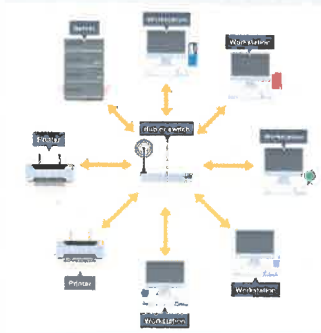
Knowledge Organiser: Networks

What is a Network?

Networking computers brings many benefits to users. Without networking, many computing applications would not be possible. A network is two or more computers (or other electronic devices) that are connected together for the purpose of communication. They are connected by a wired medium such as cables, or by a wireless medium such as Wi-Fi. A computer or device that is not connected to a network is called a stand-alone.

LAN—Local Area Network



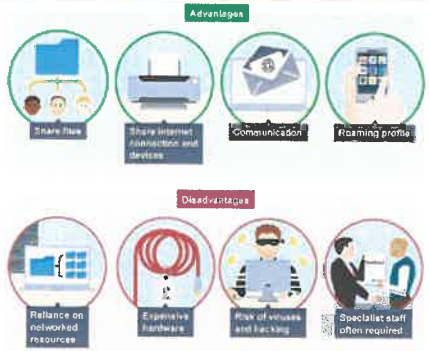
A **LAN** is a network that is geographically confined to **one building** or site.
Examples include networks employed by small businesses, small organisations, schools, colleges, universities and in homes.

WAN—Wide Area Network

A **wide area network (WAN) is** a network that is spread over a **wide geographical area.** It can cover more than one site, or be spread across a country, or even the world.

Organisations that have more than one office or branch, such as banks, tend to use a WAN. The WAN allows the head office to communicate and share data with the sub-offices and branches. Communication is done through national telephone infrastructures or via wireless transmission.
The internet is essentially a huge, international WAN

Networks



Client Sever & Peer to Peer Networks

This type of network separates computers into one of two classifications - **servers and clients.**
A **server** is a computer that manages and stores files, or one that provides services to other computers on the network. They control the network and allow other computers to share and communicate. In effect, they serve other computers. Typical servers include:
Client-server networks are best suited to organisations with many computers, or to situations where many computers need access to the same information. Many schools use this type of model.
A server is a computer that manages and stores files, whereas a client is a computer that relies on other computers to provide and manage data

Peer to Peer Networks

In a **peer-to-peer (P2P) network,** all computers have equal status - no computer has control over the network. There are no servers or clients. Instead, each computer is known as a peer.
P2P networks are best suited to smaller organisations that have fewer computers, or where fewer computers need

Glossary

Key Vocabulary

Client	The computer on a network that request data from a server.
Client-server	A form of computer networking where the data or web application is hosted on a server and accessed by client computers.
Collision	The result of two devices on a network trying to communicate with each other simultaneously.
Domain	An area of control or management, eg bbc.co.uk is controlled by the BBC.
Fibre-optic cable	Cable that carries data transmitted as light.
File server	A networked computer that provides large amounts of shared storage, it can be accessed by workstations on the same network.
File sharing	The act of sharing files over the internet.
Host	A server that stores files for other computers to access.
Hub	A piece of hardware used in computer networks used to connect multiple devices.
Internet	A global network connecting millions of computers.
LAN	Local area network. A network of computers that covers a small area, eg a school or college.
Server	A computer that holds data to be shared with other computers. Servers require server software.
WAN	Wide area network. A network that spans across a building, buildings or even countries, eg the internet.

Knowledge Organiser: Online Safety

Malware

This is malicious software which is often installed on a computer without the users knowledge. The **Malware** is often downloaded form an unknown email attachment or form poorly protected websites. Once a computer is infected with Malware is can cause harm by deleting or sharing data and gaining unauthorised access to personal data. There are different types of Malware:

Virus—This is designed to copy and spread itself to oth-

Phishing

Phishing is when you are tricked into doing something online. Perhaps giving away user names and passwords, bank details. These are usually emails or links to fake websites and they can be very convincing and hard to spot that the site is fake.

Criminals are becoming increasingly sophisticated and their websites and emails can seem very realistic, especially to the elderly or to someone who is a less experi-

Trolling

Its not always easy to find out who has left a message or comment on a social media post. Sometimes people pretend to be someone they are not. Some who does this is called a Troll and this activity of leaving nasty mes-



Cyber bullying

Those who use technology to intimidate and bully others online. This can be on a computer, a laptop, a tablet computer or a smartphone.

There are many different forms that Cyberbullying can take. This could be posts on a social media site or messages directly to the victim on email or text. T

he **Cyber bully** aims to cause harm, distress and wants

Firewall

A **Firewall** monitors communications going into and out of a computer through the internet. It looks for Malware, any of these communications are blocked by the firewall

Anti-Virus Software

and prevents the Malware from infecting the computer.

Anti-Virus Software protects the computer from **Malware** such are viruses and spyware. The Antivirus software will scan the computer foe Malware.

If any Malware is found the **Anti-Virus** software will safely

Staying Safe

Its important to be I control of the information they give out online. This is the best way to stay safe online.

You should never give out your telephone number, address, school, or accept a friend request from someone who says they know one of your friends, as this may not be true.

Also always be cautious about what you say when you're online. Never agree to meet someone you've only known online.

