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| Progression through the three strands |
| Computing Strand | Year 1 | Year 2 | Expectation at the end of key stage |
| Computer Science | * Understand what an algorithm is and create simple linear algorithms.
* Understand that computers need precise instructions.
* Understand how to develop programs, avoid errors and make checks and changes.
* Create a simple program using Blubots (an environment that does not rely on text).
* Understand that computers have no intelligence and they can do nothing unless a program is executed.
* Recognise that all software executed on digital devices is programmed.
 | * Understand that algorithms are implemented on digital devices as programs.
* Design simple algorithms using loops, and selection i.e. if statements.
* Uses logical reasoning to predict outcomes.
* Detect and correct errors i.e. debugging, in algorithms.
* Recognise that a range of digital devices can be considered a computer.
* Understand how programs specify the function of a general purpose computer.
 | * Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.
* Create and debug simple programs.
* Use logical reasoning to predict the behaviour of simple programs.
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| Information Technology | * Recognise that digital content can be represented in many forms.
* Explain the different ways that digital content can communicate information.
* Obtain content from the world wide web using a web browser.
* Use software under the control of the teacher to create, store and edit digital content using appropriate file and folder names.
* Talks about their work and makes changes to improve it.
 | * Recognise different types of data: text, number.
* Appreciate that programs can work with different types of data.
* Recognise that data can be structured in tables to make it useful.
* Recognise that a range of digital devices can be considered a computer.
* Recognise and use a range of input and output devices.
* Navigate the web and carry out simple web searches to collect digital content.
* Use technology with increasing independence to purposefully organise digital content.
* Uses a variety of software to manipulate and present digital content: data and information.
* Share experiences of technology in school and beyond the classroom.
* Talk about their work and make improvements to solutions based on feedback received.
 | * Use technology purposefully to create, organise, store, manipulate and retrieve digital content.
* Recognise common uses of information technology beyond school.
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| Digital Literacy | * Understand the importance of communicating safely and respectfully online, and the need for keeping personal information private.
* Know what to do when concerned about content or being contacted.
* Know common uses of information technology beyond the classroom.
* Share their use of technology in school.
 | * Demonstrate use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online.
* Show an awareness for the quality of digital content collected.
 | * Use technology safely and respectfully, keeping personal information private.
* Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.
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| Computing Strand | Year 3 | Year 4 | Year 5 | Year 6 | Expectation at the end of key stage |
| Computer Science | * Design algorithms that use repetition and two-way selection i.e. if, then and else.
* Use diagrams to show algorithms.
* Use logical reasoning to predict outputs, showing an awareness of inputs.
* Create programs that implement algorithms to achieve given goals.
* Use variables.
* Use post-tested loop e.g. ‘until’, and a sequence of selection statements in programs, including an if, then and else statement.
* Know that computers collect data from various input devices, including sensors and application software.
* Understand the difference between hardware and application software, and their roles within a computer system.
* Understand the difference between the internet and internet service e.g. world wide web.
 | * Show an awareness of tasks best completed by humans or computers.
* Design solutions by decomposing a problem and creating a sub-solution for each of the parts.
* Recognise that different solutions exist for the same problem.
* Understand the difference between, and appropriately use if and if, then and else statements.
* Use variables within a loop.
* Design, write and debug codes.
* Know the different ways to create a code and how to make it the most efficient
* Understands why and when computers are used.
* Understands 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’.  | * 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 and

applies them in the context of program control. * Selects the appropriate data types.
 | * Defines data types.
* Knows that digital computers use binary to represent all data.
* Understands how bit patterns represent numbers and images.
* Knows that computers transfer data in binary.
* Understands the relationship between binary

and file size (uncompressed). * Recognises and understands the function of the main internal parts of basic computer

architecture.Understands the concepts behind the fetch-execute cycle. * Understands how search engines rank search results.
* Understands how to construct static

web pages using HTML and CSS.* Understands data transmission between digital

computers over networks, including the internet i.e. IP addresses and packet switching.**.** | * Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
* Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
* Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.
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| Information Technology | * Understands the difference between data and information.
* Knows why sorting data in a flat file can improve searching for 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.
* 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 e.g. blogging.Makes appropriate improvements to solutions based on feedback received, and can comment on the success of thesolution.  | * 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 futuresolutions. | * Queries data on one table using a typical query language.
* Knows that there is a range of operating systems and application software for the same hardware.

  | * Evaluates the appropriateness of digital devices, internet services and

application software to achieve given goals. * Designs criteria to critically evaluate the quality of solutions, uses the criteria to identify improvements and can make appropriate refinements to the solution.
 | * Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration.
* Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.
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| Digital Literacy | * Recognises what is acceptable and
* unacceptable behaviour when using
* technologies and online services.
 | * Makes judgements about digital content when evaluating and repurposing it for a given audience.
* Demonstrates responsible use of

technologies and online services, and knowsa range of ways to report concerns.* Selects, combines and uses internet services.
* Understands the potential of information

technology for collaboration when computersare networked.  | * Recognises ethical issues surrounding the

application of information technology beyondschool. | * 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.
 | * Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.
* Use technology safely, respectfully and responsibly.
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