Coding & Computational Thinking (Year 1)

Prior Learning

- Used 2Go in early years to complete a simple program.

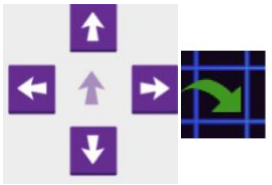
Concepts

algorithm	A precise, step-by-step set of instructions used to solve a problem or achieve an objective.
program	An algorithm that has been coded into something that can be run by a machine.

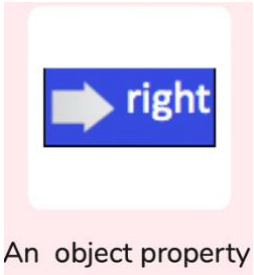
Key Vocabulary

debug	Find and fix errors in an algorithm or program.
coding	Write instructions that can be understood by a computer
action	A type of command which is run on an object. Could make the object move or change something.
collision detection	Detects when two objects on screen touch each other.
input	Information going into the computer e.g. moving mouse, typing on keyboard.
'when'	An event command that runs when, for example, you click or type something.

Images and Techniques



Design



An object property

The background object

Key Knowledge/Skills

1) I can say what an algorithm is.
2) I understand algorithms need to be clear and in a set order.
3) I can debug simple mistakes in an algorithm or program.
4) I know that an algorithm written for a computer is called a program.
5) I can create and run a simple program on a computer using object , event and collision detection blocks.
6) I can 'read' code and can see some ways in which the program will run.

Coding & Computational Thinking (Year 2)

Prior Learning

- Understanding what an algorithm is.
- Debugging simple mistakes in an algorithm or program.
- Creating and running a simple program on a computer using objects, events and collision detection

Concepts

algorithm	A precise, step-by-step set of instructions used to solve a problem or achieve an objective.
program	To provide a computer or machine with coded instructions.

Key Vocabulary

action	A type of command. Could be used to move an object.
input	Information going into the computer e.g. clicking a mouse or pressing a key.
event command	Makes code run when a certain event such as a click or key press occurs.
object	Something in a program that can be changed or controlled.
repeat	Used to make blocks of code run a number of times or forever.
timer	Used to run code blocks after a time delay or at intervals.

Key Knowledge/Skills

1) I can explain what an algorithm is.
2) I can use 'repeat' in a program.
3) I can use a timer in a program.
4) I can explain what debugging is.
5) I can debug a simple program.
6) I can use different object types in a program.

Images and Techniques

Open design mode in 2Code.

Switch to code m in 2Code.

An object property.

A timer code block.

A repeat code block.

Coding & Computational Thinking (Year 3)

Prior Learning

- Understanding what an algorithm is.
- Debugging simple mistakes in an algorithm or program.
- Creating and running a simple program on a computer using objects, events and collision detection

Concepts

algorithm	A precise, step-by-step set of instructions used to solve a problem or achieve an objective.
program	To provide a computer or machine with coded instructions.

Key Vocabulary

action	A type of command. Could be used to move an object.
input	Information going into the computer e.g. clicking a mouse or pressing a key.
event command	Makes code run when a certain event such as a click or key press occurs.
object	Something in a program that can be changed or controlled.
repeat	Used to make blocks of code run a number of times or forever.
timer	Used to run code blocks after a time delay or at intervals.

Key Knowledge/Skills

7) I can explain what an algorithm is.
8) I can use 'repeat' in a program.
9) I can use a timer in a program.
10) I can explain what debugging is.
11) I can debug a simple program.
12) I can use different object types in a program.

Images and Techniques

Open design mode in 2Code.

Switch to code m in 2Code.

An object property.

A timer code block.

A repeat code block.

Coding & Computational Thinking (Year 4)

Prior Learning

- Use repeat in a program.
- Use timers in a program.
- Debug simple programs,
- Use different object types in a program

Concepts

algorithm	A precise, step-by-step set of instructions used to solve a problem or achieve an objective.
debug/debugging	Looking for any problems in the code, fixing and testing them.

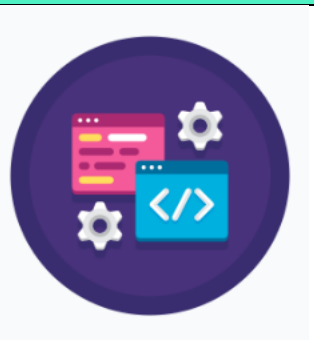
Key Vocabulary

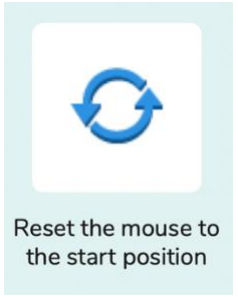
fd/bk	Forward and backward commands in Logo.
lt/rt	Left turn and right turn in Logo.
repeat	Perform a set of instructions a number of times.
selection	A program will choose a different outcome depending on the situation.
variable	Breaking a task into parts so that each part can be coded separately.
simulation	A model that represents a real or imaginary situation.

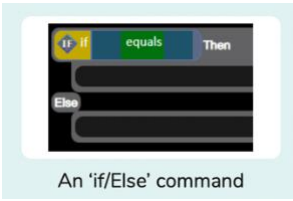
Key Knowledge/Skills

13) I can use 'repeat' in Logo to create shapes.
14) I can create and use procedures in Logo.
15) I can begin to use if/else statements in my programming.
16) I can use 'repeat until' to make an object repeat actions.
17) I can use variables along-side timers in a program.
18) I can create a simulation.