You can get help from:

BBC Website

Childline

Key Vocabulary

Anti-virus	Anti-virus software scans all forms of storage devices for viruses (programs harmful to computers) and, if found, attempts to remove them.
Cyberbullying	The bullying of another person using the internet, mobile phones and other digital devices.
Downloading	To copy a file from the internet onto your computer or device.
Firewall	An application that prevents unauthorised connections to and from the Internet.
Malware	Software that is designed to cause harm or damage to a computer. This includes viruses that might damage files, adware that causes pop-ups, and spyware that collects and shares login details.
Phishing	An attempt to gain personal information about someone by way of deception, eg sending an email pretending to be from their bank asking them for their bank details.
Program	Sequences of instructions for a computer.
Trojan	Malware that appears legitimate, but performs some malicious activity when it is run.
Troll	A derogatory name taken from the troll character in folklore and now used as a term for a person who posts offensive messages online.
Zombie	Malware that takes over a computer in order to perform some malicious task.



Knowledge Organiser: Bias and Reliability

Summary

The internet is a tremendous source of information. There are millions of websites on the internet, some are very good and completely accurate, others however many not be reliable and have bias in the way that they report information. There may also be fake information on some websites which can be very misleading and even dangerous.

Being able to identify reliable and unbiased information

Information

Information contains a huge array of information which can you be to learn about new things or to check information is correct.

Some **information** is often however either incorrect or biased in some way. If information is biased or incorrect then it is of little if any use. It is important that we can distinguish between information that is valuable and information that is not. If information on a website is

Reliability

If **information** is **reliable** then it should be correct, up to date and accurate. **Incorrect information is:**

Wrong—The information stated is incorrect

Out of date —The information is old and no longer relevant.

Inaccurate—Some of the facts may be correct, but not all and may contain errors.

Reliable information has value.

What is Bias ?

The internet has lots of websites with **biased** information. **Biased** information is information that is written from a particular perspective or point of view.

Bias may be include:

A personal opinion

A statement that is not based on any actual facts

Prejudice in favour or against a person, situation or idea.

Why is it important to watch for bias?

Biased information can caused several problems as it distorts the truth. Biased information can:

***Mislead** us*

***Misinform** us*

*Cause us to make an **incorrect decision***

*Cause us to make a **poor decision***

Factors which may indicate Bias

Biased information is **influenced** by a particular point of view.

There are some things you should consider:

Source—Who produced the information? Can they be trusted? Is it form a well known organisation or someone's Wiki or Blog?

Opinion or Fact—Opinions are just someone's point of view. We should always look for facts on websites.

Statements without facts—If a statement is without a fact it is of little value.

Date of publication—If information is out of date then it may no longer be accurate.

Key Vocabulary

Bias	Prejudice or favour shown for one person, group, thing or opinion over another.
Blog	An online publication written by an individual or a group of individuals that covers a subject of their choosing, a contraction of the term 'web log'.
Information	Data that has meaning, not just a number or a letter.
Prejudice	Forming an unfavourable opinion or feeling about a person or a group of people, without a full examination of the situation.
Wiki	A website whose content can added, removed or amended by any users via a web browser.



Knowledge Organiser: Law and Ethics in the UK

Summary

The Internet and Computing has brought the need for specific **Laws** to protect both individuals and Data. There are **three main Laws** which are designed to provide this **protection.**

Computer Misuse Act — This is designed to make Hacking into a Computer System illegal and punishable by a Jail sentence.

Copyright, Design and Patents Act — This law protects the owner of software from Piracy.

Data Protection Act—This law offers protection to individuals in regard to the data held about them on Computer Systems.

Computer Misuse Act

The **Computer Misuse Act** is Designed to make **Hacking** into a Computer Illegal.

Unauthorised access to a Computer is known as Hacking

It is illegal to access data on someone's computer which could then be used to commit **fraud** or **blackmail** for example.

Its illegal to make changes to data held on a computer system if you don not have permission to do so.

Installing a **Virus** or **Malware** which damages a computer is illegal.

The **maximum punishment** for breaking the Law is **£5000** or **several years imprisonment.**

Data Protection Act

The **Data Protection Act protects personal details** stored on Computer Systems.

This could include: Name and Address, Date of Birth, Medical Records, School and Employment records, Religion.

The Data Protection Act Makes Sure our Data is properly looked after.

Everyone also has a **right** to see the **Data Held about them** by an organisation. You can the **right to demand** that data is corrected or deleted if it is incorrect.

There are **Eight Principles** of the **Data Protection Act.**

Computer and the Law

Computers can be used by **criminals,** there are several ways this could happen:

Allowing someone to illegally share your personal data

Stealing Financial information, for example Bank Details and Credit Card Details.

Aiding the **Illegal copying** and distribution of music, films and Television programmes.

Extortion or **Blackmail** of someone

The internet allows people to **hack** into someone's computer remotely, even from the other side of the world and **steal** information.

Copyright, Design and Patents Act

The **Copyright Design and Patents Act** is designed to **protect peoples creations**. This could include:

A photograph, drawing or picture

A Television programme, video or film

Books, Articles and Reports

Games

Computer Software code

Work is **automatically protected by Copyright** unless the owner chooses to give tis right away

With Computers it is **illegal to make copies**, publish, distribute or sell copies of something that you do not own the copyright for.



