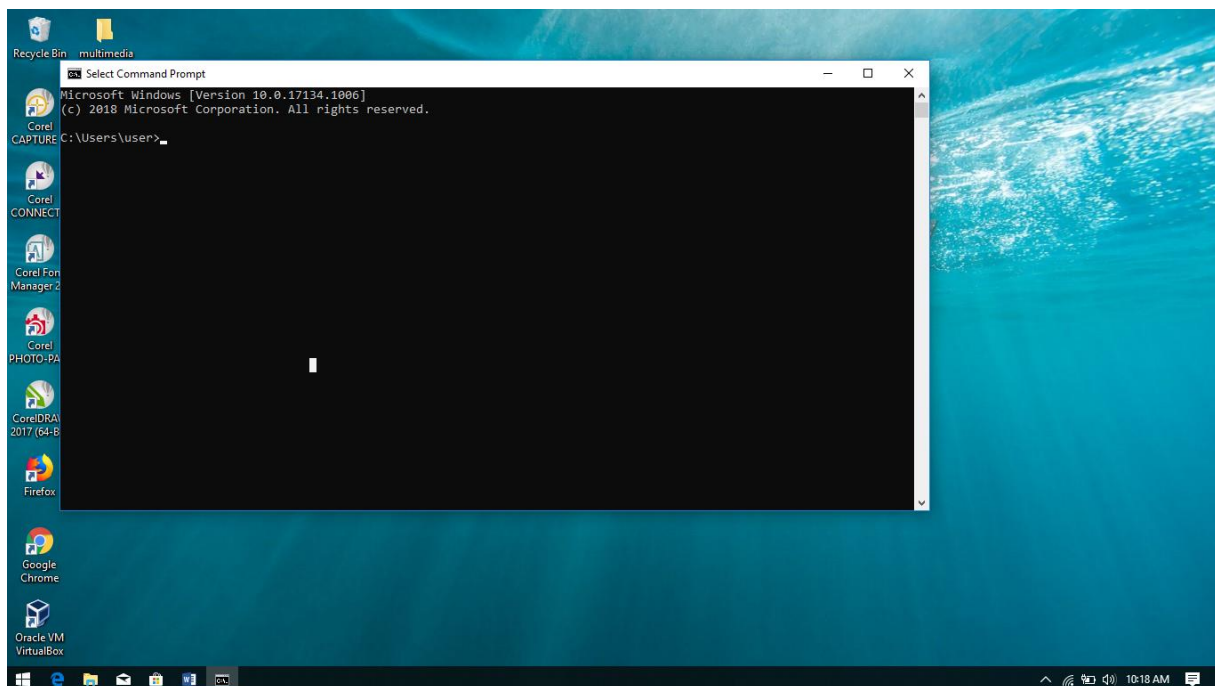


## MODUL 2

Nama : Damar Fatika Sari

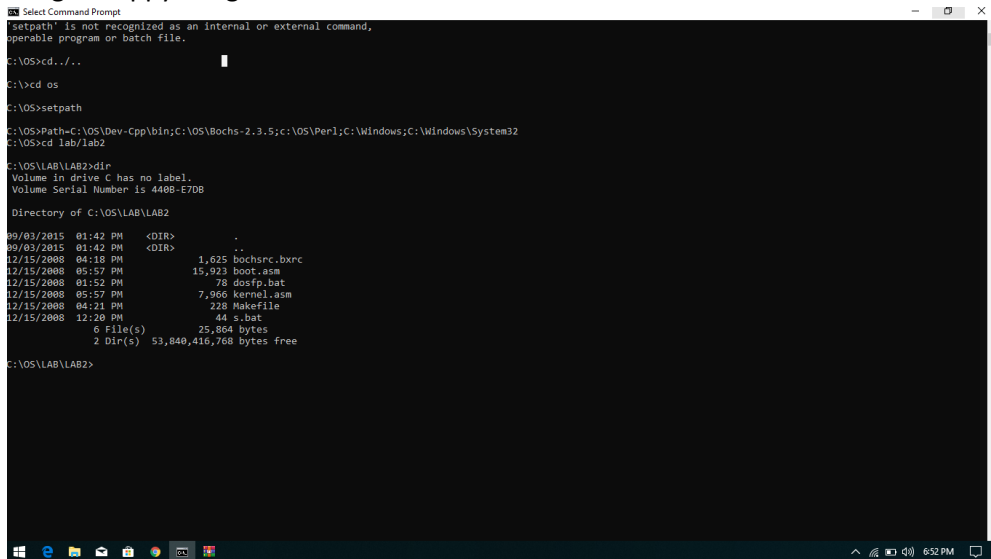
NIM : L200180126

Kelas : C



Menuju ke direktori kerja

- 1.) Masuk ke direktori kerja "C:\OS"
- 2.) Melihat isi direktori didalam folder OS dengan perintah "dir" pada command prompt
- 3.) Menjalankan file setpath untuk mengatur lingkungan kerja
- 4.) Ketik "cd LAB/LAB2" lalu perintah "dir" untuk melihat file didalamnya dan Menyiapkan file image "floppya.img"



```
Select Command Prompt
setpath is not recognized as an internal or external command,
operable program or batch file.

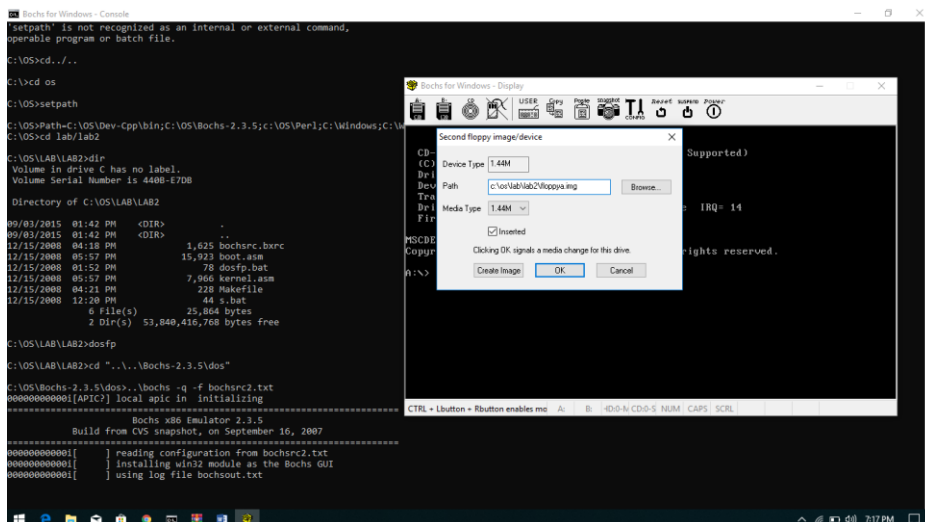
C:\OS>cd ../..
C:\>cd os
C:\OS>setpath
C:\OS>Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;c:\Windows;C:\Windows\System32
C:\OS>cd lab/lab2
C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is 4408-E7DB

Directory of C:\OS\LAB\LAB2

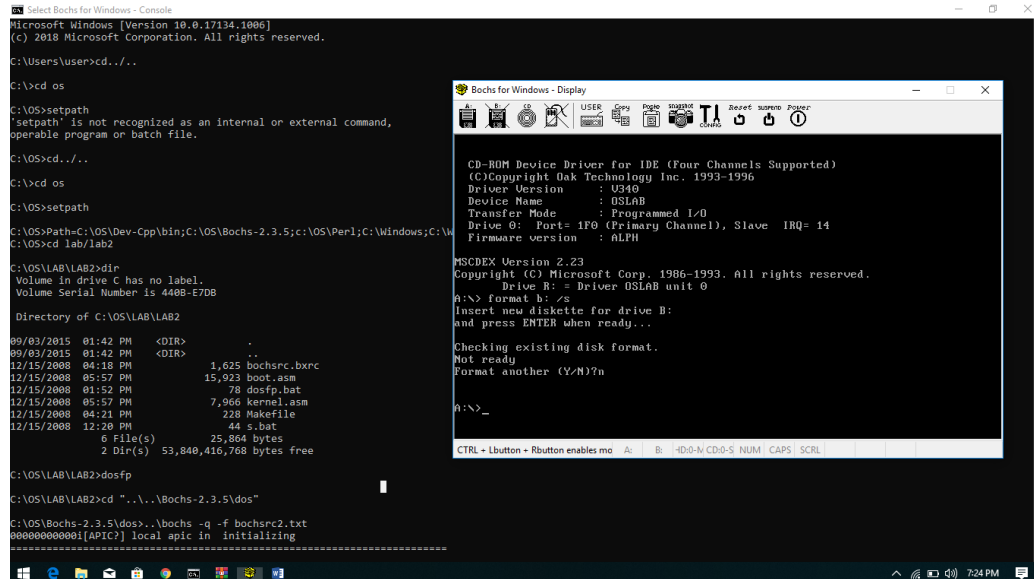
09/03/2015  01:42 PM    <DIR>          .
09/03/2015  01:42 PM    <DIR>          ..
12/15/2008  04:18 PM             1,625 bochsrc.bxrc
12/15/2008  05:57 PM             15,923 boot.asm
12/15/2008  01:52 PM              78 dosfp.bat
12/15/2008  05:57 PM             7,966 kernel.asm
12/15/2008  04:21 PM              228 Makefile
12/15/2008  12:20 PM              44 s.bat
                6 File(s)          25,864 bytes
                2 Dir(s)  53,840,416,768 bytes free

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

- 1.) Format file "floppya.img" dan mengisi dengan system Operasi DOS versi 7
- 2.) Jalankan perintah "dosfp"
- 3.) Pada Bochs klik menu gambar floppy disk nomor dua dari kanan atau B
- 4.) Atur lokasi file image sehingga menunjukkan file "floppya.img" pada LAB2 dengan klik "Browser" dan atur lalu "Ok"



- 1.) Pada prompt “A:>” ketik dengan “A:>Format B:/S”
- 2.) Jika tidak ada kesalahan maka “floppy.img” maka dapat digunakan untuk booting.



