

# PRAKTIKUM SISTEM OPERASI

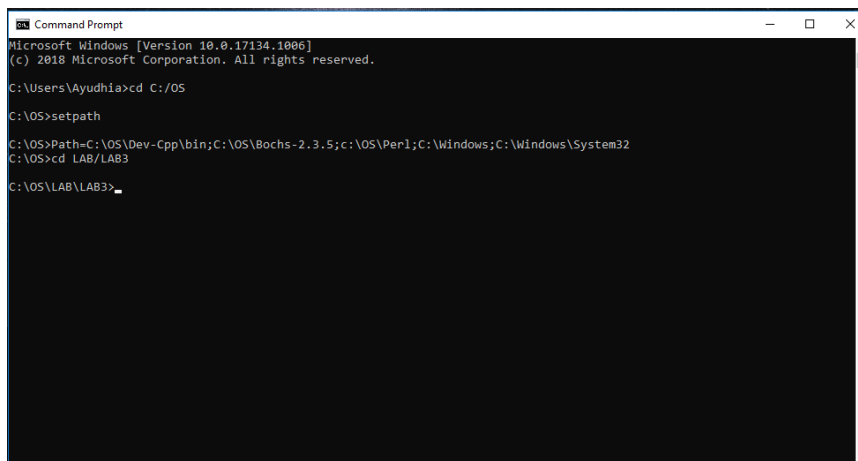
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*L200180095*

*B*

## MODUL 3

1. Ketik 'cmd' lanjut dengan 'CD OS', 'setpath', dan 'cd LAB/LAB3'



```
Command Prompt
Microsoft Windows [Version 10.0.17134.1006]
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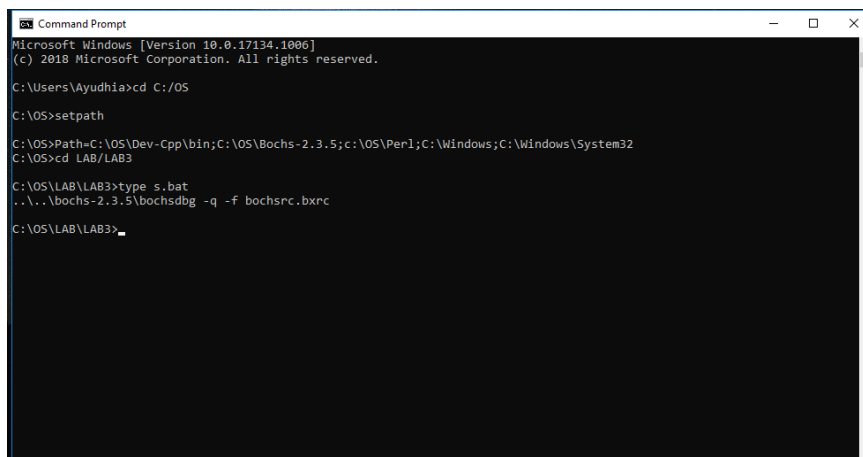
C:\Users\Ayudhia>cd C:/OS

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. Ketik 'type s.bat'



```
Command Prompt
Microsoft Windows [Version 10.0.17134.1006]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Ayudhia>cd C:/OS