Key Vocabulary

Computer Misuse Act	Defines and criminalises a number of offences involving the use of a computer, eg unauthorised access to computer systems.
Copyright Law	The Copyright, Designs and Patents Act 1988 gives the creator of published material the control over the way it is used.
Data	Units of information. In computing there can be different data types, including integers, characters and Boolean. Data is often acted on by instructions.
Data Protection Act	Legislation passed by parliament that governs the protection of personal data in the UK.
Hacking	Gaining unauthorised access to a computer.
Malware	Software that is designed to cause harm or damage to a computer. This includes viruses that might damage files, adware that causes pop-ups, and spyware that collects and shares login details.
Password Protect	To make a file secure by forcing a user to enter a password before it can be opened.
User Account	A collection of settings, and often files, that relate to just one user. A password is normally needed to gain access.
Virus	Any computer program designed to replicate and damage other computer systems and software.

Knowledge Organiser: Modelling with Spreadsheets

Summary

In computing, modelling is used to look at large amounts of data to help with scientific or engineering projects. A **computer model** is a representation of a real-life system or situation, such as the workings of a nuclear reactor or the evacuation of a football stadium.

Simple models can be built in a spreadsheet. A spreadsheet model could be used to plan a school prom. To make sure it came in on budget the spending on food, drinks, entertainment, and the price of tickets could be varied.

A spreadsheet can be used as a modelling tool. The **model** is controlled by a set of rules introduced by **formulae**. These rules can be changed easily to vary the model and, for example, provide information about running costs and profit margins.

Spreadsheets are used to store information and data. Once you have your information in a spreadsheet you can run powerful calculations and make charts.

Key Vocabulary

Axis labels	A label for a graph's horizontal or vertical axis that explains what the value relates to.
Cell	An individual spreadsheet box where you enter data.
Cell reference	Names of individual cells (A5 for example).
Column	Cells that go down the spreadsheet page.
Computer model	Predicts and investigates how real-life devices or processes might behave in different situations.
Data	Values, typically letters or numbers.
Format	The appearance of a document, including the fonts, colours, size and rotation.
Formula	Makes automatic calculations that update when the data does.
Function	Makes more complex calculations.
Row	Cells that go across the spreadsheet page.
Spread-sheet	A piece of software used to manipulate data, often used in modelling.

Advantages of using spreadsheets

Using a spreadsheet rather than a calculator or pen and paper offers the following advantages:

More effective data handling

Formulae can be used to instantly recalculate totals. For example, if the builder changed his call-out charge, the total cost would be instantly recalculated taking the change into account.

- You can carry out **"what if?" investigations**. For example, the grocer could increase his prices to see the effect on sales and the builder could increase his hourly charge to see the effect on his daily total.
- The information can be presented in different ways. For example, the grocer could produce a **graph** of fruit and vegetable sales by choosing the ranges A2:A8 and E2:E8 in order to make the graph.
- It is **easy to make these changes**, save your work and print it out again.

More flexible presentation

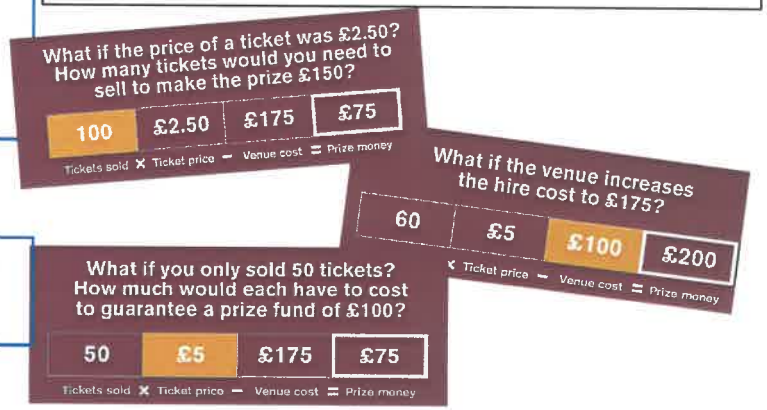
- Alter **column** widths and easily delete or add columns and **rows**.
- Underline, embolden text and use different fonts and graphics.
- Justify your data to the left, centre or right.
- Control the types of numbers you enter - for example you can choose percentage, currency or set the number of decimal places.

Limitations of computer models

A model is only as good as the rules used to create it. A mistake could have been made by whoever wrote the model and not every situation might have been considered - both of these issues could cause the model to give incorrect answers.

Modelling: what if?

Modelling gives you the chance to test certain scenarios out before they happen. These are commonly known as 'what if' questions.



Knowledge Organiser: Scratch

What is Scratch?

Summary
Scratch is a visual programming language, designed for people who have never done any programming before. Its a very good tool to learn the basics of coding.

