CSC 7003 : Basics of Software Engineering

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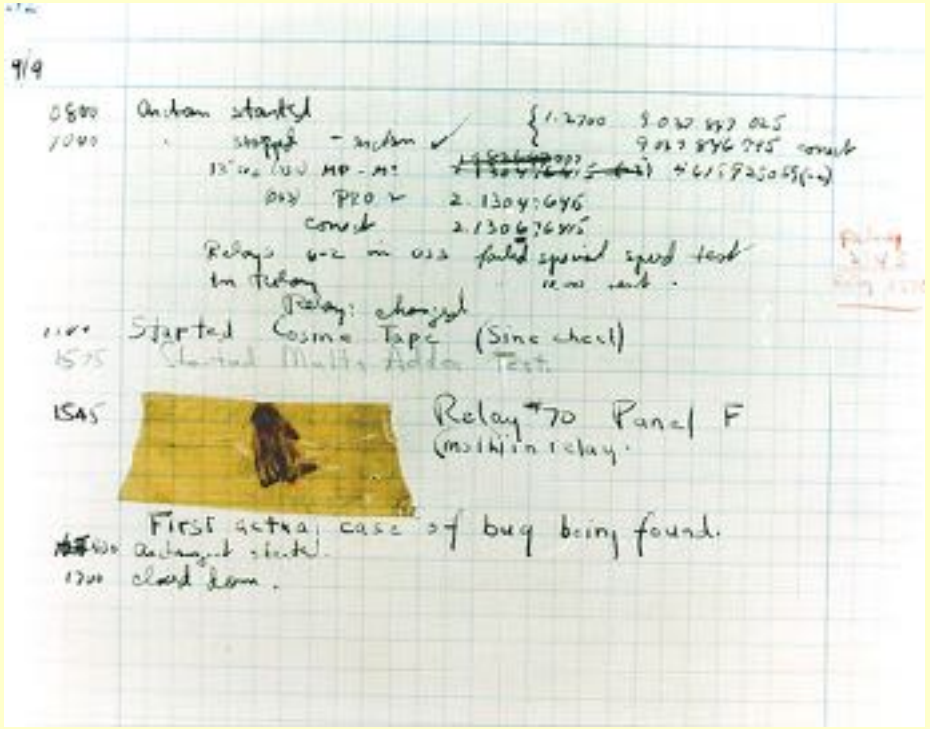
http://www-public.telecom-sudparis.eu/~gibson/Teaching/CSC7003/

Debugging

…/~gibson/Teaching/CSC7003/L13-Debugging.pdf

"It's not an error. It's a debugging opportunity."



When Do You Debug?

When you want to find and fix an error

What Type Of Error?

