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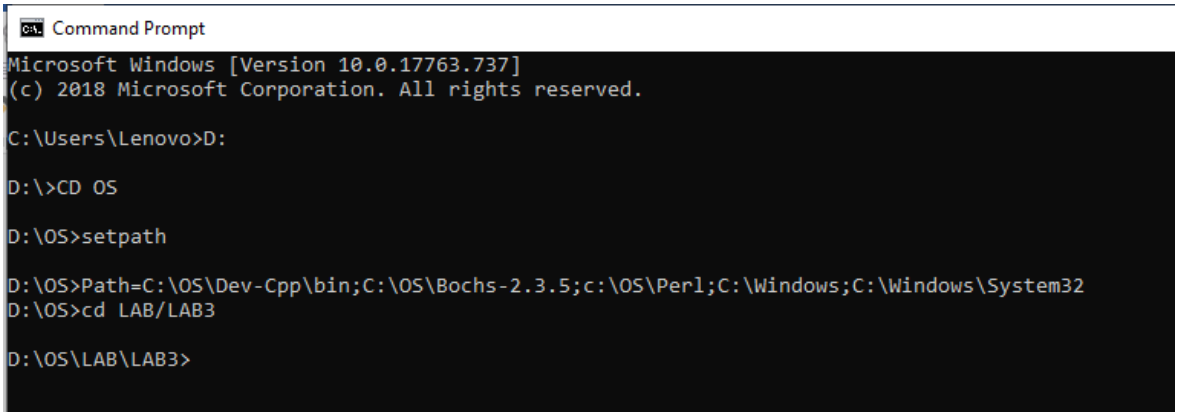
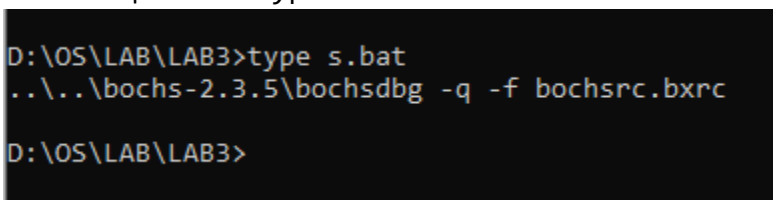
Kelas : B

MODUL 3

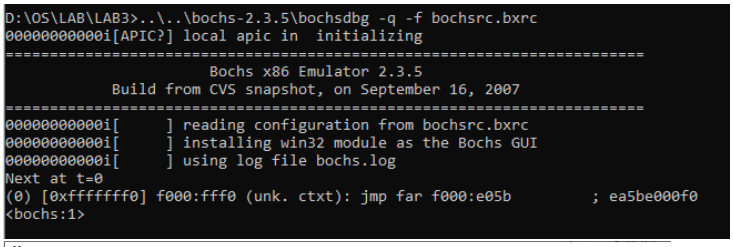
1. Masuk ke direktori OS, melakukan ‘setpath’ dan masuk ke direktori LAB/LAB3

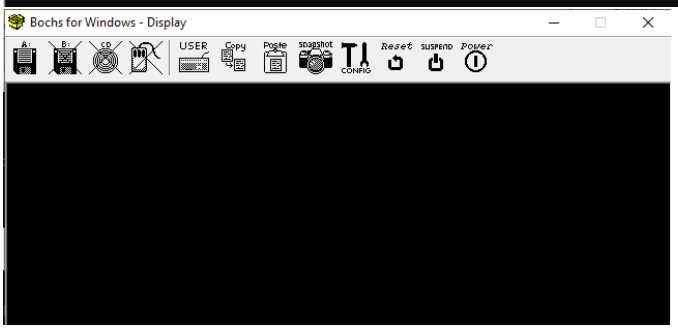


2. Masukkan perintah ‘type s.bat’



3. Mulai debugging dengan memasukkan perintah ‘s’





4. Untuk melihat isi register CS dan IP, masukkan perintah ‘r’

```
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>
```

