



Year 3 – Algorithms and Programming (Coding)

Element 1 – Coding

Coding can become very complicated if you do not think through carefully at the start what it is you want to do. The design stage is one of the most important as this helps you represent the instructions (algorithm) in a clear way before you actually start to code. This means you have a better chance of doing everything in the correct order. Think about it in a real-life context: If you go to make a bowl of cereal, you must have the bowl out first so you can put the cereal in it. If this was not planned carefully, you could end up with cereal and milk all over the floor!

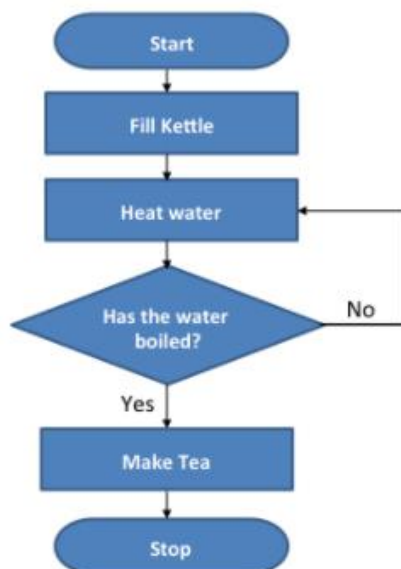
This works the same for coding. For example, if you wanted to create a program that showed a race car going across the screen and turning back when it touched a green square, you would need to plan this carefully first.

Flowcharts – How are they helpful?

Flowcharts are basically diagrams that show the algorithm (set of instructions to follow). You may have seen something similar called a branch diagram in Science when identifying creatures or flowers etc.

Designing your program using a flowchart helps you organise the instructions/steps, but also helps you start the initial part of programming. See the diagram below as an example – this one is for making a cup of tea, but you can see how it would help in coding.

Example (Making the Tea)





What KEY VOCABULARY do we use in coding?

In Year 3, you will use these key vocabulary terms below:

Action Types of commands, which are run on an object. They 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.	Bug A problem in a computer program that stops it working the way it was designed.
Alert This is a type of output which shows a pop-up of text on the screen.	Code Design A process of designing what your program will look like and what it will do.	Control These commands determine whether parts of the program will run, how often and sometimes, when.
Code block A group of commands that are joined together and are run when a specific condition is met or when an event occurs.	Design Mode Used to create the look of a 2Code computer program when it is run.	Command A single instruction in a computer program.
Debug/Debugging Looking for any problems in the code, fixing and testing them.	Flowchart A diagram which represents an algorithm.	Event Something that causes a block of code to be run.
Input Information going into the computer. Can include moving or clicking the mouse, using the keyboard, swiping and tilting the device.	Nesting When you write a command inside something else e.g. a block of commands could be nested inside a timer.	Repeat This command can be used to make a block of commands run a set number of times or forever.
Object An element in a computer program that can be changed using actions or properties.	Properties In 2Code, all objects have properties that can be changed in design or by writing code e.g. image, colour and scale properties.	Timer Use this command to run a block of commands after a timed delay or at regular intervals.
Sequence When a computer program runs commands in order.	Computer simulation A program that models a real-life situation.	When clicked/ swiped An event command. It makes code run when you click or swipe on something (or press/swipe your finger on a touchscreen).

Element 1 – Closed Test

- 1) Why is the design stage an important one when you are coding?
- 2) How does a flowchart help during the design stage?
- 3) What does 'nesting' mean in coding?
- 4) What does 'debugging' mean in coding?
- 5) What is a 'code block' in coding?



Element 2

Can you use '2Chart' on Purple Mash to create a Flowchart for a piece of coding? Then as an extra challenge, could you create the piece of coding using 'Free Code' on Purple Mash? You could do the coding on absolutely anything – just remember to save it and hand it in to your teacher.

Can you design a piece of coding (this can be however you would like to present it) which you can then use the 'Free Code' section of Purple Mash to create. You could try and create one that shows a lift going up and down correctly, or it could simply be making a character move across the screen.

Remember to save it and hand it in to your teacher on Purple Mash!
