

Kit's Code-Cracker: The Debugging Log

Learning objective: To identify, explain, and correct errors (bugs) in an algorithm or sequence of instructions.

Help Kit the Fox refine his latest computer program! Use this log to track a problem you have found in a set of instructions. Follow the steps to identify the 'bug' and justify your solution to ensure the program runs perfectly.

Word bank: algorithm · debugging · syntax error · logical error · sequence · prediction · refine · input · output · resolution

1. The Intended Goal: Describe what the program was supposed to do before the error occurred. (2 marks)

2. The Bug Hunt: Explain the exact moment the sequence failed. What happened instead of the desired outcome? (3 marks)

3. The Diagnosis: Is this a 'logical error' (a mistake in the plan) or a 'syntax error' (a mistake in the instruction format)? Justify your choice. (3 marks)

4. The Fix: Write the corrected step-by-step instructions that will solve the problem. (4 marks)

5. Testing the Resolution: Explain why your new instructions are more reliable than the original ones. (3 marks)

6. Critical Reflection: What might happen if a computer program has a hidden bug that is not discovered? Compare the risks of small errors versus major glitches. (5 marks)

Extension challenge: Imagine you are designing a robot to make a cup of tea. Write a sequence of five instructions for this task, then purposefully 'break' one instruction. Swap your log with a partner and challenge them to find the bug and write the correct, logical sequence.