

Kit's Code-Cracking Challenge: Mastering Debugging

Learning objective: To understand that algorithms can contain errors, and to identify, correct, and 'debug' these errors to ensure a program functions as intended.

Join Kit the fox in the computer lab! Read each question carefully. Use your logic skills to find the 'bugs' in these sequences. Good luck, young coder!

Answer Key: 1.C, 2.True, 3.Bug, 4.B, 5.False, 6.A, 7.Sequence, 8.B, 9.True, 10.Logic. Debugging is the essential process of finding and removing mistakes from computer code to ensure a program runs smoothly.

Word bank: Algorithm · Bug · Debug · Sequence · Logic · Error · Predict · Pattern

1. Kit is writing a program to make a robot move. What do we call a mistake in the code that stops the robot from working? A) A feature, B) A shortcut, C) A bug*, D) A glitch. (1 mark)

2. True or False: Debugging is the process of finding and fixing errors in a computer program. (1 mark)

3. If your code does not run the way you expected, what is the single word used to describe the error? (1 mark)

4. Kit has a list of instructions to bake a cake, but he put 'put in oven' before 'mix ingredients'. What is wrong? A) The temperature, B) The sequence*, C) The ingredients, D) The timer. (1 mark)

5. True or False: Once you have written your code, it is impossible for it to have any bugs. (1 mark)

6. When you look for a mistake in your code, which step should you take first? A) Read through your instructions step-by-step*, B) Delete the whole program, C) Buy a new computer, D) Ask for a snack. (1 mark)

7. What is the term for the ordered steps that a computer follows to complete a task? (1 mark)

8. Kit's robot is spinning in circles instead of walking forward. Which is the best way to debug? A) Ignore it, B) Check the code for a logic error*, C) Turn the robot off and never use it, D) Change the colour of the robot. (1 mark)

9. True or False: Debugging requires patience and careful observation. (1 mark)

10. If you are writing code for a game where a character jumps, and they jump backwards instead of forwards, what type of error have you likely made? (1 mark)

Draw: Draw Kit the fox sitting at a computer screen. On the screen, show a 'bug' character wearing tiny glasses and holding a screwdriver, surrounded by messy code that Kit is trying to fix.



Extension challenge: Greater Depth Challenges: 1. Explain why it is important to test code in small sections rather than all at once. 2. Justify why a computer will always do exactly what you tell it to do, even if it is wrong. 3. Compare and contrast a 'syntax error' (a typo) with a 'logic error' (a mistake in the sequence). 4. What might happen if a computer programmer ignores a small bug in a large, complex system? 5. Design a simple 5-step algorithm for a human to make a sandwich; deliberately add a logic error and challenge a partner to debug it. 6. If you were designing a new piece of software, how would you document your debugging process to help others understand your work?