```
(0) [0x000fe05b] f000:e05b (unk. ctxt): xor ax, ax                ; 31c0
<bochs:3> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:00000f20 rbx: 0x00000000:00000000
rsp: 0x00000000:00000000 rbp: 0x00000000:00000000
rsi: 0x00000000:00000000 rdi: 0x00000000:00000000
r8 : 0x00000000:00000000 r9 : 0x00000000:00000000
r10: 0x00000000:00000000 r11: 0x00000000:00000000
r12: 0x00000000:00000000 r13: 0x00000000:00000000
r14: 0x00000000:00000000 r15: 0x00000000:00000000
rip: 0x00000000:0000e05b
eflags 0x00000002
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:4> vb 0:0x7c00
<bochs:5> c
(10264512) Breakpoint 10285608, in 0000:7c00 (0x00007c00)
Next at t=2082128
(0) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+003b (0x00007c3e) ; e93b00
<bochs:6> s
Next at t=2082129
(0) [0x00007c3e] 0000:7c3e (unk. ctxt): cli                      ; fa
<bochs:7> s
Next at t=2082130
(0) [0x00007c3f] 0000:7c3f (unk. ctxt): mov ax, 0x07c0           ; b8c007
<bochs:8> h
h|help - show list of debugger commands
h|help command - show short command description
-*- Debugger control -*-
   help, q|quit|exit, set, instrument, show, trace, trace-reg,
   record, playback, load-symbols, slist
-*- Execution control -*-
   c|cont|continue, s|step|stepi, p|n|next, modebp
-*- Breakpoint management -*-
   vb|vbreak, lb|lbreak, pb|pbreak|b|break, sb, sba, blist,
   bpe, bpd, d|del|delete
-*- CPU and memory contents -*-
   x, xp, u|disasm|disassemble, r|reg|regs|registers, setpmem, crc, info,
   set, dump_cpu, set_cpu, ptime, print-stack, watch, unwatch, ?|calc
<bochs:9> s
Next at t=2082131
(0) [0x00007c42] 0000:7c42 (unk. ctxt): mov ds, ax               ; 8ed8
```

```
(0) [0x00007c42] 0000:7c42 (unk. ctxt): mov ds, ax               ; 8ed8
<bochs:10> s
Next at t=2082132
(0) [0x00007c44] 0000:7c44 (unk. ctxt): mov es, ax               ; 8ec0
<bochs:11> s
Next at t=2082133
(0) [0x00007c46] 0000:7c46 (unk. ctxt): mov fs, ax               ; 8ee0
<bochs:12> q
# In bx_win32_gui_c::exit(void)!

Bochs is exiting. Press ENTER when you're ready to close this window.
s

C:\OS\LAB\LAB3>s

C:\OS\LAB\LAB3>..\..\bochs-2.3.5\bochsdbg -q -f bochsrc.bxrc
00000000000i[APIC?] local apic in  initializing
========================================================================
                Bochs x86 Emulator 2.3.5
        Build from CVS snapshot, on September 16, 2007
========================================================================
00000000000i[     ] reading configuration from bochsrc.bxrc
00000000000i[     ] installing win32 module as the Bochs GUI
00000000000i[     ] using log file bochs.log
Next at t=0
(0) [0xfffffff0] f000:fff0 (unk. ctxt): jmp far f000:e05b        ; ea5be000f0
<bochs:1> vb 0x0100:0x0000
<bochs:2> c
(10264512) Breakpoint 10285608, in 0100:0000 (0x00001000)
Next at t=2949443
(0) [0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100           ; b80001
<bochs:3> s
Next at t=2949444
(0) [0x00001003] 0100:0003 (unk. ctxt): mov ds, ax               ; 8ed8
<bochs:4> s
Next at t=2949445
(0) [0x00001005] 0100:0005 (unk. ctxt): mov es, ax               ; 8ec0
<bochs:5> s
Next at t=2949446
(0) [0x00001007] 0100:0007 (unk. ctxt): cli                      ; fa
<bochs:6> s
```

```
(0) [0x00001008] 0100:0008 (unk. ctxt): mov ss, ax               ; 8ed0
<bochs:7> s
Next at t=2949448
(0) [0x0000100a] 0100:000a (unk. ctxt): mov sp, 0xffff           ; bcffff
<bochs:8> s
Next at t=2949449