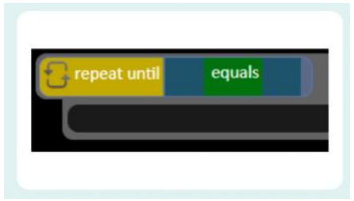
Images and Techniques

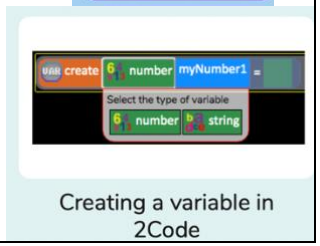






An 'if/Else' command





Creating a variable in 2Code

Coding & Computational Thinking (Year 5)

Prior Learning

- Use if/else statements in a program.
- Use variables in a program.
- Use repeat to make an object repeat until a given event.

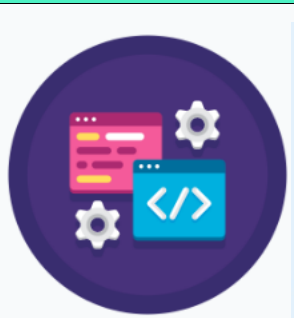
Concepts

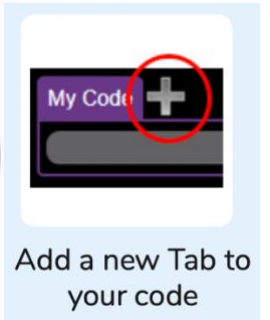
algorithm	A precise, step-by-step set of instructions used to solve a problem or achieve an objective.
debug/debugging	Looking for any problems in the code, fixing and testing them.

Key Vocabulary

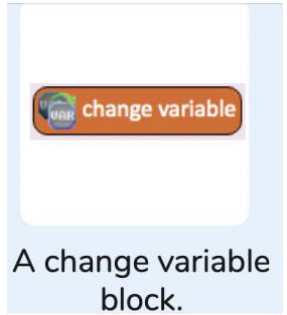
sequence	When a computer program runs commands in order.
selection	A conditional/decision command
'if/else'	If the condition is true, then the commands inside the 'if' block will run. If the statement is not true, then the commands inside of the 'else' block will run.
variable	Something that the program remembers of future use. The program can change the value of the variable.
decomposition	Breaking a task into parts so that each part can be coded separately.
abstraction	Remove unnecessary details to get a program functioning.

Images and Techniques



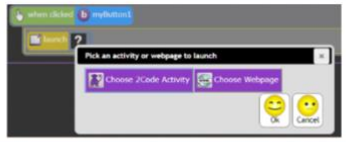


Add a new Tab to your code



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

Key Knowledge/Skills

19) I can design and write a program that simulates a physical system.
20) I can use number and text variables.
21) I can combine variables, if/else statements and repeats in a program.
22) I can read code so that it can be changed and improved, arranging it in a way that makes it more efficient.
23) I can use the launch command.
24) I evaluate and debug my work as I go along.

Coding & Computational Thinking (Year 6)

Prior Learning

- Using number and text variables.
- Combining variables, if/else statements and repeats in a program.
- Reading code and using tabs to improve work,
- Using launch command.

Concepts

algorithm	A precise, step-by-step set of instructions used to solve a problem or achieve an objective.
debug/debugging	Looking for any problems in the code, fixing and testing them.

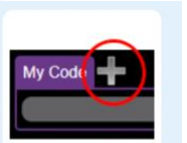
Key Vocabulary

sequence	When a computer program runs commands in order.
selection	A conditional/decision command
'if/else'	If the condition is true, then the commands inside the 'if' block will run. If the statement is not true, then the commands inside of the 'else' block will run.
variable	Something that the program remembers of future use. The program can change the value of the variable.
decomposition	Breaking a task into parts so that each part can be coded separately.
abstraction	Remove unnecessary details to get a program functioning.

Key Knowledge/Skills

25) I can design a program with objects and actions of my choice.
26) I can use variables within a game to track properties of objects.
27) I can use functions.
28) I can explore options for gett8ing text input from a user.
29) I can make a program interactive.
30) I can use flow charts to test and debug a program.

Images and Techniques

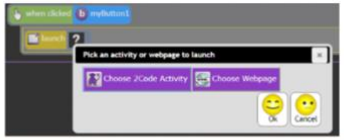


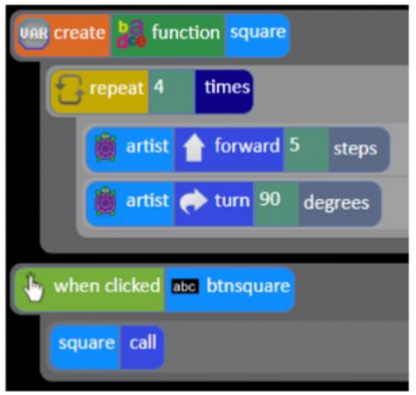
Add a new Tab to your code

A change variable block.


Creating a variable in 2Code

Example of combining variables and strings to print to the screen


Creating a variable in 2Code



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