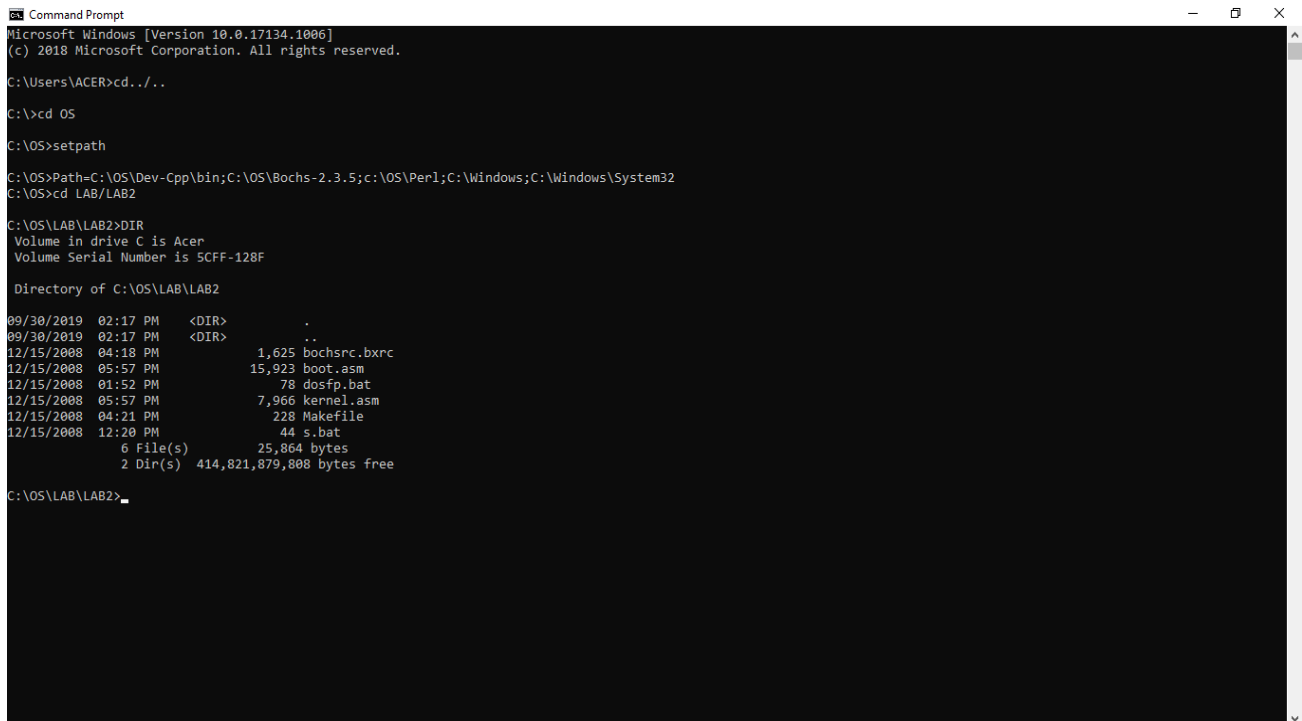


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MODUL 2

1. Menuju ke direktori kerja
2. Masuk ke direktori kerja “C:\OS”
3. Melihat isi direktori di dalam folder OS dengan perintah “DIR” pada Command Prompt
4. Menjalankan file setpath untuk mengatur lingkungan kerja
5. Ketik “cd LAB/LAB2” dilanjutkan perintah “DIR” untuk melihat file didalamnya
6. Menyiapkan file image “floppya.img”



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

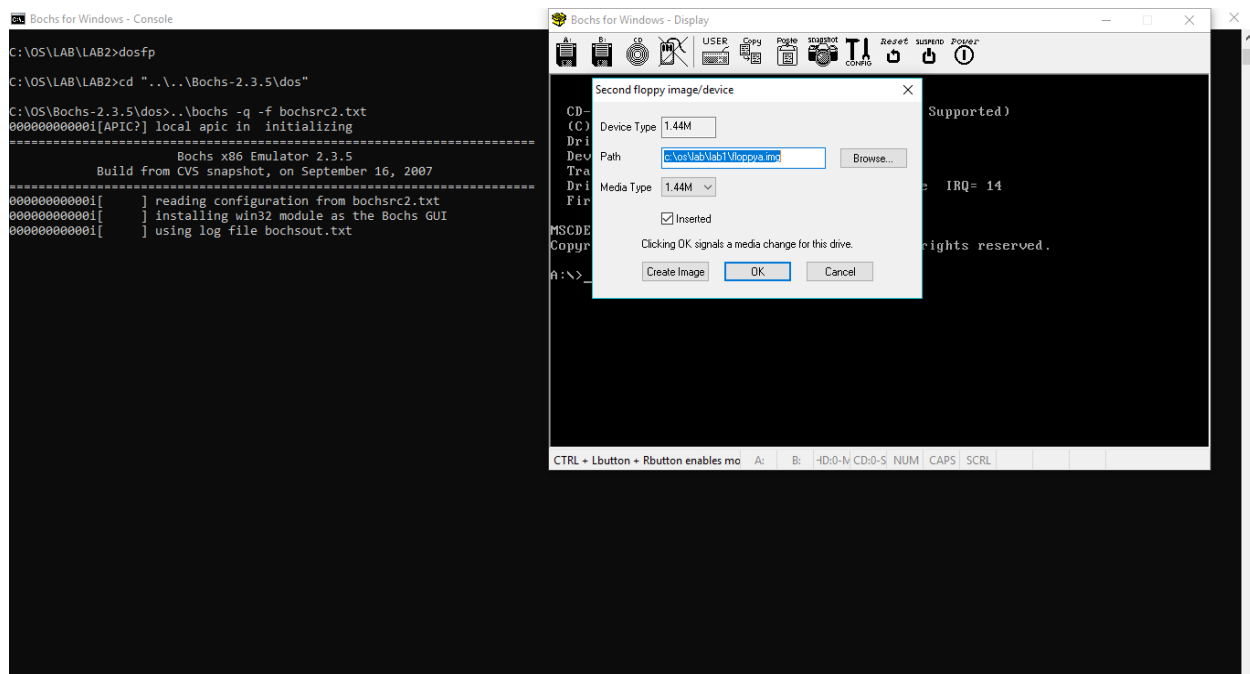
C:\Users\ACER>cd ../../
C:\>cd OS
C:\OS>setpath
C:\OS>Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;c:\Windows;c:\Windows\System32
C:\OS>cd LAB/LAB2
C:\OS\LAB\LAB2>DIR
Volume in drive C is Acer
Volume Serial Number is 5CFF-128F

