Woodley Primary School – Knowledge Organiser

Computing Focus:	Computer Science	Year 5	Ongoing

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
Loop	The action of doing something over and over again
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.
Conditionals	Statements that only run under certain conditions
While Loop	A loops that continues to repeat while a condition is true
Behaviour	An action that a sprite performs continuously until it's told to stop
Sprite	A graphic character on the screen with properties that describe its location look and movement
Event	An action that causes something to happen.
Function	A named group of programming instructions. Functions are reusable abstractions that reduce the complexity of writing and maintaining programs
Define	Figure out the details of the problems that you are trying to solve

Possible Experiences

Create a robot with a motion sensor, motor and programme it to move.

Create repeated patters using scratch, applying use of nested loops to geometry work in maths.

Prior Knowledge

What I should already know …

Year 3:	• 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. • That events make programs interactive, to build a game using event handlers to detect mouse clicks and object collisions • How to use loops to build big structures faster and traverse mazes more efficiently, introduce more actions in to loops such as 'collect' • Some understanding of how binary translating can translate something 'real life' to a series of on and offs • To create visualisations of data and use this to reason and predict • How to build a game from scratch using loops, sequence, debugging and events (end project).
Year 4:	• To be able to create and share a game using sequential algorithms, debugging, events, loops, nested loops, and conditionals including until loops, while loops. • Begin to understand binary

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
Key skills	• Understand accessibility and the value of empathy, design accessible solutions for hypothetical apps • Create an interactive poster applying digital citizenship understanding • Create game in Artist or Sprite Lab using sequential algorithms, debugging, events, loops, nested loops, conditionals (until loops, while loops, if/else statements) functions and sprites.

Key Skills:	Sequencing – recap sequencing, debugging, loops, conditionals, while loops and introduce if/else' statements Sprites – consider use of commands in order to get right result, learn about sprites and behaviours, create game inc. interactions between characters and user input Nested loops – practice nested loops with new goals, recognise more uses for nested loops in programming, create intricate designs, create portfolio-ready images. Functions – write song by combining chunks of code into functions, understand how functions are useful and helpful, combine functions with 'while' loos and 'if/else' statements, create and modify images using functions in Artist. Impacts of computing – learn about accessibility and the value of empathy, design accessible solutions for hypothetical apps Digital Citizenship – private and personal information, create interactive poster applying digital citizenship understanding End project – create game in Artist or Sprite Lab using sequential algorithms, debugging, events, loops, nested loops, conditionals (until loops, while loops, if/else statements) functions and sprites. Application – Build robot and connect to iPad using Bluetooth, program motors to make robot move using a pulley. Program motion sensor using conditionals.