

# Debugging

## ...literally

Photo # NH 96566-KN (Color) First Computer "Bug", 1947

9/2

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0800 Antan started  
 1000 " stopped - antan ✓  
 1300 (032) MP-MC 1.5826000 9.037 847 025  
 (033) PRO 2 2.130476415 9.037 846 895 correct  
 correct 2.130676415 4.615925059(-2)

Relays 6-2 in 033 failed special speed test  
 in relay 11.000 test.

Relay  
 2145  
 3371

1100 Started Cosine Tape (Sine check)  
 1525 Started Multi-Adder Test.

1545



Relay #70 Panel F  
 (moth) in relay.

First actual case of bug being found.  
 1630 Antan started.  
 1700 closed down.

# Lingo

Removing bugs is the process of debugging.

The tool you use is (unsurprisingly) a debugger.

# Idle, to the rescue

Open idle, go to Debug -> Debugger

The interpreter will say **[DEBUG ON]**

Now, any file you run or command you type into the interpreter will go through the debugger. You will need to hit "Go" to make Python start running that command.

Check the four debugger checkboxes.

# Breakpoints

Typically, you want to investigate the state of your program on a given line of code. The debugger will automatically stop just before executing any line with a breakpoint.

In Idle, when editing a file (not just in the interpreter), you can right click on a line and select "Set Breakpoint". The line will highlight in yellow.

# Step, Over, Out

**Step:** Steps to the next line. If there is a function call, step into it.

**Over:** Steps to the next line "over" (i.e. ignoring) any function calls.

**Out:** Steps out of the current function and back to the line that called it.