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Kelas : B

Laporan Modul 3

1. Masuk ke direktori C:/OS, lakukan setpath dan masuk ke direktori lab/lab3

```
C:\Users\Wulandari Ratna>cd C:/OS  
  
C:\OS>setpath  
  
C:\OS>Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;c:\Windows;c:\Windows\System32  
C:\OS>cd LAB/LAB3  
  
C:\OS\LAB\LAB3>
```

2. Ketikkan 'type s.bat'

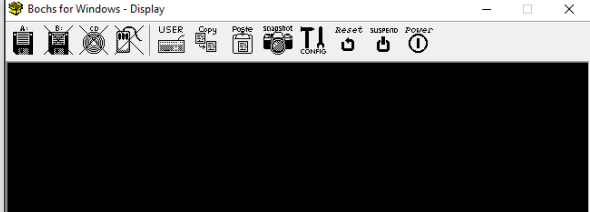
```
C:\OS\LAB\LAB3>type s.bat  
..\..\bochs-2.3.5\bochsdbg -q -f bochsrc.bxrc  
  
C:\OS\LAB\LAB3>
```

3. Lakukan debugging dengan cara ketik 's'

```
C:\OS\LAB\LAB3>s  
C:\OS\LAB\LAB3>..\..\bochs-2.3.5\bochsdbg -q -f bochsrc.bxrc  
000000000000[APIC?] local apic in initializing  
=====
```

Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007

```
=====
```

000000000000[] reading configuration from bochsrc.bxrc
000000000000[] installing win32 module as the Bochs GUI
000000000000[] using log file bochs.log
Next at t=0
(0) [0xffffffff] f000:ffff (unk. ctx): jmp far f000:e05b ; ea5be00f0
<bochs:1>

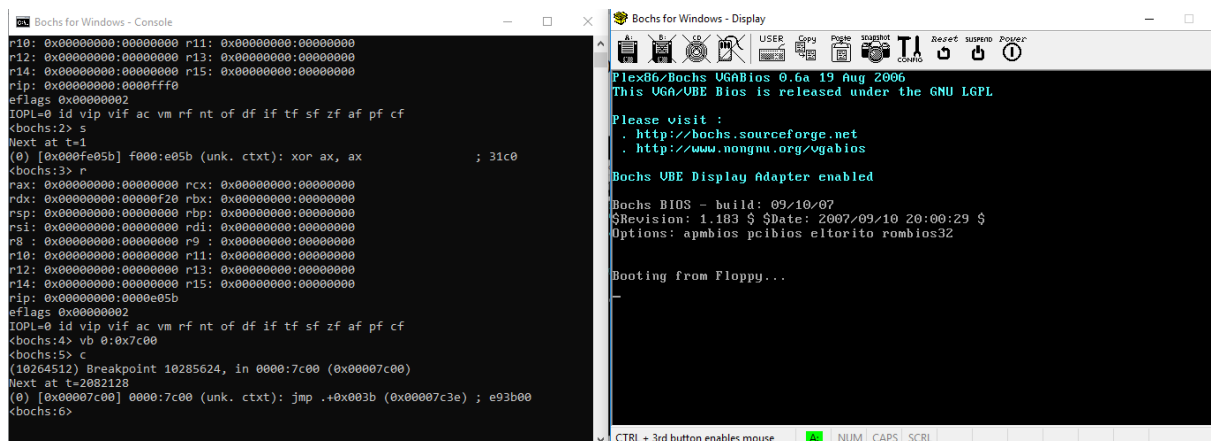
4. Ketikkan 'r' untuk melihat isi register CS dan IP

```
<bochs:1> r  
rax: 0x00000000:00000000 rcx: 0x00000000:00000000  
rdx: 0x00000000:0000f20 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: 0x00000000:0000ffff  
eflags 0x00000002  
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf  
<bochs:2>
```

5. Mengeksekusi perintah selanjutnya, ketikkan 's' <ENTER> lalu ketikkan 'r' <ENTER>

```
<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: 0x00000000:0000f20 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. Kemudian masukkan perintah 'vb 0:0x7C00' untuk membuat pemberhentian di alamat tersebut



