

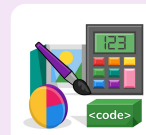
Unit: 6.1

Coding

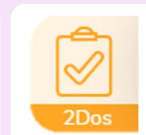
Key Learning

- To design a playable game with a timer and a score.
- To plan and use selection and variables.
- To understand how the launch command works.
- To use functions and understand why they are useful.
- To understand how functions are created and called.
- To use flowcharts to create and debug code.
- To create a simulation of a room in which devices can be controlled.
- To understand how user input can be used in a program.
- To understand how 2Code can be used to make a text-adventure game.

Key Resources



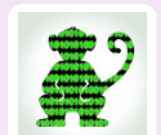
Tools



2Dos



2Chart



Free code gorilla

Key Vocabulary

Action

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

Algorithm

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

Command

A single instruction in a computer program.

Co-ordinates

Numbers which determine the position of a point, shape or object in a particular space.

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**) or when objects interact (**collision**). In 2Code, the event commands are used to create blocks of code that are run when events happen.

Decomposition

A method of breaking down a task into manageable components. This makes coding easier as the components can then be coded separately and then brought back together in the program.

Execute\Run

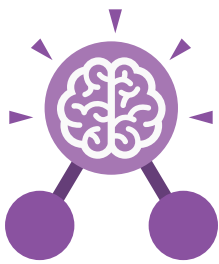
Clicking the Play button to make the computer respond to the code. Execute is the technical word for when you run the code. We say, 'the program (or code) executes.'

Debug/Debugging

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

Flowchart

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



Unit: 6.1

Coding

Key Vocabulary

Function

A block or sequence of code that you can access when you need it, so you don't have to rewrite the code repeatedly. Instead, you simply **call** the function each time you want it.

Object

Items in a program that can be given instructions to move or change in some way (action). In 2Code Gorilla, the **object types** are button number, input, text, shape turtle, character, object, vehicle, animal.

Procedure

An independent code module that fulfils a task and is referenced within a larger body of code. In 2Code a procedure might be coded as a function.

Selection

Selection is a decision command. When selection is used, a program will choose which bit of code to run depending on a condition. In 2Code selection is accomplished using 'if' or 'if/else' statements.

Tab

In 2Code, this is a way to organise a program into separate pages (tabs) of code.

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. In 2Code the commands **prompt for input** and **get input** are used to prompt the user to enter typed input and then use this input.

Properties

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

Sequence

This is when a computer program runs commands in order.

Simulation

A model that represents a real or imaginary situation. Simulations can be used to explore options and to test predictions.

Timer

Use this command to run a block of commands after a timed delay or at regular intervals.

Launch Command

This command will open another Purple Mash file or an external website that you specify when it is called.

Output

Information that comes out of the computer e.g. **sound**, **prompt**, **alert** or **print to screen**.

Predict

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

Repeat

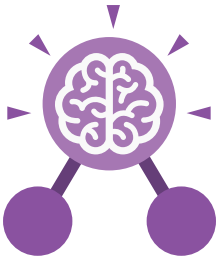
This command can be used to make a block of commands run a set number of times or forever.

Repeat Until

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

Variable

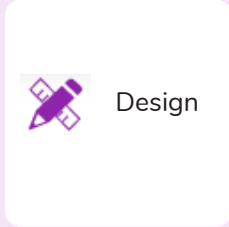
A named area in computer memory. A variable has a **name** and a **value**. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running.



Unit: 6.1

Coding

Key Images



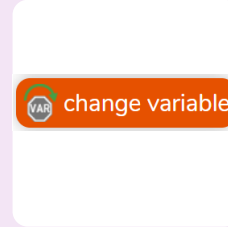
Design

Open design mode in 2Code.

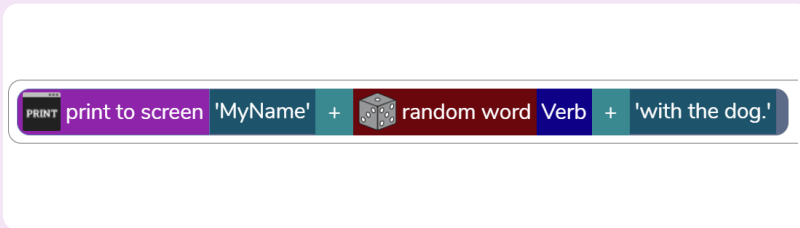


Exit Design

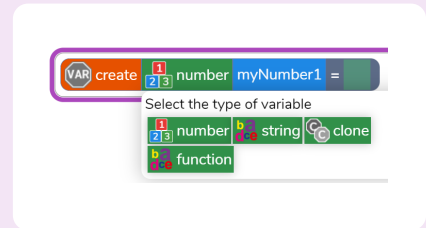
Switch to code mode in 2Code.



