

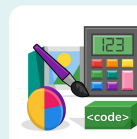
Unit: 4.1

Coding

Key Learning

- To begin to understand selection in computer programming.
- To understand how an IF statement works.
- To understand how to use co-ordinates in computer programming.
- To understand the 'repeat until' command.
- To understand how an IF/ELSE statement works.
- To understand what a variable is in programming.
- To use a number variable.
- To create a playable game.

Key Resources



Tools



2Dos



2Chart



Free code gibbon

Key Vocabulary

Action

The way that objects change when programmed to do so. For example, move or change a property.

Alert

This is a type of output. It shows a pop up of text on the screen.

Algorithm

A precise, step-by-step set of instructions used to solve a problem or achieve an objective.

Background

In 2Code the background is an image in the design that does not change.

Button

A type of object that responds to being clicked on.

Code blocks

A way to write code using blocks which each have an object or an action. Each group of blocks will run when a specific condition is met or when an event occurs.

Command

A single instruction in 2Code.

Debug/Debugging

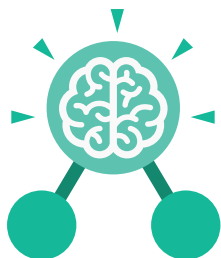
Fixing code that has errors so that the code will run the way it was designed to.

Execute

This is the proper word for when you run the code. We say, 'the program (or code) executes.'

Design

In coding, this is a plan for the program showing the visual look of the user interface (the screen) with the objects. The algorithm can be represented as part of the design, showing actions and events.



Unit: 4.1

Coding

Key Vocabulary

Event

An occurrence that causes a block of code to be run.

The event could be the result of user action such as the user pressing a key (when Key) or clicking or swiping the screen (when Clicked, when Swiped). In

2Code, the event commands are used to create blocks of code that are run when events happen.

Flowchart

A diagram that uses specifically shaped, labelled boxes and arrows to represent an algorithm as a diagram.

'If' Statement

A computer uses an IF statement to decide which bit of code to run. IF a condition is true, then the commands inside the block will be run.

'If/Else' Statement

A conditional command. This tests a statement. If the condition is true, then the commands inside the 'if block' will be run. If the condition is not met, then the commands inside the 'else block' are run.

Input

Information going into the computer. This could be the user moving or clicking the mouse, or the user entering characters on the keyboard. On tablets there are other forms such as finger swipes, touch gestures and tilting the device.

Nest

When coding commands are put inside other commands. These commands only run when the outer command runs.

Object

Items in a program that can be given instructions to move or change in some way (action). In 2Code Gibbon, these include character, turtle, button, vehicle, animal, food, shape, number, input and label.

Prompt

A question or request asked in coding to obtain information from the user in order to select which code to run.

Implement

When a design is turned into a program using coding.

Repeat until

In 2Code this command will repeat a block of commands until a condition is met.

Predict

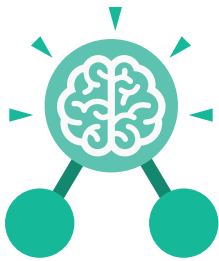
Use your understanding of a situation to say what will happen in the future or will be a consequence of something.

Repeat

This command can be used to make a block of commands run a set number of times or forever.

Run

Clicking the Play button to make the computer respond to the code.



Unit: 4.1

Coding

Key Vocabulary

Properties

These determine the look and size of an object. Each object has properties such as the image, scale and position of the object.

Selection

Selection is a decision command. When selection is used, a program will choose which bit of code to run depending on a condition.

Sequence

This is when a computer program runs commands in order.

Timer

In coding, use a timer command to run a block of commands after a timed delay or at regular intervals.

Variable

A named area in computer memory. A variable has a name and a value. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running.

Key Images



Design

Open design mode in 2Code.