Directory of C:\OS\LAB\LAB2

09/30/2019  02:17 PM  <DIR>          .
09/30/2019  02:17 PM  <DIR>          ..
12/15/2008  04:18 PM             1,625 bochssrc.bxrc
12/15/2008  05:57 PM             15,923 boot.asm
12/15/2008  01:52 PM              78 dosfp.bat
12/15/2008  05:57 PM             7,966 kernel.asm
12/15/2008  04:21 PM              228 Makefile
12/15/2008  12:20 PM              44 s.bat
               6 File(s)            25,864 bytes
               2 Dir(s)  414,821,879,808 bytes free

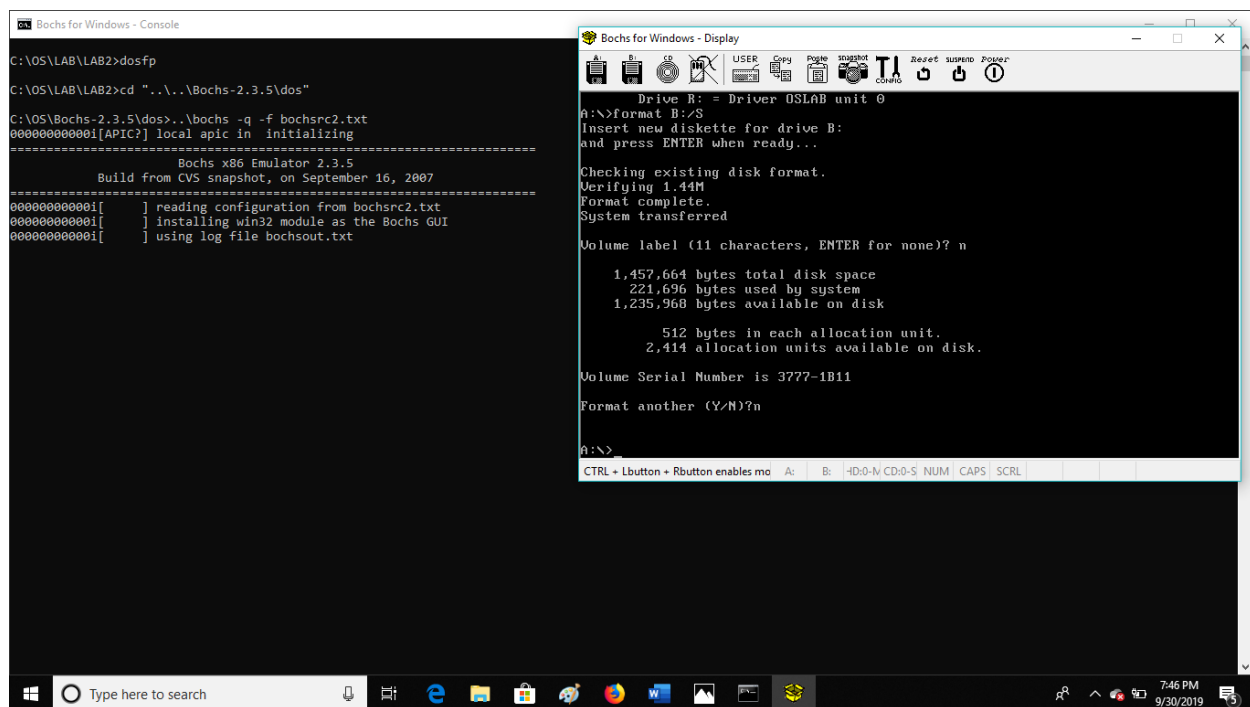
C:\OS\LAB\LAB2>
```

7. Memformat file “floppya.img” dan mengisi dengan sistem operasi DOS versi 7
8. Jalankan perintah “dosfp”
9. Pada Bochs klik menu gambar floppy disk nomor dua dari kiri atau B
10. Atur lokasi file image sehingga menunjukkan file “floppya.img” pada LAB2 dengan klik “Browser” dan atur lalu “OK”



11. Pada prompt “A:>” ketik dengan “A:>Format B:/S”

12. Jika tidak ada kesalahan maka “floppya.img” maka dapat digunakan untuk booting.



13. Tutup Windows “Bochs” klik menu “Power”. Pada windows “Command Prompt” akan tampak bekas aktifitas “Bochs” seperti dibawah ini.

```
Command Prompt
C:\OS\LAB\LAB2>dosfp
C:\OS\LAB\LAB2>cd "..\..\Bochs-2.3.5\dos"
C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
00000000000i[APIC?] local apic in  initializing
=====
                Bochs x86 Emulator 2.3.5
                Build from CVS snapshot, on September 16, 2007
=====
00000000000i[      ] reading configuration from bochsrc2.txt
00000000000i[      ] installing win32 module as the Bochs GUI
00000000000i[      ] using log file bochsout.txt
# In bx_win32_gui_c::exit(void)!
=====
Bochs is exiting with the following message:
[WGUI ] POWER button turned off.
=====
C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab2"
C:\OS\LAB\LAB2>
```

14. BOOT PC-Simulator dengan file “floppya.img”

15. Pindah direktori kerja pada windows “Command Prompt” dan jalankan perintah “s” lalu “Enter”

