

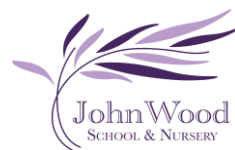


Computing

Year 5

Autumn 1

Programming : Programming music with Scratch



Key Vocabulary

Basic commands	The simplest instructions that can be used.
Bug	A mistake or error in the code, stopping the program from working as intended.
Computer code	A set of instructions written in programming language, to tell a computer what to do.
Code (verb)	To write in programming language (code).
Code block	A visual representation for a section of code that performs a certain job. They can be snapped together to build a program.
Debug	To remove and repair the error or mistake in computer code.
Error	A mistake or a fault in software.
Live loop	Like loops, but instead of repeating a number of times, they go on forever. You can also have multiple running at the same time.
Loop	A repeated sequence of instruction.
Pitch (music)	A musical term which refers to how high or low a note is.
Program language	The particular library of code which a piece of software is written in, for example Java and C++.
Rhythm	A musical term that refers to the 'pattern' of long and short notes.
Scratch (®)	A coding program, in which you can develop interactive games and animations.
Sprite	Visual objects that can be manipulated through code, for example to move, respond, appear or disappear.
Soundtrack	A music recording that accompanies a film or TV show.
Tempo (music)	A musical term which refers to the speed of the music.
Timbre (music)	A musical term which refers to the characteristic trait of a sound.

Scratch 'create' interface

Block Palette

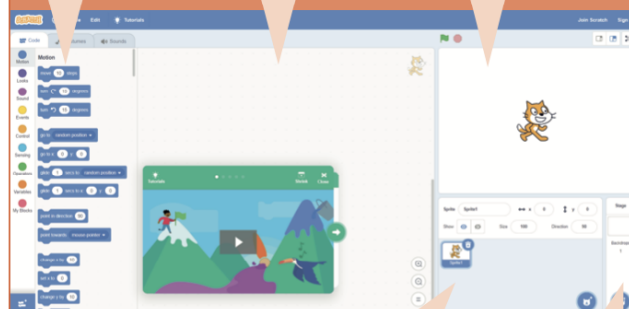
This is where you choose the blocks to use.

Scripts Area

This is where you create your program.

Stage

This is where you see your program in action.



Sprites

This is what characters or objects are called in Scratch

Backdrop

Backgrounds for your project.

Scratch code blocks colour key

Motion	Events	Operations
Looks	Control	Variables
Sound	Sensing	My Blocks

Online Safety

Any form of online communication can be misinterpreted. Text may be misread and emojis or memes could be misunderstood.



Technology can have both positive and negative effects on our health and wellbeing.



Tell a trusted adult if you are getting bullied online. You can also get help from these places:

Childline
<https://www.childline.org.uk/>

NSPCC
<https://www.nspcc.org.uk/>

app	The shortened word for application is a type of computer program typically found on smart phones and tablets.
bullying	The deliberate act of harming, intimidating or threatening someone else to cause them physical or emotional distress.
health	The mental and physical condition of a person or living thing.
judgement	To come to a sensible conclusion about a matter or a person.
memes	An image or video visual with some usually humorous writing added to it.
online communication	The way people communicate (share and receive information) with each other over a computer networks, such as the internet.
permission	The action of allowing something to happen.
well-being	The state of mind, health and happiness.

Prior Learning:

Reception: All about instructions. Year 1: Algorithms Unplugged. Year 2: Algorithms unplugged, Scratch Jnr. Year 3: Scratch. Year 4: Further coding with Scratch.





