

## Woodley Primary School – Knowledge Organiser

<b>Computing Focus:</b>	Computer Science	Year 4	Ongoing
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Key Vocabulary	
Spelling	Definition
Logic	Predicting and analysing
Evaluation	Making judgements
Algorithm	A list of steps and rules to finish a task
Patterns	Spotting and using similarities
Decomposition	Breaking down into parts
Abstraction	Removing unnecessary detail
Tinker	Change things and see what happens
Debugging	Finding and fixing problems in an algorithm or program
Collaborating	Working together
Persistence	Trying again and again, even when something is very hard
Program	An algorithm that has been coded into something that can be run by a machine
Bug	Part of a program that does not work correctly
Loop	The action of doing something over and over again
Repeat	Do something again
Event	An action that causes something to happen
Command	An instruction for the computer. Many commands put together make up algorithms and computer programs
Conditionals	Statements that only run under certain conditions.
Condition	A statement that a program checks to see if it is true or false. If true, an action is taken. Otherwise, the action is ignored
While Loop	A loop that continues to repeat while a condition is true
Until	A command that tells you to do something only up to the point that something becomes true.
Binary	A way of representing information using only two options
Binary Alphabet	The two options used in your binary code

Possible Experiences
Introduction to the Microbit potential support from Microsoft) Use of Makey Makeys to link science to computer science.

Prior Knowledge What I should already know ...	
Year 2:	<ul style="list-style-type: none"> <li>Sequencing - how to build on understanding of algorithms and how to debug</li> <li>Events – the events add variety to algorithms</li> <li>Loops – how to use repeat loops, comparing efficiency of different algorithms, create own images using loops</li> <li>Impacts of computing – how to exercise empathy and creativity by sketching app to address needs of imaginary user</li> <li>Digital citizenship – understand that we leave a digital footprint</li> </ul>
Year 3:	<ul style="list-style-type: none"> <li>How to develop sequential algorithms, systematically identify errors in pre-existing code and debug (inc. incorrect loops, missing blocks, extra blocks, errors in sequence), introduction of new blocks inc. moving forward by specific number of pixels and turn by specific degrees.</li> <li>That events make programs interactive, to build a game using event handlers to detect mouse clicks and object collisions</li> <li>How to use loops to build big structures faster and traverse mazes more efficiently, introduce more actions in to loops such as ‘collect’</li> <li>Some understanding of how binary translating can translate something ‘real life’ to a series of on and offs</li> <li>To create visualisations of data and use this to reason and predict</li> <li>How to build a game from scratch using loops, sequence, debugging and events (end project).</li> </ul>

What I will know at the end of the unit	
Objectives for the unit:	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts Use sequence, selection, and repetition in programs; work with variables and various forms of input and output Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 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
Skills	<ul style="list-style-type: none"> <li>To be able to create and share a game using sequential algorithms, debugging, events, loops, nested loops, and conditionals including until loops, while loops.</li> <li>Begin to understand binary</li> </ul>

Key Skills:

Sequencing – solving puzzles by giving sequenced algorithms, debugging

Events – create video game using events

Loops – create shapes using repeats blocks inc. pixels and degrees in Artist, introduction to nested loops

Conditionals – introduction to games where points only scored in specific conditions, program using conditionals, introduction to while loops and until loops, make decisions about which conditional to use

Binary – learn how computers store pictures using simple ideas like on and off, create own images using on and off

Digital Citizenship – recognising which information is safe to share and which is private

End project – create and share a game using sequential algorithms, debugging, events, loops, nested loops, until loops, while loops.

Application – Bring programming to life using Microbit and Makey Makey