

How2 use flowcharts to create algorithms

What is an algorithm?

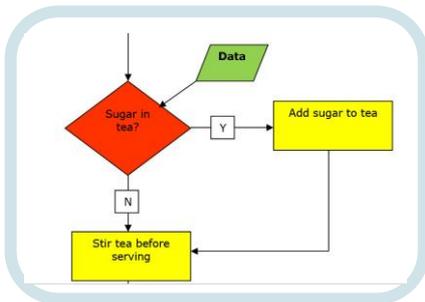
An algorithm is a fancy name for a set of steps in a process. So a recipe is an algorithm, because it's a set of steps in the process that makes a cake, or another dish. Getting out of bed in the morning could be an algorithm, because it's a set of steps that you take, probably without even realising it!



Computers use algorithms to work. A computer doesn't know what to do until someone – usually a programmer – tells it what to do. And it needs a set of steps to go through to do something. So a computer program is simply a set of steps, or algorithms. The steps, though, need to be carefully planned and checked – it is easy to forget some steps and then the program won't work!

All programs, including the ones that Scratch, Blockly and Kodu create, use algorithms. But it isn't always easy to see the algorithms when you are using blocks. One of the best ways to understand algorithms is to use flowcharts with symbols that lay out clearly the steps that a program (or a process) needs to follow to work properly.

What are flow charts?



- Flowcharts are made up of different shapes, with connectors that link them together.
- Each different flowchart shape represents a different action within the process they represent.
- Programmers can use flowcharts to model how a program might work, and where the program has to make a decision, take a step or ask for more information.

Process or action step

The most common shape used in most algorithms or processes

Terminator

Shows the start and stop points in an algorithm or process

Decision

Where a choice or decision has to be made

Often has two connectors coming from this box, one for answer yes [Y] and the other for answer no [N]

Data

A point at which some data or information is needed to be inputted.

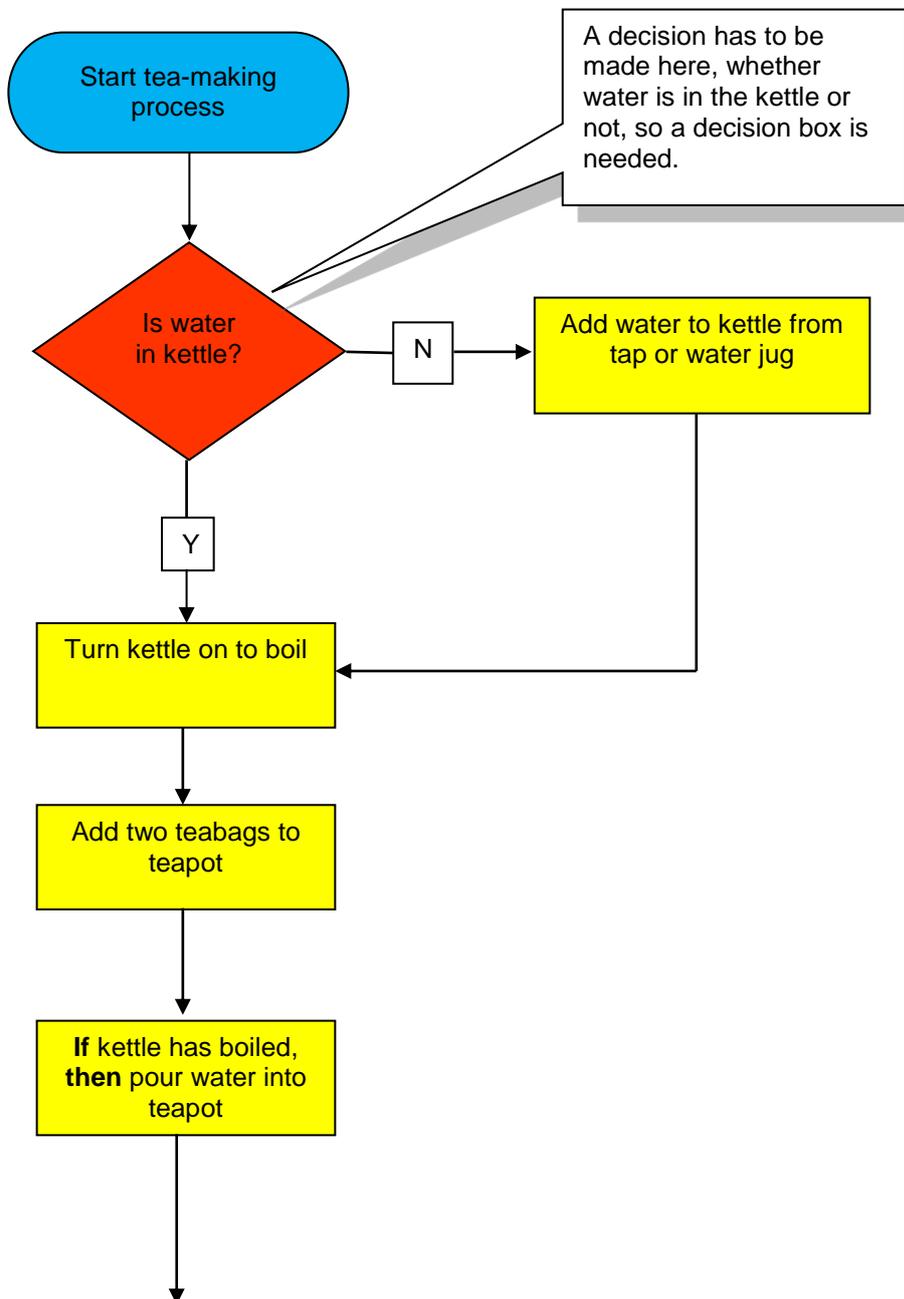
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Alternate process
An action that could happen as an alternative to a process or action step.

A flowchart is made when shapes are connected with arrows and other connectors. This means the boxes form one long sequence, or process, to achieve something.

A tea-making algorithm

Making a cup of tea is a process! And it can be represented by a flowchart. See our tea-making algorithm below. All the shapes are used here – we have steps, alternate steps/process, decisions, input of information, and start and end (terminator) shapes. Check it out!



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