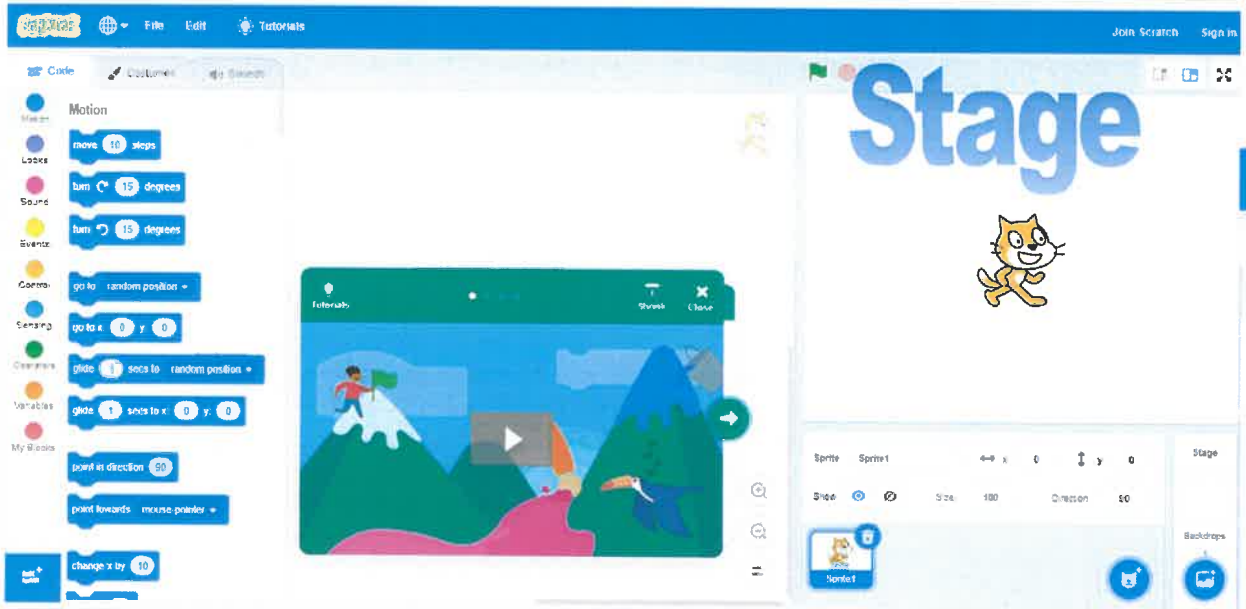
With Scratch, you can program your own interactive games, and animations. Scratch helps you to learn coding in a visual colour coded way and see how the blocks of coloured code fit together to make a working program. It also lets you learn about more complicated coding concepts such as iteration and selection in an accessible way.

Scratch is an online coding program—www.scratch.mit.edu used widely in the uk and usa to learn how to code.

Category	Notes
Motion	Moves sprites, changes angles and position
Looks	Controls the visuals of the sprite
Sound	Plays audio files and effects
Events	Event handlers
Control	Conditionals and loops etc.

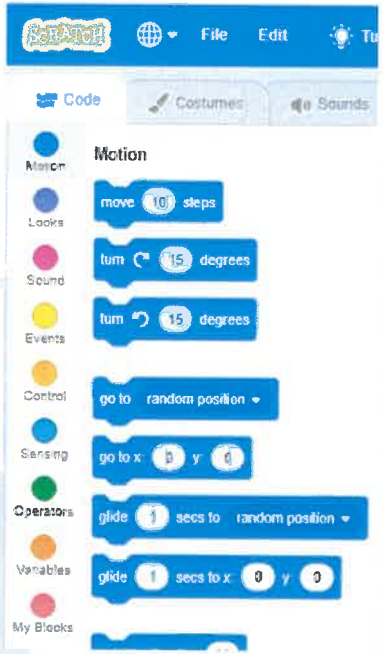
Category	Notes
Sensing	Sprites can interact with the surroundings
Operators	Mathematical operators, comparisons
Variables	Variable and List usage and assignment
My Blocks	Custom procedures

Scratch User Interface



The Scratch interface has **three main sections: a *stage area*, *block palette*, and a coding area** to place and arrange the blocks into runnable scripts. Users may also create their own code blocks and they will appear in "My Blocks".

With a sprite selected at the bottom of the **staging area**, blocks of **commands** can be applied to it by dragging them from the block palette into the coding area. The Costumes tab allows users to change the look of the sprite in order to create various effects, including animation. The Sounds tab allows attaching sounds and music to a sprite.



The table above shows the categories of the programming **blocks:**

When creating sprites and backgrounds, users can draw their own **sprite** manually, choose a Sprite from a library, or upload an existing image.

There are **three tabs** to create your program on the coding area —Code, Costumes and Sounds

The example here is coding the **motion** of the sprite

Knowledge Organiser: Designing an Algorithm

Designed an Algorithm

Before designing an algorithm it is important to first understand what the problem is. Algorithms can be designed using pseudocode or a flowchart, and the standard notations of each should be known.

An algorithm is a plan, a logical step-by-step process for solving a problem. Algorithms are normally written as a flowchart or in pseudocode.

The key to any problem-solving task is to guide your thought process. The most useful thing to do is keep asking 'What if we did it this way?' Exploring different ways of solving a problem can help to find the best way to solve it.

Understanding the problem

Before an algorithm can be designed, it is important to check that the problem is completely understood. There are a number of basic things to know in order to really understand the problem:

What are the **inputs** into the problem?

What will be the **outputs** of the problem?

In what order do **instructions** need to be carried out?

What decisions need to be made in the problem?

Are any areas of the problem repeated?