5. Untuk mengeksekusi perintah selanjutnya, ketikkan ‘s’ <ENTER>, lalu ‘r’ <ENTER>

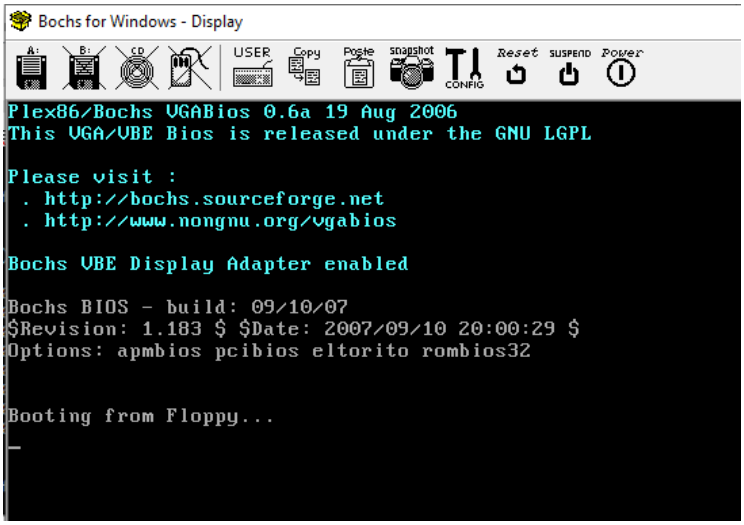
```
rip: 0x00000000:0000fff0
eflags 0x00000002
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:2> s
Next at t=1
(0) [0x000fe05b] f000:e05b (unk. ctxt): xor ax, ax               ; 31c0
<bochs:3> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:00000f20 rbx: 0x00000000:00000000
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>
```

6. Untuk membuat titik pemberhentian pada alamat, masukkan perintah ‘vb 0:0x7C00’ <ENTER>

```
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>
```

Untuk meneruskan prosesnya sampai ke titik pemberhentian, masukkan perintah ‘c’ <ENTER>

```
<bochs:4> vb 0:0x7C00
<bochs:5> c
(1995898425) Breakpoint 10285608, in 0000:7c00 (0x00007c00)
Next at t=2082128
(0) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x00007c3e) ; e93b00
<bochs:6>
```



7. Masukkan perintah ‘s’ <ENTER> sebanyak 10 kali

```
<bochs:5> c
(1995898425) Breakpoint 10285608, in 0000:7c00 (0x00007c00)
Next at t=2082128
(0) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (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> s
Next at t=2082131
(0) [0x00007c42] 0000:7c42 (unk. ctxt): mov ds, ax                ; 8ed8
<bochs:9> s
Next at t=2082132
(0) [0x00007c44] 0000:7c44 (unk. ctxt): mov es, ax                ; 8ec0
<bochs:10> s
Next at t=2082133
(0) [0x00007c46] 0000:7c46 (unk. ctxt): mov fs, ax                ; 8ee0
<bochs:11> s
Next at t=2082134
(0) [0x00007c48] 0000:7c48 (unk. ctxt): mov gs, ax                ; 8ee8
<bochs:12> s
Next at t=2082135
(0) [0x00007c4a] 0000:7c4a (unk. ctxt): mov ax, 0x0000            ; b80000
<bochs:13> s
Next at t=2082136
(0) [0x00007c4d] 0000:7c4d (unk. ctxt): mov ss, ax                ; 8ed0
<bochs:14> s
Next at t=2082137
(0) [0x00007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xffff            ; bcffff
<bochs:15> s
Next at t=2082138
(0) [0x00007c52] 0000:7c52 (unk. ctxt): sti                       ; fb
<bochs:16>
```

8. Perintahkan PC untuk melanjutkan pekerjaannya dengan memasukkan perintah ‘c’, atau menghentikan proses dengan perintah ‘q’.