(0) [0x0000100d] 0100:000d (unk. ctxt): sti                      ; fb
<bochs:9> s
Next at t=2949450
(0) [0x0000100e] 0100:000e (unk. ctxt): push dx                  ; 52
<bochs:10> s
Next at t=2949451
(0) [0x0000100f] 0100:000f (unk. ctxt): push es                  ; 06
<bochs:11> s
Next at t=2949452
(0) [0x00001010] 0100:0010 (unk. ctxt): xor ax, ax               ; 31c0
<bochs:12> s
Next at t=2949453
(0) [0x00001012] 0100:0012 (unk. ctxt): mov es, ax               ; 8ec0
<bochs:13>
Next at t=2949454
(0) [0x00001014] 0100:0014 (unk. ctxt): cli                      ; fa
<bochs:14>
Next at t=2949455
(0) [0x00001015] 0100:0015 (unk. ctxt): mov word ptr es:0x84, 0x0030 ; 26c70684003000
<bochs:15>
Next at t=2949456
(0) [0x0000101c] 0100:001c (unk. ctxt): mov word ptr es:0x86, cs  ; 268c0e8600
<bochs:16>
Next at t=2949457
(0) [0x00001021] 0100:0021 (unk. ctxt): sti                      ; fb
<bochs:17>
Next at t=2949458
(0) [0x00001022] 0100:0022 (unk. ctxt): pop es                   ; 07
<bochs:18>
Next at t=2949459
(0) [0x00001023] 0100:0023 (unk. ctxt): pop dx                   ; 5a
<bochs:19>
Next at t=2949460
(0) [0x00001024] 0100:0024 (unk. ctxt): mov si, 0x01e8           ; bee801
<bochs:20>
```

```
(0) [0x00001014] 0100:0014 (unk. ctxt): cli                      ; fa
<bochs:14>
Next at t=2949455
(0) [0x00001015] 0100:0015 (unk. ctxt): mov word ptr es:0x84, 0x0030 ; 26c70684003000
<bochs:15>
Next at t=2949456
(0) [0x0000101c] 0100:001c (unk. ctxt): mov word ptr es:0x86, cs  ; 268c0e8600
<bochs:16>
Next at t=2949457
(0) [0x00001021] 0100:0021 (unk. ctxt): sti                      ; fb
<bochs:17>
Next at t=2949458
(0) [0x00001022] 0100:0022 (unk. ctxt): pop es                   ; 07
<bochs:18>
Next at t=2949459
(0) [0x00001023] 0100:0023 (unk. ctxt): pop dx                   ; 5a
<bochs:19>
Next at t=2949460
(0) [0x00001024] 0100:0024 (unk. ctxt): mov si, 0x01e8           ; bee801
<bochs:20>
Next at t=2949461
(0) [0x00001027] 0100:0027 (unk. ctxt): mov al, 0x01             ; b001
<bochs:21> s
```

```
Microsoft Windows [Version 10.0.17763.195]
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C:\Users\Vian>cd..

C:\Users>cd..

C:\>cd os

C:\OS>cd lab

C:\OS\LAB>cd lab3

C:\OS\LAB\LAB3>s

C:\OS\LAB\LAB3>..\..\bochs-2.3.5\bochsdbg -q -f bochsrc.bxrc
00000000000i[APIC?] local apic in  initializing
========================================================================
                   Bochs x86 Emulator 2.3.5
          Build from CVS snapshot, on September 16, 2007
========================================================================
00000000000i[    ] reading configuration from bochsrc.bxrc
00000000000i[    ] installing win32 module as the Bochs GUI
00000000000i[    ] using log file bochs.log
Next at t=0
(0) [0xfffffff0] f000:fff0 (unk. ctxt): jmp far f000:e05b           ; ea5be000f0
<bochs:1> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:00000f20 rbx: 0x00000000:00000000
rsp: 0x00000000:00000000 rbp: 0x00000000:00000000
rsi: 0x00000000:00000000 rdi: 0x00000000:00000000
r8 : 0x00000000:00000000 r9 : 0x00000000:00000000
r10: 0x00000000:00000000 r11: 0x00000000:00000000
r12: 0x00000000:00000000 r13: 0x00000000:00000000
r14: 0x00000000:00000000 r15: 0x00000000:00000000
rip: 0x00000000:0000fff0
eflags 0x00000002
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:2> s
Next at t=1
(0) [0x000fe05b] f000:e05b (unk. ctxt): xor ax, ax               ; 31c0
```