```
Bochs for Windows - Console
r10: 0x00000000:00000000 r11: 0x00000000:00000000
r12: 0x00000000:00000000 r13: 0x00000000:00000000
r14: 0x00000000:00000000 r15: 0x00000000:00000000
rip: 0x00000000:0000ff00
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: 0x00000000:0000f20 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 10285624, in 0000:7c00 (0x00007c00)
Next at t=2082128
(0) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x00007c3e) ; e93b00
<bochs:6>
```

Bochs for Windows - Display

Plex86/Bochs UGABios 0.6a 19 Aug 2006
This UGA/UBE Bios is released under the GNU LGPL

Please visit :
. <http://bochs.sourceforge.net>
. <http://www.nongnu.org/vgabios>

Bochs UBE Display Adapter enabled

Bochs BIOS - build: 09/10/07
\$Revision: 1.183 \$ \$Date: 2007/09/10 20:00:29 \$
Options: apmbios pcibios eltorito rombios32

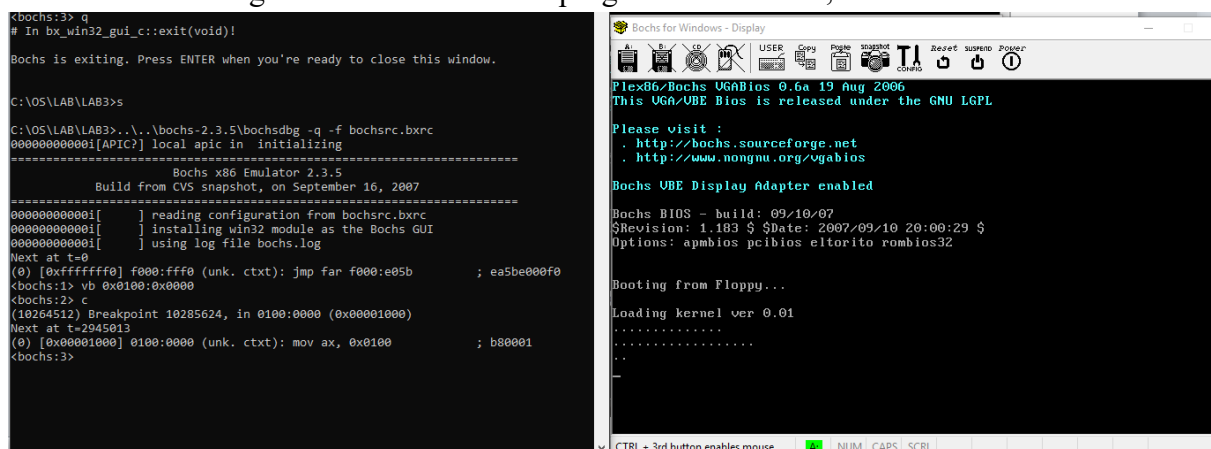
Booting from Floppy...

CTRL + 3rd button enables mouse NUM CAPS SCRL

7. Ketikkan 'c' untuk continue / melanjutkan. Lalu ketikkan 's' berulang sebanyak 10 kali, dan lakukan pengecekan dengan file boot.asm

```
<bochs:5> c
(10264512) Breakpoint 10285624, 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. Ketikkan 'q' untuk menghentikan debugging. Kemudian lakukan debugging lagi dengan cara ketikkan 's', kemudian ketikkan 'vb 0x0100:0x0000' untuk menghentikan langkah saat PC mulai mengeksekusi instruksi dari program 'kernel.bin', lalu ketikkan 'c'



```
<bochs:3> q
# In bx_win32_gui_c::exit(void)!
Bochs is exiting. Press ENTER when you're ready to close this window.

C:\OS\LAB\LAB3>s
C:\OS\LAB\LAB3>.\..\bochs-2.3.5\bochsdbg -q -f bochsrc.bxrc
000000000000[APIC?] local apic in initializing
-----
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
-----
000000000000[ ] reading configuration from bochsrc.bxrc
000000000000[ ] installing win32 module as the Bochs GUI
000000000000[ ] using log file bochs.log
Next at t=0
(0) [0xfffffff0] f000:ffff (unk. ctxt): jmp far f000:e05b ; ea5be00f0
<bochs:1> vb 0x0100:0x0000
<bochs:2> c
(10264512) Breakpoint 10285624, in 0100:0000 (0x00001000)
Next at t=2945013
(0) [0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100 ; b80001
<bochs:3>
```

Bochs for Windows - Display

Plex86/Bochs UGBios 0.6a 19 Aug 2006
This UGA/UE Bios is released under the GNU LGPL

Please visit :
<http://bochs.sourceforge.net>
<http://www.nongnu.org/vgabios>

Bochs VBE Display Adapter enabled

Bochs BIOS - build: 09/10/07
\$Revision: 1.103 \$ \$Date: 2007/09/10 20:00:29 \$
Options: apmbios pcibios eltorito rombios32

Booting from Floppy...

Loading kernel ver 0.01

CTRL + 3rd button enables mouse NUM CAPS SCRL

9. Kemudian ketikkan 's' minimal 10x. Lalu bandingkan hasilnya dengan isi file kernel.asm

```
<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>
```