

**The Isaac Newton Primary School Computing Curriculum Progression**

<p><b>Breadth of study Key Stage 1:</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</li> <li>• Write and test simple programs</li> <li>• Use logical reasoning to predict the behaviour of simple programs</li> <li>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content</li> <li>• Recognise common uses of information technology beyond school</li> <li>• Use technology safely and respectfully online, keeping personal information private; identify where to go for help and support when they have concerns about content or contact.</li> </ul>	<p><b>Essential characteristics in our school (INTENT):</b></p> <ul style="list-style-type: none"> <li>• <i>Competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects.</i></li> <li>• <i>The ability to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity.</i></li> <li>• <i>An understanding of the connected nature of devices.</i></li> <li>• <i>The ability to communicate ideas well by using applications and devices throughout the curriculum.</i></li> <li>• <i>The ability to collect, organise and manipulate data effectively.</i></li> </ul>
<p><b>Breadth of study Key Stage 2:</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</li> <li>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li> <li>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</li> <li>• 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</li> <li>• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</li> <li>• Describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely.</li> <li>• Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.</li> </ul>	

**Threshold Concepts (IMPLEMENTATION)**

Code	Connect	Communicate	Collect
This concept involves developing an understanding of instructions, logic and sequences.	This concept involves developing an understanding of how to safely connect with others.	This concept involves using apps to communicate one's ideas.	This concept involves developing an understanding of databases and their uses.

	To Code (use scratch)	To connect	To communicate	To collect
Y5/6	<p>C1: Set IF conditions for movements. Specify types of rotation giving the number of degrees.</p> <p>C2: Change the position of objects between screen layers (send to back, bring to front).</p> <p>C3: Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation.</p> <p>C4: Combine the use of pens with movement to create interesting effects.</p> <p>C5: Set events to control other events by 'broadcasting' information as a trigger.</p> <p>C6: Use IF THEN ELSE conditions to control events or objects.</p> <p>C7: Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.</p> <p>C8: Use lists to create a set of variables.</p> <p>C9: Use the Boolean operators () &lt; (), () = (), () &gt; (), () and(), () or(), Not() to define conditions.</p> <p>C10: Use the Reporter operators () + (), () - (), () * (), () / () to perform calculations.</p> <p>C11: Pick Random () to (), Join () (), Letter () of (), Length of (), () Mod ()</p> <p>C12: This reports the remainder after a division calculation Round () () of ()).</p>	<p>C13: Collaborate with others online on sites approved and moderated by teachers.</p> <p>C14: Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems.</p> <p>C15: Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder.</p> <p>C16: Understand the effect of online comments and show responsibility and sensitivity when online.</p> <p>C17: Understand how simple networks are set up and used.</p>	<p>C18: Choose the most suitable applications and devices for the purposes of communication.</p> <p>C19: Use many of the advanced features in order to create high quality, professional or efficient communications.</p>	<p>C20: Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner.</p>
Y3/4	<p>C1: Use specified screen coordinates to control movement.</p> <p>C2: Set the appearance of objects and create sequences of changes.</p> <p>C3: Create and edit sounds.</p> <p>C4: Control when they are heard, their volume, duration and rests.</p> <p>C5: Control the shade of pens.</p> <p>C6: Specify conditions to trigger events.</p> <p>C7: Use IF THEN conditions to control events or objects.</p> <p>C8: Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).</p> <p>C9: Use variables to store a value.</p> <p>C10: Use the functions define, set, change, show and hide to control the variables.</p> <p>C11: Use the Reporter operators () + () () - () () * () () / () to perform calculations</p>	<p>C12: Contribute to blogs that are moderated by teachers.</p> <p>C13: Give examples of the risks posed by online communications.</p> <p>C14: Understand the term 'copyright'.</p> <p>C15: Understand that comments made online that are hurtful or offensive are the same as bullying.</p> <p>C16: Understand how online services work.</p>	<p>C17: Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.</p>	<p>C18: Devise and construct databases using application designed for this purpose in areas across the curriculum.</p>
Y1/2	<p>C19: Control motion by specifying the number of steps to travel, direction and turn.</p> <p>C20: Add text strings, show and hide objects and change the features of an object.</p> <p>C21: Select sounds and control when they are heard, their duration and volume.</p> <p>C22: Control when drawings appear and set the pen colour, size and shape.</p> <p>C23: Specify user inputs (such as clicks) to control events.</p> <p>C24: Specify the nature of events (such as a single event or a loop).</p> <p>C25: Create conditions for actions by waiting for a user input (such as responses to questions like: What is your name?).</p>	<p>C26: Participate in class social media accounts.</p> <p>C27: Understand online risks and the age rules for sites.</p>	<p>C28: Use a range of applications and devices in order to communicate ideas, work and messages.</p>	<p>C29: Use simple databases to record information in areas across the curriculum.</p>