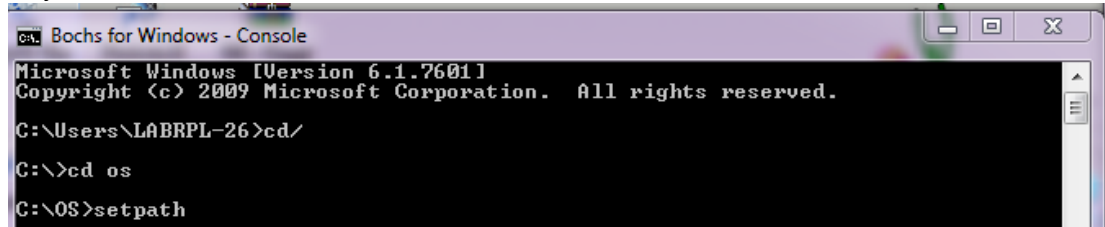


MODUL 3

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Kerja 1



```
Bochs for Windows - Console
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\LABRPL-26>cd /
C:\>cd os
C:\OS>setpath
```

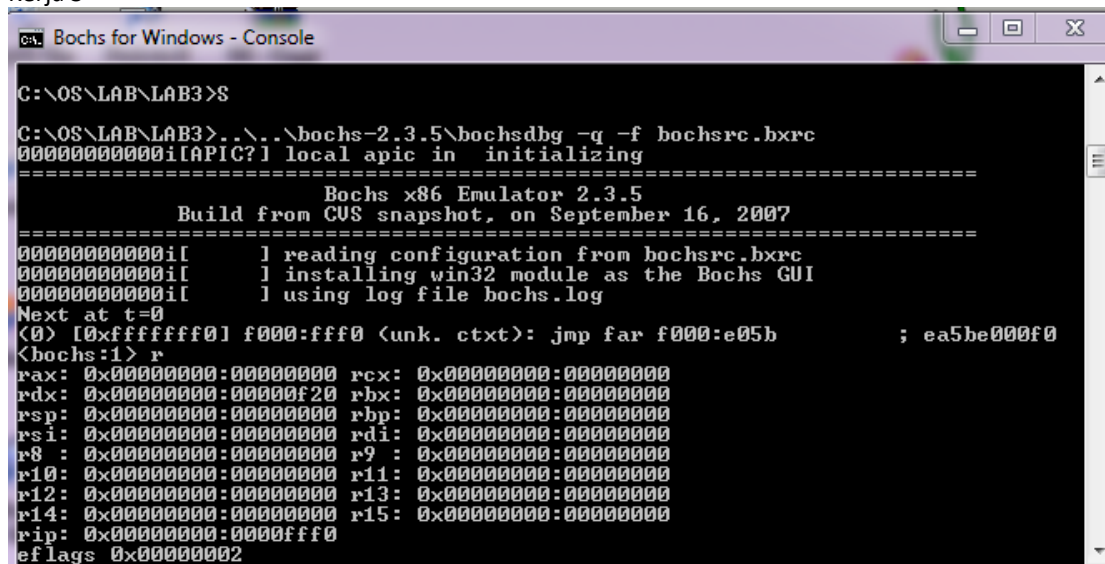
Kerja2



```
Directory of C:\OS\LAB\LAB3
09/03/2015 01:42 PM <DIR> .
09/03/2015 01:42 PM <DIR> ..
12/17/2008 10:36 AM 10,203 bochs.log
12/15/2008 04:18 PM 1,625 bochsrc.bxrc
12/15/2008 09:04 PM 15,923 boot.asm
12/15/2008 06:59 PM 78 dosfp.bat
12/15/2008 07:04 PM 1,474,560 floppy.aimg
12/15/2008 05:57 PM 7,966 kernel.asm
12/15/2008 04:21 PM 228 Makefile
12/15/2008 07:05 PM 47 s.bat
8 File(s) 1,510,630 bytes
2 Dir(s) 137,593,061,376 bytes free

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

Kerja 3



