

Curriculum Objectives	Vocabulary				Links Across the Curriculum
<ul style="list-style-type: none"> Understand what algorithms are; Understand how algorithms are implemented as programs on digital devices; Understand that programs execute by following precise and unambiguous instructions. Create and debug simple programs. Use logical reasoning to predict the behaviour of simple programs. 	algorithm	A set of clear and precise instructions.	tinkering	Changing things to see what happens.	Science—electricity, technology, the future, sustainability Skills—Problem Solving, PSHE—resilience, curiosity English—instructions
	program	A sequence of instructions that allows a computer to perform a task or a set of instructions.	debug	To find and remove mistakes or flaws from.	
	device	An electronic gadget that has been made for a			

Lessons Sequence	Key Knowledge	Disciplinary Knowledge / Skills
1. How can we get a device to move?	Children explore the beebots by tinkering—exploring and playing with the beebots to get them to move. Children to use positional vocabulary such as: forwards, backwards, left and right when programming the beebot.	Explore a device by using the commands and buttons.
2. What directions are needed to create an algorithm?	Children are introduced to the vocabulary 'algorithm.' Children to understand what creating an algorithm means and how they can create one for the beebot by using a range of positional vocabulary which match the buttons provided.	Create an algorithm.
3. What do I need to do if my algorithm doesn't work?	Children are introduced to the vocabulary 'debug.' Children understand that a large part of the computing curriculum is all about problem solving. Children	Debug an algorithm if it is incorrect.

Themes		Diversity in the Curriculum
Computer Science	The study of computers and computer systems.	Steven Hawking and Alan Turing are Computer Scientists that the children will look at during their time at Rushey Mead Primary School.
Future Technology	Understand that technological developments are happening daily and this is changing our world at a dramatic rate.	

Outcome	Character Traits	Stickability	WOW
Children to create an algorithm for the beebot and be able to debug it if their algorithm is incorrect.	Curious Resilience	Google Form assessments at the end of the unit, use of beebots in Year 2	Use of the beebot devices— physical programming

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1. Why is the sequence of an algorithm important?	Children can review their learning on what an algorithm is. Children can give examples of how we use algorithms in everyday life. Children to provide instructions in a clear logical sequence so that the algorithm works correctly. Children to verbally provide their own algorithm to their partner. Children to decompose algorithms to see which part of the sequence is missing.	Understand that the sequence of an algorithm is important.
2. How can I find patterns in an algorithm?	Children to review their learning on algorithms and the importance of the sequence in an algorithm. Children to identify the pattern in some of the algorithms that they have either created or have been provided with. Children develop their understanding of variables and are beginning to understand that lots of things can be stored as variables including: strings, numbers and Booleans.	Create an algorithm.
3. Why do I need to improve my algorithm sometimes?	Children to check that the algorithms are correct. Children to debug algorithms that are incorrect. Understand that algorithms have rules and match the rule to the algorithm. Children to organise data into data structures as a result of their algorithm. Children to understand that some algorithms have a loop and to understand what a loop is. Children to provide real-life examples of loops.	Debug an algorithm if it is incorrect.

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Children to write an algorithm for their partner and check it is correct.	Curious Resilience	Google Form assessments at the end of the unit Children will complete the Hello Ruby activities again in Year 2,	

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1. What do we need to provide when we are giving instructions?	Children to understand the link between instructions and an algorithm. Children to play instruction games with their class or talk partner to understand that an action follows a command. Children to be provided with an oral set of instructions. Children to follow the instructions to create their outcome. Children compare their outcome with the children in their class to see if the outcome was the same.	Follow a set of instructions.
2. How do I write my own algorithm so that another person understands it?	Children to understand that an algorithm is a clear set of instructions. Children to reflect on the previous session where the children had different outcomes for the same algorithm. Children to write their own algorithm.	Create an algorithm independently.
3. Why are the outcomes of an algorithm sometimes different?	Children to swap algorithms with their talk partner from the previous session. Children to carry out the instructions to create their outcome. Children to compare their outcomes to see whether they are the same or different. Children to discuss why the outcomes of algorithms may be the same or different.	Understand that instructions have to be clear.

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Children to complete unplugged Computing tasks to develop their understanding of algorithms. Children create their own crazy character!	Curious Resilience	Google Form assessments at the end of the unit, use of beebots in Year 2, Scratch jr in Year 2.	