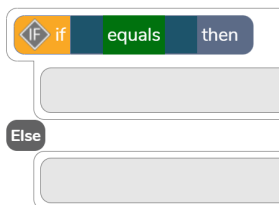
Exit Design

Switch to code mode in 2Code.



change variable

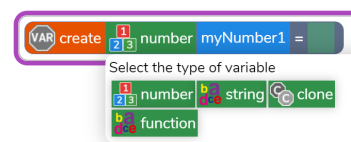
A change variable block.



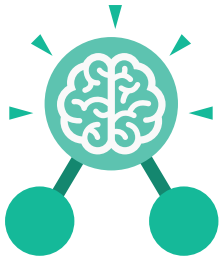
An 'if/Else' command.



Repeat until.



Creating a variable in 2Code.



Unit: 4.1

Coding

Key Questions

Explain the stages of the design, code, test, debug coding process.

This is a process to go through as you create a program using coding

- Design: create a design which could be a flowchart, a labelled diagram or a storyboard. This helps to think through the algorithms required
- Code: code the algorithms using to code and adapting the design.
- Test and Debug: see if the program works and fix any errors.

What does selection mean in coding and how can you achieve this in 2Code?

The code will contain commands that require a decision and the next code to run will depend upon the outcome of this decision. In 2Code we used the 'if' command for selection.

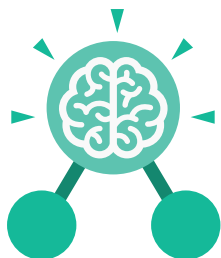
What is the difference between the different object types in 2Code Gibbon level?

The different objects have different properties. This makes them suitable for different types of programs.

- Buttons can only be clicked and have their colour and text changed.
- Vehicles have speed and angle.
- Characters have movement in 4 directions.
- Turtles have rotation, pen up and down.

How can variables and if/else statements be useful when coding programs with selection?

The variable could be set either to 0 or 1 and this could be changed by user action or a timer. If/else statement outcomes could depend upon the value of the variable. command for selection.



Unit: 4.2

Online Safety

Key Learning

- To understand how children can protect themselves from online identity theft.
- To understand that information put online leaves a digital footprint or trail and that this can aid identity theft.
- To identify the risks and benefits of installing software including apps.
- To understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism.
- To identify appropriate behaviour when participating or contributing to collaborative online projects for learning.
- To identify the positive and negative influences of technology on health and the environment.
- To understand the importance of balancing game and screen time with other parts of their lives.

Key Resources



2Connect



2Investigate



SPAM

Key Questions

What is meant by a digital footprint?

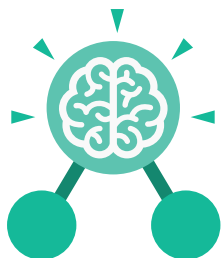
A digital footprint is the information that exists about a person based upon sites that they have visited, searches that they have done, information that they have shared and other online behaviours.

What is SPAM?

SPAM messages are emails or online messages sent from a computer to many other users. The users are sent the email without requesting it. The purpose of SPAM is for advertising, phishing or malware.

What is meant by plagiarism?

Plagiarism refers to using someone else's work and claiming it to be your own.



Unit: 4.2

Online Safety

Key Vocabulary

AdFly

An online advertising marketplace that allows publishers to monetize their website traffic by placing advertisements on their site.

Collaborate

To work jointly on an activity or project.

Digital footprint

The information about a person that exists on the Internet as a result of their online activity.

Plagiarism

Taking someone else's work or ideas and passing them off as one's own.

Spam

Messages sent over the Internet, typically to many users, for the purposes of advertising, phishing or spreading malware.

Attachment

A file, which could be a piece of work or a picture, that is sent with an email.

Cookies

A small amount of data generated by a website and saved by a web browser. Its purpose is to remember information about the user.

Malware

Software that is specifically designed to disrupt, damage, or gain unauthorised access to a computer system.

Ransomware

A type of malicious software designed to block access to a computer system until a sum of money is paid.