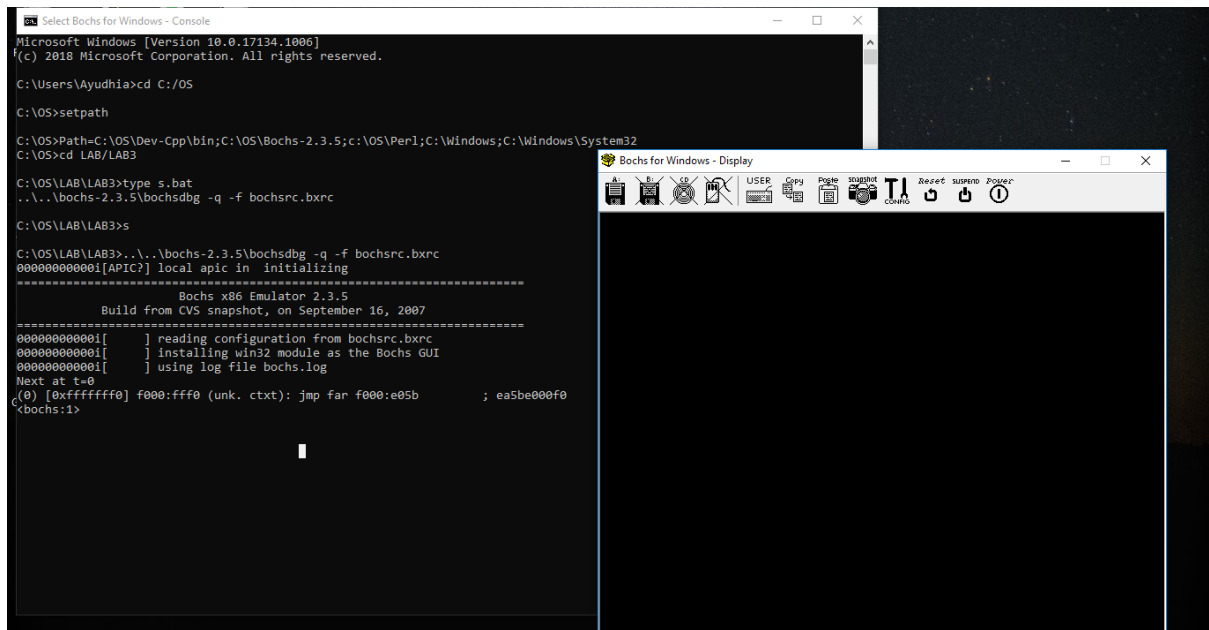
C:\OS>setpath

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

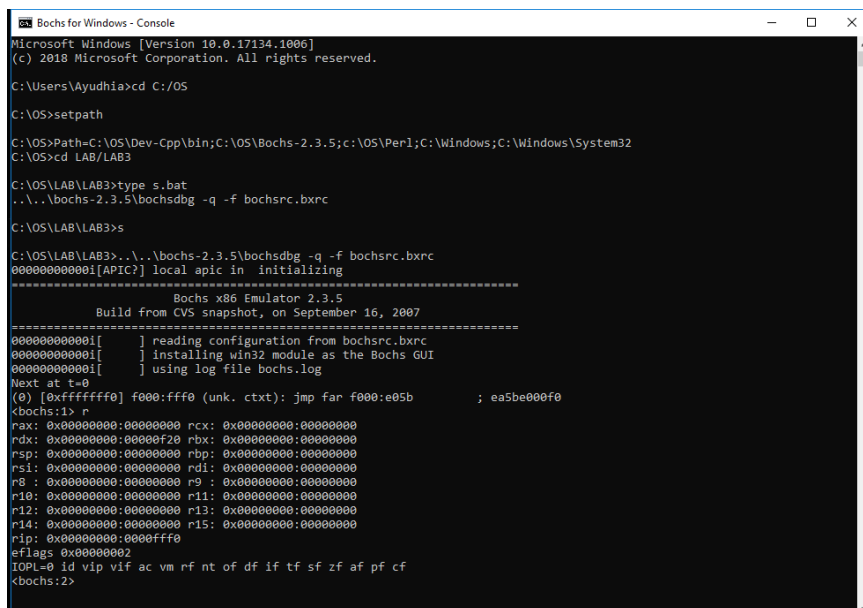
C:\OS\LAB\LAB3>type s.bat
... \bochs-2.3.5\bochsdbg -q -f bochsrc.bxrc

C:\OS\LAB\LAB3>
```

### 3. Mulai melakukan ‘debugging’, masukkan perintah ‘s’



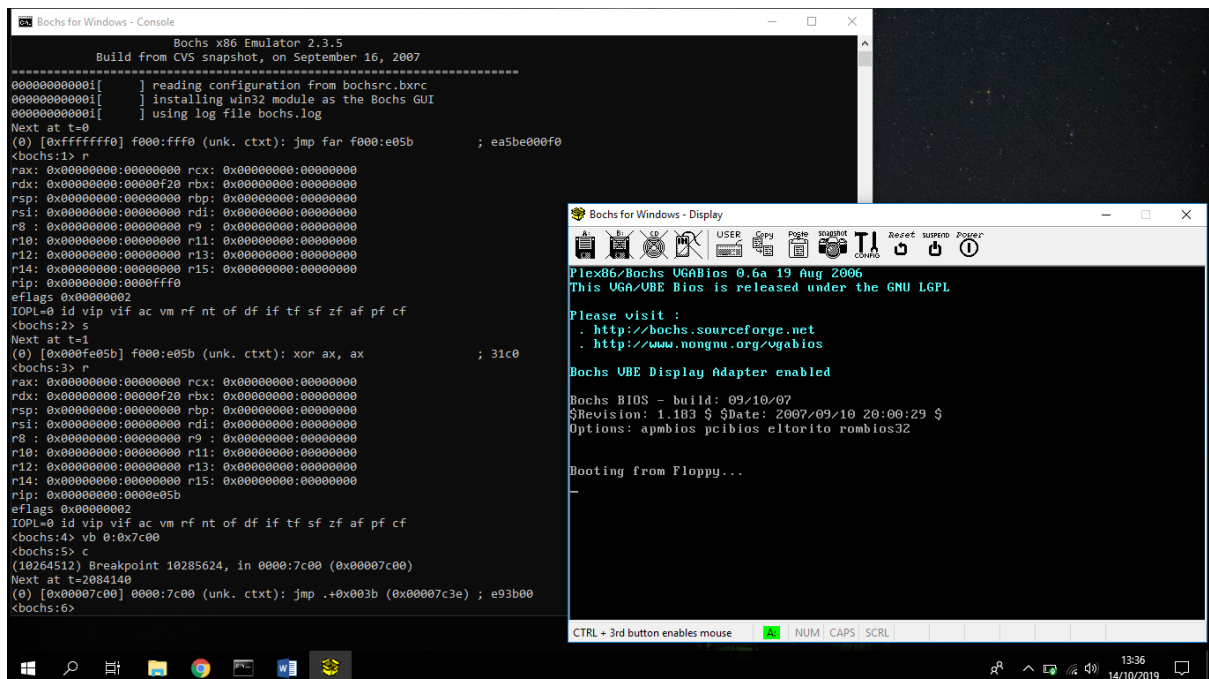
### 4. Ketik ‘r’ untuk melihat isi register CS dan IP



## 5. Mengeksekusi perintah tersebut