When a test fails or a run-time exception occurs

Easiest -> Hardest

Exception, Unit test, Validation test, Integration test

Debugging - When no tools are available

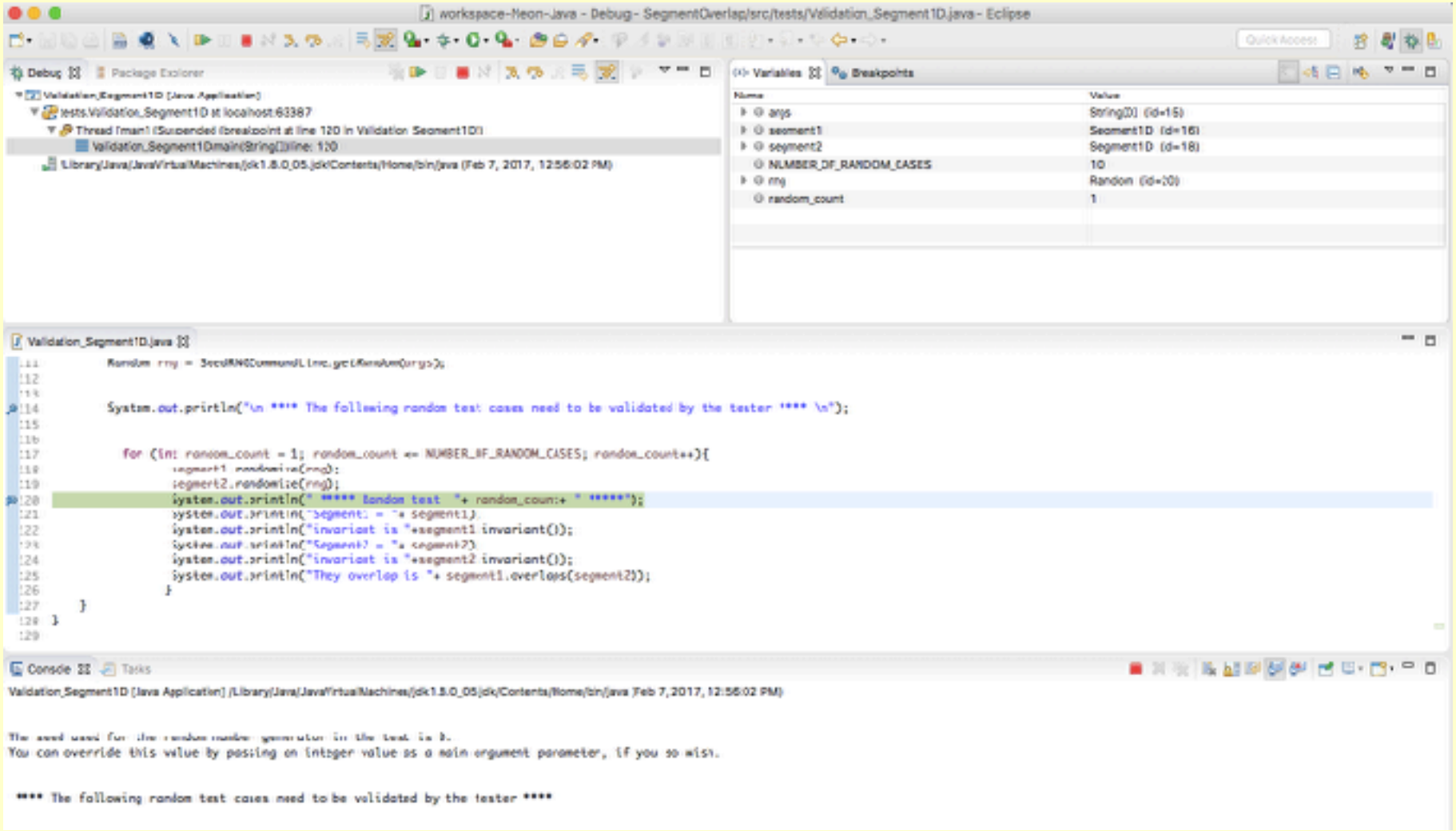
```
System.out.println()
```

```
System.err.println()
```

