

Kit's Code-Cracking Challenge

Learning objective: To explain the process of writing a computer program and the importance of debugging.

Use the prompts below to structure your explanation of how to create a simple computer program. Remember to include technical vocabulary and describe the steps clearly.

To create a successful computer program, one must first design a clear, logical algorithm that acts as a step-by-step recipe for the computer to follow.

Word bank: algorithm · sequence · debug · command · variable · if-then statement · logical · consequently · furthermore · subsequently

1. What is the purpose of an algorithm in computing, and why is it essential to order your commands correctly? Start with: An algorithm is... (2 marks)

2. Describe the process of 'debugging' a program. Why might a coder need to look for syntax or logic errors? Start with: Debugging is the process of... (2 marks)

3. Explain how an 'if-then' statement allows a program to make a decision. Provide an example. Start with: An 'if-then' statement is useful because... (2 marks)

4. Justify why it is important to test a program multiple times before declaring it finished. Start with: Testing is crucial because... (2 marks)

5. Compare and contrast writing code for a simple animation versus writing code for a complex puzzle game. What might happen if a command is placed in the wrong sequence? Start with: Whilst both tasks require logic, they differ because... (3 marks)

6. What might happen if a computer program lacked variables to store information? How would this limit the user's experience? Start with: If a program had no variables... (3 marks)

Extension challenge: Design a flow chart for a program that helps a character cross a busy road. Use symbols to represent 'Start', 'End', and 'Decisions'. Below your flow chart, write a paragraph evaluating why clear instructions are vital for artificial intelligence.