Pseudocode

Most programs are developed using programming languages. These languages have specific syntax that must be used so that the program will run properly. Pseudocode is not a programming language, it is a simple way of describing a set of instructions that does not have to use specific syntax.

Flowcharts

A flowchart is a diagram that represents a set of instructions. Flowcharts normally use standard symbols to represent the different types of instructions. These symbols are used to construct the flowchart and show the step-by-step solution to the problem.

Name	Symbol	Usage
Start or Stop		The beginning and end points in the sequence.
Process		An instruction or a command.
Decision		A decision, either yes or no.
Input or Output		An input is data received by a computer. An output is a signal or data sent from a computer.
Connector		A jump from one point in the sequence to another.
Direction of flow		Connects the symbols. The arrow shows the direction of flow of instructions.

Key Vocabulary

Algorithm	A sequence of logical instructions for carrying out a task. In computing, algorithms are needed to design computer programs.
Condidtion	In computing, this is a statement or sum that is either true or false. A computation depends on whether a condition equates to true or false.
Flowchart	A diagram that shows a process, made up of boxes representing steps, decision, inputs and outputs.
Input	Data which is inserted into a system for processing and/or storage.
Instruction	A single action that can be performed by a computer processor.
Iteration	In computer programming, this is a single pass through a set of instructions.
Loop	A method used in programming to repeat a set of instructions.
Notation	A system of written symbols or graphics used to represent something in order to aid communication and understanding.
Output	Data which is sent out of a system.
Program	Sequences of instructions for a computer.
Programming language	A language used by a programmer to write a piece of software.
Pseudocode	Also written as pseudo-code. A method of writing up a set of instructions for a computer program using plain English. This is a good way of planning a program before coding.
Selection	A decision within a computer program when the program decides to move on based on the results of an event.
Syntax	Rules governing how to write statements in a programming language.

Knowledge Organiser: Algorithms—Sequencing

Sequencing

When designing algorithms, it is important to make sure that all the steps are presented in the correct order. This is known as sequencing, and can be displayed in pseudocode or flowcharts.

Sequencing is the specific order in which instructions are performed in an algorithm.
Each step is an instruction to be performed. Sequencing is the order in which the steps are carried out.

It is crucial that the steps in an algorithm are performed in the right order - otherwise the algorithm will not work

Why is Sequencing Important?

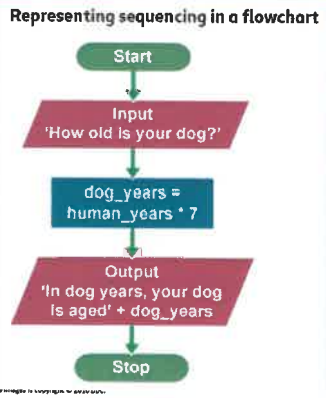
Complex algorithms may have hundreds, if not thousands, of steps. It is critical to make sure all steps in the algorithm are in the correct sequence before programming begins. Once programmed, trying to find an instruction in the wrong sequence can be extremely difficult.

Representing Sequencing — Pseudocode

Writing in pseudocode is rather like writing in a **programming language**. Each step of the algorithm is written on a line of its own, in sequence. In pseudocode, an algorithm would look like this:

```
OUTPUT 'How old is your dog?'
INPUT user inputs their dog's age in human years
STORE the user's input in the human_years variable
dog_years = human_years * 7
OUTPUT 'In dog years, your dog is aged' + dog_years
```

Representing Sequencing — Flowcharts



A Flowchart Algorithm will look like this:



Key Vocabulary

Algorithm	A sequence of logical instructions for carrying out a task. In computing, algorithms are needed to design computer programs.
Flowchart	A diagram that shows a process, made up of boxes representing steps, decision, inputs and outputs.
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Sequence	In computer programming, this is a set of instructions that follow on from one another.