Virus

A piece of code which can copy itself and typically has a damaging effect on the device, such as corrupting the system or destroying data.

Citation

Making reference to the original source of a piece of information quotation or image.

Copyright

When the rights to something belong to a specific person.

Phishing

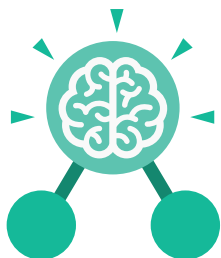
Practice of sending email pretending to be from reputable companies in order to persuade individuals to reveal personal information, such as passwords and credit cards numbers.

SMART rules

A set of rules based around the word SMART designed to help you stay safe when online. SMART represents the words Safe, Meet, Accept, Reliable, Tell.

Watermark

Watermarks are used mainly on images or videos to show who the content belongs to.



Unit: 4.3

Spreadsheets

Key Learning

- To format cells as currency, percentage, decimal to different decimal places or fraction.
- To use the formula wizard to calculate averages.
- To combine tools to make spreadsheet activities such as timed times tables tests.
- To use a spreadsheet to model a real-life situation.
- To add a formula to a cell to automatically make a calculation in that cell.

Key Resources



Key Vocabulary

Row

Vertical reference points for the cells in a spreadsheet.

Column

Horizontal reference points for the cells in a spreadsheet.

Spreadsheet

A computer program that represents data in **cells** in a grid of **rows** and **columns**. Any cell in the grid may contain either data or a **formula** that describes the value to be inserted based on the values in other cells.

Formula

A group of letters, numbers, or other symbols which represents a scientific or mathematical rule. The plural of formula is formulae.

Average

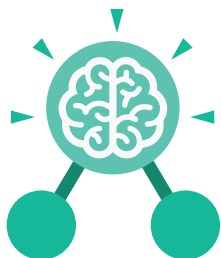
A number expressing the typical value in a set of data. Also known as the mean. It is calculated by dividing the sum of the values in the set by their number.

Budget

The amount of money available to spend on a project.

Chart

A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts.



Unit: 4.3

Spreadsheets

Key Vocabulary

Data

A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision-making.

Decimal place

The position of a digit to the right of a decimal point. In 2Calculate, the number of decimal places to be displayed can be chosen.

Equals tool

Tests whether the entered calculation in the cells to the left of the tool has the correct answer in the cell to the right of the tool.

Format Cell

The way that data is displayed in a cell. For example using units such as £ or \$.

Formula Wizard

Use the formula wizard or type into the formula bar to create a formula in a cell, this will calculate the value for the cells based upon the value of other cells in the spreadsheet.

Line graph

A line graph is used to display information which can change over time. For example, temperature at different times of the day.

Percentage

'per' 'cent' means number of parts per hundred.

Random Number Tool

This tool, when clicked, will generate a random number.

Timer

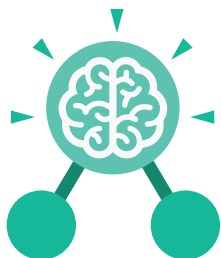
When placed in the spreadsheet, clicking the timer adds 1 to the value of the cell to its right every second until it is clicked again.

Place value

This is the value of each digit within a number. For example 354, the 3 = 3 hundreds, the 5 = 5 tens and the 4 = 4 ones.

Spin Tool

This tool changes a number to the right of it by one each time an arrow is pressed.



Unit: 4.3

Spreadsheets

Key Images



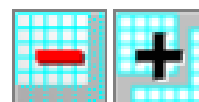
Open, close or share
a file



Save your work



Open a previously
saved file



Increase or decrease
spreadsheet size



Advanced mode



Formula Wizard



Format Cell Toolbox



Charts



Totals toolbox



Image Tools



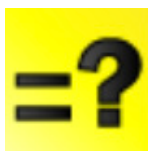
Controls Toolbox



Random Number



Spin



Equals



Timer



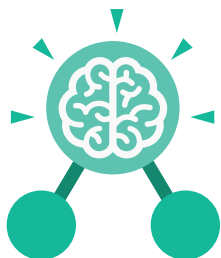
To Copy



To Cut



To Paste



Unit: 4.3

Spreadsheets

Key Questions

How would you add a formula so that the cell shows the percentage score for a test?

