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# Debugger

A debugger or debugging tool is a computer program that is used to test and debug other programs

Snippet from [Wikipedia: Debugger](#)

A **debugger** or **debugging tool** is a computer program used to test and debug other programs (the "target" program). The main use of a debugger is to run the target program under controlled conditions that permit the programmer to track its execution and monitor changes in computer resources that may indicate malfunctioning code. Typical debugging facilities include the ability to run or halt the target program at specific points, display the contents of memory, CPU registers or storage devices (such as disk drives), and modify memory or register contents in order to enter selected test data that might be a cause of faulty program execution.

The code to be examined might alternatively be running on an *instruction set simulator* (ISS), a technique that allows great power in its ability to halt when specific conditions are encountered, but which will typically be somewhat slower than executing the code directly on the appropriate (or the same) processor. Some debuggers offer two modes of operation, full or partial simulation, to limit this impact.

A "trap" occurs when the program cannot normally continue because of a programming bug or invalid data. For example, the program might have tried to use an instruction not available on the current version of the CPU or attempted to access unavailable or protected memory. When the program "traps" or reaches a preset condition, the debugger typically shows the location in the original code if it is a **source-level debugger** or **symbolic debugger**, commonly now seen in integrated development environments. If it is a **low-level debugger** or a **machine-language debugger** it shows the line in the disassembly (unless it also has online access to the original source code and can display the appropriate section of code from the assembly or compilation).

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