

Computing Year 7 Long Term Plan

Rationale (with end points): Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns. Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems. Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds, and pictures) can be represented and manipulated digitally, in the form of binary digits; be able to convert between binary and decimal, and perform simple binary arithmetic. Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem. Use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions. Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability. undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users. Design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users

Term	Topic	Knowledge	Skills	Reading /wider reading
Autumn term 1	Online Safety	<p>Getting to know the systems and an understanding of communicating online respectfully</p> <p>Respectful and effective feedback</p> <p>Sharing of work and resources</p> <p>Social media companies, their policies and influences</p>	<p>Presenting to an audience</p> <p>Effective methods to prevent cyberbullying</p> <p>How to get help</p> <p>Who are you talking to online</p> <p>What social media is used for</p>	<p>The dangers of the internet</p> <p>https://www.kaspersky.co.uk/resource-center/threats/to-p-seven-dangers-children-face-online</p>

<p>Autumn 2</p>	<p>Understanding Computers Part 1</p>	<p>Distinguish between hardware and software Identify input, output and storage devices</p> <p>Name at least five pieces of software</p> <p>Understand what happens at the "Process" stage Suggest appropriate input and output devices for a given scenario</p> <p>Explain what main memory is used for</p> <p>Understand the difference between RAM and ROM and what ROM is used for.</p>	<p>Draw a block diagram of the main components of a computer: input, processor, output and storage</p> <p>Distinguish between main memory and permanent storage devices</p> <p>Name the three stages in the Fetch Execute Cycle</p> <p>Define Hz, MHz and GHz and state how these relate to the speed of the processor</p>	<p>New Technologies, Changing the world</p> <p>https://www.pocket-lint.com/gadgets/news/142027-tech-innovations-that-will-shortly-change-the-world</p>
<p>Spring 1</p>	<p>Computational Thinking</p>	<p>Understand computational thinking is a way of breaking a problem down into smaller parts in order to find a solution</p> <p>Know that decomposition is the first stage of computational thinking</p>	<p>Be able to take a large problem and help to break it down into smaller tasks.</p> <p>Be able to use abstraction to remove unnecessary detail from a problem</p> <p>By using abstraction, be able to simplify complex problems.</p>	<p>AI and the moral dilemma</p> <p>https://news.harvard.edu/gazette/story/2020/10/ethical-concerns-mount-as-ai-takes-bigger-decision-making-role/</p>

		<p>Know that once a problem has been decomposed it may be possible to identify patterns within the smaller tasks.</p> <p>Understand that pattern recognition can help us to solve complex problems more efficiently.</p> <p>Decompose a problem in order to solve it using computational thinking techniques - algorithm to check log-in.</p> <p>Understand the term abstraction</p> <p>Understand the term 'algorithm'</p>	<p>Be able to write an algorithm to solve a simple problem</p> <p>Be able to test and debug an algorithm</p>	
<p>Spring 2</p>	<p>Programming with Scratch</p>	<p>Understand that Scratch is a programming environment that allows you to create games, animations and other simulations</p>	<p>Understand what is meant by an algorithm</p> <p>Create a sprite and write code to make it move and bounce</p>	<p>The world and algorithms</p> <p>https://interestingengineering.com/how-algorithms-run-the-world-we-live-in</p>

		<p>Produce design ideas for a Scratch project</p> <p>Understand the purpose of comments in a program</p> <p>Learn what each of the operators in the Scratch Green block menu does</p> <p>Use the Pick Random block to position objects randomly on the screen</p>	<p>Load and use an existing Scratch file</p> <p>Define a variable</p> <p>Write algorithms which use variables to hold values such as Number of Lives Left or Score in a computer game</p> <p>Annotate a program with comments</p> <p>Use selection statements if, else and elif in a program</p> <p>Use indentation correctly to define a block of code</p> <p>Understand the use of the operators <, =, >, and, or, not.</p> <p>Use some of these in a Scratch game</p>	
<p>Summer 1</p>	<p>Multimedia Using PowerPoint</p>	<p>Demonstrate a thorough understanding of the audience and purpose of multimedia products.</p>	<p>Be able to identify good points, bad points and improvements of multimedia products.</p> <p>Produce clear and detailed visualisation diagrams for the intended final product.</p>	<p>Technology revolution in the 20th century</p> <p>https://www.nationalgeographic.org/article/industrial-revolution-and-technology/6th-grade/</p>

		<p>Identify different file types and their suitability for different platforms.</p> <p>Identify a wide range of assets and resources to be used as part of these plans, which are wholly appropriate.</p> <p>Records and sources consistently appropriate assets from a wide range of sources to create assets for the Multimedia product.</p>	<p>Combine a wide range of different planned assets with a clear navigation system to create a working interactive multimedia product.</p> <p>Produce a review of the multimedia product sequence which demonstrates a thorough understanding of what worked and what did not, fully referencing back to the brief.</p>	
<p>Summer 2</p>	<p>Spreadsheet Modelling</p>	<p>Identify columns, rows, cells, and cell references in spreadsheet software</p> <p>Explain the difference between data and information</p> <p>Explain the difference between primary and secondary sources of data</p>	<p>Use formatting techniques in a spreadsheet</p> <p>Use basic formulas with cell references to perform calculations in a spreadsheet (+, -, *, /)</p> <p>Use the autofill tool to replicate cell data</p> <p>Create appropriate charts in a spreadsheet</p>	<p>Impact of technology in business</p> <p>https://smallbusiness.chron.com/impact-technological-change-business-activity-2191.html</p>



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