Click on the cell where you want the percentage score to be displayed then click the formula wizard button. Click on the cell that contains the score. Choose the \div operation then click on the cell that shows what the test was out of. Click OK. Click on the answer cell and then the format cell button. Choose % as the format.

Which tools would you use to create a timed times tables test in 2Calculate?

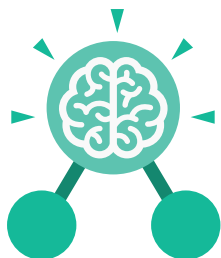
You could use the random tool, the spin tool, the equal tool and the timer tool.

Give an example of the data that could be best represented by a line graph.

Data where both axes will contain continuous data so that you can see trends in the data. Such as ages and heights, time and temperature, years and costs.

Explain what a spreadsheet model of a real-life situation is and what it can be used for?

It represents the data of a situation for example budgeting for a party, working out how big a field needs to be for a certain number of animals, working out how to spend your pocket money over time.



Unit: 4.4

Writing for Different Audiences

Key Learning

- To explore how font size and style can affect the impact of a text.
- To use a simulated scenario to produce a news report.
- To use a simulated scenario to write for a community campaign.

Key Resources

**purple
mash**



2Publish Plus



2Simulate

Key Images



Text Toolbar. Click here to format your text.

Key Vocabulary

Campaign

An organised course of action to achieve a goal.

Format

The way in which something is arranged or set out.

Font

A set of type which shows words and numbers in a particular style and size.

Genre

The style or category type of a piece of art, music or writing.

Opinion

A view or judgment someone forms about something, not always based on fact.

Reporter

A person who reports news or conducts interviews for the press or broadcasting media.

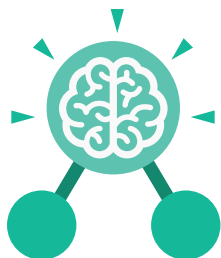
Viewpoint

The way someone sees or thinks about something.

Key Questions

Why should I change the font when I am writing?

Changing the appearance of the font can help make things easier to read and highlight important parts of the text.



Unit: 4.5

Logo

Key Learning

- To learn the structure of the coding language of Logo.
- To input simple instructions in Logo.
- Using 2Logo to create letter shapes.
- To use the Repeat function in Logo to create shapes.
- To use and build procedures in Logo.

Key Questions

What is Logo?

Logo is a text-based coding language used to control an on-screen turtle to create mathematical patterns.

Key Resources



2Logo

Key Vocabulary

Debugging

The process of identifying and removing errors from computer hardware or software.

Grid

The template around which the 2Logo turtle moves.

LOGO

A text-based coding language used to control an on screen turtle to create mathematical patterns.

LOGO Commands (e.g FD, BK, RT, LT)

A list of commands inputted into 2Logo to move the turtle around the screen.

Multi Line Mode

Type several lines of commands in the text area.

Pen Down

Lowens the screen pen so the 2Logo turtle draws a line on the screen.

Pen Up

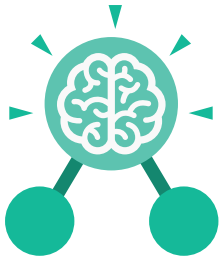
Raises the screen pen so the 2Logo turtle doesn't draw on screen.

Prediction

When you say what is going to happen when you run the instructions.

Procedure

Pieces of Logo text with a procedure name that can be run by calling them by name. Saves time if you want to print to screen lots of the same shape.



Unit: 4.5

Logo

Key Vocabulary

Repeat

A set of instructions that is run a specified number of times.

Run Speed

The speed at which the 2Logo turtle moves around the screen.