```
Bochs for Windows - Console
C:\OS\LAB\LAB2>dosfp
C:\OS\LAB\LAB2>cd "..\..\Bochs-2.3.5\dos"
C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
00000000000i[APIC?] local apic in  initializing
=====
                Bochs x86 Emulator 2.3.5
                Build from CVS snapshot, on September 16, 2007
=====
00000000000i[      ] reading configuration from bochsrc2.txt
00000000000i[      ] installing win32 module as the Bochs GUI
00000000000i[      ] using log file bochsout.txt
# In bx_win32_gui_c::exit(void)!
=====
Bochs is exiting with the following message:
[WGUI ] POWER button turned off.
=====
C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab2"
C:\OS\LAB\LAB2>s
C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -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
```

```
Bochs for Windows - Display
Flex86/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

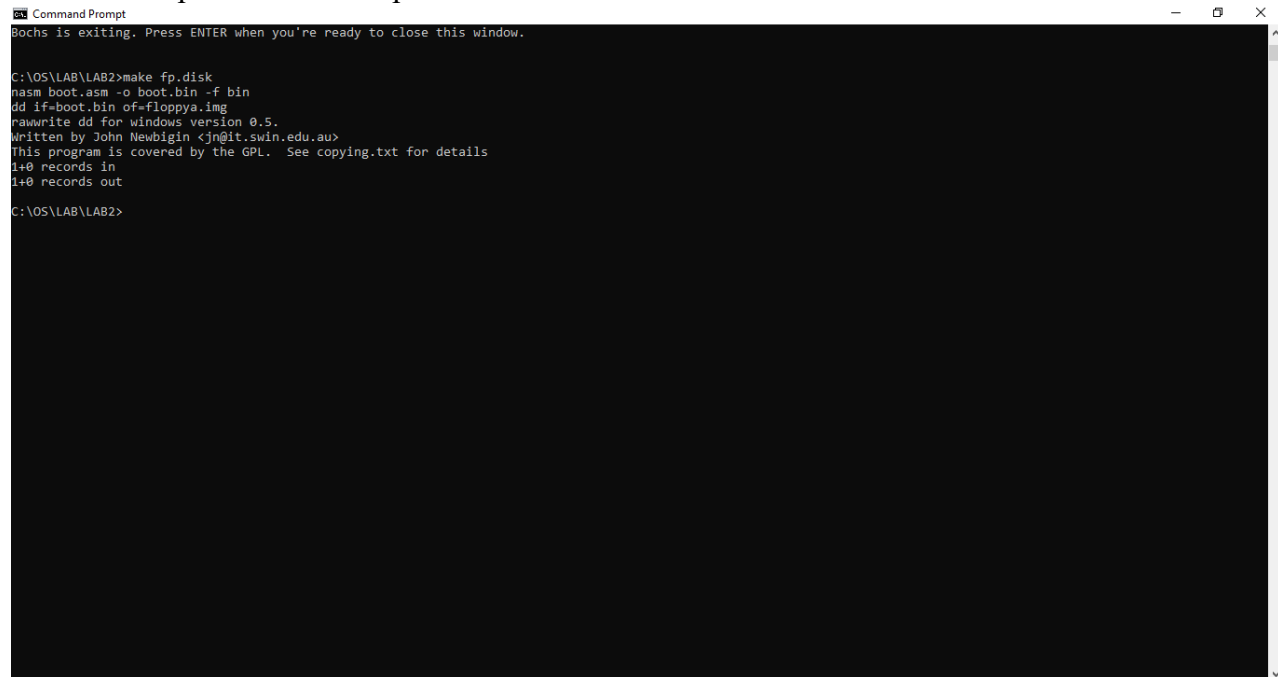
Bochs BIOS - build: 09/10/07
$Revision: 1.183 $ $Date: 2007/09/10 20:00:29 $
Options: apmbios pcibios eltorito rombios32

Booting from Floppy...
Starting BootCD.....

Microsoft(R) MS-DOS 7.1
(C)Copyright Microsoft Corp 1981-1999.
A:\>
```

CTRL + Lbutton + Rbutton enables mo A: NUM CAPS SCRL

16. Kompilasi source code “boot.asm” dan memindah hasil ke bootsector “floopya.img”.
17. Pindah ke direktori kerja “LAB2”
18. Jalankan perintah “make fp.disk”

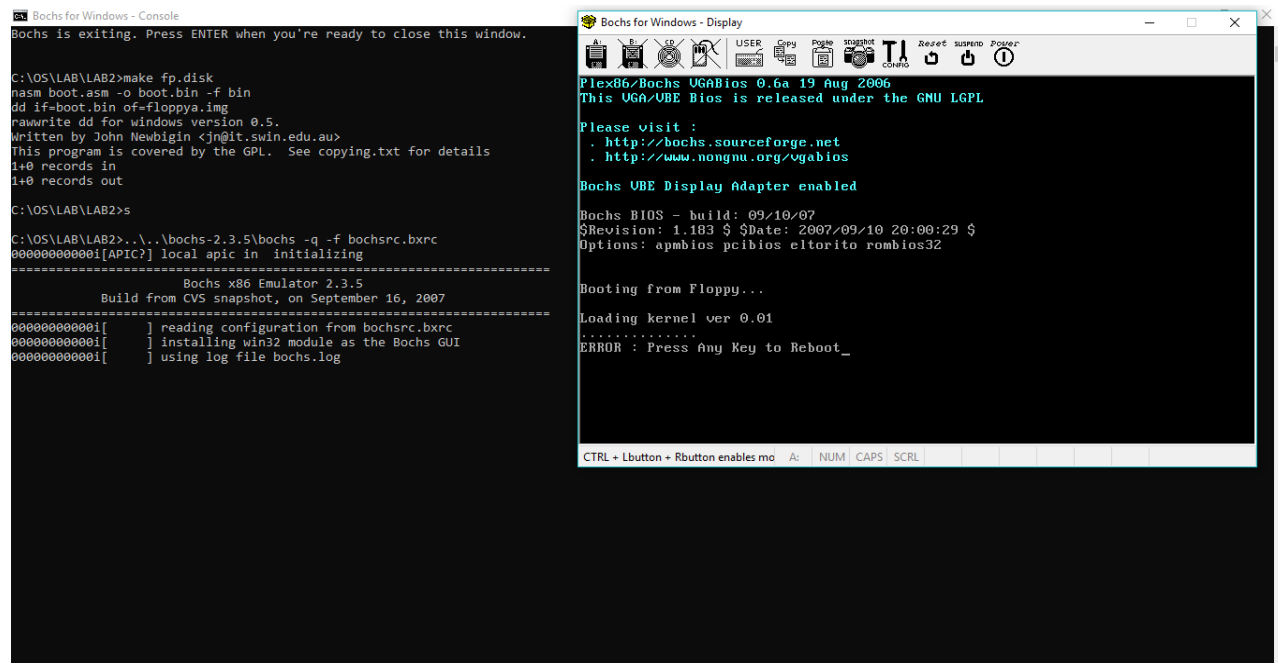