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1. Can I make predictions on what will happen in an algorithm?	Children to review their learning on algorithms. Children to give examples of algorithms in everyday life. Children to look at a range of algorithms and predict the outcome of the algorithm. Children to use online software and programs to create and evaluate their algorithms.	Predict an outcome of an algorithm.
2. What is the outcome of a command?	Children to think about the structure of an algorithm. Children to understand that commands have to be given in order for an algorithm to be created. Children to read and create algorithms and state what the outcome is.	State the outcome of an algorithm.
3. What happens when I run a set of commands as an algorithm?	Children to create their own algorithms using a range of different computer programs. Children are able to debug their code if it is incorrect and does not run correctly.	Create an algorithm and debug if appropriate.

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Children to create their own code on J2 Turtle. Children to create and debug their own code on the Daisy the dinosaur app.	Curious Resilience	Google Form assessments at the end of the unit, use of beebots in Year 2	Use of the beebot devices— physical programming

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1. What is a function in coding?	Children to understand that a function is a piece of code that you want to use over and over again. Children to write their own functions to help them improve their code. Children to understand that unnecessary details can be left out of algorithms and that this is known as abstraction.	Write a function for a piece of code.
2. What is selection and abstraction in coding?	Children to understand that selection means that computers need to be told how to make decisions and what to do in different situations. Children to debug an algorithm and provide further instructions. Children to tinker with their algorithms and make small changes in order to improve them.	Tinker with a piece of code.
3. How can I look for patterns in an algorithm? Why might I need to debug an algorithm?	Children to understand that most codes contain errors at first. Children understand that the errors are called bugs and that tracking these bugs down is known as debugging. Children to debug some algorithms to state what is not working. Children to problem solve and figure out what was wrong with the algorithm.	Improve an algorithm by debugging.

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Children debug some different algorithms and state what is wrong with it.	Curious Resilience	Google Form assessments at the end of the unit, use of beebots in previous year	Use of the Scratch Jr app—physical programming.

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1. What other programs or apps can I use to create an algorithm?	Children to review their learning on tinkering and algorithms from the introduction to programming unit from Year 1. Children to discuss different types of algorithms that are used in real-life and how these relate to their Computing learning. Children review their learning on the beebots from last year. Children to create a suitable algorithm for the beebot so it follows a suitable route and debug it if it is required.	Explore a device by using the commands and buttons.
2. How can I use programming to create movement and audio in an algorithm?	Children explore the Scratch Jr app by tinkering—exploring and playing with the program to get the sprite to move. Children to use positional vocabulary such as: forwards, backwards, left and right when programming the sprite. Children to explore the coding blocks on Scratch Jr. to create and add movement and audio to an algorithm.	Create a code that includes movement and audio.
3. How can I use logic to predict the outcome of a simple program?	Children use the skill of logical reasoning to predict the outcome of an algorithm. Children use inputs on Scratch Jr. as well as selection/conditions. Children to debug their algorithms if this is required.	Use logic to predict the outcome of an algorithm.

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Children to create an algorithm for Scratch Jr. and be able to debug it if their algorithm is incorrect.	Curious Resilience	Google Form assessments at the end of the unit, use of beebots in previous year	Use of the Scratch Jr app—physical programming.

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	program	A sequence of instructions that allows a computer to perform a task or a set of instructions.	decomposition	The breaking down of objects or processes.	
	device	An electronic gadget that has been made for a	logic	Drawing conclusions based on known facts.	
	debug	To find and remove mistakes or flaws from.			

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1. How do I create my own algorithm?	Children review their learning on algorithms. Children to relate their learning on algorithms with the beebots to today's session. Children to explain the definition of an algorithm as being a clear set of instructions. Children to provide examples of algorithms in everyday life. Children to tinker and explore Scratch Jr. Children to create their own algorithm using Scratch Jr.	Explore software to understand how to create an algorithm.
2. How can I use logical reasoning to predict the outcome of an algorithm?	Children to explore their understanding of logical reasoning. Children to predict the outcome of a range of algorithms provided to them. Children to test their algorithms to see whether their predictions were correct.	Predict the outcome of an algorithm.
3. What is decomposition in Computing?	Children begin to understand that decomposition is the breaking down of objects or processes. Children to understand what the decomposition of algorithms is.	Decompose an algorithm and extract information.

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Children to predict, create and decompose their own algorithms on Scratch Jr.	Curious Resilience	Google Form assessments at the end of the unit, use of beebots in previous year, use of Scratch Jr in Year 3.	Use of the Scratch Jr app—physical programming.