SETPC

Set pen colour to a given colour.

SETPS

Set the thickness of the pen's line.

Key Images



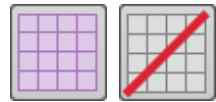
Open, close and share work



Choose the turtle style



Choose a background



Switch the grid on and off



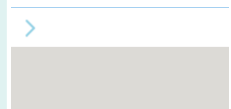
Press and the logo mouse follows the instructions



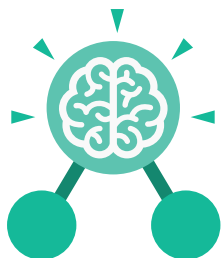
Reset the mouse to the start position



Change the speed at which the mouse moves



Write the Logo instructions here



Unit: 4.6

Animation

Key Learning

- To discuss what makes a good animated film or cartoon.
- To learn how animations are created by hand.
- To find out how animation can be created in a similar way using the computer.
- To learn about onion skinning in animation.
- To add backgrounds and sounds to animations.
- To be introduced to 'stop motion' animation.
- To share animation on the class display board and by blogging.

Key Resources



2Animate

Key Vocabulary

Animation

The process of adding movement to still objects.

FPS (Frames Per Second)

The number of frames played per second.

Frame

A single image in an animation.

Onion Skinning

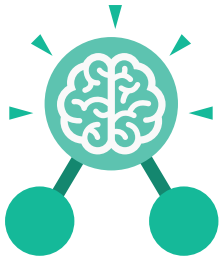
A process where the shadow image of the previous frame is present to help you line up the objects of the animation correctly.

Pause

To temporarily stop the animation.

Stop motion

A technique whereby the camera is repeatedly stopped and started, for example to give animated figures the impression of movement.



Unit: 4.6

Animation

Key Images



Open, close or share animation.



Add or delete a frame from the animation.



Play the animation.



Switch onion skinning on or off.



Add a background picture to the animation.



Insert a photograph from a webcam into the animation.



Insert a sound file into the animation.



Number of frames in the animation.

Key Questions

What is an animation?

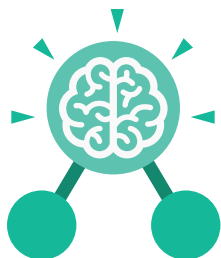
Animation is the process of giving the illusion of movement to drawings, models, or inanimate objects. Animated motion pictures and television shows are highly popular forms of entertainment.

What is meant by onion skinning?

Onion skinning is a 2D computer graphics term for a technique used in creating animated cartoons and editing movies to see several frames at once.

What is meant by stop motion animation?

Stop motion animation is a filming technique in which objects (such as clay models) are photographed in a series of slightly different positions so that the objects seem to move.



Unit: 4.7

Effective Searching

Key Learning

- To locate information on the search results page.
- To use search effectively to find out information.
- To assess whether an information source is true and reliable.

Key Resources



2Publish Plus



Key Questions

What is a search engine?

A search engine is a piece of software that allows the user to find and display pages from the World Wide Web.

Key Vocabulary

Balanced View

Presenting opposing points of view fairly and without bias.

Easter eggs

An unexpected or undocumented feature in a piece of computer software or on a DVD, included as a joke or a bonus.

Internet

A global computer network providing a variety of information and communication facilities.

Key words

A word or a group of words an Internet user uses to perform a search in a search engine.

Reliability

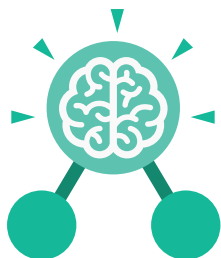
The degree to which the result of something can be depended on to be accurate.

Results page

Where the answers to a search are displayed.

Search engine

A program that searches for and identifies items in a database. Used especially for finding sites on the World Wide Web.



Unit: 4.8

Hardware Investigators

Key Learning

- To understand the different parts that make up a computer.
- To recall the different parts that make up a computer.