```
Microsoft Windows [Version 10.0.17134.1000]
(c) 2018 Microsoft Corporation. All rights reserved.

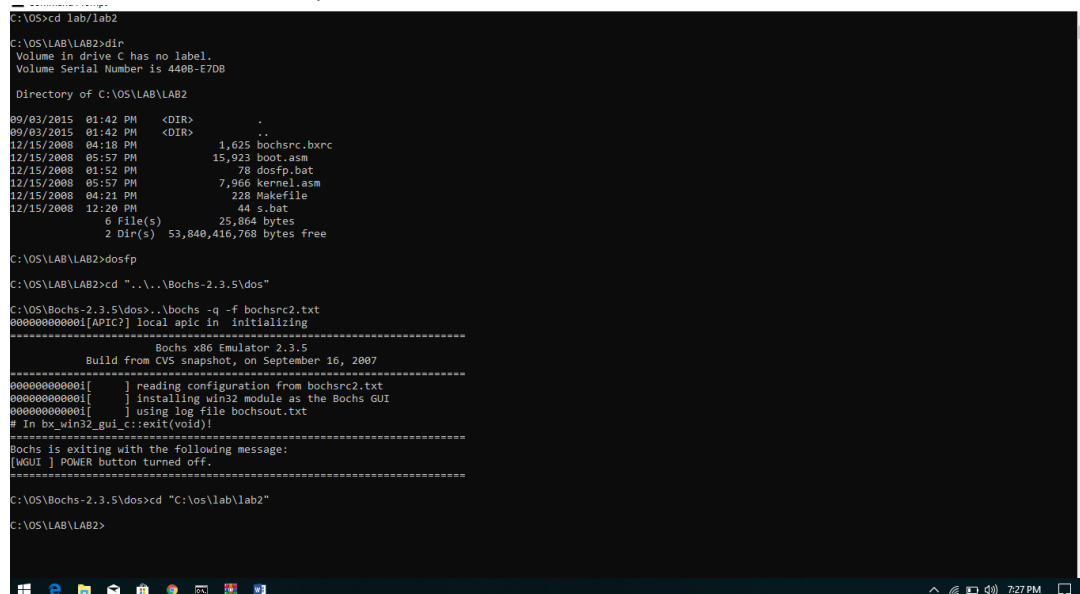
C:\Users\User>cd ../..
C:\>cd os
C:\OS>setpath
'setpath' is not recognized as an internal or external command,
operable program or batch file.
C:\OS>cd ../..
C:\OS>cd os
C:\OS>setpath
C:\OS>Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;c:\Windows;c:\Windows\system32
C:\OS>cd lab/lab2
C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is 440B-E7DB

