

Grade 4 Computing Assessment: The Art of Debugging

Learning objective: To identify, explain, and correct errors in algorithms and code sequences.

Read each question carefully. Use your knowledge of logic and sequences to solve the problems. Remember to write clearly and show your working where necessary.

Kit the Fox is building a robot to help him organize his book collection. He has written a set of instructions (an algorithm) for the robot to move from the shelf to the desk, pick up a book, and place it in the delivery box. However, the robot keeps bumping into a chair and dropping the books. Kit needs to find the mistakes in his code.

Word bank: Algorithm · Bug · Debug · Sequence · Syntax Error · Logic Error · Test · Predict

1. Define the term 'bug' in computing. Why is it important to find them? (2 marks)

2. Kit's robot code is: 1. Move forward 5 steps. 2. Turn left. 3. Pick up book. 4. Move forward 2 steps. The chair is located after the first 3 steps. Identify the 'logic error' in this sequence. (3 marks)

3. Explain the difference between a syntax error and a logic error. (4 marks)

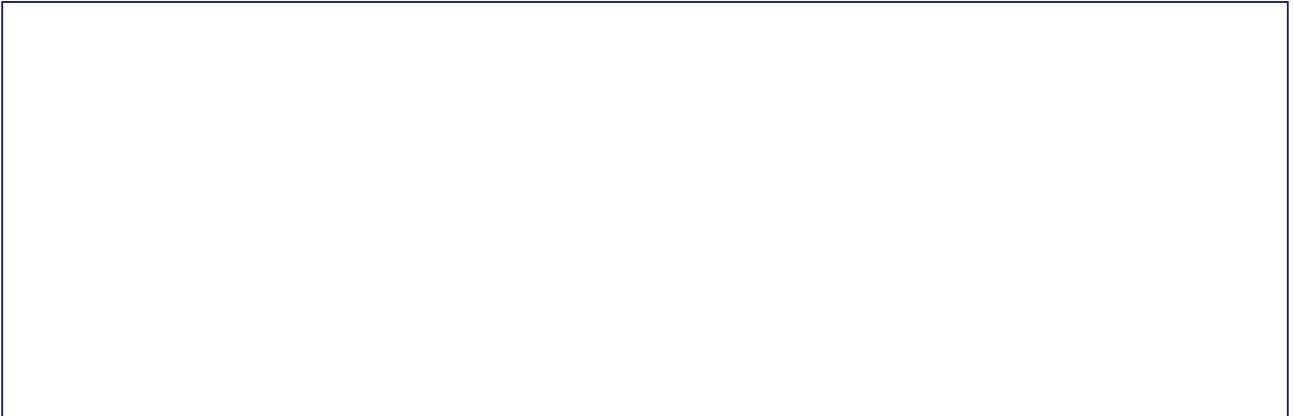
4. If Kit writes a program to calculate the cost of 3 books at £4 each and the result shows £7, what has likely happened in the code? (3 marks)

5. List the three steps you should take once you discover your code is not working as expected. (3 marks)

6. Extended Writing Task: Kit is frustrated because his robot keeps failing. Write a short guide (3-5 sentences) explaining to Kit how he can use a 'step-through' method to debug his code effectively. (5 marks)

7. Why do we 'test' code after we have made changes to fix a bug? (2 marks)

Draw: Draw a flow chart showing the path Kit's robot should take to avoid the chair and successfully reach the desk.



Extension challenge: Total: /25. Challenge: Imagine you are writing a sequence for a robot to make a cup of tea. Write two lines of code and deliberately include a bug, then explain how you would fix it.