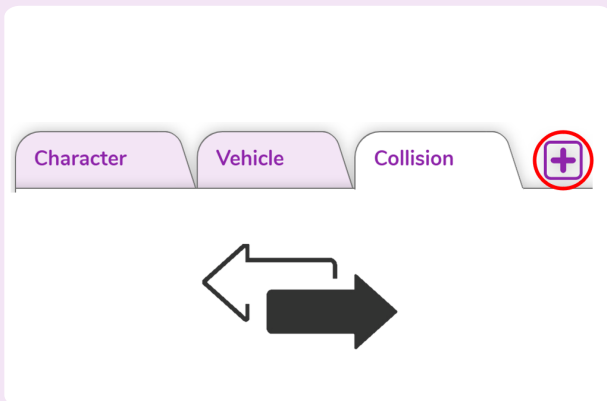
A change variable block.



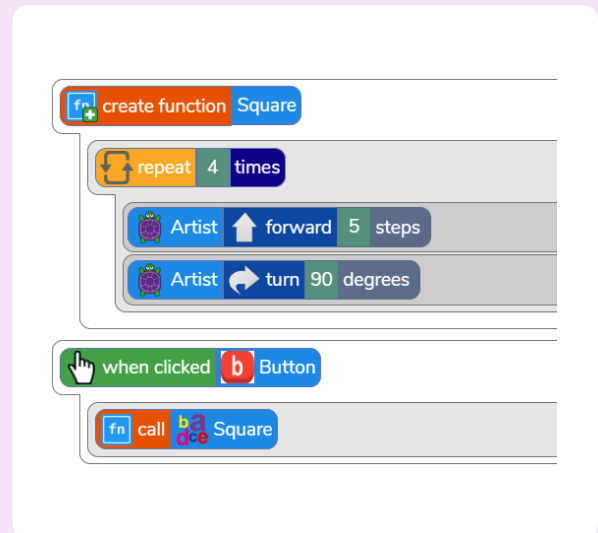
Example of combining variables and strings to print to the screen



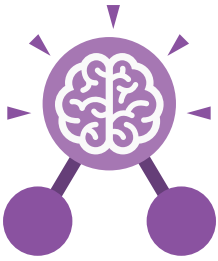
Creating a variable in 2Code



Add a new Tab to your code or move code blocks between tabs



A function called 'square' that is called by clicking on a button called btnSquare.



Unit: 6.1

Coding

Key Questions

How can you use Tabs in 2Code Gorilla?

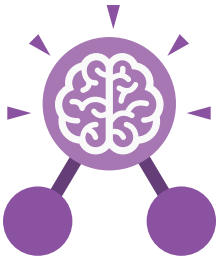
Tabs are used to organise your code and make it more readable. This also makes it easier to debug. Give the Tabs useful names to help with this.

What is a function in coding? Give an example that you have used in 2Code Gorilla.

A function is a block of code that you can access when you need it, so you don't have to rewrite the same block repeatedly. You call the function each time you want it. In a turtle program you could have a button that will make the turtle draw a square each time you click it. In the text adventure, there were functions for each room that were called when the user navigated to the room.

In 2Code Gorilla, how can a program receive user input?

When the user clicks on an object, when the user presses keys or swipes the screen with the mouse, the 'Get Input' and 'Prompt for input' commands.
On a touchscreen: when the screen is touched or swiped.



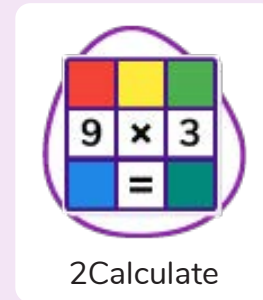
Unit: 6.3

Spreadsheets

Key Learning

- To use a spreadsheet to investigate the probability of the results of throwing many dice.
- To use a spreadsheet to calculate the discount and final prices in a sale.
- To use a spreadsheet to plan how to spend pocket money and the effect of saving money.
- To use a spreadsheet to plan a school charity day to maximise the money donated to charity.

Key Resources



Key Vocabulary

Rows

Boxes running horizontally in a spreadsheet.

Data

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

Spreadsheet

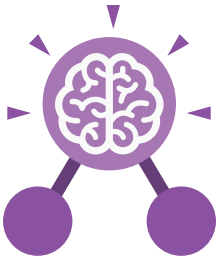
A computer program that represents data in **cells** in a grid of **rows** and **columns**. Any cell in the grid may contain either **data** or a **formula** that describes the value to be inserted based on the values in other cells.

