

Kit's Computing Conundrums: The Debugging Detective

Learning objective: To identify, explain, and correct syntax and logic errors in simple algorithms.

Kit the fox has written some instructions for his robot friend to make a cup of tea, but he has made some silly mistakes! Look at the 'Code' provided in each question. Identify the error (the 'bug') and write the corrected instruction to fix it. Remember, in computing, the order of steps is just as important as the steps themselves!

Word bank: Algorithm · Bug · Debugging · Sequence · Logic Error · Syntax Error

1. Code: 1. Fill kettle with water. 2. Boil water. 3. Put tea bag in cup. 4. Pour water in cup. 5. Remove tea bag. 6. Add milk. The robot added the milk before putting the tea bag in. What is the bug and how do you fix the sequence? (2 marks)

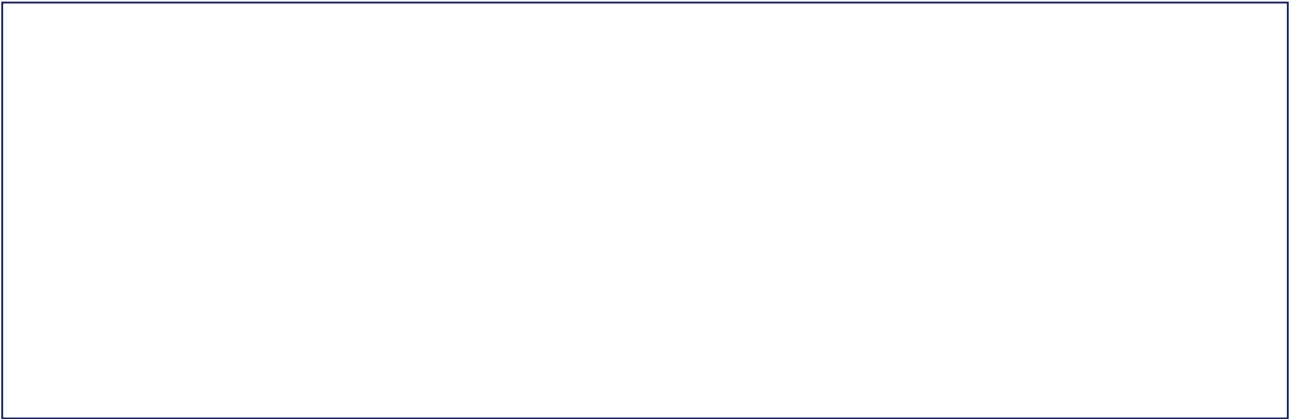
2. Code: 1. Open cupboard. 2. Take out mug. 3. Place mug on table. 4. Close table. The robot has a logic error. Why is step 4 incorrect and what should the instruction be? (2 marks)

3. Code: 1. Put sugar in cup. 2. Pour water. 3. Stir. Kit forgot to tell the robot to put the tea bag in! If this is a 'missing step' bug, where exactly should the new instruction go? (2 marks)

4. Kit writes: 'Pour milk in cup'. The robot pours the milk, but there is no tea in the cup yet. Is this a syntax error (wrong command) or a logic error (wrong order)? Explain why. (2 marks)

5. If you were to give the robot an instruction to 'Pour tea into the closed cupboard', what type of error is this and how would you 'debug' it to make it a successful task? (2 marks)

Draw: Draw a flowchart showing the correct, bug-free steps for Kit the fox to make a piece of toast with butter, using clear arrows to show the sequence.



Extension challenge: Imagine your robot friend has a 'Repeat' function. Write a short piece of code using a loop to help the robot stir the tea exactly 5 times.