Directory of C:\OS\LAB\LAB2

09/03/2015  01:42 PM    <DIR>          .
09/03/2015  01:42 PM    <DIR>          ..
12/15/2008  04:18 PM                1,625 bochsrc.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)  53,840,416 bytes free

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
000000000000[APIC?] local apic in  initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000[ ] reading configuration from bochsrc2.txt
000000000000[ ] installing win32 module as the Bochs GUI
000000000000[ ] using log file bochsout.txt
# In bx_win32_gui.c::exit(void)!
=====
Bochs is exiting with the following message:
[MGUI ] POWER button turned off.
=====
C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab2"
C:\OS\LAB\LAB2>
```

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



```
C:\OS>cd lab/lab2
C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is 440B-E7DB

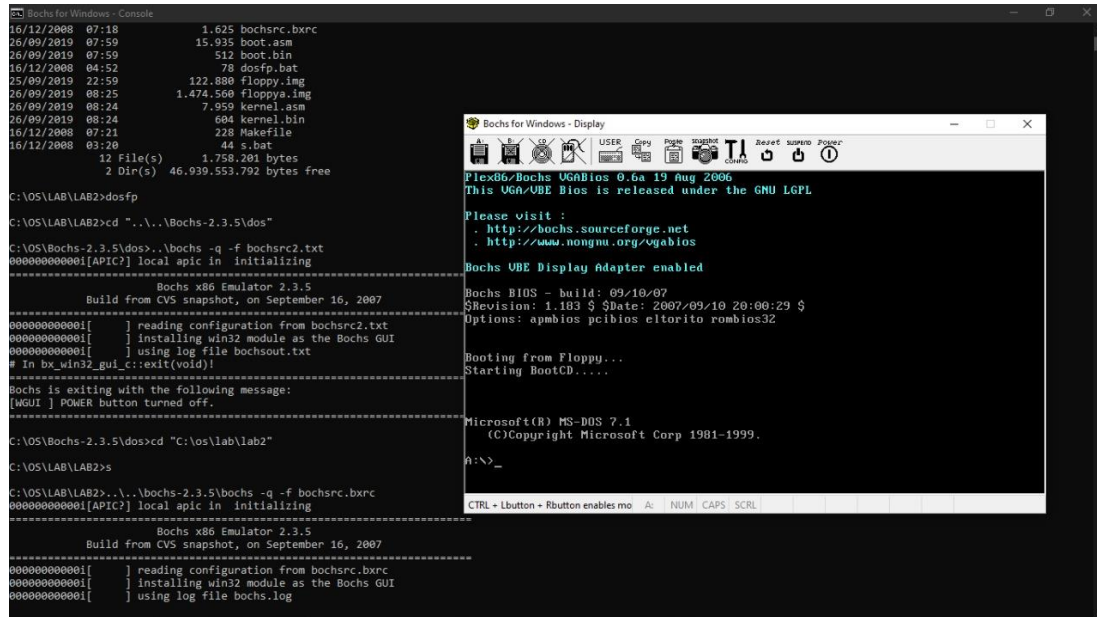
Directory of C:\OS\LAB\LAB2

09/03/2015  01:42 PM    <DIR>          .
09/03/2015  01:42 PM    <DIR>          ..
12/15/2008  04:18 PM                1,625 bochsrc.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)  53,840,416 bytes free

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
000000000000[APIC?] local apic in  initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000[ ] reading configuration from bochsrc2.txt
000000000000[ ] installing win32 module as the Bochs GUI
000000000000[ ] using log file bochsout.txt
# In bx_win32_gui.c::exit(void)!
=====
Bochs is exiting with the following message:
[MGUI ] POWER button turned off.
=====
C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab2"
C:\OS\LAB\LAB2>
```

1.) BOOT PC-Simulator dengan file “floppy.img”

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



The screenshot shows two windows from the Bochs emulator. The 'Bochs for Windows - Console' window displays the following output:

```
16/12/2008 07:18      1.625 bochsrc.bxrc
26/09/2019 07:59      15.935 boot.asm
26/09/2019 07:59      512 boot.bin
16/12/2008 04:52       78 dosfp.bat
25/09/2019 22:59     122.888 floppy.img
26/09/2019 08:25     1.474.568 floppy.img
26/09/2019 08:24      7.959 kernel.asm
26/09/2019 08:24      604 kernel.bin
16/12/2008 07:21      228 Makefile
16/12/2008 03:20       44 s.bat
12 File(s)      1.758.281 bytes
2 Dir(s)      46.939.553.792 bytes free

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
000000000000[APIC?] local apic in  initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000[ ] reading configuration from bochsrc2.txt
000000000000[ ] installing win32 module as the Bochs GUI
000000000000[ ] using log file bochsout.txt
# in bx_win32_gui.c:exit(void)!
=====
Bochs is exiting with the following message:
[VGUI ] 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
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
=====
```

The 'Bochs for Windows - Display' window shows the BIOS boot screen:

```
PIEX86/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...
Starting BootCD.....

