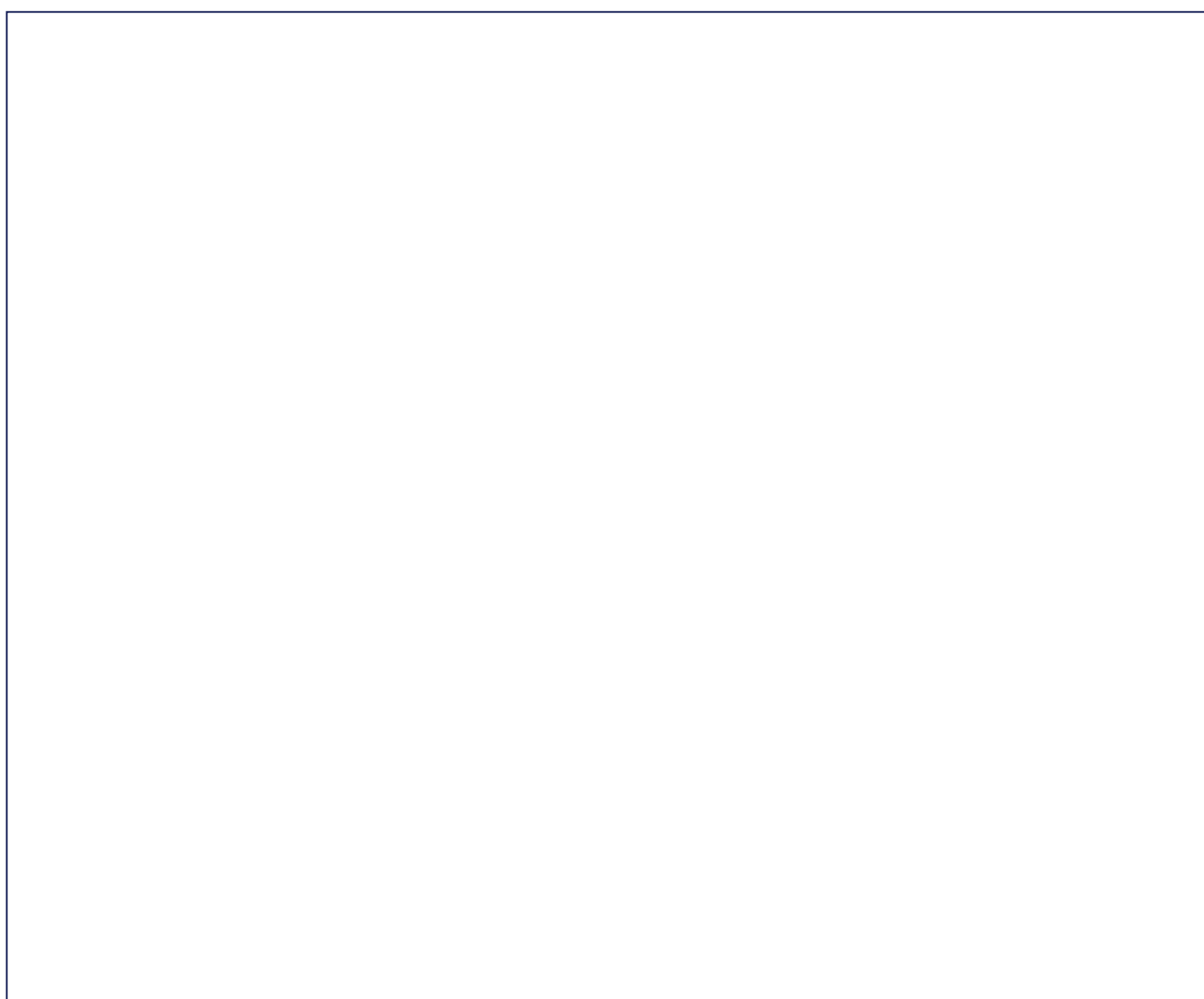


Kit's Computing Challenge: The Great Debugging Mission

Learning objective: To identify, explain, and correct errors in a sequence of instructions (algorithms) to ensure a program runs successfully.

Kit the fox has written a simple algorithm to help a robot navigate through a garden maze to find a hidden treasure. However, there are mistakes in the sequence! Follow the steps below to draw and debug the path.

Draw: Draw a top-down view of a rectangular garden maze. Include a square robot at the entrance, a treasure chest at the exit, and several 'wall' obstacles made of hedges. In the corner, draw Kit the fox holding a tablet. Use a clear, grid-like style so that a path can be drawn between the obstacles. Use a bright color for the correct path and a contrasting color for the incorrect 'bugged' path.



Label words: Algorithm · Bug · Debug · Sequence · Logic · Correction

Steps:

1. Step 1: On your drawing, trace the path the robot should take to reach the treasure without hitting the garden walls. Mark the 'bugs' (the incorrect moves) with a red 'X'.
2. Step 2: Write the corrected sequence of instructions for the robot below your drawing. Explain why your new sequence is more efficient than the original.

3. Justify your answer: Why is it important to test an algorithm multiple times before finalising it?
4. Compare and contrast: How does 'debugging' a computer program differ from fixing a mistake in a math calculation?
5. What might happen if a computer program has a 'hidden bug' that is not corrected before it is used?
6. Creative Extension: Design a new obstacle for the maze. How would you adjust your algorithm to navigate around this new feature?