# 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

purple mash
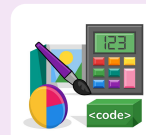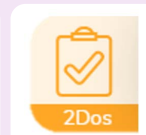
Tools | 2Dos | 2Chart | Free code gorilla

Key Vocabulary

Action
The way that objects change when programmed to do so. For example, move.

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

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.'

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

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.

Command
A single instruction in a computer program.

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.

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.

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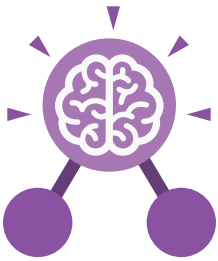
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Key Vocabulary

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.

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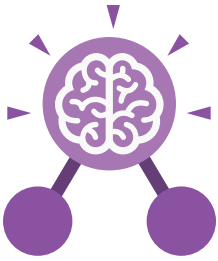
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Key Images

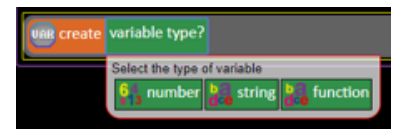Open design mode in 2Code.

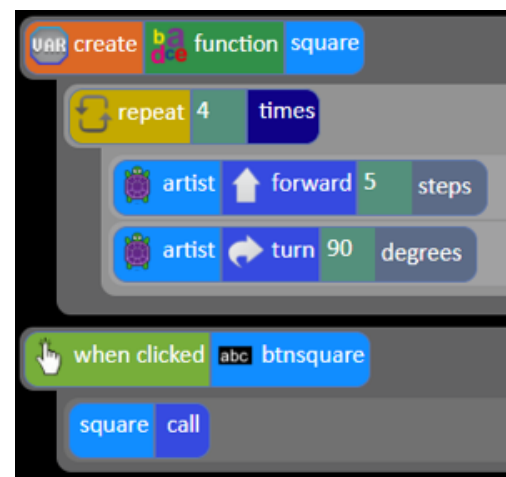Switch to code mode in 2Code.

A change variable block.

Example of combining variables and strings to print to the screen
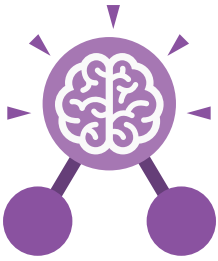

Creating a variable in 2Code

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.

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Key Questions

How can you use Tabs in 2Code Gorilla?

Tabs are used to organise you 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.

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