```
Command Prompt
Bochs is exiting. Press ENTER when you're ready to close this window.

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floopya.img
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\LAB2>
```

19. Jalankan PC-Simulator ketik “s” lalu “Enter” maka akan tampil seperti ini



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

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floopya.img
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\LAB2>s

C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -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

Bochs for Windows - Display
Plex86/Bochs UGA Bios 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...

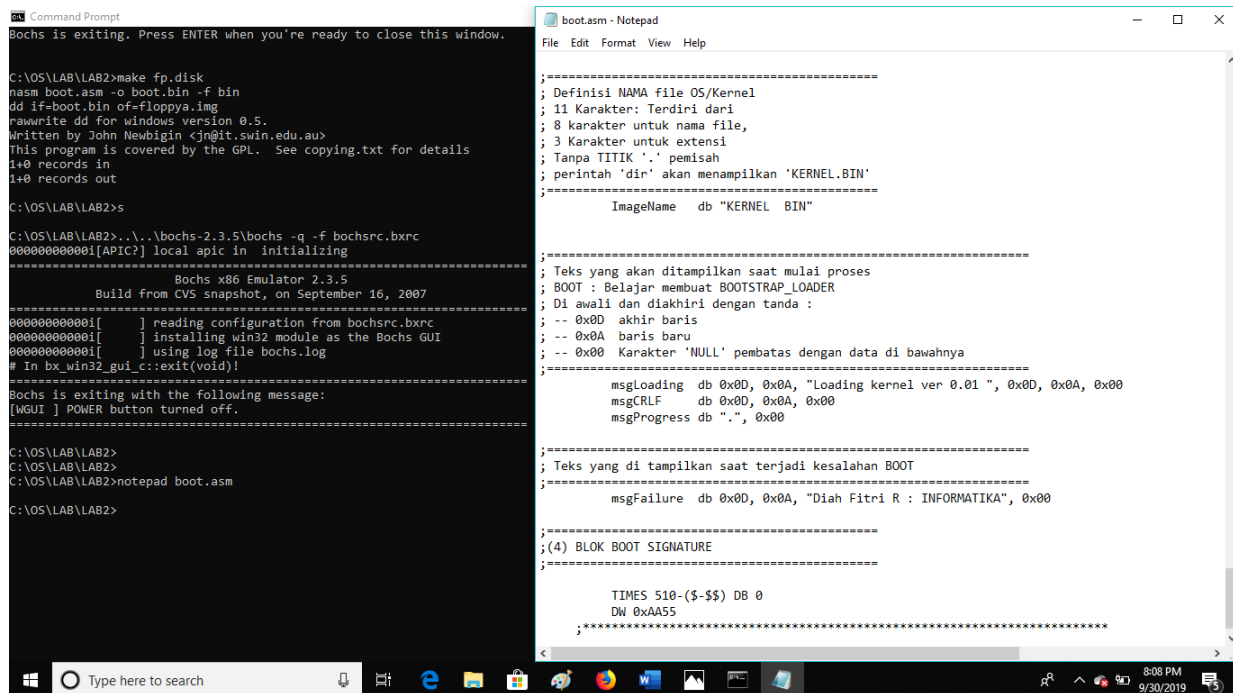
Loading kernel ver 0.01
.....
ERROR : Press Any Key to Reboot_

CTRL + Lbutton + Rbutton enables mo A: NUM CAPS SCRL
```

20. Menyunting file “boot.asm” ketik “notepad boot.asm” lalu “Enter”, cari teks Loading Kernel” pada windows “Notepad”
21. Sunting baris “Loading kernel ver 0.01” menjadi dengan “Belajar membuat BOOTSTRAP_LOADER”

22. Sunting juga baris “ERROR: Press Any Key to Reboot” dengan cara yang sama dengan nama “msgFailure”

23. Simpan file “boot.asm” dengan CTRL+S



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

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppya.img
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\LAB2>s

C:\OS\LAB\LAB2>.\..\bochs-2.3.5\bochs -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
# In bx_win32_gui.c:exit(void)!
=====
Bochs is exiting with the following message:
[WGUI ] POWER button turned off.
=====

C:\OS\LAB\LAB2>
C:\OS\LAB\LAB2>
C:\OS\LAB\LAB2>notepad boot.asm

C:\OS\LAB\LAB2>

boot.asm - Notepad
File Edit Format View Help

;=====
; Definisi NAMA file OS/Kernel
; 11 Karakter: Tendiri dari
; 8 karakter untuk nama file,
; 3 Karakter untuk ekstensi
; Tanpa TITIK '.' pemisah
; perintah 'dir' akan menampilkan 'KERNEL.BIN'
;=====
ImageName db "KERNEL BIN"

