

Kit's Coding Chronicles: Designing a Digital Adventure

Learning objective: To design an algorithm for a computer program and explain the importance of debugging to ensure code is efficient and accurate.

Follow this writing frame to describe your computer program. Use the word bank to help link your ideas and ensure your explanation is clear and logical for someone else to follow.

Kit the fox has challenged us to create a digital game, so I have begun to plan the sequence of actions for my character to follow.

Word bank: algorithm · sequence · debugging · variable · iteration · consequently · subsequently · furthermore · by contrast · logical flow · error-free

1. The Concept: What is the main objective of your program and who is the user? Start by saying: 'The primary purpose of my program is to...' (2 marks)

2. The Algorithm: Describe the step-by-step sequence of instructions. Start by saying: 'To ensure the code runs correctly, the first step in my algorithm is...' (3 marks)

3. Debugging: Explain why it is important to test your code. Start by saying: 'If the program fails to execute, I would perform debugging by...' (3 marks)

4. Efficiency: Justify why your chosen sequence is the most effective way to solve the problem. Start by saying: 'My code is efficient because...' (3 marks)

5. Variables: Describe how you might use a variable (like a score or timer) in your game. Start by saying: 'I will introduce a variable to track...' (2 marks)

6. Evaluation: What might happen if the user enters an unexpected input? Start by saying: 'If the user provides an input not defined in my code, the program should...' (3 marks)

Extension challenge: Compare and contrast a simple linear algorithm with one that includes 'if-then' selection statements. Explain why the latter allows for a more complex and engaging user experience. Justify your answer with an example from your own design.