Trinity Academy
Curriculum map – Computer Science

Intent

The computer science curriculum is structured to guide students to solve problems using computational thinking. Computational thinking has four core tenets: abstraction, decomposition, pattern recognition and algorithmic thinking. Throughout the curriculum, students are continuously practising and mastering these tenets in order to solve complex problems and create intricate digital artefacts. Computational thinking prepares pupils for the 21st century economy by allowing students to approach problems in a logical fashion and decompose them into terms which a computer can understand.

Implementation

Key stage 3

	Autumn I	Autumn II	Spring I	Spring II	Summer I	Summer II
	Content	**Content**	**Content**	**Content**	**Content**	**Content**
Year 7	<u>How do we use computers</u> - How to use G-suite/Microsoft applications - How to use Google and keyboard shortcuts - How to use Google Classroom	<u>Computer Systems in the modern world</u> - The impact of computer in wider society (benefits and negatives) - Online safety - Ethical issues such as automation and driverless cars	<u>What is a computer</u> - What makes a computer system - Hardware and software - The role of the CPU - What data is	<u>Computational thinking and Scratch</u> - What computational thinking is - What an algorithm is - What programming is, and use of Scratch	<u>Scratch continued</u> - The three control structures - Continued application of control structures on Scratch - What a variable is	<u>Computers around us (Control systems)</u> - What a control system is - The benefits of control systems - The use of Micro:Bits to represent control systems

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Year 8	**Content**	**Content**	**Content**	**Content**	**Content**	**Content**
	Introduction to Python - How to input and output data on Python - Use of all three control structures on Python	Introduction to Python II - Continued use of Python to solve computational problems - What a syntax and logic error are - Count- and condition-controlled iteration	Computer Networks - What a computer network is - The difference between WAN and LAN - The impact of networks on society - How to stay safe online	Using Notepad++ - Notepad++ is used to create websites - We use <> brackets on Notepad++ - How to add images and tables to websites	Data representation and the CPU - All data that is inputted into a computer must be converted to binary - How different data is represented - Converting binary numbers to denary etc	Using Adobe suite - Use of the adobe suite to create a var.iety of digital artefacts i.e animation, posters, images
Year 9	**Content**	**Content**	**Content**	**Content**	**Content**	**Content**
	Advanced Flowcharts - Using flowcharts to represent computational problems - Accurately using the correct flowchart symbols - Use of nested selection	Flowcharts cont. & Data Representation - Knowledge of logic gates and their application - How data can be compressed - Continued use of flowcharts to represent computational problems	Advanced Python I - Further application of control structures using Python - The use of data structures such as lists to organise data	Advanced Python II - Continued use of Python to solve computational problems - Use of the random function	Computer Systems - The role of the CPU, and the different factors that affect its performance - What memory and storage is - The role of the operating system	Computer Systems II - Networks and what The Cloud is - What factors affect a network's performance - How networks can be organised

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Key Stage 4

Awarding body: OCR

	Autumn I	Autumn II	Spring I	Spring II	Summer I	Summer II
Year 10	**Content** <u>Fundamentals of Algorithms</u> - Use of flowcharts and pseudocode to represent algorithms - The use of trace tables to trace algorithms - The main steps of searching and sorting algorithms	**Content** <u>Fundamentals of programming</u> - What an array is and the use of lists on Python3 - How to create programs with defensive design considerations - The purpose of testing and use of IDEs - String handling	**Content** <u>Advanced programming</u> - Use of arrays, records and 2D arrays - The use of SQL to search for data - Use of external files in our programs - What a subroutine is and its application	**Content** <u>Python3</u> - Extended time to use Python3 to solve computational problems, including a longer challenge where this is appropriately planned and tested	**Content** <u>Computer Systems</u> - The different pieces of hardware in a computer and their purpose and operating systems - The different types of secondary storage and their strengths and weaknesses	**Content** <u>Data representation</u> - How the computer represents different types of media - Binary math

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	Content	Content	Content	Content
Year 11	<u>Networks</u> - Hardware needed to connect to networks - The different modes of connection and common protocols and layers - Network security	<u>Ethical, legal, cultural and environmental impacts</u> - The impact of digital technology on wider society such as ethical and legal issues - Relevant legislation	Revision of all content in preparation for examination	Revision of all content in preparation for examination