;=====
; Teks yang akan ditampilkan saat mulai proses
; BOOT : Belajar membuat BOOTSTRAP_LOADER
; Di awali dan diakhiri dengan tanda :
; -- 0x0D akhir baris
; -- 0x0A baris baru
; -- 0x00 Karakter 'NULL' pembatas dengan data di bawahnya
;=====
msgLoading db 0x0D, 0x0A, "Loading kernel ver 0.01 ", 0x0D, 0x0A, 0x00
msgCRLF db 0x0D, 0x0A, 0x00
msgProgress db ".", 0x00

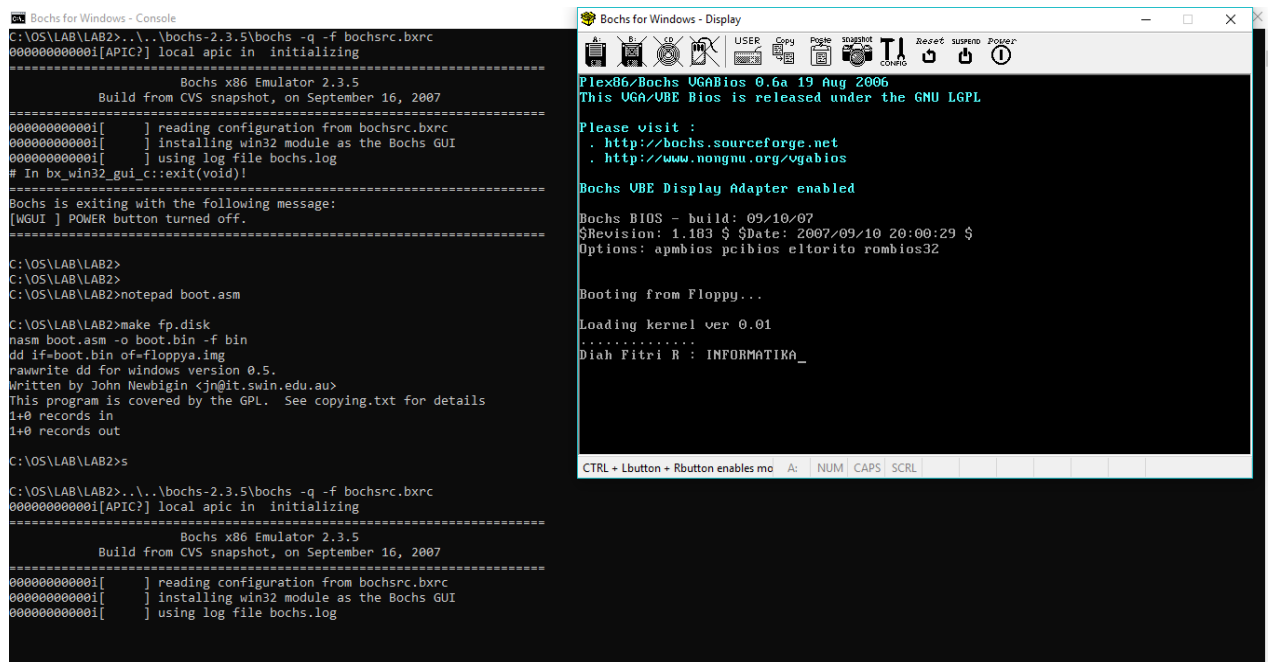
;=====
; Teks yang di tampilkan saat terjadi kesalahan BOOT
;=====
msgFailure db 0x0D, 0x0A, "Diah Fitri R : INFORMATIKA", 0x00

;=====
; (4) BLOK BOOT SIGNATURE
;=====

TIMES 510-($-$$) DB 0
DW 0xAA55
;=====
```

24. Ulangi kompilasi file “boot.asm” dan jalankan perintah “Make fp.disk” lalu “Enter”

25. Jalankan PC-Simulator ketik “s” lalu “Enter” maka akan tampil seperti berikut



```
Bochs for Windows - Console
C:\OS\LAB\LAB2>.\..\bochs-2.3.5\bochs -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
# In bx_win32_gui.c:exit(void)!
=====
Bochs is exiting with the following message:
[WGUI ] POWER button turned off.
=====

C:\OS\LAB\LAB2>
C:\OS\LAB\LAB2>
C:\OS\LAB\LAB2>notepad boot.asm

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=Floppya.img
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\LAB2>s

C:\OS\LAB\LAB2>.\..\bochs-2.3.5\bochs -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
```

```
Bochs for Windows - Display
F1exB6/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...

Loading kernel ver 0.01
.....
Diah Fitri R : INFORMATIKA_

CTRL + Lbutton + Rbutton enables mo A: NUM CAPS SCRL
```

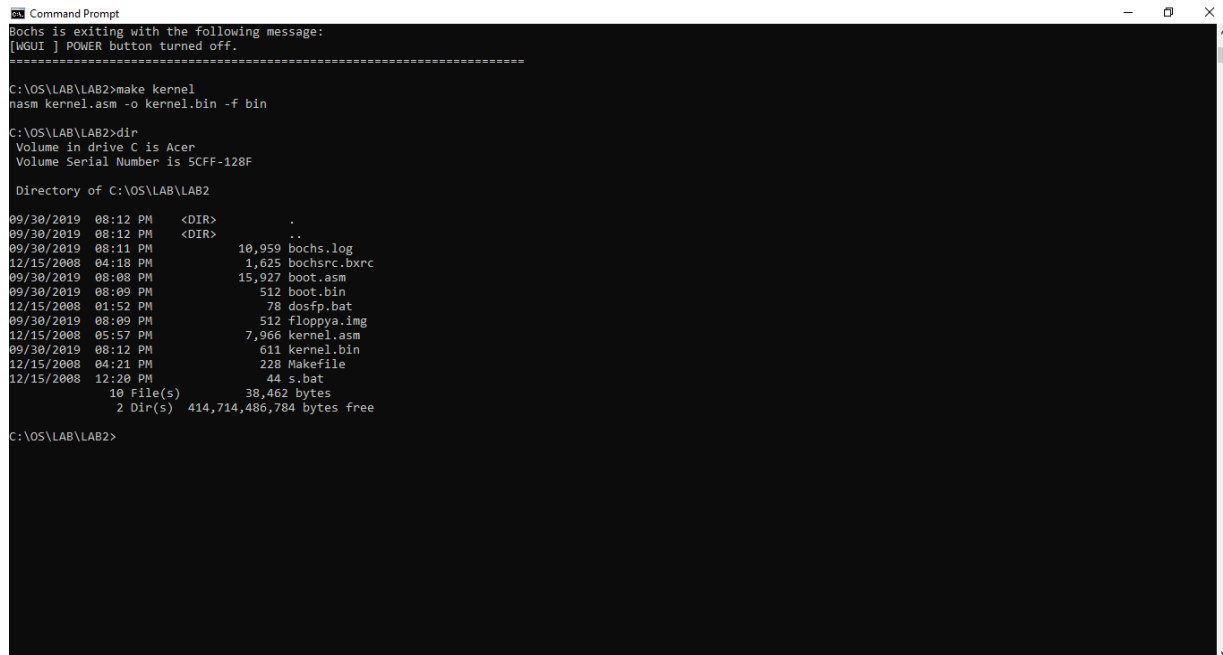
26. Menyiapkan file “kernel.bin” Prototype source code program kernel disimpan pada file “kernel.asm” lalu periksa pada direktori kerja anda.

27. Lakukan proses kompilasi untuk menghasilkan file “kernel.bin”

28. Lalu jalankan perintah “make kernel”

29. Apabila tidak ada kesalahan, berarti proses kompilasi berhasil pada direktori kerja dan terdapat file baru yaitu “kernel.bin”

30. Ketik perintah “dir” untuk melihat isi file didalamnya