```
Bochs for Windows - Console

C:\OS\LAB\LAB3>S
C:\OS\LAB\LAB3>..\..\bochs-2.3.5\bochsdbg -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> [0xffffffff] f000:fff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:1> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:00000020 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
```

Kerja 4

```
Bochs for Windows - Console
0000000000i[      ] installing win32 module as the Bochs GUI
0000000000i[      ] using log file bochs.log
Next at t=0
<0> [0xffffffff] f000:fff0 <unk. ctxt>: jmp far f000:e05b      ; ea5be00ff0
<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>
```

Kerja 5

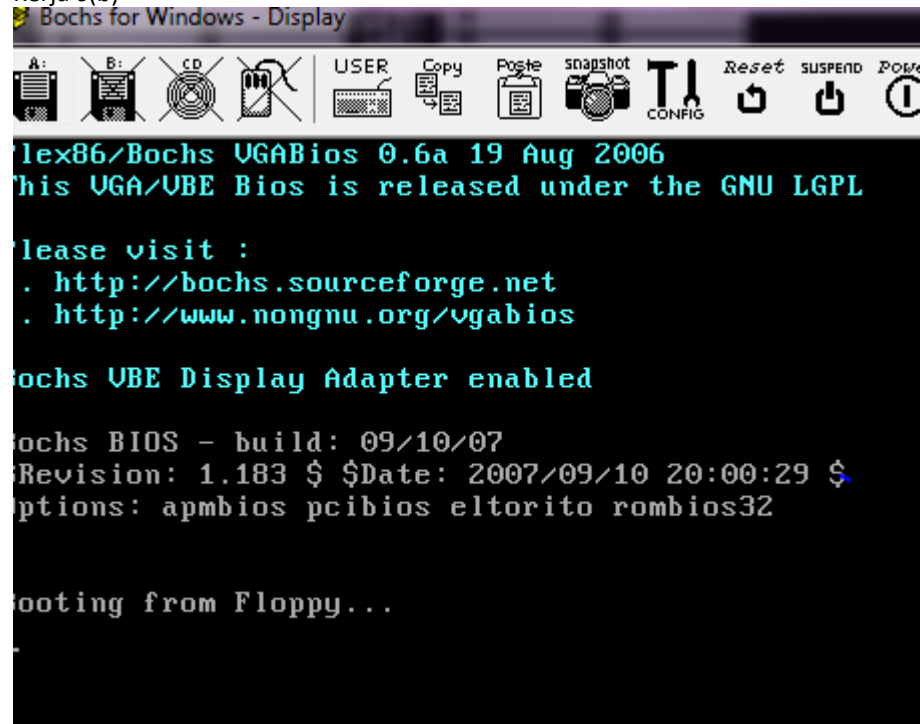
```

r12: 0x00000000:00000000 r13: 0x00000000:00000000
r14: 0x00000000:00000f20 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>
```

Kerja 6(a)

```
Bochs for Windows - Console
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> vb 0:0x7C00
<bochs:5> c
<0> Breakpoint 2683464, in 0000:7c00 <0x00007c00>
Next at t=2082128
<0> [0x00007c00] 0000:7c00 <unk. ctxt>: jmp .+0x003b <0x00007c3e> ; e93b00
<bochs:6>
```

Kerja 6(b)



The screenshot shows a window titled "Bochs for Windows - Display". The toolbar includes icons for A: drive, B: drive, CD-ROM, floppy disk, USER, Copy, Paste, snapshot, CONFIG, Reset, SUSPEND, and Power. The main display area shows the following text in a green monospaced font on a black background:

```
Intel86/Bochs VGABios 0.6a 19 Aug 2006
This VGA/VE BIOS is released under the GNU LGPL

