Information

An algorithm is an explicit, step by step instructions to complete a task. At its basic form, an algorithm is a set of instructions that will be followed. Algorithms enable digital systems to complete the required tasks. The complexity of algorithms increases as the task becomes more complicated. Some functions help reduce the amount of content written to perform the algorithm.

Branching is the term given to show multiple options available for the task to be completed. The direction of the algorithm will change, depending on how the task is executed. E.g. The question 'Is it raining outside?' requires two options - an answer of yes or no. The answer to the question will influence the next command, to bring an umbrella or not.

Instead of repeating the same algorithm over and over – one algorithm can be written to repeat the same task. Instead of writing out an algorithm 100 times, it can be written as one command, repeated 100 times. This is a repeat or iteration. Using the above example, an algorithm could be written 365 times (to be asked each day) or once, repeated 365 times.

Providing options for the user to decide how to complete the task is called user input. The user controls the steps based on their input. This controls the direction of the algorithms. An example of user input is playing a video game. The user controls the character and makes the decisions on what the character does.

Curriculum Expectation

The focus of using algorithms at this level to show how they are presented in organised structure such as a flowchart. Students will provide options to the user and incorporate repeats to make their commands to reduce the number of algorithms. Students will use visual programs to present algorithms using digital platforms.

Video Resources

Click the images to watch the video
Watch the video to see Mark Zuckerberg explaining how loops help make life easier. Watch Bill Gates explain the purpose of 'If Statements' (branching) and how we use them in everyday life and coding.

Video Source: Hour of Code

ALGORITHMS

Explicit instructions that a computer uses to complete a task

If I turn left then...
If I turn right then...

Making toast
1. . . . .
2. . . . .
3. . . . .
Repeat when hungry

Which box will you choose?

BRANCHING

Branching shows multiple options and outcome for one command

ITERATION

Iteration repeats the same command without rewriting the algorithm.

USER INPUT

User input controls the data and guides the direction of the algorithm.

No — Are the dishes dirty? — Yes

Relax

Wash the dishes

Repeat daily