```
Command Prompt
Bochs is exiting with the following message:
[VGUI ] POWER button turned off.
=====
C:\OS\LAB\LAB2>make kernel
nasm kernel.asm -o kernel.bin -f bin

C:\OS\LAB\LAB2>dir
Volume in drive C is Acer
Volume Serial Number is 5CFF-128F

Directory of C:\OS\LAB\LAB2

09/30/2019  08:12 PM  <DIR>          .
09/30/2019  08:12 PM  <DIR>          ..
09/30/2019  08:11 PM                10,959 bochs.log
12/15/2008  04:18 PM                1,625 bochsrc.bxrc
09/30/2019  08:08 PM                15,927 boot.asm
09/30/2019  08:09 PM                 512 boot.bin
12/15/2008  01:52 PM                 78 dosfp.bat
09/30/2019  08:09 PM                 512 floppy.img
12/15/2008  05:57 PM                7,966 kernel.asm
09/30/2019  08:12 PM                 611 kernel.bin
12/15/2008  04:21 PM                 228 Makefile
12/15/2008  12:20 PM                  44 s.bat
               10 File(s)            38,462 bytes
               2 Dir(s)  414,714,486,784 bytes free

C:\OS\LAB\LAB2>
```

31. Memindahkan file “kernel.bin” ke dalam file image “floppya.img”

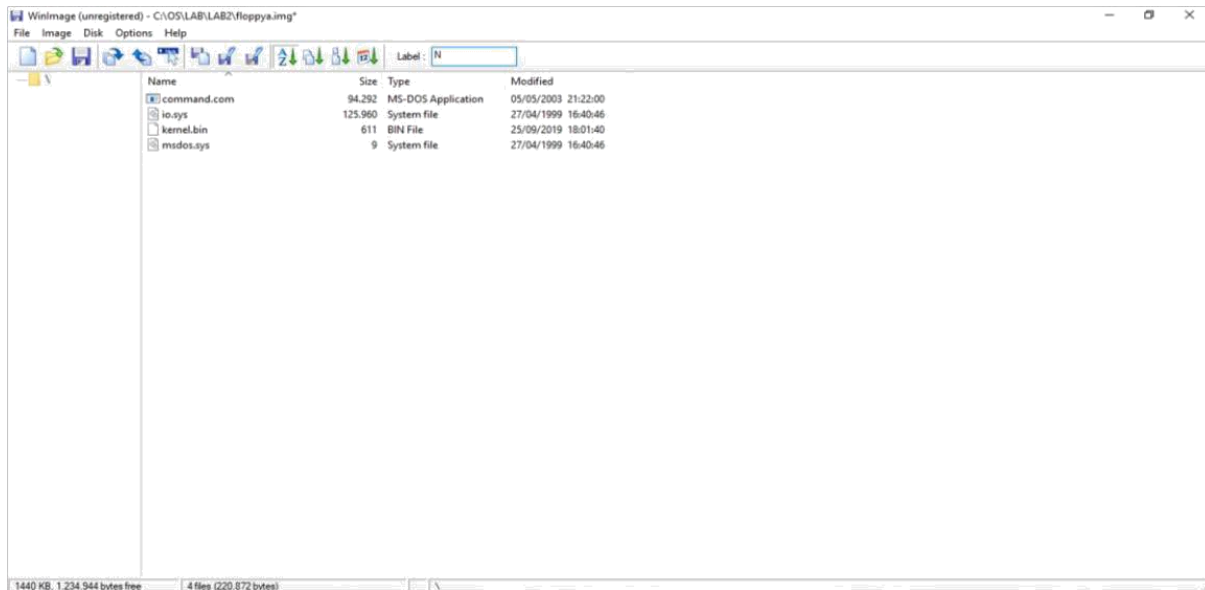
32. Untuk melakukan ini dengan menggunakan program shareware namanya “winimage”

33. Buka direktori kerja “C:\OS\LAB\LAB2” dengan Windows Explore

34. Klik double pada file “floppya.img” atau panggil program winimage klik “Start | All Programs| Winimage| Winimage