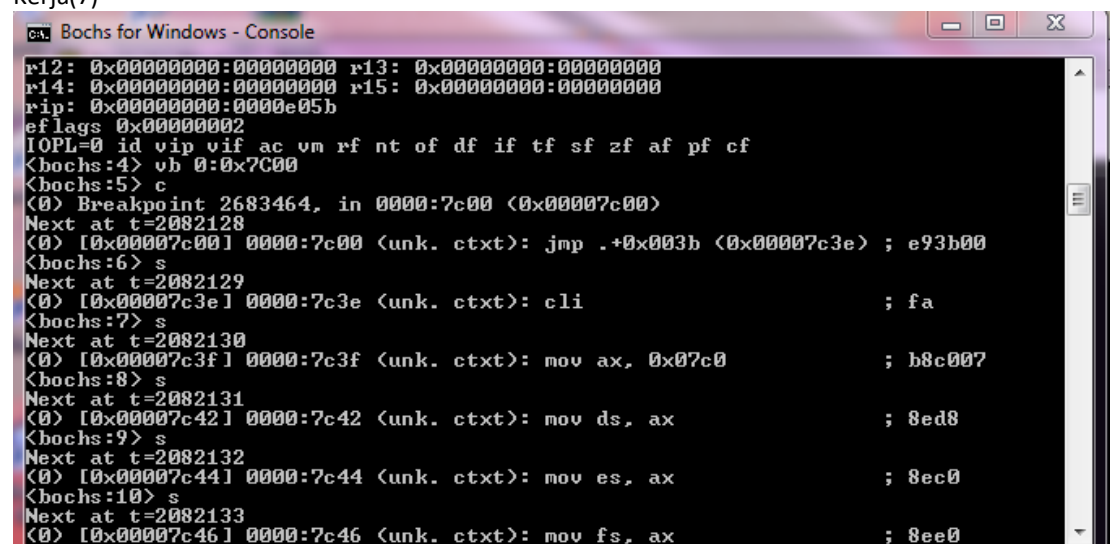
Please visit :
. http://bochs.sourceforge.net
. http://www.nongnu.org/vgabios

Bochs VBE Display Adapter enabled

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

Booting from Floppy...
```

Kerja(7)



The screenshot shows a window titled "Bochs for Windows - Console". The main display area shows the following text in a white monospaced font on a black background:

```
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
<0> Breakpoint 2683464, 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
```

Kerja(8-10)

```

C:\OS\LAB\LAB3>..\..\bochs-2.3.5\bochsdbg -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> [0xfffffffff0] f000:fff0 <unk. ctxt>: jmp far f000:e05b ; ea5be000f0
<bochs:1> vb 0x0100:0x0000
<bochs:2> c
<0> Breakpoint 2683464, 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
  
```

TUGAS MODUL 3

1

Frekuensi bus memori (MHz)	Nama standar	Lama waktu per cycle (ns)	Nama modul memori	Laju transfer data maksimum modul memori (MB/s)	
				Single channel	Dual channel
100	DDR-200	10	PC-1600	1600	3200
133	DDR-266	7,5	PC-2100	2100	4200
150	DDR-300	6,67	PC-2400	2400	4800
166	DDR-333	6	PC-2700	2700	5400
200	DDR-400	5	PC-3200	3200	6400

2

Perbedaan antara mode kerja “Real- Mode” dan mode kerja “protect-mode”

* Real-Mode (Mode-Nyata)

Mode nyata adalah mode operasi yang memungkinkan Prosesor Intel 286 dan yang lebih baru untuk mengambil atribut prosesor 8086 atau 8088 yang lebih rendah, memungkinkan mereka untuk menjalankan program perangkat lunak yang lebih lama. Mode nyata menawarkan kecepatan clock yang lebih tinggi, tetapi membatasi prosesor untuk hanya menggunakan instruksi 16-bit dan minimal 1 MB o

*Protect-Mode

Mode terproteksi adalah mode operasional CPU yang kompatibel dengan Intel 80286. Ini memungkinkan perangkat lunak sistem untuk menggunakan fitur-fitur seperti memori virtual, paging dan multi-tasking yang aman. Ini juga dirancang untuk meningkatkan kontrol OS atas perangkat lunak aplikasi.