Columns

Boxes running vertically in a spreadsheet.

Formula

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



Unit: 6.3

Spreadsheets

Key Vocabulary

Advance mode

A mode of 2Calculate in which the cells have references and can include formulae.

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.

Count (How Many) Tool

Counts how many of a variable there are in a spreadsheet.

Dice Tool

Simulates the roll of a die to a random number between 1 and 6 when you click on it.

Expense

A cost associated with a project.

Format Cell

The way that text looks. Formatting cells is helpful for interpreting a cell's contents for example you might want to format a cell to show a fraction e.g. $4\frac{1}{2}$ or include units such as £ or \$.

Formula Bar

An area of the spreadsheet into which formulae can be entered using the '=' sign to open the formula.

Formula Wizard

Helps a user create formulas which perform calculations on selected cells. For example, adding, multiplying, average, total.

Move cell tool

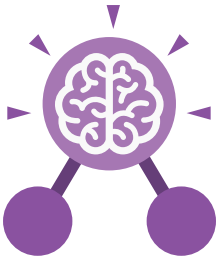
Allows selected cells to be draggable.

Probability

The extent to which an event is likely to occur, measured by the ratio of the favourable cases to the whole number of cases possible.

Profit

Money that is earned in trade or business after paying the costs of producing and selling goods and services.



Unit: 6.3

Spreadsheets

Key Images



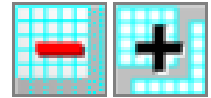
Open, close or share a file



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



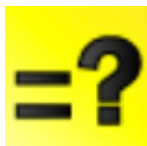
Controls Toolbox



Move



Dice



Equals



Count



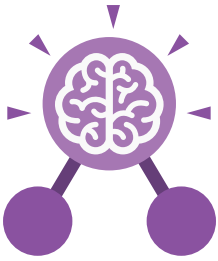
To Copy



To Cut



To Paste



Unit: 6.3

Spreadsheets

Key Questions

How would you add a formula so that the cell shows the total of a column of cells?

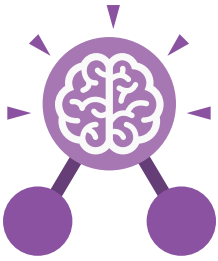
Use the formula wizard advanced total tool or type a formula into the cell by using the '=' symbol, mathematical operators and cell references.

What is a computational model and what it can be used for?

Modelling in Computing means creating or using a simulation (a model) of a real-life situation, on a computer. 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 the best price for an item or using the existing data to predict what time your shadow will be a certain length.

If you were going to use a spreadsheet to plan your dream holiday, what data would you collect to cost the trip?

Ideas could include:
Travel; comparing the cost of different methods, airports, airlines, different companies and discounts such as rail cards.
Cost of accommodation of different types, trips out, food, passports, immunisations.



Unit: 6.4

Blogging

Key Learning

- To identify the purpose of writing a blog.
- To identify the features of a successful blog.
- To plan the theme and content for a blog.
- To understand how to write a blog and a blog post.
- To consider the effect upon the audience of changing the visual properties of the blog.
- To understand how to contribute to an existing blog.
- To understand how and why blog posts are approved by the teacher.
- To understand the importance of commenting on blogs.

Key Resources

**purple
mash**



2Blog



2Connect

Key Questions

What is a blog?

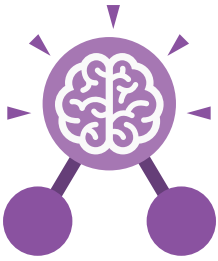
A blog is a website or webpage that is regularly updated by the author. A blog also allows the reader to post comments or opinion based on what is written.

What can a blog be about?

A blog can be written about any subject. You could write a blog about school such as information about the subject you are studying. Alternatively, you could write a blog about your favourite team or movie.

How are the audience involved in a blog?

A key feature of blogs is that the audience can leave a comment or opinion about what they have read on the blog.



Unit: 6.4

Blogging

Key Vocabulary

Approval

The act of acknowledging something is appropriate.

Archive

In this case, where older blog or vlog posts are stored.

Blog

A regularly updated website or web page, typically one run by an individual or small group, that is written in an informal or conversational style.

Blog post

A piece of writing or other item of content published on a blog.

Collaborate

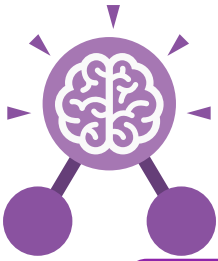
Work jointly on an activity or project.

Commenting

To express an opinion or reaction in speech or writing.

Vlog

A personal website or social media account where a person regularly posts short videos.