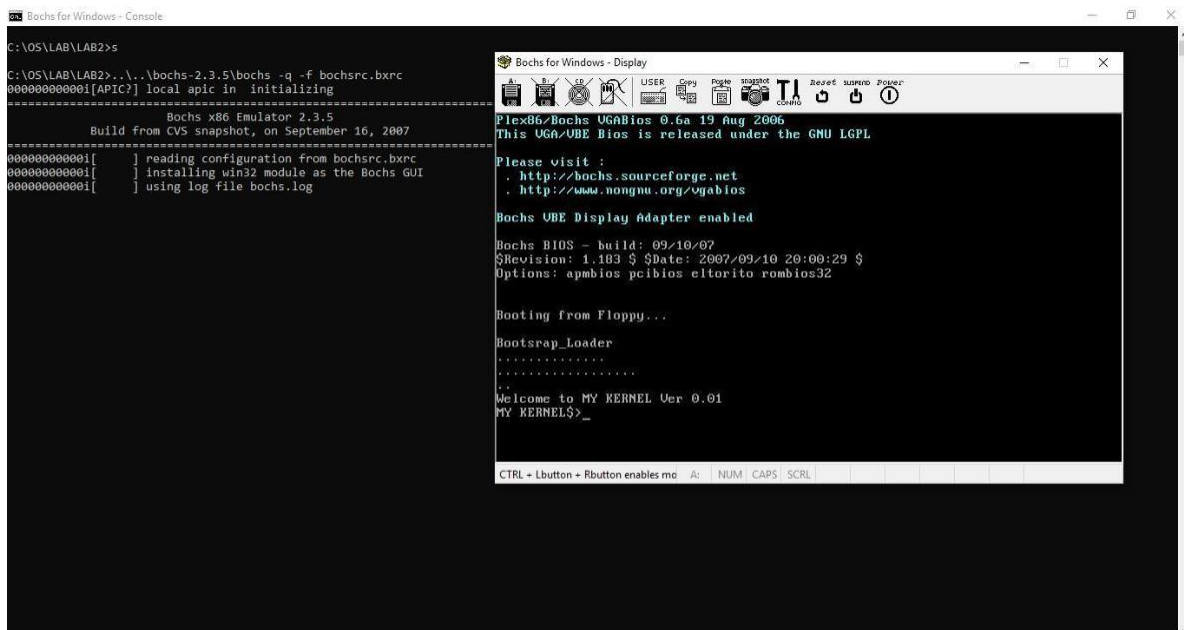
35. Kemudian klik open dan cari file “floppya.img” pada direktori kerja untuk memasukkan file “kernel.bin” pada Windows “Winimage” klik menu “image| inject”

36. Lalu cari file “kernel.bin” pada direktori kerja dan OK. Lalu simpan dengan “File| Save” dan keluar dari Winimage



37. Kembali ke Windows “Command Prompt” direktori kerja

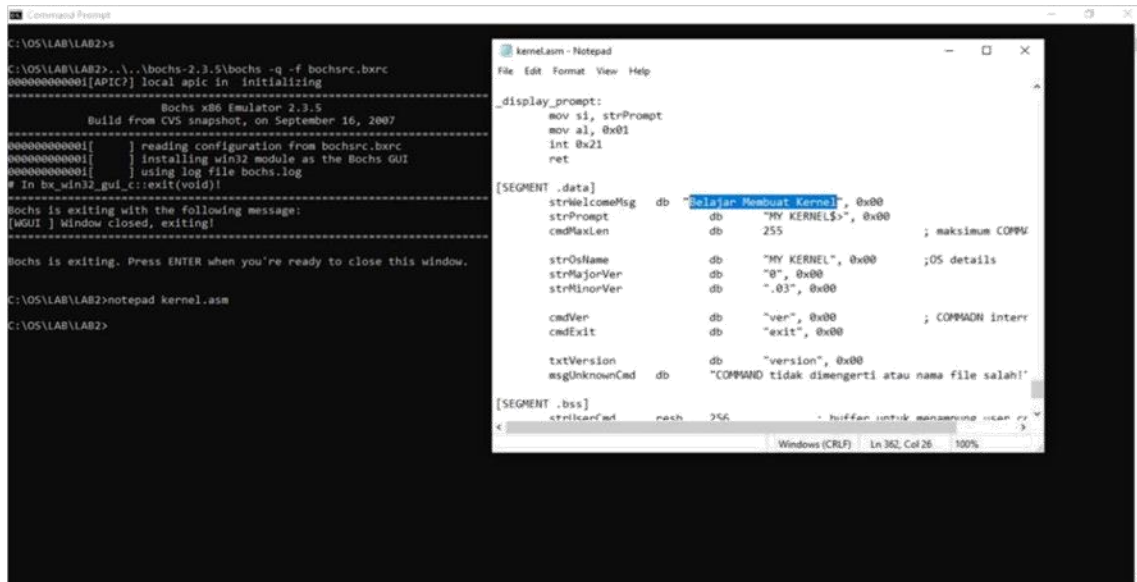
38. Jalankan PC-Simulator ketik “s” lalu “Enter” maka akan tampil seperti ini



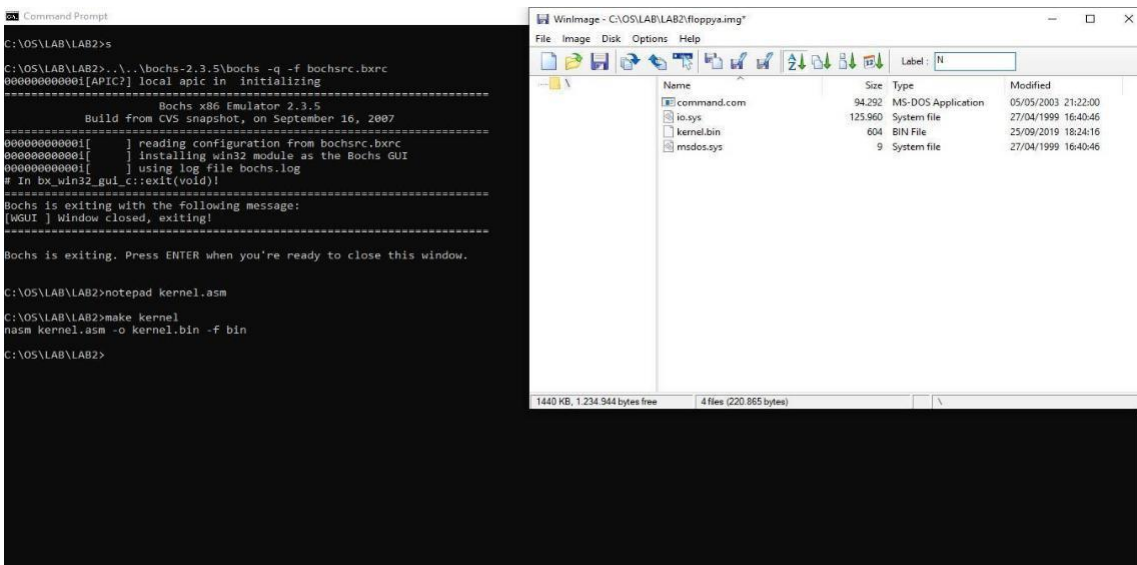
39. Memodifikasi file “kernel.asm”

40. Jalankan perintah “Notepad kernel.asm” lalu “Enter”. Cari teks “Welcome to MY KERNEL. . . .” ganti dengan teks “Belajar membuat KERNEL”

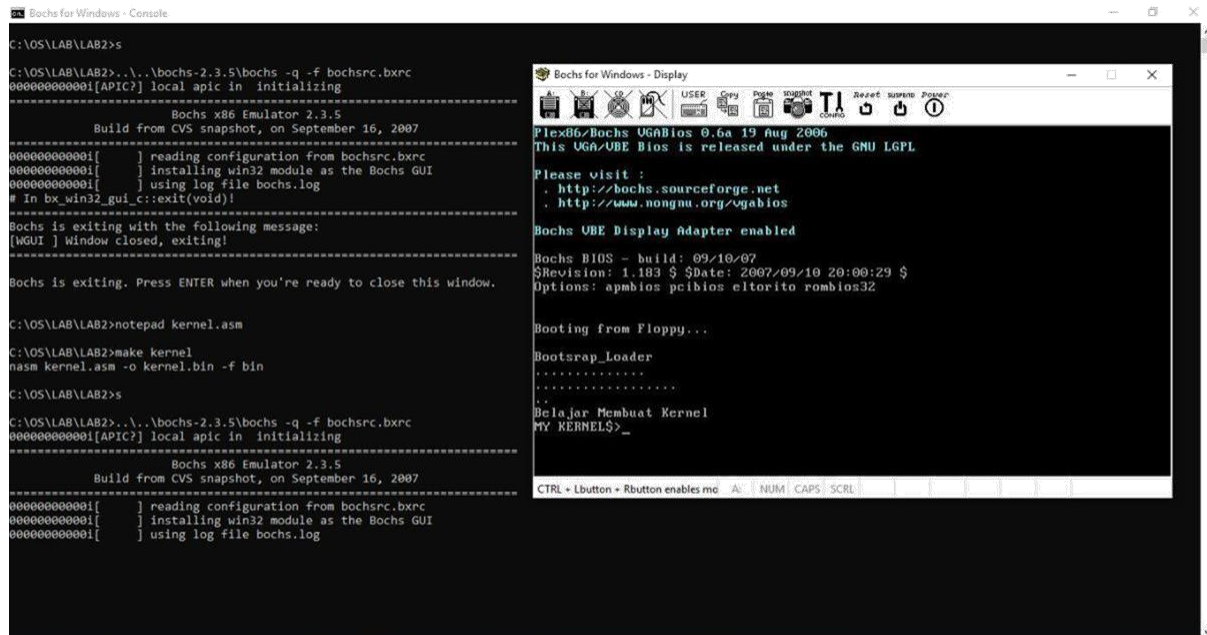
41. Lalu simpan file “kernel.asm” tekan CTRL+S



42. Ulangi proses kompilasi dengan perintah “make kernel” lalu “Enter”
43. Lalu lakukan proses memindahkan file “kernel.bin” kedalam file “floppya.img” dengan Winimage



44. Jalankan PC-Simulator ketik “s” lalu “Enter” maka akan tampil seperti berikut



The screenshot shows two windows from the Bochs emulator. The 'Bochs for Windows - Console' window on the left displays the command prompt where the user enters 's' and then 'Enter'. The console output shows the Bochs x86 Emulator 2.3.5 initializing, reading configuration from