Computing Progression Pathways – National Curriculum Expectations

Year/ Points	Computer Science	Information Technology	Digital Literacy
Year 5	Understands that algorithms are implemented on digital devices as programs. Designs simple algorithms using loops, and selection i.e. 'if' statements. Uses logical reasoning to predict outcomes. Detects and corrects errors i.e. debugging, in algorithms. Uses arithmetic operators, 'if' statements, and loops, within programs.	Recognises that a range of digital devices can be considered a computer, and can use a range of input and output devices. Recognises different types of data eg: text, number. Recognises that data can be structured in tables to make it useful. Navigates the web and can carry out simple web searches to collect digital content. Uses technology with increasing independence to purposefully organise digital content. Uses a variety of software to manipulate and present digital content: data and information. Shares their experiences of technology in school and beyond the classroom. Talks about their work and makes improvements to solutions based on feedback received.	Demonstrates use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online. Shows an awareness for the quality of digital content collected. Recognises what is acceptable and unacceptable behaviour when using technologies and online services.
Year 6 27 (4S) ***End of KS2 Expected Standard***	Designs solutions (algorithms) that use repetition and two-way selection i.e. 'if, then and else' Uses diagrams to express solutions. Uses logical reasoning to predict outputs, showing an awareness of inputs Creates programs that implement algorithms to achieve given goals. Declares and assigns variables. Uses post-tested loop e.g. 'until', and a sequence of selection statements in programs, including an: 'if, then and else' statement. Knows that computers collect data from various input devices, including sensors and application software. Understands the difference between hardware and application software, and their roles within a computer system. Understands the difference between the internet and internet service e.g. World Wide Web.	Understands the difference between data and information. Uses filters or can perform single criteria searches for information. Shows an awareness of, and can use a range of internet services e.g. VOIP (whats app/skype/face time) Collects, organises and presents data and information in digital content. Creates digital content to achieve a given goal through combining software packages and internet services to communicate with a wider audience Makes appropriate improvements to solutions based on feedback received, and can comment on the success of the solution	Makes judgements about digital content when evaluating and repurposing it for a given audience. Demonstrates responsible use of technologies and online services, and knows a range of ways to report concerns. Selects, combines and uses internet services. Understands the potential of information technology for collaboration when computers are networked

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Year 7 33 (5S) ***STG's Y7 Expectation*** 35 (5H) ***End of KS2 Mastery***	Shows an awareness of tasks best completed by humans or computers. Designs solutions by decomposing a problem and creates a sub-solution for each of these parts. Recognises that different solutions exist for the same problem. Understands the difference between, and appropriately uses 'if' and 'if, then and else' statements. Uses a variable and relational operators within a loop to govern termination. Designs, writes and debugs modular programs using procedures. Knows that a procedure can be used to hide the detail with sub-solution. Understands why and when computers are used and the main functions of the operating system. Understands how to effectively use search engines, and knows how search results are selected, including that search engines use 'web crawler programs'. Recognises and understands the function of the main internal parts of basic computer architecture. Understands the concepts behind the fetch-execute cycle. Understands the Von Neumann architecture in relation to the fetch- execute cycle, including how data is stored in memory. Understands how bit patterns represent numbers and images. Knows that computers transfer data in binary. Performs simple operations using bit patterns e.g. binary addition.	Performs more complex searches for information e.g. using Boolean and relational operators. Analyses and evaluates data and information, and recognises that poor quality data leads to unreliable results, and inaccurate conclusions. Knows the difference between physical, wireless and mobile networks. Recognises the audience when designing and creating digital content. Uses criteria to evaluate the quality of solutions, can identify improvements making some refinements to the solution, and future solutions. Knows that there is a range of operating systems and application software for the same hardware.	Makes judgements about digital content when evaluating and repurposing it for a given audience. Demonstrates responsible use of technologies and online services, and knows a range of ways to report concerns. Recognises ethical issues surrounding the application of information technology beyond school.

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Year 8 39 (6S) ***STG's Y8 Expectation***	Understands that iteration is the repetition of a process such as a loop. Recognises that different algorithms exist for the same problem. Represents solutions using a structured notation. Can identify similarities and differences in situations and can use these to solve problems (pattern recognition). Understands that programming bridges the gap between algorithmic solutions and computers. Has practical experience of a high-level textual language, including using standard libraries when programming. Uses a range of operators and expressions e.g. Boolean, and applies them in the context of program control. Selects the appropriate data types. Defines data types: real numbers and Boolean. Knows that digital computers use binary to represent all data. Understands how search engines rank search results. Understands how to construct static web pages using HTML and CSS. Understands the relationship between resolution and colour depth, including the effect on file size	Queries data on one table using a typical query language. Justifies the choice of and independently combines and uses multiple digital devices, internet services and application software to achieve given goals. Evaluates the trustworthiness of digital content and considers the usability of visual design features when designing and creating digital artefacts for a known audience. Designs criteria for users to evaluate the quality of solutions, uses the feedback from the users to identify improvements and can make appropriate refinements to the solution.	Recognises ethical issues surrounding the application of information technology beyond school. Uses technologies and online services securely, and knows how to identify and report inappropriate conduct. Identifies and explains how the use of technology can impact on society.