

Kit's Computing Challenge: Designing a Digital Solution

Learning objective: To design, write, and debug a sequence of commands to solve a specific problem using logical reasoning and computational thinking.

Help Kit the fox create a new computer programme. Use this template to plan your algorithm, predict potential errors, and justify your design choices. Remember to use precise terminology to ensure your sequence of instructions is clear and effective.

Word bank: algorithm · debug · sequence · variable · input · output · logical reasoning · syntax error · loop · conditional

1. The Objective: What specific problem or task is your programme designed to solve? Explain the purpose of your digital solution. (2 marks)

2. The Algorithm: Write a step-by-step sequence of instructions for your programme. How will it handle inputs to produce the desired output? (4 marks)

3. Predicting Errors: What might happen if a user enters unexpected data? Describe a potential 'bug' and how you would debug it. (3 marks)

4. Efficiency: Justify your choice of loops or conditionals. Why is this the most efficient way to achieve the task? (3 marks)

5. Compare and Contrast: Compare your proposed algorithm with a simpler version. Why is your design better suited for this complex task? (4 marks)

6. Refining the Logic: What might happen to the programme if the environment or variables changed suddenly? Explain your reasoning. (4 marks)

Extension challenge: Imagine you are presenting your programme to Kit. Write a persuasive paragraph explaining why your code is robust, user-friendly, and logically sound. Include a 'what if' scenario where you have to modify your code to handle a completely new, unexpected variable.