TATA ELXSI

Python Scripting

Learning & Development Team

Monday, November 2, 2020

Module – 9 : PDB

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Agenda

- How does the debugger work?
- Debugger Commands
- Setting (conditional) breakpoints
- Single stepping at the source line level,
- Inspection of stack frames,
- Source code listing

Debugger -- pdb

- The module pdb defines an interactive source code debugger for Python programs

- . Typical usage to run a program under control of the debugger is:

```
>>> import pdb
>>> import mymodule
>>> pdb.run('mymodule.test()')
```

- pdb.py can also be invoked as a script to debug other scripts. For example:

- python3   -m   pdb   myscript.py

Debugger -- pdb

- Command tp print the documentation on pdb

```
>>> import pdb
>>> pdb.help()
```

- Command to print the short documentation on pdb commands

```
(Pdb) help clear
cl(ear) filename:lineno
cl(ear) [bpnumber [bpnumber...]]
```

- Debugger commands

```
=================
 h(elp)
   Without argument, print the list of available commands.
```

Debugger -- pdb

- w(here)

  Print a stack trace, with the most recent frame at the bottom. An arrow indicates the "current frame", which determines the context of most commands. 'bt' is an alias for this command.

- d(own) [count]

  Move the current frame count (default one) levels down in the stack trace (to a newer frame).

- u(p) [count]

  Move the current frame count (default one) levels up in the stack trace (to an older frame).

Debugger -- pdb

- b(reak) [([filename:]lineno | function) [, condition]]

  Without argument, list all breaks.

cl(ear) filename:lineno

cl(ear) [bpnumber [bpnumber...]]

With a space separated list of breakpoint numbers, clear those breakpoints. Without argument, clear all breaks

- disable bpnumber [bpnumber ...]

  Disables the breakpoints given as a space separated list of breakpoint numbers it remains in the list of breakpoints and can be (re-)enabled.

Debugger -- pdb

- enable bpnumber [bpnumber ...]

  Enables the breakpoints given as a space separated list of breakpoint numbers

- s(tep)

  Execute the current line, stop at the first possible occasion (either in a function that is called or in the current function).

- n(ext)

  Continue execution until the next line in the current function is reached or it returns.

j(ump) lineno

Set the next line that will be executed. Only available in the bottom-most frame.

Debugger -- pdb

- l(ist) [first [,last] | .]

    List source code for the current file. Without arguments, list 11 lines around the current line or continue the previous listing.

- display [expression]

    Display the value of the expression if it changed, each time execution stops in the current frame.

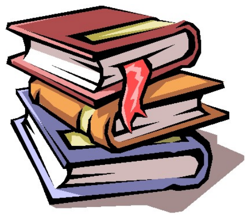
Example 1:

```
import pdb;

def add( a,b) :
    return a+b

def sub(a,b):
    return a-b

def mul(a,b):
    return a*b

def div(a,b):
    return a/b

pdb.set_trace()

val1=add(5,10)
val2=sub(5,10)
val3=div(5,10)
val4=mul(5,10)


print(val1)
print(val2)
print(val3)
print(val4)
```

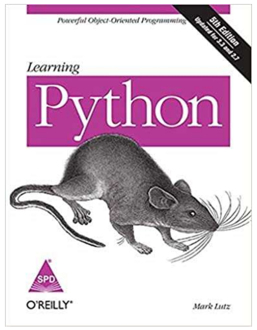
Example 2:

```
import pdb

def fun(a):
    ret1=foo(a*10)
    print("Return from foo",ret1)
    print("a in  fun is :",a)
    return ret1

def foo(a):
    ret2=bar(a*10)
    print("Return from bar",ret2)
    print("a in  bar is :",a)
    return ret2

def bar(a):
    ret3=(a*10)
    print("value in bar is ",ret3)
    print("a in  fun is :",a)
    return ret3

pdb.set_trace()
fun(10)
```

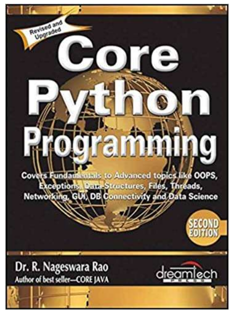
References



- **Python 3.x.x documentation**: https://docs.python.org/3/



- **Learning Python: Powerful Object-Oriented Programming: 5th Edition**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