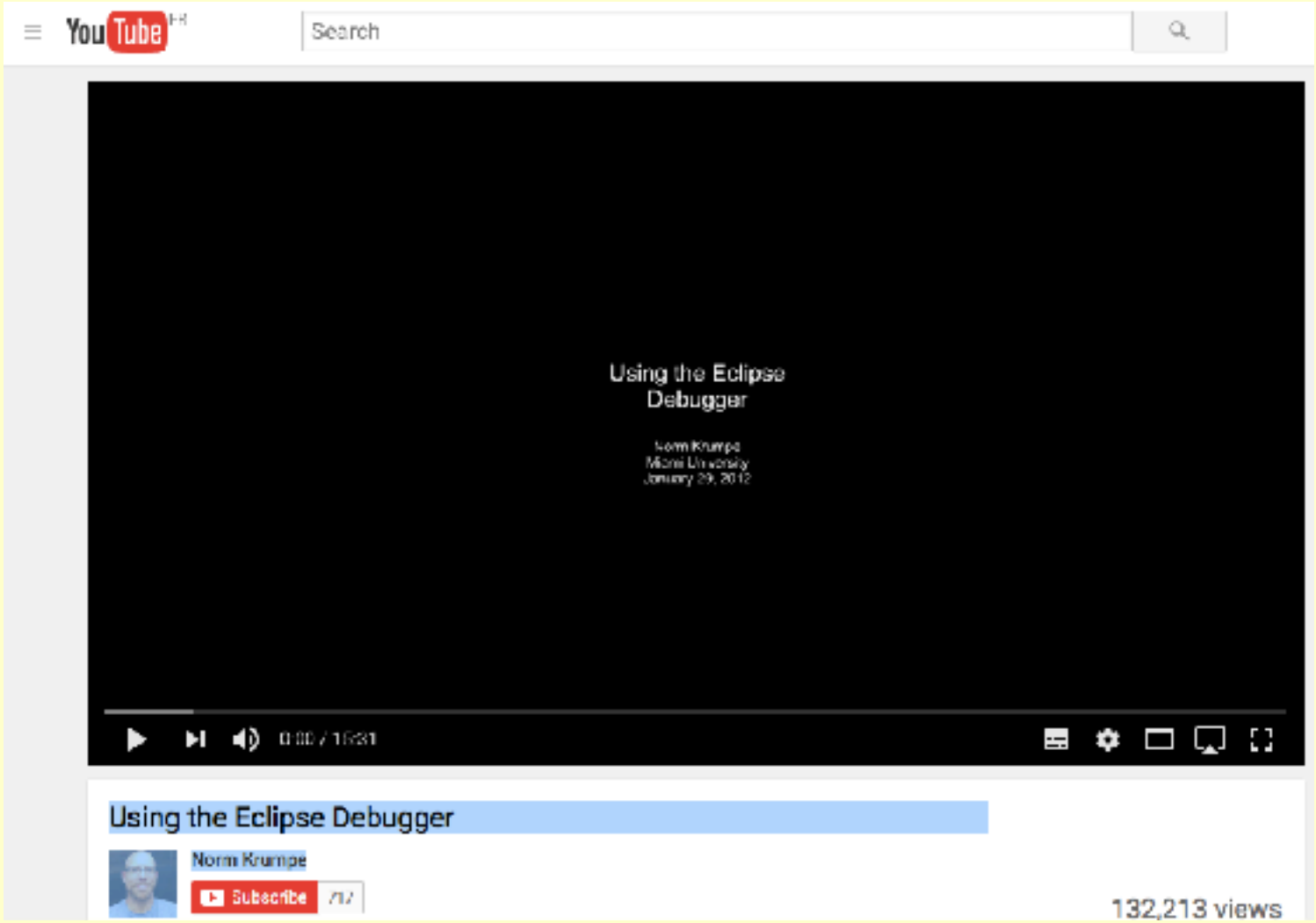
```
LOG.debug(...)
```

Question: which of these *techniques* do you currently use?

Using the Eclipse IDE debugger (for Java)

