Mastering Algorithms with Kit the Fox

Learning objective: To understand, design, and debug algorithms, and to represent them using flowcharts and clear sequences.

Use these flashcards to test your knowledge of computational thinking. Read the term or question on the front, then flip to check the definition provided by Kit the Fox.

What is an algorithm?

An algorithm is a precise, step-by-step set of instructions designed to complete a specific task or solve a problem.

Define a 'sequence' in computing.

A sequence is the specific order in which instructions must be carried out to ensure the algorithm functions correctly.

What is 'selection'?

Selection is a decision-making process in an algorithm, often using 'if... then... else' statements to choose between different paths based on a condition.

Explain 'iteration'.

Iteration is the process of repeating a specific set of instructions or a block of code until a condition is met or a task is finished (also known as a loop).

What is a 'bug'?

A bug is an error, flaw, or fault in an algorithm or computer program that causes it to produce an incorrect or unexpected result.

What does it mean to 'debug'?

Debugging is the methodical process of finding, analysing, and fixing errors within an algorithm or program.

What is a flowchart?

A flowchart is a visual diagram that uses standard symbols to map out the logical steps of an algorithm, showing the flow of processes and decisions.

Define 'decomposition'.

Decomposition is the act of breaking a complex, large problem down into smaller, more manageable parts that are easier to solve individually.

What is the difference between 'input' and 'output'?

Input is the data or information provided to the algorithm, while output is the final result or information produced by the algorithm.

Why is 'efficiency' important in algorithm design?

Efficiency refers to how well an algorithm uses resources, such as time and memory; an efficient algorithm completes the task using the fewest necessary steps.

Explain the role of a 'variable' in an algorithm.

A variable is a named storage location used to hold a value that may change while the algorithm is running, such as a score or a timer.

Describe the term 'logical reasoning'.

Logical reasoning is the ability to use clear, systematic thinking to predict the behaviour of an algorithm or identify where a process might fail.