

Year 5 Computing: Mastering the Art of Debugging

Learning objective: To identify, explain, and correct logical and syntax errors within algorithms and programs.

Read each question carefully. Use your knowledge of computational thinking to solve the problems provided. Write your answers clearly in the spaces provided.

Kit the fox is writing a program to help a robot navigate a garden maze. The robot needs to move forward 3 squares, turn right, and pick up a fallen apple. Kit's current code is: [Move Forward], [Move Forward], [Turn Left], [Pick Up Apple].

Word bank: Algorithm · Bug · Debugging · Sequence · Syntax Error · Logical Error · Decomposition · Variable

1. Define the term 'debugging' in your own words. Why is this an essential skill for a computer programmer? (2 marks)

2. Look at Kit's code in the passage. Identify the specific bug that prevents the robot from reaching the apple. Explain how you would fix it. (3 marks)

3. Distinguish between a 'syntax error' and a 'logical error'. Give an example of how each might occur in a simple set of instructions. (4 marks)

4. If a program runs without crashing but produces the wrong result, which type of error is present? Justify your answer. (3 marks)

5. Explain why 'decomposition' is a helpful strategy when you are faced with a very large, complex piece of code that contains multiple hidden bugs. (3 marks)

6. What might happen if a programmer ignores a small warning message in their code instead of investigating it immediately? Discuss the long-term impact on the program. (5 marks)

7. Compare and contrast the process of testing a program with the process of debugging a program. How do they work together? (5 marks)

Draw: Draw a flowchart that shows the logical steps a programmer should take when they encounter a bug, starting from 'Identify the Error' to 'Success'.



Extension challenge: Total: /25. Extension Task: Imagine you are writing a program for a vending machine that sells snacks for £1.50. Write a set of instructions for the machine. Then, intentionally write one 'logical error' into your steps. Swap with a partner and see if they can identify and 'debug' your logic.