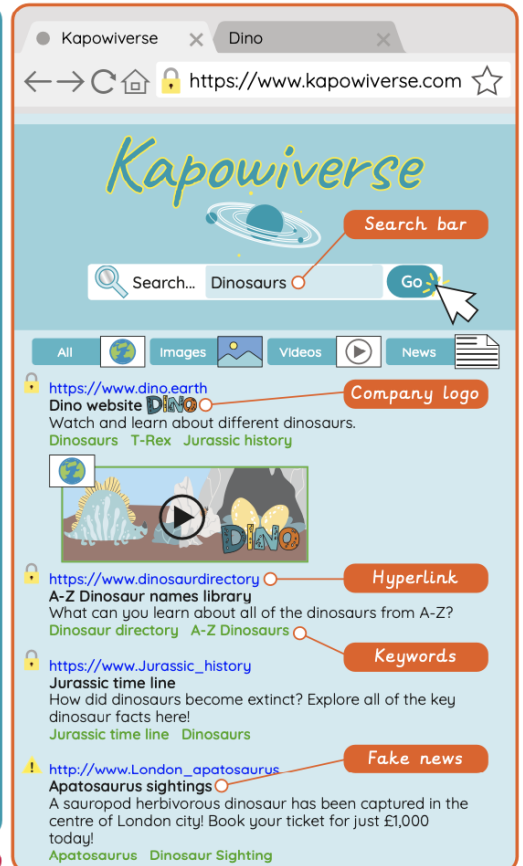
Computing Year 5 Autumn 2

Computing Systems and Networks: Search Engines



Key Vocabulary

Algorithm	A sequence of instructions which, when followed, solve a problem.
Company logo	A symbol or motif, used to represent an organisation, so that it can be identified quickly and easily in a busy environment online or in the real world.
Data leak	When information is released without approval from the owner or creator.
Data privacy	The right to keep information private and away from those you do not wish to have access.
Fake news	False and inaccurate information that is shared in a convincing way, usually on social media and in websites.
Inaccurate information	When information is false and untrue. ⚠️
Index	A computer saves key information about previously searched results, to make this quicker next time they are accessed.
Keywords (internet)	A set of words used to define and produce an accurate search engine result.
Network	When more than one electronic device is connected in a network through the internet or a local connection in order to share files and information.
Online	When a person is accessing the internet through an electronic device.
Page rank	Web pages are sorted in an order to give the user the most suitable results at the top of the list, the first result could be considered rank one.
Search engine	A way for a user to search the internet's database of information.
TASK	Title, Author, Summary, Kids
Web crawler	A program that uses keywords to search the WWW in a logical and systematic way to find the most suitable results for the user.
Website	A series of web pages and other content, which can be discovered and read through an internet browser, that all belong to a single domain name. For example, Google. The main place where particular web pages can be viewed or accessed.
WWW	The acronym used to express the 'World Wide Web'. It is found at the beginning of website addresses e.g. www.kapowprimary.com



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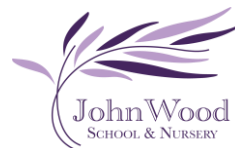


Prior Learning:

Reception:



Computing Year 5 Spring 1 Data Handling: Mars Rover 1

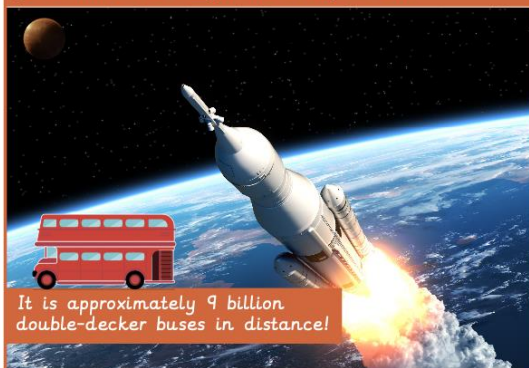


Key Vocabulary

Binary code	A code used in computers, based around the binary values of 0 and 1.
Data	Information used for a specific purpose or investigation.
Data transmission	The movement of information from one or more points to another.
Discovery	When something is intentionally or unintentionally found.
Distance	The amount of space between two places or objects.
Input	Information sent to a computer by an input device such as a keyboard or mouse for processing.
Mars Rover	A robotic vehicle, that explores, investigates and returns data about the terrain on Mars.
Moon	Orbits round planet Earth and is Earth's only natural satellite.
Numerical data	Information that is based on numbers and digits.
Output	Information or data that is sent by the computer to an output device such as a printer or speakers.
Planet	A large natural object that orbits around a star.
Radio signal	A radio wave that is sent or received to somewhere.
Scientist	A person who studies within the fields of Science, such as Physics, Biology and Chemistry.
Sequence	A set order or pattern for something to follow.
Signal	A voltage, current or electromagnetic wave that is either sent or obtained.
Computer simulation	Computer generated imitation of something such as a program test or product prototype.
Space (astronomy)	A vast area around and beyond planet Earth, which is not inhabited.



The Mars Rover had to travel 350 million miles (approx) to get to Mars, it took eight and a half months.



It is approximately 9 billion double-decker buses in distance!

Binary:

When a robot thinks independently, it needs to be able to calculate a range of data. All decisions carried out by a robot, or any computer, are done in binary - including the Mars Rover.

Binary value	Decimal value
0 0 0 0	0 zero
0 0 0 1	1 one
0 0 1 0	2 two
0 0 1 1	3 three
0 1 0 0	4 four
0 1 0 1	5 five
0 1 1 0	6 six
0 1 1 1	7 seven
1 0 0 0	8 eight
1 0 0 1	9 nine
1 0 1 0	10 ten



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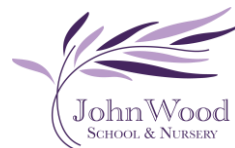
Prior Learning:

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Computing Year 5 Spring 2 Creating Media: Stop Motion Animation