```
Bochs for Windows - Console
C:\OS\LAB\LAB3>
C:\OS\LAB\LAB3>.\..\bochs-2.3.5\bochsrc -q -f bochsrc.bxrc
000000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000i[ ] reading configuration from bochsrc.bxrc
000000000000i[ ] installing win32 module as the Bochs GUI
000000000000i[ ] using log file bochs.log
Next at t=0
(0) [0xfffffff0] f000:fff0 (unk. ctxt): jmp far f000:e05b ; ea5be00f0
<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
<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. Kemudian masukkan perintah 'vc 0:0x7c00' untuk membuat pemberhentian di halaman tersebut



7. Ketik 'c' untuk melanjutkan, dan ketik 's' berulang sebanyak 10 kali dan lakukan pengecekan dengan file boot.asm

```

Bochs for Windows - Console
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> vd 0x07c00
<bochs:5> c
(10264512) Breakpoint 10285624, in 0000:7c00 (0x00007c00)
Next at t=2084140
(0) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x00007c3e) ; e93b00
<bochs:6> s
Next at t=2084141
(0) [0x00007c3e] 0000:7c3e (unk. ctxt): cli ; fa
<bochs:7> s
Next at t=2084142
(0) [0x00007c3f] 0000:7c3f (unk. ctxt): mov ax, 0x07c0 ; b8c007
<bochs:8> s
Next at t=2084143
(0) [0x00007c42] 0000:7c42 (unk. ctxt): mov ds, ax ; 8ed8
<bochs:9> s
Next at t=2084144
(0) [0x00007c44] 0000:7c44 (unk. ctxt): mov es, ax ; 8ec0
<bochs:10> s
Next at t=2084145
(0) [0x00007c46] 0000:7c46 (unk. ctxt): mov fs, ax ; 8ee0
<bochs:11> s
Next at t=2084146
(0) [0x00007c48] 0000:7c48 (unk. ctxt): mov gs, ax ; 8ee8
<bochs:12> s
Next at t=2084147
(0) [0x00007c4a] 0000:7c4a (unk. ctxt): mov ax, 0x0000 ; b80000
<bochs:13> s
Next at t=2084148
(0) [0x00007c4d] 0000:7c4d (unk. ctxt): mov ss, ax ; 8ed0
<bochs:14> s
Next at t=2084149
(0) [0x00007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xffff ; bcffff
<bochs:15> s
Next at t=2084150
(0) [0x00007c52] 0000:7c52 (unk. ctxt): sti ; fb
<bochs:16>

```

8. Ketik 'q' untuk menghentikan debugging. Kemudian lakukan debugging lagi dengan cara ketik 's', kemudian ketik '**vb 0x0100:0x0000**' untuk menghentikan langkah saat PC melakukan eksekusi dari program 'kernel.bin' dan ketik 'c'

The screenshot shows a Windows desktop with two windows open. The left window is a terminal titled "Bochs for Windows - Display". It shows the execution of a Bochs BIOS image, displaying assembly code and BIOS initialization steps. The right window is the Bochs GUI, titled "Bochs for Windows - Display". It shows the BIOS screen with various options and a toolbar. The BIOS screen displays "Plex86/Bochs VGBios 0.6a 19 Aug 2006" and "This VGA/VE Bios is released under the GNU LGPL". It also shows the version and date of the BIOS, and the options for the BIOS. The GUI has a toolbar with icons for various functions like USER, Copy, Paste, Snapshot, T1, Reset, Shutdown, and Power. The BIOS screen also shows the build date and time, and the options for the BIOS.

9. Ketik 's' sebanyak 10 kali, lalu bandingkan dengan isi file 'kernel.asm'

```
Bochs for Windows - Console
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochs.log
Next at t=0
(0) [0xffffffff] f000:fff0 (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> 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>
```