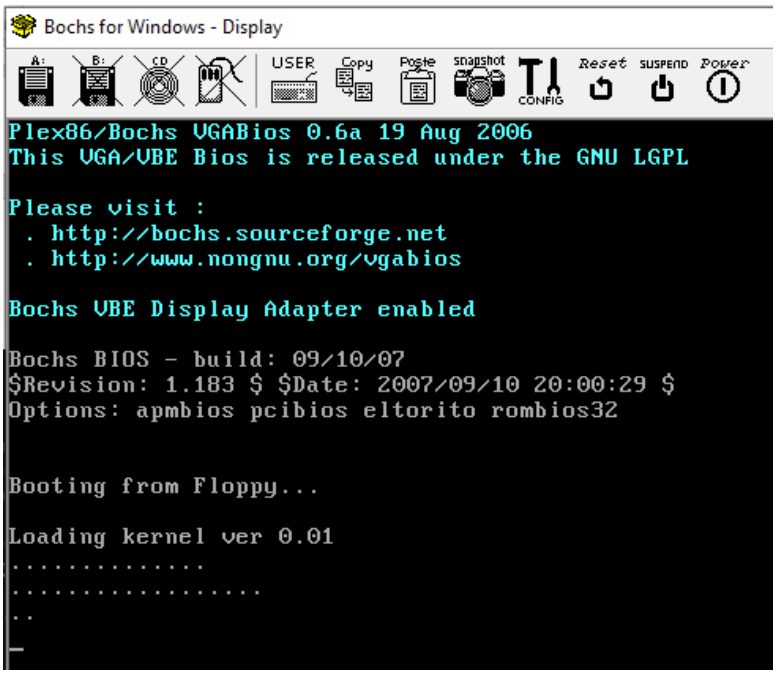
```
<bochs:16> q
# In bx_win32_gui_c::exit(void)!

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

9. Mulai debugging dari awal dengan memasukkan perintah ‘s’<ENTER>, lalu masukkan perintah ‘vb 0x0100:0x0000’ untuk menghentikan langkah saat PC mulai mengeksekusi instruksi dari program ‘kernel.bin’. lalu masukkan perintah ‘c’ untuk melanjutkan pekerjaan.

```
D:\OS\LAB\LAB3>s

D:\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=2945013
(0) [0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100            ; b80001
<bochs:3>
```



10. Masukkan perintah ‘s’ sebanyak 10 kali

```
<bochs:1> vb 0x0100:0x0000
<bochs:2> c
(10264512) Breakpoint 10285608, in 0100:0000 (0x00001000)
Next at t=2945013
(0) [0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100          ; b80001
<bochs:3> s
Next at t=2945014
(0) [0x00001003] 0100:0003 (unk. ctxt): mov ds, ax              ; 8ed8
<bochs:4> s
Next at t=2945015
(0) [0x00001005] 0100:0005 (unk. ctxt): mov es, ax              ; 8ec0
<bochs:5> s
Next at t=2945016
(0) [0x00001007] 0100:0007 (unk. ctxt): cli                     ; fa
<bochs:6> s
Next at t=2945017
(0) [0x00001008] 0100:0008 (unk. ctxt): mov ss, ax              ; 8ed0
<bochs:7> s
Next at t=2945018
(0) [0x0000100a] 0100:000a (unk. ctxt): mov sp, 0xffff          ; bcffff
<bochs:8> s
Next at t=2945019
(0) [0x0000100d] 0100:000d (unk. ctxt): sti                     ; fb
<bochs:9> s
Next at t=2945020
(0) [0x0000100e] 0100:000e (unk. ctxt): push dx                 ; 52
<bochs:10> s
Next at t=2945021
(0) [0x0000100f] 0100:000f (unk. ctxt): push es                 ; 06
<bochs:11> s
Next at t=2945022
(0) [0x00001010] 0100:0010 (unk. ctxt): xor ax, ax              ; 31c0
<bochs:12> s
Next at t=2945023
(0) [0x00001012] 0100:0012 (unk. ctxt): mov es, ax              ; 8ec0
<bochs:13>
```