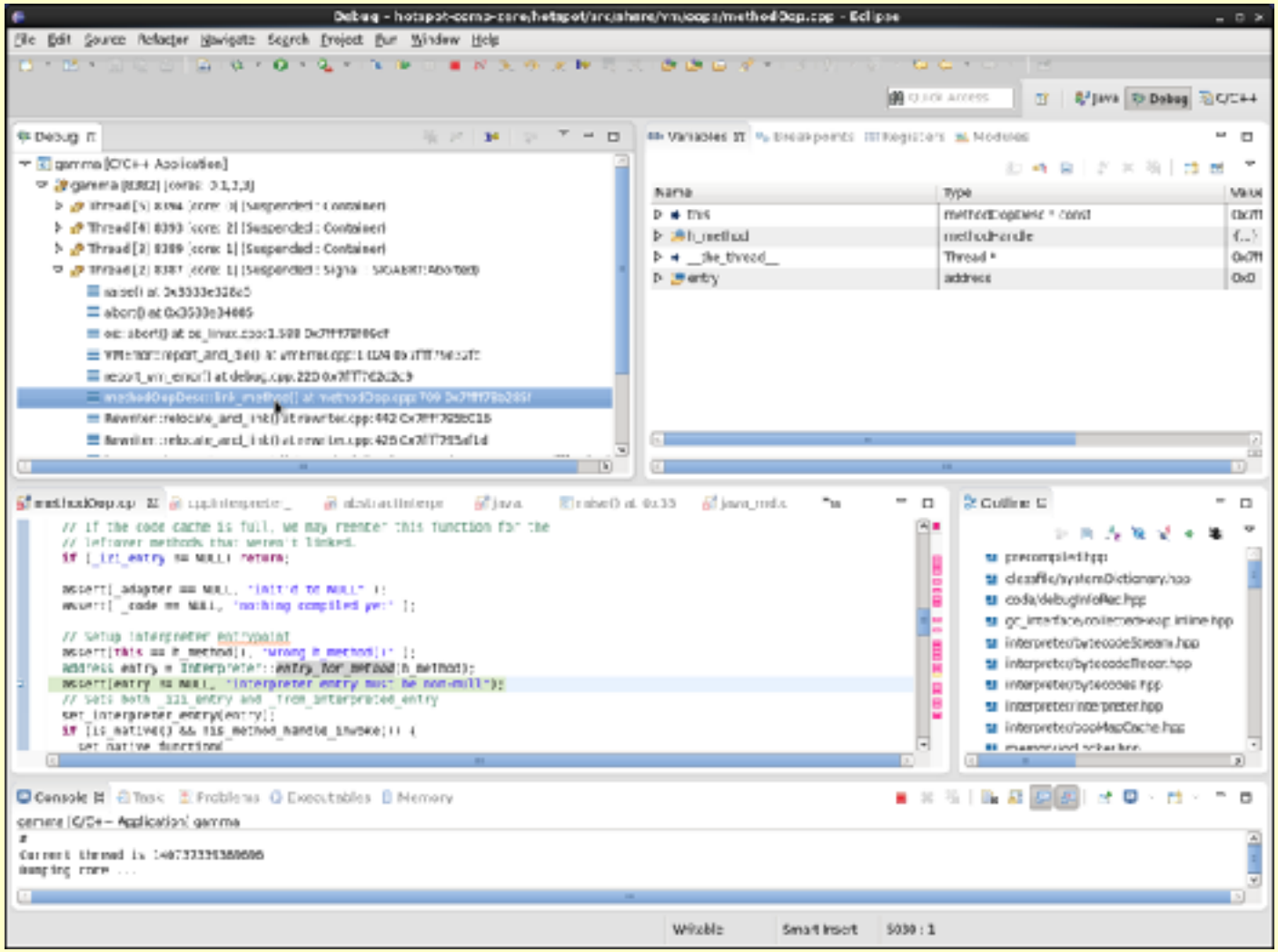


On-line video tutorial



https://www.youtube.com/watch?v=9gAjIQc4bPU

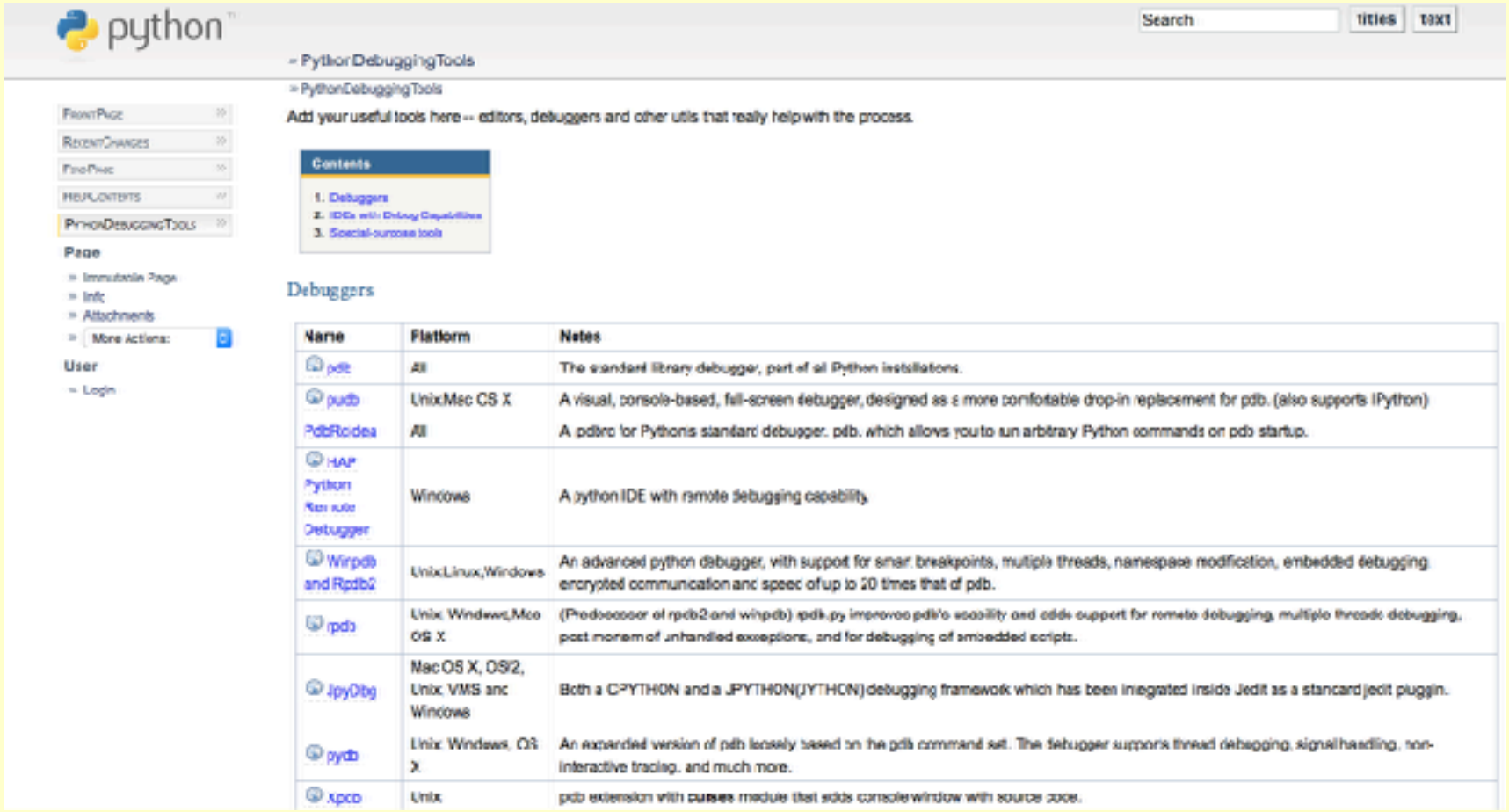
Eclipse also supports debugging the languages (like C++)