Knowledge Organiser: Scratch

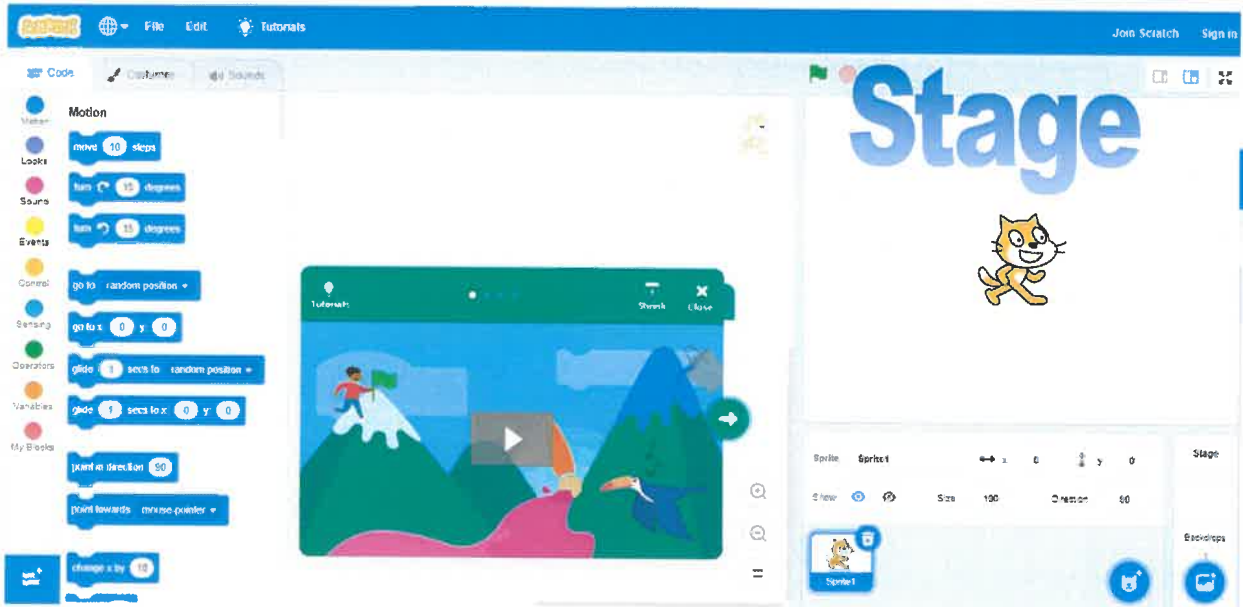
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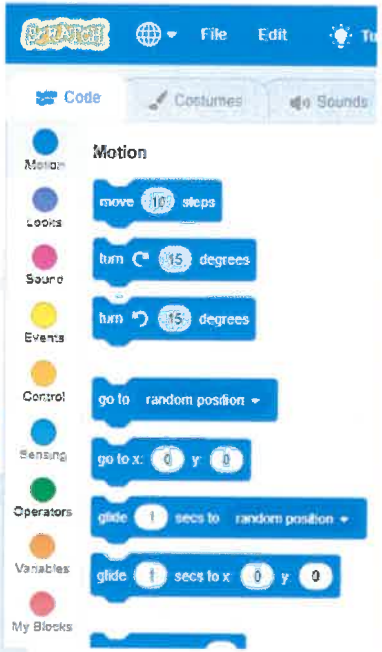


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Knowledge Organiser: Computational Thinking

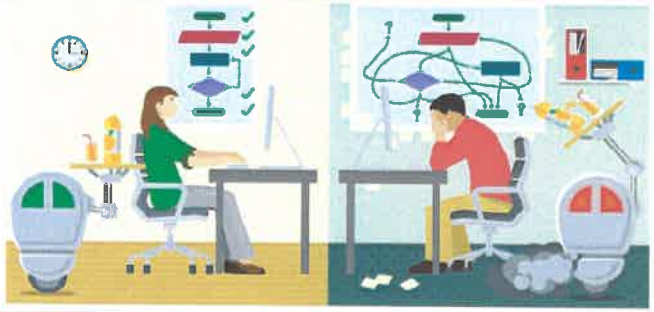
What is Computational Thinking

Computational thinking allows us to take a complex problem, understand what the problem is and develop possible solutions. We can then present these solutions in a way that a computer, a human, or both, can understand.

The Four Cornerstones of Computational Thinking are: Decomposition, Pattern Recognition, Abstraction and Algorithms

Decomposition

Decomposition is one of the four cornerstones of Computer Science. It involves breaking down a complex problem or system into smaller parts that are more manageable and easier to understand. The smaller parts can then be examined and solved, or designed individually, as they are simpler to work with.



Pattern Recognition

When we decompose a complex problem we often find patterns among the smaller problems we create. The patterns are similarities or characteristics that some of the problems share.

Pattern recognition is one of the four cornerstones of Computer Science. It involves finding the similarities or patterns among small, decomposed problems that can help us solve more complex problems more efficiently.

Abstraction

Once we have recognised patterns in our problems, we use abstraction to gather the general characteristics and to filter out of the details we do not need in order to solve our problem.

Abstraction is the process of filtering out – ignoring - the characteristics of patterns that we don't need in order to concentrate on those that we do. It is also the filtering out of specific details. From this we create a representation (idea) of what we are trying to solve.

Key Vocabulary

Abstraction	The process of separating and filtering out ideas and specific details that are not needed in order to concentrate on those that are needed.
Algorithm	A sequence of logical instructions for carrying out a task. In computing, algorithms are needed to design computer programs.
Decomposition	The breaking down of a system into smaller parts that are easier to understand, program and maintain.
Pattern Recognition	Finding similarities and patterns in order to solve complex problems more efficiently.
Program	Sequences of instructions for a computer.
Programming	The process of writing computer software.

Algorithms

An algorithm is a plan, a set of step-by-step instructions to resolve a problem. In an algorithm, each instruction is identified and the order in which they should be carried out is planned.

What is an algorithm?

Algorithms are one of the four cornerstones of Computer Science. An algorithm is a plan, a set of step-by-step instructions to solve a problem. If you can tie shoelaces, make a cup of tea, get dressed or prepare a meal then you already know how to follow an algorithm.

Evaluating Solutions

Before solutions can be programmed, it is important to make sure that it properly satisfies the problem, and that it does so efficiently. This is done through evaluation.

Evaluation is the process that allows us to make sure our solution does the job it has been designed to do and to think about how it could be improved.

