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# Finding and Fixing Bugs in Your Code

**KS3** Ages 11-14 🕒 3 min read

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## What Is a Bug?

A **bug** is a mistake in your **computer program** that makes it behave in the wrong way. It might crash, show silly results, or simply not do what you told it to do. Even the best programmers make bugs — it's completely normal!

Think of it like baking a cake following a recipe. If you forget to add sugar or put the oven temperature wrong, your cake won't turn out right. Bugs are like mistakes in your recipe instructions.

## Why Do Bugs Happen?

Bugs happen for lots of reasons. You might type something wrong, misunderstand how a command works, or forget to tell your program what to do in a certain situation. **Logic errors** happen when your code doesn't actually solve the problem you wanted it to solve. Sometimes bugs only show up when you try unusual things that you didn't think about when writing the code.

## Steps to Find and Fix Your Bugs

**Step 1: Run Your Program** and see what happens. Does it crash? Does it give wrong answers? Write down exactly what goes wrong.

**Step 2: Read Your Code Carefully** to find where the problem might be. Look at the part that's not working. Does it match what you meant to write?

**Step 3: Use Test Cases** by trying your program with different inputs. If it works with some numbers but fails with others, you've found a clue!

Think of it like being a detective. You gather clues (what the program does), look for evidence (your code), and test theories (does changing this line help?).

**Step 4: Debug Slowly** by adding **print statements** to show you what's happening inside your program as it runs. This helps you see where it goes wrong.

**Step 5: Fix One Thing at a Time.** Change one part of your code, then test it again. This way, you'll know if your fix actually worked.

## Ask for Help

Don't be embarrassed to ask teachers, friends, or look online for answers. Professional programmers do this all the time. **Debugging** — the process of finding and fixing bugs — is an important skill that takes practice.