All reasonable IDEs provide debugging functionality, eg NetBeans:

https://netbeans.org/features/java/debugger.html

All reasonable programming languages provide a selection of debugging tools, e.g. Python



- PythonDebuggingTools

» PythonDebuggingTools

Add your useful tools here -- editors, debuggers and other utils that really help with the process.

Contents

1. Debuggers
2. IDEs with Debug Capabilities
3. Special-purpose tools

Debuggers

Name	Platform	Notes
pdb	All	The standard library debugger, part of all Python installations.
pudb	Unix,Mac OS X	A visual, console-based, full-screen debugger, designed as a more comfortable drop-in replacement for pdb. (also supports IPython)
PdbRcIdea	All	A pdbrc for Pythons standard debugger, pdb, which allows you to run arbitrary Python commands on pdb startup.
HAP Python Remote Debugger	Windows	A python IDE with remote debugging capability.
Winpdb and Rpdb2	Unix,Linux,Windows	An advanced python debugger, with support for smart breakpoints, multiple threads, namespace modification, embedded debugging, encrypted communication and speed of up to 20 times that of pdb.
rpdb	Unix, Windows, Mac OS X	(Predecessor of rpdb2 and winpdb) rpdb.py improves pdb's usability and adds support for remote debugging, multiple threads debugging, post mortem of unhandled exceptions, and for debugging of embedded scripts.
JpyDbg	Mac OS X, OS/2, Unix, VMS and Windows	Both a CPYTHON and a JPYTHON(JYTHON) debugging framework which has been integrated inside Jedit as a standard jedit pluggin.
pydb	Unix, Windows, OS X	An expanded version of pdb loosely based on the pdb command set. The debugger supports thread debugging, signal handling, non-interactive tracing, and much more.
xpdb	Unix	pdb extension with curses module that adds console window with source code.

https://wiki.python.org/moin/PythonDebuggingTools

You can even debug at the command line, eg using gdb for C:

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How to Debug C Program using gdb in 6 Simple Steps

by SATHIYAMOORTHY on MARCH 15, 2010

Earlier we discussed the basics of how to write and compile a C program with C Hello World Program.

In this article, let us discuss how to debug a c program using gdb debugger in 6 simple steps.

Write a sample C program with errors for debugging purpose

To learn C program debugging, let us create the following C program that calculates and prints the factorial of a number. However this C program contains some errors in it for our debugging purpose.

http://www.thegeekstuff.com/2010/03/debug-c-program-using-gdb