



Golden Threads

To be familiar with the hardware and software components that make up a computer system
To understand the key principles behind the organisation of computer networks
Developing the skill of computer programming – designing, reading, writing and debugging programmes

Enrichment

After school coding support club

Review and Evaluation

Summer 2026

	Topics & Substantive Knowledge	Disciplinary Knowledge	Assessment	Misconceptions	Key Vocabulary	Knowledge Tracking
Term 1	<p>4.1 Networks</p> <p>6 Problem solving with programming</p> <p>4.1.1 understand why computers are connected in a network</p> <p>4.1.2 understand different types of networks (LAN, WAN)</p> <p>4.1.3 understand how the internet is structured (IP addressing, routers)</p> <p>4.1.4 understand how the characteristics of wired and wireless connectivity impact on performance (speed, range, latency, bandwidth)</p> <p>4.1.5 understand that network speeds are measured in bits per second (kilobit, megabit, gigabit) and be able to construct expressions involving file size, transmission rate and time)</p>	<p>6.6.1 be able to write programs that use pre-existing (built-in, library) and user-devised subprograms (procedures, functions)</p> <p>6.6.2 be able to write functions that may or may not take parameters but must return values, and procedures that may or may not take parameters but do not return values</p> <p>6.6.3 understand the difference between and be able to write programs that make appropriate use of global and local variables</p>	<p>5 question MCQ retrieval at the start of each lesson</p> <p>Term 1 Week 7 short answer questions</p>	<p>The Internet is one network rather than a series of linked networks</p> <p>The role of protocols to ensure that different devices are able to communicate</p>	<p>Bluetooth</p> <p>Bus</p> <p>Client server model</p> <p>Ethernet</p> <p>Full mesh</p> <p>Hub</p> <p>LAN – Local Area Network</p> <p>Network</p> <p>NIC – Network Interface Card</p> <p>Partial Mesh Network</p> <p>Peer to peer</p> <p>Ring network</p> <p>Router</p> <p>Server</p> <p>Star network</p> <p>Switch</p> <p>Topology</p> <p>WAN – Wide Area Network</p> <p>WAP – Wireless Access Point</p> <p>WiFi</p>	



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Term 2	<p>4.1 Networks</p> <p>6 Problem solving with programming</p> <p>4.1.6 understand the role of and need for network protocols (Ethernet, Wi-Fi, TCP/IP, HTTP, HTTPS, FTP) and email protocols (POP3, SMTP, IMAP)</p> <p>4.1.7 understand how the 4-layer (application, transport, internet, link) TCP/IP model handles data transmission over a network</p> <p>4.1.8 understand characteristics of network topologies (bus, star, mesh)</p>	<p>6.6.1 be able to write programs that use pre-existing (built-in, library) and user-devised subprograms (procedures, functions)</p> <p>6.6.2 be able to write functions that may or may not take parameters but must return values, and procedures that may or may not take parameters but do not return values</p> <p>6.6.3 understand the difference between and be able to write programs that make appropriate use of global and local variables</p>		<p>The role of protocols to ensure that different devices are able to communicate</p> <p>Computers are always negative for the environment</p>	<p>Data packet</p> <p>Encapsulation</p> <p>Ethernet</p> <p>FTP – File Transfer Protocol</p> <p>Handshake</p> <p>IP address</p> <p>IPv4 – Internet Protocol version 4</p> <p>IPv6 – IP version 6</p> <p>IMAP – Internet Message Access Protocol</p> <p>MAC (Media Access Control) address</p> <p>Packet switching</p> <p>POP3 – Post Office Protocol version 3</p> <p>Protocol</p> <p>SMTP – Simple Mail Transfer Protocol</p> <p>TCP/IP – Transmission Control Protocol / Internet Protocol</p>	



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Term 3	<p>5.2 Ethical and legal</p> <p>6 Problem solving with programming</p> <p>5.2.1 understand ethical and legal issues associated with the collection and use of personal data (privacy, ownership, consent, misuse, data protection)</p> <p>5.2.2 understand ethical and legal issues associated with the use of artificial intelligence, machine learning and robotics (accountability, safety, algorithmic bias, legal liability)</p> <p>5.2.3 understand methods of intellectual property protection for computer systems and software (copyright, patents, trademarks, licencing)</p>	<p>6.3.1 be able to write programs that make appropriate use of primitive data types (integer, real, Boolean, char) and one-dimensional structured data types (string, array, record)</p> <p>6.3.2 be able to write programs that make appropriate use of variables and constants</p> <p>6.3.3 be able to write programs that manipulate strings (length, position, substrings, case conversion)</p>	<p>5 question MCQ retrieval at the start of each lesson</p> <p>Mock exam (Paper 1 and Paper 2)</p>	<p>AI is either completely negative (influenced by media such as The Terminator) or positive</p> <p>There are no laws that govern the Internet</p>	<p>Algorithmic bias</p> <p>AI – Artificial Intelligence</p> <p>Computer Misuse Act</p> <p>Computer, Designs and Patents Act</p> <p>Create Commons</p> <p>Data Protection Act</p> <p>Encryption</p> <p>Freedom of Information Act</p> <p>License</p> <p>Open source</p> <p>Proprietary</p>	
Term 4	<p>1.3 Truth tables</p> <p>3.3 Programming languages</p> <p>6 Problem solving with programming</p> <p>1.2.6 understand how standard algorithms (bubble sort, binary search) work</p> <p>1.3.1 be able to apply logical operators (AND, OR, NOT) in truth tables with up to three inputs to solve problems</p> <p>3.3.1 understand the characteristics and purposes of low-level and high-level programming languages</p> <p>3.3.2 understand how an interpreter differs from a compiler in the way it translates high-level code into machine code</p>	<p>1.2.4 be able to determine the correct output of an algorithm for a given set of data and use a trace table to determine what value a variable will hold at a given point in an algorithm</p> <p>6.1.5 be able to identify, locate and correct program errors (logic, syntax, runtime)</p>	<p>5 question MCQ retrieval at the start of each lesson</p> <p>Week 7 short answer questions</p>		<p>Assembler</p> <p>Assembly language</p> <p>Compiler</p> <p>Interpreter</p> <p>High level languages</p> <p>Low level languages</p> <p>Machine code</p> <p>Opcode</p> <p>Translator</p> <p>Virtual machine</p> <p>Circuit</p> <p>Logic gate</p>	5.2 links to 5.1
Term 5	Exam Preparation					