Unit: 5.1
Coding

Key Learning

- To begin to simplify code.
- To create a playable game.
- To understand what a simulation is.
- To program a simulation using 2Code.
- To know what decomposition and abstraction are in computer science.
- To a take a real-life situation, decompose it and think about the level of abstraction.
- To understand how to use friction in code
- To begin to understand what a function is and how functions work in code.
- To understand what the different variables types are and how they are used differently.
- To understand how to create a string.
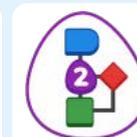- To understand what concatenation is and how it works.

Key Resources

purple mash

Tools   2Dos   2Chart   Free code gorilla

Key Vocabulary

Action
Types of commands, which are run on an object. They could be used to move an object or change a property.

Abstraction
A way of de-cluttering and removing unnecessary details to get a program functioning.

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

Bug
A problem in a computer program that stops it working the way it was designed.

Command
A single instruction in a computer program.

Concatenation
The action of linking things together in a series.

Control
These commands determine whether parts of the program will run, how often and sometimes, when.
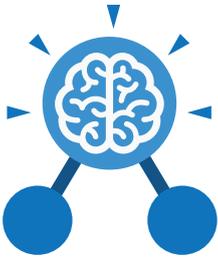
Decomposition
A method of breaking down a task into manageable components. This makes coding easier as the components can then be coded separately and then brought back together in the program.

Debug/Debugging
Looking for any problems in the code, fixing and testing them.

Design Mode
Used to create the look of a 2Code computer program when it is run.

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Key Vocabulary

Event
Something that causes a block of code to be run.

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.

Get Input
This puts the text that a user types into the computer's temporary memory to be used to control the program flow.

If
A conditional command. This tests a statement. If the condition is true, then the commands inside the block will be run.

If/Else
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. Can include moving or clicking the mouse, using the keyboard, swiping and tilting the device.

Output
Information that comes out of the computer e.g. sound.

Object
An element in a computer program that can be changed using actions or properties. In 2Code, buttons, characters and vehicles are types of objects.

Physical System
A system or process which happen in the real world using robotics, sensors or motors e.g. traffic lights.

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

Sequence
This is when a computer program runs commands in order. In 2Code this can also include "repeat" or a timer.

Selection
This is a conditional/ decision command. When selection is used, a program will choose a different outcome depending on a condition.

Simulation
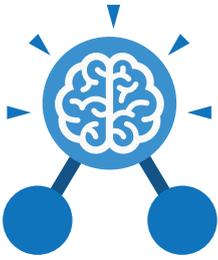A model that represents a real or imaginary situation.

String
A sequence of characters, which could form words, phrases or even whole sentences.

Timer
Use this 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.
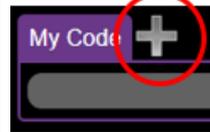
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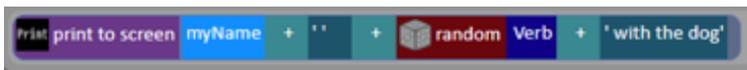
Key Images

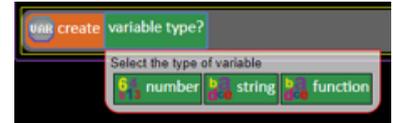Open design mode in 2Code.

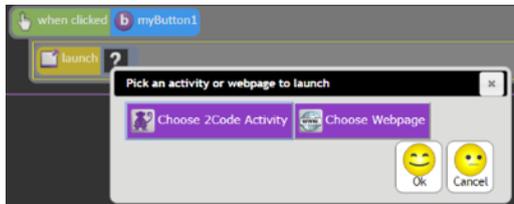Switch to code mode in 2Code.
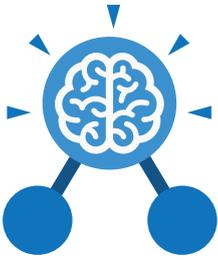

Add a new Tab to your code

A change variable block.

Example of combining variables and strings to print to the screen

Creating a variable in 2Code

Creating a variable in 2Code

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Key Questions

What does simulating a physical system mean?

Creating a program where the objects behave as they would in the real world. For example, a football program that uses angles, speed and friction to simulate kicking a football. When simulating a physical system, you first must break the system down into parts that can be coded (decomposition). The different parts will come together to make the full simulation.

Describe how you would use variables to make a timer countdown and a scorepad for a game.

Timer countdown: Create a timer variable and set it to the starting number of seconds. Add a Timer command that repeats and subtracts 1 every second. Add a text object in design view to display this number.

Score: Create a variable to store the score, each time the user gains a point, change and display the value of the variable.

Give examples of how you could use the Launch command in 2Code.

Clicking on a button or other object in the program to opens another 2Code program or a webpage.

What do the terms decomposition and abstraction mean? Use examples to explain them.

Decomposition is breaking a task into its component parts so that each part can be coded separately. If you were coding a game of chess, you could decompose into the moves of the different pieces and the setup of the playing space. Abstraction is removing unnecessary details to get the program functioning. In the example, the colour and size of the squares is not important to game play.

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