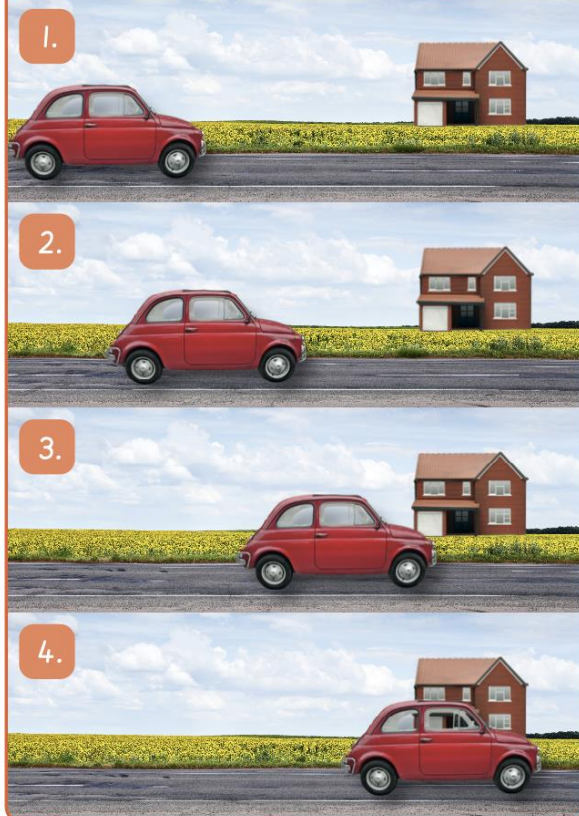
Key Vocabulary

Animation	Pictures or photographs in a sequence to give the illusion of movement.
Animator	Someone who specialises in the creation of animations.
Background	What can be seen behind the main objects or people in a picture.
Decompose	To break something down into smaller chunks.
Duplicate	To make an exact copy of something.
Editing	The process of making changes to a text or film.
Frame	Each picture or page in an animation.
Illusion	Something that is not how it appears to be.
Onion Skinning	A way of seeing the previous frame to help create the next frame in an animation.
Stop Motion	A sequence of images or photographs used to create an animation.
Storyboard	A sequence of sketches to show what will be included within an animation or video.

The onion-skinning tool helps to create more flowing animations.



The stop motion animation process.



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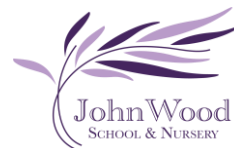
Prior Learning:

Year 1: Creating Media: Digital Imagery. Year 2: Stop Motion.
Year 3: Video Trailers & Website Design. Year 4: Skills Showcase HTML.





Computing Year 5 Summer 1 Programming 2: Micro: Bit



Key Vocabulary

.hex file	A file type, that carries binary information.
.zip file	Multiple files that are bound together as a single file, to use less digital storage space.
Bluetooth	Device to device connectivity, for example sharing images between two smart phones.
Code blocks	A visual representation for a section of code that performs a certain job. They can be snapped together to build a program.
Decompose	To break something down into smaller chunks.
Emulator	A program or machine that is built to copy the way another computer system works.
Feature	Distinctive characteristics of something.
Loop	A repeated sequence of instructions.
Micro:bit	Created by the BBC, a small compact computer that you can code.
Pedometer	A device used to record the number of steps taken to calculate the distance travelled.
Predict	To make an educated guess, as to what might happen or occur as the result of something in the future.
Systematic	Doing something in an ordered way to achieve a specified goal.
Tinker	To explore and play with something to discover the key functions.
Variable	This could be a number or text, that can change each time the program is run and often in combination with selection to change the end result of the program.

BBC Micro:bit
make code -
Code blocks key:

Basic

Led

Logic

Input

Radio

Variables

Music

Loops

Math(s)

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Computing Year 5 Summer 2 Skills Showcase: Mars Rover 2



Key Vocabulary

Algorithm	A sequence of instructions which, when followed, solve a problem.
Binary image	An image where the pixels are made up of only two colours, such as black and white. 
Bit	One unit of data, that either has a value 1 or 0. A bit is also known as a 'binary digit'.
Bit pattern	A sequence of binary digits.
CAD	Computer-aided design, software used to create graphics, diagrams or other visuals.
Compression file	Taking single or multiple files, and reducing their file size to take up less digital storage space.
CPU	Central Processing Units are the brains of a computer and deal with all of the data it receives from input and output devices, as well as programs ran within the computer.
Data	Information used for a specific purpose or investigation.
Digital image	Formed by a series of programmed pixels.
Encode	To convert something into a different code, for someone or something else to understand it.
Image	A picture of people or objects.
JPEG	Joint Photographic Experts Group. A popular image compression format.
Memory computer	Any hardware device that is able to store data or information.
Operating system	The base software needed on a computer for it to manage basic commands, hardware and software and provide a user-friendly interface.
Pixels	A screen is made up of a grid of pixels, each pixel is programmed to display a certain colour which when put together form an image.
RGB	Red, Green, Blue. A colour mode, that uses these three hues combined to create a spectrum of colours.

Digital images are formed by a series of programmed pixels.

Zoomed in to see pixels



The RGB colour mode, uses different levels of red, blue and green light to produce a spectrum of colours.



$$\begin{aligned}
 &\text{Green} + \text{Blue} = \text{Cyan} \\
 &\text{Red} + \text{Blue} = \text{Magenta} \\
 &\text{Green} + \text{Red} = \text{Yellow} \\
 &\text{Red} + \text{Green} + \text{Blue} = \text{White}
 \end{aligned}$$

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