

Kit's Coding Chronicles: Designing a Digital Algorithm

Learning objective: To design and write a sequence of instructions (an algorithm) to solve a specific problem, ensuring logic and precision.

Read the passage below. Use the prompts to help you plan and write your own program for a digital character. Ensure your steps are clear, logical, and easy for a computer to follow.

Kit the fox adjusted his spectacles and looked at the screen; he knew that even the most complex digital game starts with a single, perfectly ordered sequence of commands.

Word bank: sequentially · initially · subsequently · if... then... · repeat until · debug · precise · algorithm · input · output

1. The Goal: What is the specific task or movement you want your program to achieve? Start by saying: 'My program is designed to...' (2 marks)

2. The Algorithm: Write your step-by-step instructions. Remember to use sequential language. Start by saying: 'First, the program must... Next, it should...' (4 marks)

3. The 'If/Then' Logic: How will your program react if something goes wrong or a specific condition is met? Start by saying: 'If the character encounters [obstacle/event], then it must...' (3 marks)

4. The Debugging Process: Explain why it is important to test an algorithm before it is finished. Start by saying: 'Testing is crucial because...' (3 marks)

5. Compare and Contrast: How is a computer program similar to a recipe for baking a cake? Start by saying: 'A computer program is like a recipe because...' (3 marks)

6. Justify your answer: Why must instructions for a computer be more precise than instructions given to a human friend? Start by saying: 'Computers require extreme precision because...' (3 marks)

Extension challenge: What might happen if you changed the order of two steps in your algorithm? Explain the consequences of this change and how it would affect the final output. If you were designing a game to teach others about saving money (e.g., tracking an allowance of £10.00), what 'If/Then' logic would you include to help the user manage their budget?