Failure to evaluate can make it difficult to write a program. Evaluation helps to make sure that as few difficulties as possible are faced when programming



Knowledge Organiser: Digital Literacy—Online Safety

Malware

This is malicious software which is often installed on a computer without the users knowledge. The **Malware** is often downloaded form an unknown email attachment or form poorly protected websites. Once a computer is infected with Malware is can cause harm by deleting or sharing data and gaining unauthorised access to personal data. There are different types of Malware:

Virus—This is designed to copy and spread itself to oth-

Phishing

Phishing is when you are tricked into doing something online. Perhaps giving away user names and passwords, bank details. These are usually emails or links to fake websites and they can be very convincing and hard to spot that the site is fake.

Criminals are becoming increasingly sophisticated and their websites and emails can seem very realistic, especially to the elderly or to someone who is a less experi-

Trolling

Its not always easy to find out who has left a message or comment on a social media post. Sometimes people pretend to be someone they are not. Some who does this is called a Troll and this activity of leaving nasty mes-



Cyber bullying

Those who use technology to intimidate and bully others online. This can be on a computer, a laptop, a tablet computer or a smartphone.

There are many different forms that Cyberbullying can take. This could be posts on a social media site or messages directly to the victim on email or text. T

he **Cyber bully** aims to cause harm, distress and wants

Firewall

A **Firewall** monitors communications going into and out of a computer through the internet. It looks for Malware, any of these communications are blocked by the firewall

Anti-Virus Software

and prevents the Malware from infecting the computer.

Anti-Virus Software protects the computer from **Malware** such are viruses and spyware. The Antivirus software will scan the computer foe Malware.

If any Malware is found the **Anti-Virus** software will safely

Staying Safe

Its important to be I control of the information they give out online. This is the best way to stay safe online.

You should never give out your telephone number, address, school, or accept a friend request from someone who says they know one of your friends, as this may not be true.

Also always be cautious about what you say when you're online. Never agree to meet someone you've only known online.

You can get help from:

BBC Website

Childline

Key Vocabulary

Anti-virus	Anti-virus software scans all forms of storage devices for viruses (programs harmful to computers) and, if found, attempts to remove them.
Cyberbullying	The bullying of another person using the internet, mobile phones and other digital devices.
Downloading	To copy a file from the internet onto your computer or device.
Firewall	An application that prevents unauthorised connections to and from the Internet.
Malware	Software that is designed to cause harm or damage to a computer. This includes viruses that might damage files, adware that causes pop-ups, and spyware that collects and shares login details.
Phishing	An attempt to gain personal information about someone by way of deception, eg sending an email pretending to be from their bank asking them for their bank details.
Program	Sequences of instructions for a computer.
Trojan	Malware that appears legitimate, but performs some malicious activity when it is run.
Troll	A derogatory name taken from the troll character in folklore and now used as a term for a person who posts offensive messages online.
Zombie	Malware that takes over a computer in order to perform some malicious task.



Knowledge Organiser: Digital Literacy

Summary

Behaviours such as **altering computer data without permission**, **hacking**, **cyberbullying** and **trolling** are considered unethical and harmful in relation to **computer systems.**

Stay safe from **phishing** by deleting unknown email immediately. Do not follow any links contained in the **email**. Instead, **go to the website directly**, and try to log in there.

There are a number of ways to protect against **malware:** install antivirus software and use firewall. Show caution by not opening emails from senders who you do not recognise and not installing **programs downloaded illegally.**

The easiest way to stay safe online is to stay in control of **personal information** given out.

Resizing images and **compressing files** reduces the upload and download time when sending email.

File Explorer is a software application for managing your files, searching them and navigating around them.

Always choose a **password** that's difficult for someone else to guess. Use a mixture of UPPERCASE and lowercase letters, numbers and symbols.

Key Vocabulary

Attachment	A file that is sent with an email.
Anti-virus	Anti-virus software scans all forms of storage devices for viruses and, if found, attempts to remove them.
Computer system	Computer system is one that is able to take a set of inputs, process them and create a set of outputs.
Cyberbullying	Cyberbullying involves sending offensive texts or emails, posting lies or insults on social networking sites and sharing embarrassing videos or photos online.
File sharing	The act of sharing files over the internet.
Hack	Gaining unauthorised access to a computer.
Malware	Malicious software created to damage or gain illegal access to computer systems.
Phishing	Trying to trick someone into giving out information over email is called 'phishing'.
Troll	A derogatory name used as a term for a person who posts offensive messages online.

Email is short for 'electronic mail'

Advantages of using email

- Can send to multiple recipients at once
- Can send attachments
- Sent instantly at any time
- Can request a receipt that the email has been read
- Can send and receive email from any web enabled device

Disadvantages

- Spam Viruses Phishing
- Need an Internet connection
- Your message can only be read when the recipient next logs in and checks their mail

Staying safe online

Never disclose

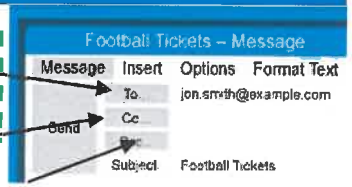
your name telephone number address or school

Never accept someone as a 'friend' on social media simply because they claim to know another friend of yours. **Always be cautious about what you say online.**

Never agree to meet anyone in person that you've only known online. If somebody does start sending you messages that offend or upset you, tell an adult that you trust.

Sending an email

To
– enter it here if this email is directly addressed to this person.



Carbon copy (Cc)
- enter it here if the email needs to be seen by this person but is not addressed to them.

