

## 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

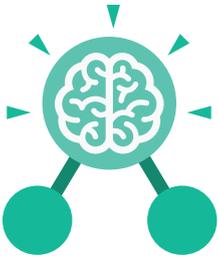
Fixing code that has errors so that the code will run the way it was designed to.

##### 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.

##### Execute

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



## 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.

##### Nest

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

##### 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.

##### Flowchart

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

##### '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.

##### 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.

##### Predict

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

##### '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.

##### 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.

##### Prompt

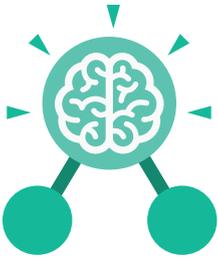
A question or request asked in coding to obtain information from the user in order to select which code to run.

##### 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.

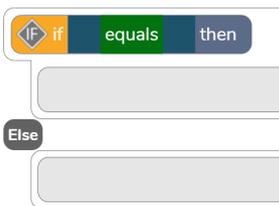


Exit Design

Switch to code mode in 2Code.



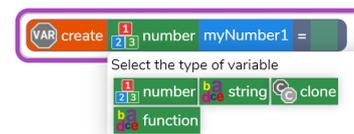
A change variable block.



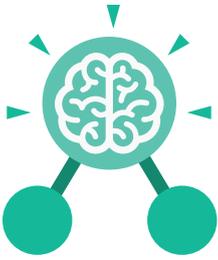
An 'if/Else' command.



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.

##### 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.

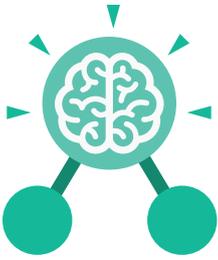
##### What does selection mean in coding and how can you achieve this in 2Code?

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.



## 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

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

##### Pen Up

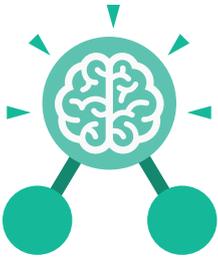
Raises the screen pen so the 2Logo turtle doesn't draw on screen.

##### 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



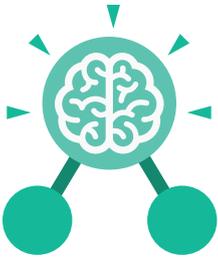
Reset the mouse to the start position



Change the speed at which the mouse moves



Write the Logo instructions here

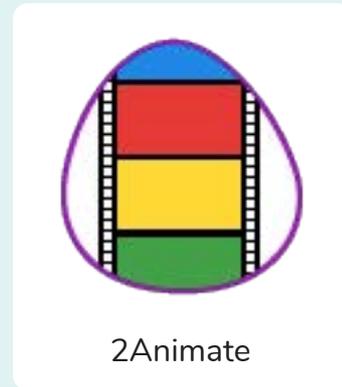


## Unit: 4.6 Animation

### 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



### 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

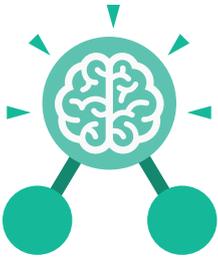
A process where the shadow image of the previous frame is present to help you line up the objects of the animation correctly.

#### 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.



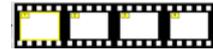
Add a background picture to the animation.



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?

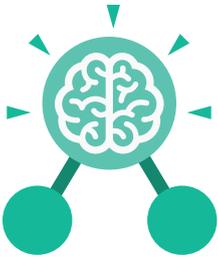
Animation is the process of giving the illusion of movement to drawings, models, or inanimate objects. Animated motion pictures and television shows are highly popular forms of entertainment.

#### 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



#### 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

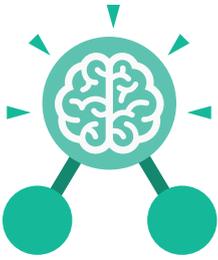
The degree to which the result of something can be depended on to be accurate.

##### 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: 4.9

### 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



#### Key Vocabulary

##### BPM

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

##### Melody

A sequence of notes which make up a tune.

##### Rhythm

A pattern of long and short sounds and silences.

##### Dynamics

How loud or quiet a sound is.

##### Pitch

How high or low a sound is.

##### Tempo

How slow or fast a piece of music is.

##### Synths

Short for synthesizer. Electronic musical instrument sounds.

##### Harmonious

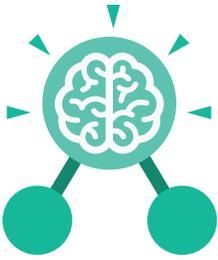
Notes which sound tuneful and pleasant together.

##### Pulse

The steady beat of a piece of music.

##### Texture

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



## Unit: 4.9

### Making Music

#### Key Images



Open, save and share work.



Play and add different notes or synths.



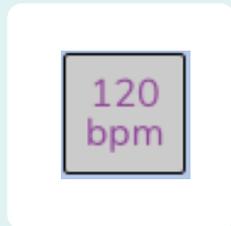
Play and add different sample sounds.



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.