Unit: 6.6 Networks

Key Learning

- To learn about what the Internet consists of.
- To find out what a LAN and a WAN are.
- To find out how the Internet is accessed in school.
- To research and find out about the age of the Internet.
- To think about what the future might hold.

Key Resources

**purple
mash**



Tim Berners- Lee
Profile



Communication
Questionnaire

Key Vocabulary

Hub\Switch

The connection point for networks where data packets from many locations converge and are then sent out to different devices.

Internet

A global computer network providing a variety of information and communication facilities consisting of interconnected networks using standardized communication protocols.

Local area network (LAN)

A computer network that links devices within a building or group of adjacent buildings, especially one with a radius of less than 1 km.

Network

Several interconnected computers, machines, or operations.

Router

A device which forwards data packets to the appropriate parts of a computer network.

Wide area network (WAN)

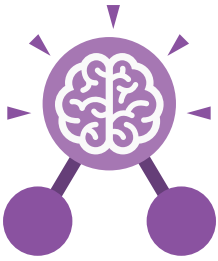
A collection of local-area networks (LANs) or other networks that communicate with one another over a large physical area or even globally.

World Wide Web

An information system on the Internet which allows documents to be connected to other documents by hypertext links, enabling the user to search for information by moving from one document to another.

Wi-Fi

A facility allowing computers, smartphones, or other devices to connect to the Internet or communicate with one another wirelessly within a particular area.



Unit: 6.6

Networks

Key Questions

What is the difference between the Internet and the World Wide Web?

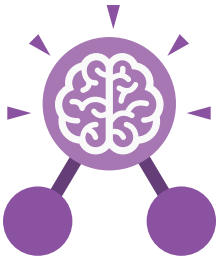
The Internet is a global network of networks while the Web, also referred formally as the World Wide Web (www) is collection of information which is accessed via the Internet.

What is the difference between a LAN and a WAN?

Both are networks that connect computers together. A LAN (Local Area Network) is normally for computers connected less than 1KM distance, whilst a WAN (Wide Area Network) extends over a large geographical area.

Who is Tim Berners-Lee?

Tim Berners-Lee is the inventor of the World Wide Web. The WWW is the system that delivers webpages over the internet.



Unit: 6.7

Quizzing

Key Learning

- To create a picture-based quiz for young children.
- To learn how to use the question types within 2Quiz.
- To explore the grammar quizzes.
- To make a quiz that requires the player to search a database.
- To make a quiz to test your teachers or parents.

Key Resources

**purple
mash**



2Quiz



2DIY



Text Toolkit



2Connect



2Investigate

Key Vocabulary

Audience

People who watch a performance or use a resource.

Audio

Sound (especially when recorded).

Case-Sensitive

Differentiating between capital and lower-case letters.

Clone

To make a complete copy of something.

Cloze

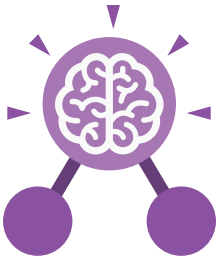
A test in which words are removed from a text and replaced with spaces. The learner has to fill each space with the correct word(s).

Preview

To see what something (or part of something) looks like before committing to it being the final version.

Quiz

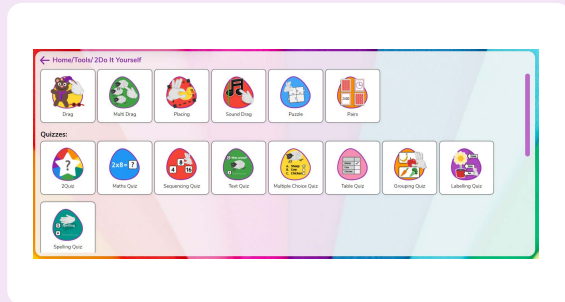
An activity in which participants answer questions and receive a score dependent upon correct answers.



Unit: 6.7

Quizzing

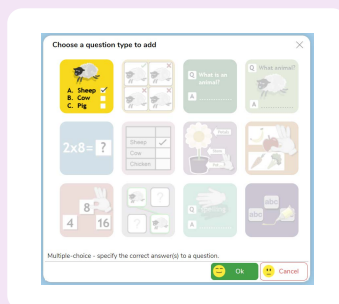
Key Images



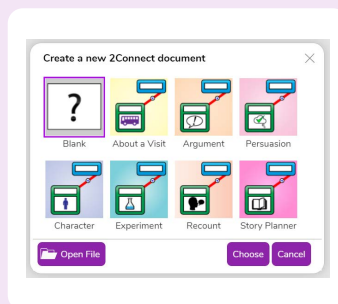
Create a quiz using 2Do It Yourself



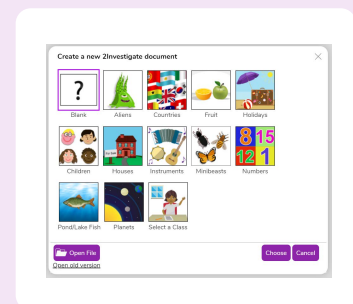
Create a quiz using Text Toolkit



Choose a question type in 2Quiz



Create a concept map from scratch (blank) or an existing template.