bochsrc.bxrc, installing the win32 module, and using log file bochs.log. It then shows the BIOS booting from floppy. The 'Bochs for Windows - Display' window on the right shows the BIOS boot screen with the text 'Plex86/Bochs UGA BIOS 0.6a 19 Aug 2006', 'This UGA/UBE Bios is released under the GNU LGPL', and 'Please visit : http://bochs.sourceforge.net, http://www.nongnu.org/vgabios'. The BIOS version is 1.183, build date is 2007/09/10 20:00:29, and options are apmbios pcibios eltorito rombios32. The boot process shows 'Booting from Floppy...', 'Bootstrap Loader', and 'Belajar Membuat Kernel MY KERNEL\$ _'.

```
C:\OS\LAB\LAB2>s
C:\OS\LAB\LAB2>.\bochs-2.3.5\bochs -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
# In bx_win32_gui_c::exit(void)!
-----
Bochs is exiting with the following message:
[WGUI ] Window closed, exiting!
-----
Bochs is exiting. Press ENTER when you're ready to close this window.

C:\OS\LAB\LAB2>notepad kernel.asm
C:\OS\LAB\LAB2>make kernel
nasm kernel.asm -o kernel.bin -f bin
C:\OS\LAB\LAB2>s
C:\OS\LAB\LAB2>.\bochs-2.3.5\bochs -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
-----
```

Bochs for Windows - Display

Plex86/Bochs UGA BIOS 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...

Bootstrap Loader

Belajar Membuat Kernel
MY KERNEL\$ _

CTRL + Lbutton + Rbutton enables me AL NUM CAPS SCRL

