



Year 5 Coding

Key Learning

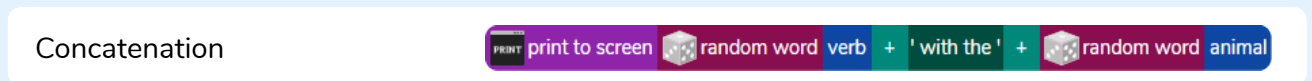
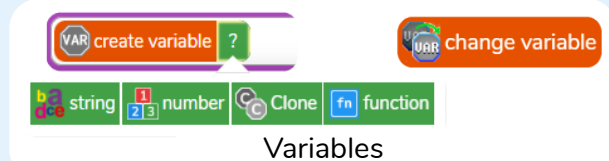
- To understand some ways that code can be simplified so that it is easier to read and runs more efficiently.
- To program a simulation using 2Code.
- To know what decomposition and abstraction are in Computer Science.
- To understand what a function is and how functions work in code.
- To understand what a datatype is and how they are used when coding with variables.
- To read code, predict outcomes and identify and fix bugs.

Key Resources



2Code

Key Images



Key Questions

What does simulating a physical system mean?

Creating a program where the objects behave as they would in the real world. Use abstraction to remove unneeded details and then decomposition to divide the task into parts that can be coded. 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.



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Key Vocabulary

Abstraction

A way of decluttering and removing unnecessary details in order to code the main task of the program.

Action

A type of command which causes an object to alter its behaviour. Actions could be used to move an object or change a property.

Algorithm

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

Coordinates

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

Concatenation

The action of linking things together in a series.

Datatype

Defines the type of data, for example, a number or text, and what operations can be done with it.

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.

Event

Something that happens in a program that causes a block of code to be run. Events include 'When Clicked', 'When Key' and 'When Swiped'.

Flowchart

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

Function

A named group of commands that a program can run when called by name, reducing the need to rewrite code repeatedly.

'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.

Initialize

Setting the starting value for a variable.

Nesting

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



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Object

An item in a program that can be given instructions to move or change in some way (carry out an action).

Simplify

In coding, this is used to describe modifying the code to complete the same process with less lines of code.

Physical System

In this context, this is any object or situation that can be analysed and modelled. For example, modelling the function of a traffic light, modelling friction of cars moving down surfaces or modelling the functions of a home's security system.

Simulation

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

String

Text or a combination of text characters and numbers: A sequence of characters, which could form words, phrases or sentences.

Random

Generating values that are unpredictable within a specified range or set. In programming, this is used to introduce variability and unpredictability into the code's behaviour.

Sub-routine

A mini program inside a bigger program that does one job.

Repeat

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

Tag Attribute

A word attribute given to objects so that code can be written for multiple objects at once to write efficient code.

Repeat until

This command will repeat a block of commands until a condition is met.

Timer

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

Selection

A decision command. When selection is used, a program will choose which bit of code to run depending on a condition. In 2Code, this can be achieved using 'if' and 'if/else' statements.

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.

Sequence

When a computer program runs commands in order.