Create a blank database

Key Questions

What factors do you need to consider when creating a quiz?

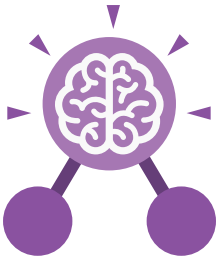
The intended audience; age and reading ability and interests.
The aim of the quiz; is it for fun like a game, or to make sure that the user has learnt something?

Name three question types in 2Quiz.

- Sequencing
- Grouping and Sorting
- Text based
- Multiple-choice
- Labelling

Apart from the questions, what else does a quiz need to contain?

A title screen and instructions for the user.
Feedback for the user (some quizzes).
Time limits (some quizzes).
Images for interest as well as part of the questions



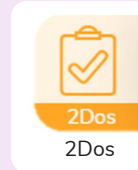
Unit: 6.8

Binary

Key Learning

- To examine how whole numbers are used as the basis for representing all types of data in digital systems.
- To recognise that digital systems represent all types of data using number codes that ultimately are patterns of 1s and 0s (called binary digits, which is why they are called digital systems).
- To understand that binary represents numbers using 1s and 0s and these represent the on and off electrical states respectively in hardware and robotics.

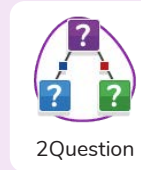
Key Resources



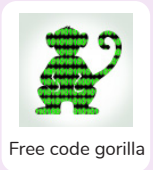
2Dos



2Connect



2Question



Free code gorilla

Key Vocabulary

Base 2

A number system in which there are two separate integers that can be used to make all numbers. This is also called the **binary** system.

Bit

A single 0 or 1 is called a bit. This word comes from 'Binary Digit'.

Base 10

A number system in which there are ten separate integers that can be used to make all numbers. This is also called the **decimal** and the **denary** system.

Digit

A single integer used to show a number.

Transistor

A transistor is a tiny switch that is activated by the electronic signals it receives.

Words used to describe numbers of bits and the computer memory space used:

Nibble - 4 bits

Byte - 8 bits.

Kilobyte (KB) - 1024 bytes

Megabyte (MB) - 1024 KB

Gigabyte (GB) - 1024 MB

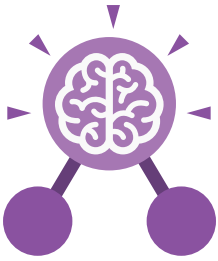
Terabyte (TB) - 1024 GB

Integer

Any whole number. This includes negative and positive numbers but not fractions or decimals.

Switch

An act of changing to or adopting one thing in place of another.



Unit: 6.8

Binary

Key Vocabulary

Machine code

The code that signals to a computer which transistors should be on or off. Machine code is written in binary.

Megabyte (MB)

1024 KB.

Nibble

4 bits.

Switch

A component that can be one of two states at any time: on or off.

Terabyte (TB)

1024 GB

Transistor

A tiny switch that is activated by the electronic signals it receives.

Variable

A variable is used in programming to keep track of things that can change while a program is running. A variable must have a name. The value of the variable is the information to store.

Key Images

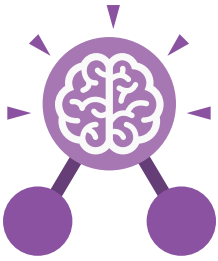
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Unit: 6.8

Binary

Key Questions

How does binary relate to the programs that you use or create?

In a computer, everything is translated into binary stored by on and off switches that pass electronic signals that the computer interprets. It can then pass the correct signals to the components of the computer such as the sound card to make the requested sound. Or graphics card to make images appear on the screen.

How does binary relate to computer memory?

A single 0 or 1 is called a bit. The word comes from Binary Digit. The bigger the program, the more bits are used so more memory space is taken up. For example, 1 byte is 8 bits, 1 megabyte (Mb) or 8,388,608 bits, 1 gigabyte (GB) is 8,589,934,592 bits!

How would you write the numbers 0 to 10 in binary?

0, 1, 10, 11,
100, 101, 110, 111, 1000,
1001, 1010.