

COMPUTING KNOWLEDGE ORGANISERS

Spring 1



Hanslope Primary School Computing Knowledge Organiser

Year 1: Programming

How does this link to my previous learning?

Personal, Social and Emotional Development

- Show resilience and perseverance in the face of a challenge.

Physical Development

- Develop small motor skills so that they can use a range of tools competently, safely, and confidently.

What key vocabulary will I learn:

- **Forwards** – In the direction that one is facing or travelling; towards the front.
- **Backwards** - (of an object's motion) back towards the starting point.
- **Turn** - Move (something) so that it is in a different position in relation to its surroundings or its previous position.
- **Clear** - easy to perceive, understand, or interpret.
- **Algorithm** - A precise set of ordered steps that can be followed by a human and implemented on a computer to achieve a task.
- **Command** - A single instruction that can be used in a program to control a computer.
- **Instructions** - A direction or order.
- **Route** - A way or course taken in getting from a starting point to a destination.

National Curriculum Links:

- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.
- Create and debug simple programs.

How does this link to my future learning?

- Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information.

What will I know by the end of this unit:

- To explain what a given command will do.
- To act out a given word.
- To combine 'forwards' and 'backwards' commands to make a sequence.
- To combine four direction commands to make sequences.
- To plan a simple program.
- To find more than one solution to a problem.





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Year 2: Programming -Robot algorithm

How does this link to my previous learning?

- Create and debug simple programs.
- Use logical reasoning to predict the behaviour of simple programs.

What key vocabulary will I learn:

Program - Is a specific set of ordered operations for a computer to perform.

Robot – A machine that follows instructions and commands

Algorithm - a set of instructions that is designed to accomplish a task

Direction - a variable that determines the direction of movement or orientation

Route - the process of path selection in any network

Obstacle - a thing that blocks one's way or prevents or hinders progress.

Design - A design is a plan that helps people to make a product.

Error - A software bug is an error, flaw, failure or fault in a computer program or system

Chunking - Chunking breaks up long strings of information into units or chunks

Debugging - The process of finding and fixing errors or bugs in the source code of any software.

National Curriculum Links:

- Create and debug simple programs.
- Use logical reasoning to predict the behaviour of simple programs.

How does this link to my future learning?

- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

What will I know by the end of this unit:

- To describe a series of instructions as a sequence
- To explain what happens when we change the order of instructions
- To use logical reasoning to predict the outcome of a program
- To explain that programming projects can have code and artwork
- To design an algorithm
- To create and debug a program that I have written





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Year 3: Programming - Sequencing sounds

How does this link to my previous learning?

Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

National Curriculum Links:

- 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.

How does this link to my future learning?

- Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem.

What key vocabulary will I learn:

- **Programming** - The process or activity of writing computer programs.
- **Scratch** - a graphic object that you can program to move and interact with other sprites as well as responding to user input.
- **Blocks** - he blocks can be used to control the sprite's movements, make it say something, or trigger an event.
- **Commands** - a directive to a computer program to perform a specific task
- **Code** - the set of instructions, or a system of rules, written in a particular programming language
- **Sprite** - [a term](#) commonly used in computer graphics and gaming
- **Stage** - a nearly exact replica of a production environment for software testing.
- **Costume** - one out of possibly many "frames" or alternate appearances of a sprite.
- **Backdrop** - a visual element behind webpage content, enhancing aesthetic appeal and user engagement
- **Debugging** -the process of finding and fixing errors or bugs in the source code of any software

What will I know by the end of this unit:

- To explore a new programming environment
- To identify that [commands](#) have an outcome
- To explain that a program has a start
- To recognise that a sequence of commands can have an order
- To change the appearance of my project
- To create a project from a task description



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Year 4: Programming A - Repetition in games

How does this link to my previous learning?

- Create and debug simple programs.
- Use logical reasoning to predict the behaviour of simple programs.

