malware.</p> <p>How can you get one?</p> <p>You can get a computer virus by downloading malicious files! These could be disguised as other common files such as word documents or pictures.</p>
Malware	<p>Malware is the software that infects and tries to take control of a device or information stored on a computer. It is very common for Malware to be ignored for the scarier media name, Computer Virus.</p> <p>How can it be protected against?</p> <p>Programmes are available such as AVG virus scan and Malwarebytes. These programmes will protect your device in real time against threats that are trying to gain access.</p> <p>The best protection is prevention. So educating yourself to not install suspicious content from websites, not to open unknown files in emails and using unknown USB pen drives. Malware can install from an executable file or even within the code of a file to automatically install or run a process when the device is installed or file is opened. A feature to turn off is Auto Enable Macro's as this would prevent auto running scripts from running in the background while you're trying to open a file/ folder.</p>

Adware	<p>This is generally malware that targets a computer with ads. Sometimes it can be completely legitimate (targeted ads on Facebook/ website) and illegitimate (pop-ups). The illegitimate versions are normally installed by accident by accidentally clicking a website banner on a poor website. You may also notice ads that pop up with the message “You are the 1 millionth visitor” when you know a website like Facebook has more than that in an hour.</p> <p>What is it used for?</p> <p>These are targeted ads that either sell really poor quality products or will install additional malware once installed onto your device. It can be used for targeted marketing and pushing the user to illegitimate websites. In most cases, pop-ups take over the computer, rendering it useless.</p> <p>What types of programmes/ devices use it?</p> <p>This is more targeted than actually used, but it can target all devices that have user input and control such as a Smart TV, Phone, Tablet, Computer, Laptop, etc...</p>
Trojan	<p>A Trojan virus takes its name from the Greek attack on Troy with a wooden Trojan horse. It attacks a computer from within and it normally gets onto a computer by masking itself as something else, normally a program downloaded from the internet or attached to an email.</p> <p>What is it used for?</p> <p>Normally this is the delivery method of getting malware onto a computer. A Trojan will then attempt to take over the computer, be it by crashing, overheating or stealing the data on the computer. Most Trojans can be found with anti-virus/ malware software as they all have a very similar signature.</p> <p>What types of programs/ devices use it?</p> <p>This can attack anything. A computer can be taken over, a mobile phone can be bugged, a tablet can be shut down, and a connected fridge can be turned off / up.</p>
Spyware	<p>Spyware is malicious software, often installed without the user consent, which aids in gathering information about a person or organisation.</p> <p>What is it used for?</p> <p>Spyware is used to collect information about a person or organisation to be relayed to advertisers or other interested parties. This could include internet activity, keystrokes (also known as a key logger), passwords and other valuable information.</p>