

Kit's Code-Cracking Challenge: Master the Debug

Learning objective: To identify, explain, and correct logical and syntax errors within algorithms and computer programs.

Kit the Fox has been busy writing code for a new adventure game, but he has left some pesky bugs behind! Read each question carefully and help Kit fix his mistakes. Use the word bank to help you.

Answer Key: 1. B*, 2. True, 3. Debugging, 4. A*, 5. False, 6. C*, 7. Logical, 8. True, 9. D*, 10. A*

Word bank: algorithm · bug · debug · syntax · logical error · sequence · prediction · iteration

1. 1. Kit wrote a program to make a character jump, but it moves left instead. What is this?

A) Syntax error B) Logical error* C) A successful code D) A virus (1 mark)

2. 2. True or False: A 'bug' is a mistake in a computer program that prevents it from running as intended. (1 mark)

3. 3. What is the specific term for the process of finding and fixing errors in code? (1 mark)

4. 4. Which of these is the most likely cause of a syntax error? A) A missing bracket or punctuation* B) The computer is tired C) The code is too long D) The internet is slow (1 mark)

5. 5. True or False: You only need to check for bugs once at the very end of your project. (1 mark)

6. 6. If your code runs but doesn't do what you expected, what should you do first? A) Delete the computer B) Restart your house C) Carefully check your sequence of steps* D) Write the whole thing again (1 mark)

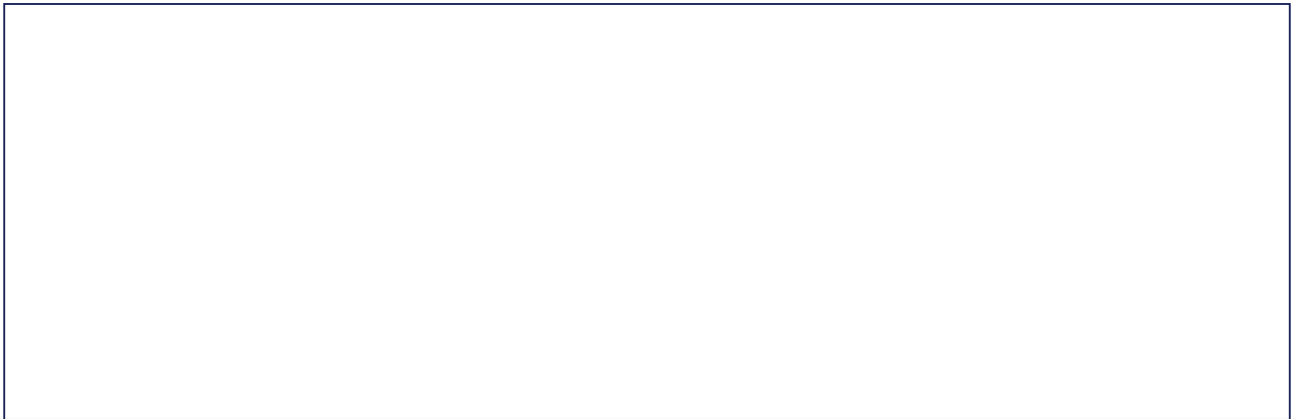
7. 7. Fill in the blank: A _____ error occurs when the code is written correctly but the instructions do not achieve the desired outcome. (1 mark)

8. 8. True or False: 'Iteration' involves repeating a section of code, which can sometimes be the site of a bug. (1 mark)

9. 9. Kit wants his code to loop three times. Which block is most important to check? A) The title B) The background colour C) The variable name D) The loop condition* (1 mark)

10. 10. Which strategy helps most when debugging? A) Testing small parts of the code one by one* B) Guessing randomly C) Waiting for the computer to fix itself D) Ignoring the error message (1 mark)

Draw: Draw a 'Bug-Zapper' machine that Kit the Fox uses to catch tiny, mischievous bugs hiding inside a computer monitor.



Extension challenge: Greater Depth Questions: 1. Explain why it is more efficient to test code in small sections rather than writing a whole program before testing. 2. Compare and contrast a syntax error with a logical error; which is easier to identify and why? 3. Justify why documentation (leaving comments in your code) is a vital tool for debugging. 4. What might happen if a programmer ignores a minor bug in a large, complex system? 5. Describe a situation where a 'logical error' could be dangerous in a real-world system (e.g., traffic lights). 6. Design a 'debugging checklist' that you would give to a fellow student to help them review their own coding projects.