Key Resources

**purple
mash**



2Connect



2Quiz

Key Questions

What is the difference between hardware and software?

Hardware refers to the physical parts of a computer or device. The parts inside the computer casing are often called the components. The parts that are attached to the computer case are called peripherals. Software describes the programs that run on the computer.

Key Vocabulary

Components

Parts inside the computer casing.

CPU

The 'brains' of the computer, where all the calculations take place.

Graphics Card

Also known as a video card and used for displaying images.

Hard Drive

Where the computer stores all your documents, pictures, games and videos.

Input

How information enters the computer.

Motherboard

Main printed circuit board of the computer.

Network Card

Used to connect the computer to a network such as the Internet.

Output

Where information leaves the system.

Peripherals

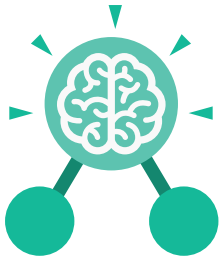
Parts that are attached to the computer case.

RAM

Allows programs to store information to help the computer run quickly.

Software

The programs that run on the computer.



Unit: 4.8

Hardware Investigators

Key Images



Motherboard



CPU



RAM



Graphics card



Network card



Monitor



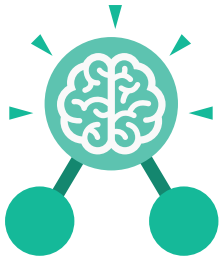
Speakers



Keyboard



Mouse



Unit: 4.9

Making Music

Key Learning

- To identify and discuss the main elements of music.
- To understand and experiment with rhythm and tempo.
- To create a melodic phrase.
- To electronically compose a piece of music.

Key Questions

What is the difference between melody and rhythm?

A rhythm is a pattern of sounds based on the length of the notes and the silences. A melody is a pattern of notes based on the pitch and rhythm, which make up a memorable tune.

Key Resources



Busy Beats

Key Vocabulary

BPM

Beats per Minute.
Changing the BPM changes the speed of the music.

Dynamics

How loud or quiet a sound is.

Harmonious

Notes which sound tuneful and pleasant together.

Melody

A sequence of notes which make up a tune.

Pitch

How high or low a sound is.

Pulse

The steady beat of a piece of music.

Rhythm

A pattern of long and short sounds and silences.

Tempo

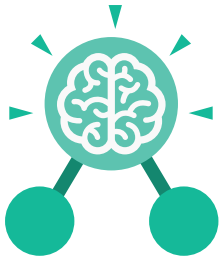
How slow or fast a piece of music is.

Texture

The different sounds you can hear in a piece of music.

Synths

Short for synthesizer.
Electronic musical instrument sounds.



Unit: 4.9

Making Music

Key Images



Open, save and share work.



Play and add different notes or synths.



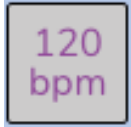
Play and add different sample sounds.



Clicking on the rippler triggers the sounds.



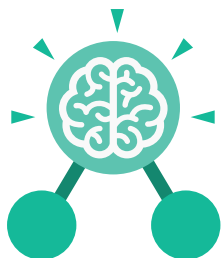
Stop the music by pressing this button.



This changes the speed – beats per minute.



Record, stop recording and replay your work.



Unit: 4.10

Introduction to Artificial Intelligence

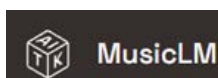
Key Learning

- To learn what is meant by the term artificial intelligence.
- To be clear about ways artificial intelligence is used in our everyday lives.
- To consider the future of artificial intelligence
- To look at how artificial intelligence is used in music and the arts to create things.

Key Resources



Bard



Music LM



Chat GPT



Quick, Draw

Key Questions

What is artificial intelligence?

Artificial intelligence (AI) is when computers and machines can do things that usually need human intelligence, like learning, solving problems, and making decisions.

How is artificial intelligence used in our lives?

Artificial intelligence is used in many ways in our lives. It helps us find information online, play games, use voice assistants, and even control some devices at home.

