



Year 11

Algorithms

- To be able to select, justify and apply appropriate techniques for data structures and algorithms.

Programming

- To be able to describe, explain and implement the systematic development of high-quality solutions.
- To be able to use techniques in programming languages.

Data

- To be able to perform calculations and conversions of binary using a wide range of operands and number systems.
- To be able to design and implement an effective relational database independently for a range of purposes.
- To know a wide range of system security vulnerabilities and how to avoid them.

Computer

- To be able to design, implement and document an effective solution using appropriate hardware and software.

Communication

- To understand in detail how to configure the hardware, properties and protocols for both LAN and WAN networks.
- To be able to select suitable topologies.

Information Technology

- To be able to explain emerging technologies and their implications for future use of ICT.

Digital literacy

- To be able to comment critically on use of computing, including economic, social, legal and ethical issues.

Year 10

Algorithms

- To be able to design a solution to a problem that depends on recursion.

Programming

- To be able to design and write nested modular programs that using sub-routines wherever possible.
- To understand the difference between 'While' loop and 'For' loop, which uses a loop counter.

Data

- To perform operations using bit patterns e.g. conversion between binary and hexadecimal, binary subtraction etc.
- To be able to explain the need for data compression, and performs simple compression methods.
- To know a wide range of system security vulnerabilities and how to avoid them.

Computer

- To understand and explain Moore's Law.
- To understand explain multitasking by computers.

Communication

- To understand hardware associated with networking computer systems, including WANs and LANs.

Information Technology

- To be able to document user feedback, identify improvements and make refinements to a solution.

Digital literacy

- To be able to recognise that data on the internet requires careful protection of online identity and privacy.



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Pathway 8

Year 9

Algorithms

- To be able to represent and explain algorithms using structured language i.e. procedures.

Programming

- To understand the effect of the scope of a variable e.g. a local variable can't be accessed from outside its function.
- To be able to apply a modular approach to error detection and correction.

Data

- To understand the relationship between binary and electrical circuits, including Boolean logic.
- To understand how and why values are data typed in many different languages when manipulated within programs.
- To know a wide range of system security vulnerabilities and how to avoid them.

Computer

- To understand that processors have instruction sets and that these relate to low-level instructions carried out by a computer.

Communication

- To know the purpose of the hardware and protocols associated with networking computer systems.

Information Technology

- To understand the properties of media when importing them into digital artefacts.

Digital literacy

- To use technologies and online services securely and know how to identify and report inappropriate conduct.

Year 8

Algorithms

- To recognise that some problems share the same characteristics and use the same algorithm to solve both.

Programming

- To understand the difference between and use appropriately, procedures and functions including use of parameters.
- To be able to detect and correct syntactical errors.

Data

- To understand how numbers, images, sounds and character sets use the same bit patterns.
- To be able to perform simple operations using bit patterns e.g. binary addition.
- To understand the relationship between resolution and colour depth, including the effect on file size.
- To know a wide range of system security vulnerabilities and how to avoid them

Computer

- To understand the functions of the CPU including the fetch- execute cycle and how data is stored in memory.

Communication

- To understand how to construct static web pages using HTML and CSS.
- To know the names of basic network hardware and protocols.

Information Technology

- To be able to evaluate the trustworthiness of digital content and consider the usability for a known audience.

Digital literacy

- To be able to use technologies and online services securely.
- To know how to identify and report inappropriate conduct.



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Pathway 8

Year

7

Algorithms

- To understand that iteration is the repetition of a process such as a loop.

Programming

- To understand a textual language, including using standard libraries when programming.
- To be able to use a range of operators and expressions e.g. Boolean, and apply them in the context of program control.

Data

- To understand that digital computers use binary to represent all data.
- To understand threats to data and forms of attack.

Computer

- To understand the function of the main internal parts of basic computer architecture.
- To understand CPU components and their functions and how they relate to memory

Communication

- To understand the purpose of protocols and how packet switching is used.
- To understand basic network topologies including star and mesh.

Information Technology

- To be able to evaluate the appropriateness of digital devices, internet services and application software.

Digital literacy

- To use technologies and online services securely, and know how to identify and report inappropriate conduct.