



Testing Programs to Find and Fix Bugs

KS3 COMPUTING

Ages 11-14 ⌚ 3 min read

Why Testing Programs Matters

When someone writes a **computer program**, they're giving instructions to a computer in a special language. But just like when you write a story or do maths homework, mistakes can happen. These mistakes in programs are called **bugs**. A bug might make the program crash, show the wrong answer, or do something completely unexpected. That's why **testing** is one of the most important parts of making software.

Before any program gets released to the public, programmers must check that it actually does what it's supposed to do. Without proper testing, people using the software could lose their work, have their privacy invaded, or experience serious problems.

Different Types of Tests

There are several ways to test a program, and good programmers use many of them together.

Manual testing is when a person sits down and uses the program like a normal user would. They click buttons, type in information, and see if everything works as expected. This is like test-driving a car before buying it.

Think of it like tasting every dish a restaurant makes before serving it to customers. You want to make sure each one tastes right and has the right temperature.

Automated testing uses other programs to test the main program automatically. The computer runs thousands of tests very quickly, checking every possible situation. This is much faster than a human could do it.

Unit testing focuses on small pieces of code, checking that each bit works correctly on its own. **Integration testing** then checks that all these pieces work well together when combined.

Finding and Fixing Bugs

When testers find a problem, they don't just delete it. They record exactly what went wrong, what they were doing when it happened, and how serious the problem is. Then **developers** (the programmers who write the code) use this information to find the bug's cause and fix it.

Think of it like telling a doctor your symptoms so they can find what's making you sick and give you medicine to fix it.

Good programmers test their code constantly while they're writing it, not just at the end. This catches problems early when they're easier to fix. By the time a program reaches you, it should have been tested hundreds or thousands of times.