Blind Carbon copy (Bcc)
– enter it here to prevent other recipients knowing you've sent it to this person.

Visit these websites for advice

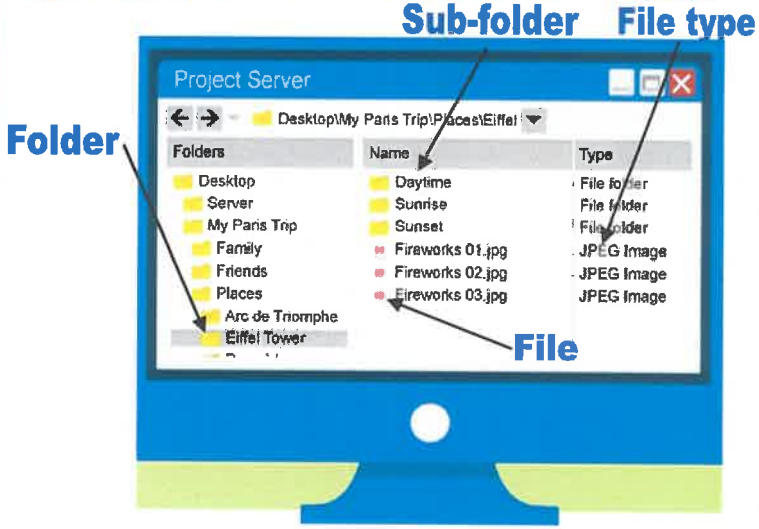
Webwise

THINK U KNOW

UK Safer Internet Centre

ChildLine 0800 1111

Folders, sub-folders & files



Knowledge Organiser: Computer Crime & Cyber Security

Summary

Malware is a general term that describes lots of different programs that try to do something unwanted to your computer. Malware is made to stop your device from running properly and sometimes to steal your information.

Anti-malware software is designed to find and stop malware from damaging your computer or a network. To protect your computer you need to install **anti-malware** software and run regular scans.

When you are online you need to watch out for **phishing** and **spam emails** and protect your private information. **Phishing** emails are trying to trick someone into giving out information over email. **Spam emails** can contain **malware**.

Smartphones and mobile devices allow for photos, videos and your location to be shared instantly on the internet. **Be careful what you get up to in public as anyone might have a smartphone pointed at you.** Do not post photos or videos of other people online without their permission.

Key Vocabulary

Backup	A copy of important files that is kept separately in case your original files are lost or damaged.
Chat room	Accessed on the internet, users can meet to chat in real-time, messages are typed out but voice chat rooms exist too.
Copyright	A set of rights that prevents people copying and distributing a piece of work without the copyright holder's permission.
Data	Values, typically letters or numbers.
File sharing	The act of sharing files over the internet.
Firewall	An application that prevents unauthorised connections to and from the Internet.
Hack	Gaining unauthorised access to a computer.
Information	Data that has meaning, not just a number or a letter.
Licence	A legal agreement between the company who published the software and the end user covering areas such as copyright.
Malware	Malicious software created to damage or gain illegal access to computer systems.

Phishing emails are trying to trick someone into giving out information over email.

? What to look out for in a phishing email ?

The greeting is not

Poor spelling and grammar

Forged link

Sense of

Request for personal information

The sender's address is often a variation on a genuine address

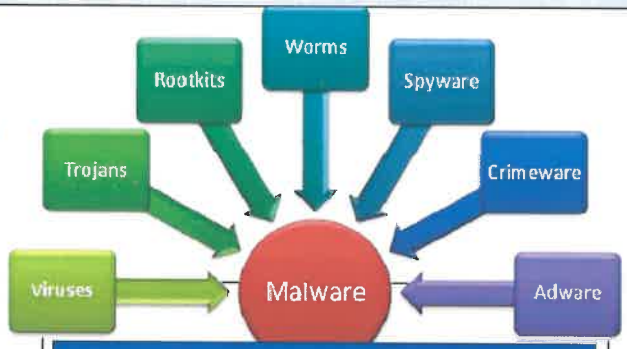
Spam emails offer all kinds of things like money and prizes and can contain malware too.

Ways to reduce spam:

Use a spam filter - most email clients try to stop spam from reaching you by using a spam filter.

Do not give your email address out – if you don't trust the website or if supplying your email address is optional, don't give it to them.

Keep an eye out for tick boxes – when you sign up to a website, it might try to sign you up to its newsletter.



Malware is software that can harm devices

Typical actions of malware include deleting or modifying files.

Spyware—secretly monitors user actions, e.g. key presses, and sends information to the hacker. Some spyware can even use your webcam without your knowledge.

Viruses—spreads through normal programs and might slow down your device or change your applications and documents.

Worms— spread from device to device and copy themselves hundreds of times. A worm might copy itself onto your email account and then send a copy to all of your email contacts!

Trojan horse— pretends it will be a useful and safe program, when actually it will try to attack your device.

Adware—displays adverts while it is running; some can serve as spyware, gathering information about you from your hard drive, the web sites you visit, or your keystrokes.

Staying safe online

Never disclose your name telephone number address or school

It's wise not to share your location. Especially on websites and apps that are accessible by anyone.



Never accept someone as a 'friend' on social media simply because they claim to know another friend of yours.

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