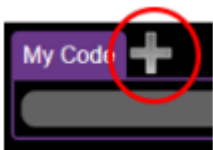# Y5 Computing - Coding

Simulating a Physical Process

Programming can be used to create 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.
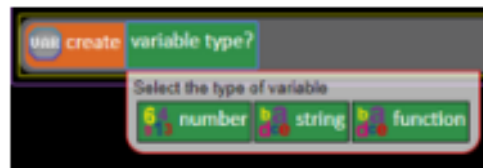
Decomposition and Abstraction

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.

Adding Tabs to Code

Creating a Variable

Combining Variables

Vocabulary

Abstraction	A way of de-cluttering and removing unnecessary details to get a program functioning.
Algorithm	A precise step by step set of instructions used to solve a problem or achieve an objective.
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.
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.
If	A conditional command. This tests a statement. If the condition is true, then the commands inside the block will be run
Nesting	When you write a command inside something else e.g. a block of commands could be nested inside a timer
Physical System	A system or process which happen in the real world using robotics, sensors or motors e.g. traffic lights
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