

Kit's Code-Cracking Challenge: Mastering Debugging

Learning objective: To understand how to identify, predict, and correct errors in a computer program (debugging).

Follow this writing frame to explain how you found and fixed a bug in your recent coding project. Use the word bank to help you describe your logical thinking process.

When I first ran my program, I noticed an unexpected outcome that prevented my character from completing their path.

Word bank: algorithm · sequence · replicate · logical · prediction · consequently · systematically · syntax error · unexpected outcome · refined · troubleshoot

1. The Identification Phase: Describe exactly what went wrong in your program. What did you expect to happen, and what happened instead? Use the sentence starter: 'Initially, I expected the algorithm to..., but instead it occurred that...' (2 marks)

2. The Investigation: How did you begin to troubleshoot the issue? Explain your step-by-step process for locating the error: 'To find the fault, I systematically checked the sequence by...' (3 marks)

3. The Correction: What specific change did you make to the code to fix the bug? 'I realised the error was caused by... so I modified the code by...' (3 marks)

4. The Testing Phase: After making your changes, how did you verify that the code was working correctly? 'To ensure the bug was resolved, I re-ran the program and observed that...' (2 marks)

5. Evaluation: Why is it important for a programmer to remain patient when debugging? 'In my opinion, debugging is a vital skill because...' (3 marks)

6. Comparison: Compare and contrast a 'syntax error' (a mistake in the code language) with a 'logic error' (the code runs, but doesn't do what you wanted). 'While a syntax error prevents the program from running, a logic error...' (4 marks)

Extension challenge: Justify your answer: If you were teaching a younger student how to debug, which three tips would you provide to help them stay calm and solve the problem efficiently? Explain why these three tips are the most effective.