

## Year 8 Progression Map

Year 8				
LEVEL	Programming	Data Representation	Hardware & Software	Creative Project
Topic Coverage	Algorithms Programming & Development	Data & Data Representation	Hardware & Processing Communication & Networks	Information Technology
L M H  L M H	<p>Designs solutions (algorithms) that use repetition and two-way selection i.e. if, then and else. <b>(AL)</b></p> <ul style="list-style-type: none"> <li>• Uses diagrams to express solutions. <b>(AB)</b></li> <li>• Uses logical reasoning to predict outputs, showing an awareness of inputs. <b>(AL)</b></li> </ul> <p>• Creates programs that implement algorithms to achieve given goals. <b>(AL)</b></p> <ul style="list-style-type: none"> <li>• Declares and assigns variables. <b>(AB)</b></li> <li>• Uses post-tested loop e.g. 'until', and a sequence of selection statements in programs, including an if, then and else statement. <b>(AL)</b></li> </ul>	<p>Understands the difference between data and information. <b>(AB)</b></p> <ul style="list-style-type: none"> <li>• Knows why sorting data in a flat file can improve searching for information. <b>(EV)</b></li> <li>• Uses filters or can perform single criteria searches for information. <b>(AL)</b></li> </ul>	<p>Knows that computers collect data from various input devices, including sensors and application software. <b>(AB)</b></p> <ul style="list-style-type: none"> <li>• Understands the difference between hardware and application software, and their roles within a computer system. <b>(AB)</b></li> </ul> <p>• Understands the difference between the internet and internet service e.g. world wide web. <b>(AB)</b></p> <ul style="list-style-type: none"> <li>• Shows an awareness of, and can use a range of internet services e.g. VOIP.</li> <li>• Recognises what is acceptable and unacceptable behaviour when using technologies and online services.</li> </ul>	<p>Collects, organises and presents data and information in digital content. <b>(AB)</b></p> <ul style="list-style-type: none"> <li>• Creates digital content to achieve a given goal through combining software packages and internet services to communicate with a wider audience e.g. blogging. <b>(AL)</b></li> <li>• Makes appropriate improvements to solutions based on feedback received, and can comment on the success of the solution. <b>(EV)</b></li> </ul>
L M H  L M  H	<p>Shows an awareness of tasks best completed by humans or computers. <b>(EV)</b></p> <ul style="list-style-type: none"> <li>• Designs solutions by decomposing a problem and creates a sub-solution for each of these parts. <b>(DE) (AL) (AB)</b></li> <li>• Recognises that different solutions exist for the same problem. <b>(AL) (AB)</b></li> </ul> <p>• Understands the difference between, and appropriately uses if and if, then and else statements. <b>(AL)</b></p> <ul style="list-style-type: none"> <li>• Uses a variable and relational operators within a loop to govern termination. <b>(AL) (GE)</b></li> <li>• Designs, writes and debugs modular programs using procedures. <b>(AL) (DE) (AB) (GE)</b></li> <li>• Knows that a procedure can be used to hide the detail with sub-solution. <b>(AL) (DE) (AB) (GE)</b></li> </ul>	<p>Performs more complex searches for information e.g. using Boolean and relational operators. <b>(AL) (GE) (EV)</b></p> <ul style="list-style-type: none"> <li>• Analyses and evaluates data and information, and recognises that poor quality data leads to unreliable results, and inaccurate conclusions. <b>(AL) (EV)</b></li> </ul>	<p>Understands why and when computers are used. <b>(EV)</b></p> <ul style="list-style-type: none"> <li>• Understands the main functions of the operating system. <b>(DE) (AB)</b></li> <li>• Knows the difference between physical, wireless and mobile networks. <b>(AB)</b></li> </ul> <p>• Understands how to effectively use search engines, and knows how search results are selected, including that search engines use 'web crawler programs'. <b>(AB) (GE) (EV)</b></p> <ul style="list-style-type: none"> <li>• Selects, combines and uses internet services. <b>(EV)</b></li> <li>• Demonstrates responsible use of technologies and online services, and nows a range of ways to report concerns.</li> </ul>	<p>Makes judgements about digital content when evaluating and repurposing it for a given audience. <b>(EV) (GE)</b></p> <ul style="list-style-type: none"> <li>• Recognises the audience when designing and creating digital content. <b>(EV)</b></li> <li>• Understands the potential of information technology for collaboration when computers are networked. <b>(GE)</b></li> <li>• Uses criteria to evaluate the quality of solutions, can identify improvements making some refinements to the solution, and future solutions. <b>(EV)</b></li> </ul>

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<p><b>L</b></p> <p><b>M</b></p> <p><b>H</b></p> <p><b>L</b></p> <p><b>M</b></p> <p><b>H</b></p>	<p>Understands that iteration is the repetition of a process such as a loop. <b>(AL)</b></p> <ul style="list-style-type: none"> <li>• Recognises that different algorithms exist for the same problem. <b>(AL) (GE)</b></li> <li>• Represents solutions using a structured notation. <b>(AL) (AB)</b></li> <li>• Can identify similarities and differences in situations and can use these to solve problems (pattern recognition). <b>(GE)</b></li> </ul> <ul style="list-style-type: none"> <li>• Understands that programming bridges the gap between algorithmic solutions and computers. <b>(AB)</b></li> <li>• Has practical experience of a high-level textual language, including using standard libraries when programming. <b>(AB) (AL)</b></li> <li>• Uses a range of operators and expressions e.g. Boolean, and applies them in the context of program control. <b>(AL)</b></li> <li>• Selects the appropriate data types. <b>(AL) (AB)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Knows that digital computers use binary to represent all data. <b>(AB)</b></li> <li>• Understands how bit patterns represent numbers and images. <b>(AB)</b></li> <li>• Knows that computers transfer data in binary. <b>(AB)</b></li> <li>• Understands the relationship between binary and file size (uncompressed). <b>(AB)</b></li> <li>• Defines data types: real numbers and Boolean. <b>(AB)</b></li> <li>• Queries data on one table using a typical query language. <b>(AB)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Recognises and understands the function of the main internal parts of basic computer architecture. <b>(AB)</b></li> <li>• Understands the concepts behind the fetch-execute cycle. <b>(AB) (AL)</b></li> <li>• Knows that there is a range of operating systems and application software for the same hardware. <b>(AB)</b></li> </ul> <ul style="list-style-type: none"> <li>• Understands how search engines rank search results. <b>(AL)</b></li> <li>• Understands how to construct static web pages using HTML and CSS. <b>(AL) (AB)</b></li> <li>• Understands data transmission between digital computers over networks, including the internet i.e. IP addresses and packet switching. <b>(AL) (AB)</b></li> </ul>	<p>Evaluates the appropriateness of digital devices, internet services and application software to achieve given goals. <b>(EV)</b></p> <ul style="list-style-type: none"> <li>• Recognises ethical issues surrounding the application of information technology beyond school.</li> <li>• Designs criteria to critically evaluate the quality of solutions, uses the criteria to identify improvements and can make appropriate refinements to the solution. <b>(EV)</b></li> </ul>
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