Computer Science Progression of Skills

MGL

Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Be able to give a floor robot instruction to make it move. • Use simple software and explain what you are doing. • Understand what happens when you click a button or touch an icon.	• Give instructions to a friend and follow their instructions to move around a space. • Describe what happens when buttons are pressed on a robot or device. • Press buttons in the correct order to make a robot follow a short sequence. • Understand what an algorithm is	• Understand what an algorithm is and demonstrate simple linear algorithms. • Be able to explain the order needed to do things to make something happen and to talk about it as an algorithm. • Programme a robot or software to do a particular task.	• Understand how an algorithm is implemented using a sequence of precise instructions. • Can predict the outcome of a sequence of precise instructions. • Repeatedly test a program and recognise when they need to debug it. • Detect a problem in an algorithm,	• Design simple algorithms using loops and repeats, whilst detecting and correcting errors is debugging. • Write and execute an efficient program, using loops such as forever, repeat & repeat until commands. • Decompose a problem into smaller parts with some	• Program a condition that uses a sensor to detect a change, which can select an action within a program. • Decomposes more openended problems into smaller parts, provides some reasoning for their choices. • Approaches a range of problems using computationally thinking	• Understand the importance of planning, testing and correcting algorithms. • Demonstrate a range of different strategies to solve a problem including: abstraction, decomposition, logic & evaluation. • Understand why sequence & patterns are important when creating simple

	and be able to create a simple algorithm. • Understand and explain how algorithms are used in every day life. • Begin to predict what will happen for a short sequence of instructions. • Begin to use different software or applications to create movement and patterns on a screen. • Use the word debug to correct an algorithm that	• Look at a basic program and explain what will happen. • Use programming software and applications to make objects move. • Use logical reasoning to predict and debug more complex programs. • Can create and debug with improved confidence & efficiency. • Begin to program using simple block code.	which could result in a different outcome to the one intended. • Understand what inputs and outputs are, how they can be used. • Provide examples of how to use inputs and outputs effectively. • Design, write, execute and debug programs of increasing complexity that accomplish a specific goal. • Use logical reasoning to	verbal reasoning. • Has an understanding of how sequencing, using inputs and repetition in programs has specific effects on the output, works with 'loops' and understands their effect. • Recognise that an algorithm will help to sequence more complex programs. • Use logical reasoning to predict and debug more	concepts, helping them to design other algorithms for other specific outcomes. • Design, write and execute an efficient program, including selection (IF…THEN) command. • Change an input to a program to achieve a different output. • Use logical reasoning to predict and debug more complex programs	algorithms that are part of a more complex program. • Gives reasoning for each step within algorithms and applying them to a program. • Understand & develop complex flow diagrams. • Use a variable to increase programming possibilities. • Use a variable and relational operators (e.g. < = >) within a loop to stop a program.

	doesn't work in the way it was intended.		predict and debug more complex programs including inputs and outputs.	complex programs including loops and repeats	including selection. • Uses programs linked to physical systems and sensors e.g. the alarm goes off when the sensor is triggered. • Design, write and execute an efficient program, which demonstrates and understanding of the difference between, and appropriate use of IF…THEN, IF…THEN…ELSE, and nested IF statements.	• Evaluate the effectiveness and efficiency of an algorithm while continually testing the programming of that program. • Use different inputs (including sensors) to control a device or onscreen action and predict what will happen. • Use logical reasoning to predict and debug more complex programs including: selection,

						variables and operators.

Digital Literacy & Information Technology Progression of Skills

MGL

	Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Digital Literacy	• Can identify a device that uses technology. • Ask permission before using the Internet. • Tell an adult if something worrying or unexpected happens	• Understand why we need passwords. • Understand that we must keep passwords private. • Explain what personal information is. • Understand that we must	• Understand the need to keep a password private. • Understand the need to keep personal information private. •Demonstrate the use of technology responsibly in terms of how	Children consider their responsibilities and actions to others online. • Children consider that all of the media they see could have been altered.	Understand that media can be edited online for advertising and other purposes. • Recognise what is acceptable and unacceptable behavior when using technology	• Be aware of their digital footprint. • Understand the dangers of building online relationships. • Explain what the consequences might be to using technology inappropriate	• Be aware of fake news and how to dissect it. • Understand the difference between misinformation and disinformation. • Understand what Copywriting

	whilst using technology.	keep personal information private. •Communicate safely and respectfully online. • Know what to do when concerned about online content. • Know what to do if someone tries to contact you online	we use it and the time we spend using it. • Know how to report inappropriate content or contact online	• Understand how to use a search engine responsibly and safety.	and online services. • Children understand how effective a strong password is and what a strong password looks like.	ly or accessing inappropriate content intentionally.	is and using someone else's work responsibly. • Manage their conduct and contact appropriately and safely when using technology and online services.
Information Technology	• Talk about technology that is used at home, in school and in the world around them.	• Recognise that a range of digital devices and products can be	• Children can explain why they use technology in the classroom, in their homes	• Save and retrieve work online, on the school network and their own device.	• Understand the difference between the Internet and online services such	• Use different online tools for different purposes. • Use a search	• Explain the Internet services they need to use for different purposes.

	• Use a safe part of the Internet to explore, play and learn.	considered computers. • Recognise the ways in which technology is used in their homes and community. • Understand that computers have no intelligence and can do nothing without being programmed. • Begin to identify some of the benefits to using technology.	and in the community. • Identify the benefits of using technology, such as creating content and communicating efficiently. • Can identify a computer by knowing that it has inputs, a processor and outputs. • Can identify parts of a computer including what an input and output is.	• Tell you ways to communicate with others online. • Knows how navigate the web responsibly. • Can carry out effective web searches to collect digital content. • Think about whether they can use images that they find online in their own work.	as the World Wide Web, instant messaging and email. • Tell you whether a resource they are using is from the World Wide Web, the school network or their own work. • Identify key words to use when searching safely on the World Wide Web. • Show an awareness of a range of	engine effectively to find appropriate information and check the reliability of a website. • Understand how search results are selected and ranked and the algorithms they use. • Recognise and evaluate different types of information they find on the World Wide Web.	• Describe the different parts of a webpage. • Understands how to construct a website using basic HTML tags. • Explain what copyright is and acknowledge the sources of information that they find online. • Understands how data is transmitted across a network.

					Internet services such as the World Wide Web, email and instant messaging. • Explain how to check who owns photos, text and clipart.	• Think about the reliability of information they read on the World Wide Web or other Internet services (Fake News)	• Understand what IP is and how it's used. • Can explain how networks use the Internet to send and receive data