What key vocabulary will I learn:

- **Programming** - The process or activity of writing computer programs.
- **Logo** – an educational programming language,
- **Turtle** - an imaginary pen that is given drawing commands, such as go forward and turn right.
- **Command** - A directive to a computer program to perform a specific task.
- **Code** - Program instructions.
- **Cursor** – a visible and moving pointer
- **Algorithm** – a procedure used for solving a problem
- **Pattern** - similarities or characteristics that some of the problems share.
- **Sequence** - A particular order in which related things follow each other.
- **Debugging** - the process of finding and fixing errors or bugs in the source code of any software

National Curriculum Links:

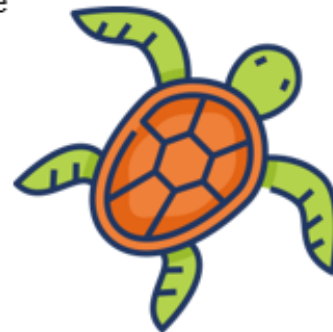
- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

How does this link to my future learning?

- Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information.

What will I know by the end of this unit:

- To identify that accuracy in programming is important
- To create a program in a text-based language
- To explain what 'repeat' means
- To modify a count-controlled loop to produce a given outcome
- To decompose a task into small steps
- To create a program that uses count-controlled loops to produce a given outcome





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Year 5: Programming A - Selection in physical computing

- Create and debug simple programs.
- Use logical reasoning to predict the behaviour of simple programs.

What key vocabulary will I learn:

- **Programming** - The process or activity of writing computer programs.
- **Debugging** - the process of finding and fixing errors or bugs in the source code of any software
- **Circuit** - a complete circular path that electricity flows through.
- **Electricity** - Electricity is the flow of electrical power or charge. Electricity is both a basic part of nature and one of the most widely used forms of energy.
- **Code** – Program instructions.
- **Motor** - A machine that supplies motive power for a vehicle or other device with moving parts.
- **Modify** - Make partial or minor changes to (something).

National Curriculum Links:

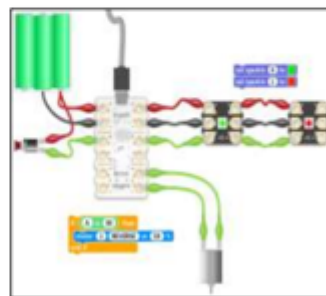
- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

How does this link to my future learning?

- Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information.

What will I know by the end of this unit:

- To control a simple circuit connected to a computer
- To write a program that includes count-controlled loops
- To explain that a loop can stop when a condition is met
- To explain that a loop can be used to repeatedly check whether a condition has been met
- To design a physical project that includes selection
- To create a program that controls a physical computing project





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Year 6: Programming A – Variables in Games

How does this link to my previous learning?

- Create and debug simple programs.
- Use logical reasoning to predict the behaviour of simple programs.

What key vocabulary will I learn:

Programming - The process or activity of writing computer programs.

Variable - a way of storing information in a computer program.

Scratch - a visual programming language that allows students to create their own interactive stories, games and animations.

Events - Things that happen in the system you are programming, which the system tells you about so your code can react to them

Code - the instructions given to a machine to create a computer program

LED - A light-emitting diode (LED) is a semiconductor device that emits light when current flows through it.

Algorithm - a set of commands that must be followed for a computer to perform calculations or other problem-solving operations

Motor - an abstract metaphor of the central organization of movement and control

Modify - Modify a program means change a program

Debugging - the process of finding and fixing errors or bugs in the source code of any software

National Curriculum Links:

- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

How does this link to my future learning?

Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem.

What will I know by the end of this unit:

- To create a program to run on a controllable device.
- To explain that selection can control the flow of a program.
- To update a variable with a user input.
- To use a conditional statement to compare a variable to a value.
- To design a project that uses inputs and outputs on a controllable device.
- To develop a program to use inputs and outputs on a controllable device.