Key Vocabulary

Algorithm

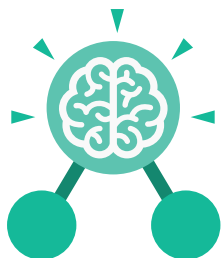
A precise, step-by-step set of instructions used to solve a problem or achieve an objective.

Artificial Intelligence:

Computer systems able to perform tasks normally requiring human intelligence, such as seeing things, speech recognition, decision-making, and translation between languages.

Data

A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision-making.



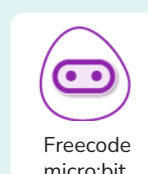
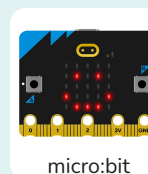
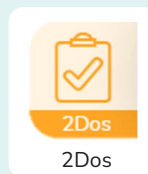
Unit: 4.11

micro:bit

Key Learning

- To understand how sensor inputs from the accelerometer can be used to detect movement, such as when a step is taken.
- To understand how variables can be used to keep track of things in a program.
- To understand how inputs, outputs and computer code work together to make control systems.
- To understand what logic is and how it can be used to make different outputs happen according to different inputs.
- To be able to make a control system and game.

Key Resources



Key Vocabulary

Accelerometer

A sensor that detects movement.

Light sensor

An input that senses the level of light in the real world.

Simulation

A program that models a real-life situation. They let you try things out that would be too difficult or dangerous to do in real life.

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Logic

How computers make decisions based on whether things are true or false.

Variable

A named area in computer memory. A variable has a name and a value. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running.

Gestures

A type of input where the micro:bit is moved in different ways such as tilting, dropping, shaking.

Selection

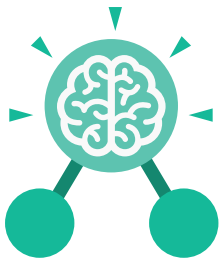
Selection is a decision command. When selection is used, a program will choose which bit of code to run depending on a condition.

Sensor

An input that senses things in the real world, such as movement, temperature, and light levels.

Infinite loop

A loop that runs forever.



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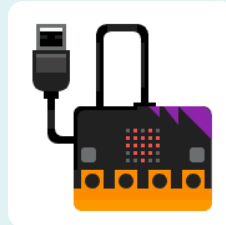
Key Images



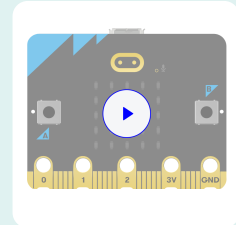
Open, close or share a file.



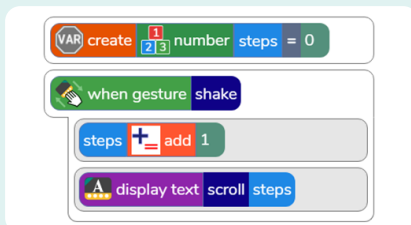
Save your work.



USB transfer.



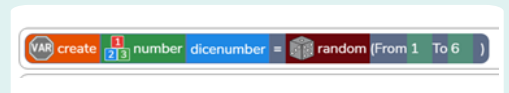
Test code using simulator.



An event triggered by a gesture which adds 1 to the variable 'steps' and outputs this number.



Logic - IF/ELSE.



A variable called 'dicenumber' set to random number 1 to 6

Key Questions

How can sensors, code and outputs work together?

When using micro:bit a user can program the device to sense the environment around it. When particular environmental conditions are met such as the accelerometer detecting movement, code written can then trigger an output response such as displaying a message.

What examples can you think of a good use for variables when programming micro:bits?

Variables are places in a computer memory that store information and can have their content changed by a program.

An example of this might be creating a variable that stores the number of times a micro:bit's accelerometer is triggered. Each time the accelerometer is triggered, the variable count is changed and then this number is outputted to the micro:bit LED.