

Key Vocabulary...



Computational Thinking	Thinking in a logical way.
Abstraction	Picking the important bits of information out of a problem.
Decomposition	Breaking a bigger problem into subtasks, making it easier to complete.
Algorithm	A step-by-step set of precise instructions
Linear Search	A searching algorithm that checks each item in a list until it finds what it is looking for. Can be very slow.
Binary Search	A searching algorithm that looks for an item in a sorted list. It works by comparing it with the middle value and deciding if it is higher or lower. It repeats this process until the item is found.
Bubble Sort	An algorithm used to sort out a list by comparing two values next to each other and swapping them over if needed.
Merge Sort	Divide and conquer algorithm where the list is split and then merged back together.
Insertion Sort	A sorting algorithm that move the item along a list until the item is put in the correct position in the list.
Sequence	Tasks that are carried out one after another.
Selection	A decision has to be made before the program flow can continue.
Iteration	Tasks are repeated in a loop.

Picture This...

Linear Search



Figure 1 - Linear search example

Binary Search

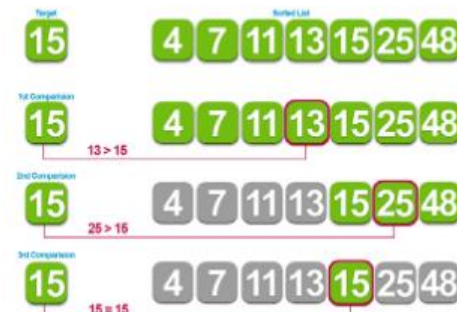
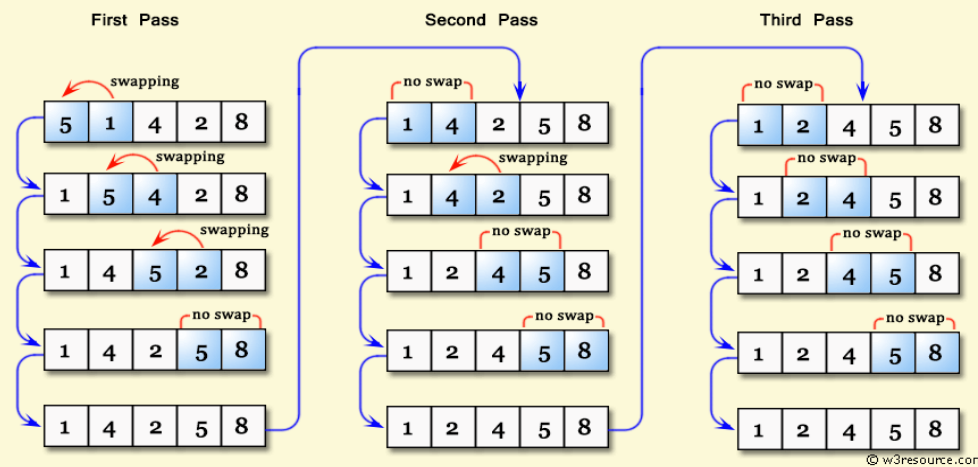


Figure 2 - Binary search example

Linear searches can be slower than a binary search if the item is further down the list as it will have to check through all of the items in the list to find the target.

Bubble Sorting



Bubble sorts check each item next to each other and then swap them if they are smaller. In a Bubble sort the largest number will always be at the end of the list. You may need to go through the list more than once – this is known as a Pass

Deep Learning

Sorted data is easier for a computer to work with. You can write this all of these algorithms out in Python or another high-level code on a computer to see how they work. There are a lot of YouTube tutorials available to watch and then you can code along with them.

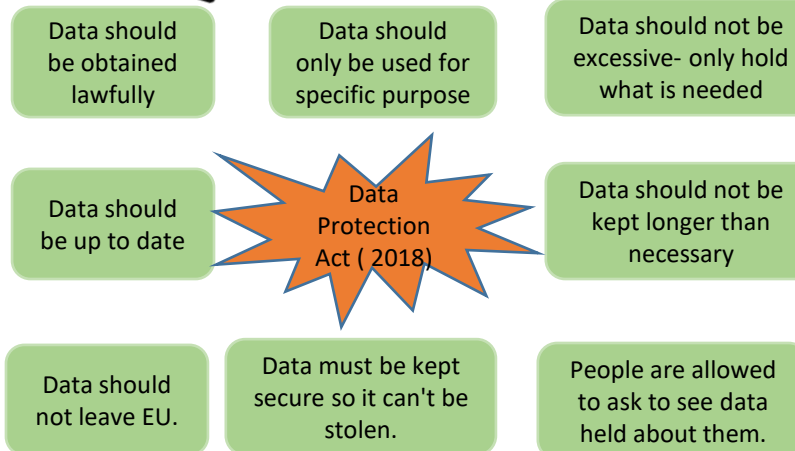
Homework – Research the difference between symmetric encryption and asymmetric encryption.

Key Vocabulary...

Ethical Issue	Something which might not be morally correct.
Environmental Issue	How computers can affect the natural world through e-waste.
Cultural issue	How different groups of people might be affected by an issue.
Stakeholder	Someone has an interest in a business or issue.
Digital Divide	The gap between people who have access to technology and those who don't.
No n-renewable resources	Resources that once used can't be used again.
Computer Legislation	Rules that are set out to govern how computers are used.
Data Protection Act (2018) GDPR – EU	A set of laws that controls how people's personal data is held.
Freedom of Information Act (2000)	Allows members of the public to access data held about them from organisations.
Computer Misuse Act(1990)	Laws which stop users using computers illegally such as hacking.
Copyright, Designs and Patents Act (1988)	Law to protect the intellectual property. This stops someone's idea, such as a game design being stolen.
Creative Commons License	A license which lets you use someone's work as long as they have put a CC license on the work.



Picture This...



Creative Commons License

Sometimes people who created work will allow others to use it under Creative Commons license. There are 4 different licenses



Questions

1. Which law would protect against hacking?
2. Explain what is meant by the digital divide and give an example.
3. Which legislation allows people to share and adapt other people's work?
4. What is the purpose of the Data Protection Act?
5. What is meant by the term stakeholder?

Remember - legislation

Computer Misuse Act(1990)

Makes it illegal to.....

1. Gain unauthorised access to computer systems such as files.
2. Steal material that you don't have access to.
3. Break into a computer system and deliberately destroy files.



Deeper Learning...

Computer technology is changing our lives as communication becomes more instant and more data is held about us. Social networks allow people to publish and upload thoughts, stories and images on a wider scale. Medical advances have happened too, and we can monitor our bodies and transmit the data online. AI is now a common experience with driverless cars and automated technology being developed. Do you think that this anything we should worry about?



Homework – Many organisations provide free public access to a wireless network. Explain THREE ethical, legal or data privacy issues that an organisation should be aware of when allowing this access.