Microsoft(R) MS-DOS 7.1
(C)Copyright Microsoft Corp 1981-1999.

A:\>_

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

Kompilasi source code “boot.asm” dan memindah hasil ke bootsector “floopya.img”.

Pindah ke direktori kerja “LAB2” \*Jalankan perintah “make fp.disk”

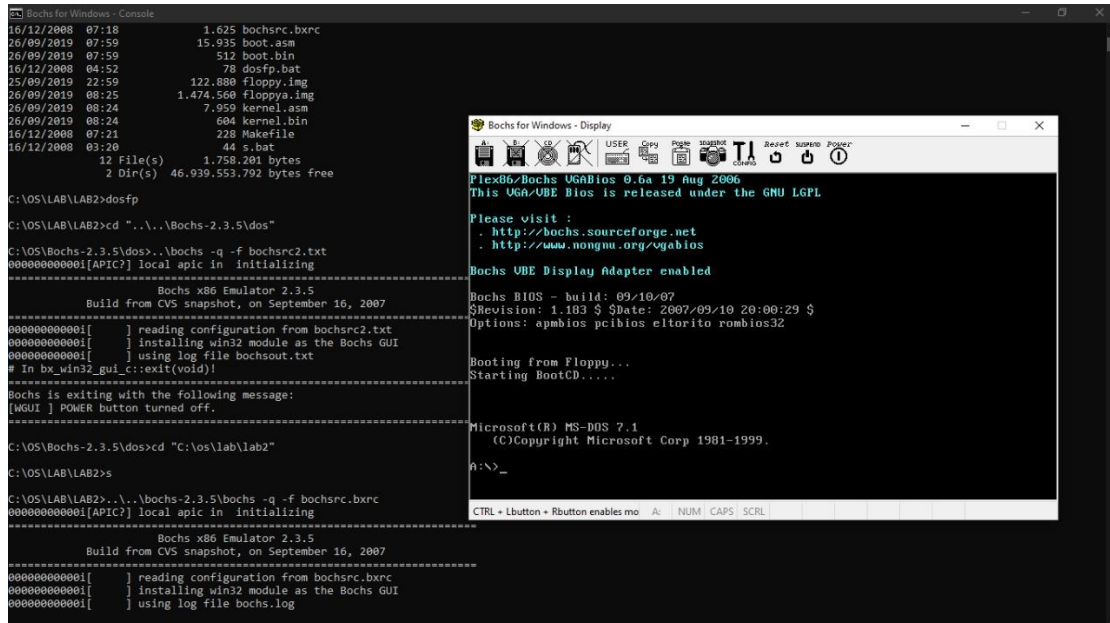


The screenshot shows a 'Command Prompt' window with the following output:

```
C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
fd if=boot.bin of=floopya.img
=====
write dd for windows version 0.5.
written by John Newmigin <jngit@win.edu.au>
This program is covered by the GPL. See copying.txt for details
140 records in
140 records out

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

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



```
Bochs for Windows - Console
16/12/2008 07:18 1.625 bochsrc.bxrc
26/09/2019 07:59 15.935 boot.asm
26/09/2019 07:59 512 boot.bin
16/12/2008 04:52 78 dosfp.bat
25/09/2019 22:59 122.808 floppy.img
26/09/2019 08:25 1.474.568 floppy.a.img
26/09/2019 08:24 7.959 kernel.asm
26/09/2019 08:24 604 kernel.bin
16/12/2008 07:21 228 Makefile
16/12/2008 03:20 44 s.bat
12 File(s) 1.753.281 bytes free
2 Dir(s) 46.939.553.792 bytes free

C:\OS\LAB\LAB2>dosfp

C:\OS\LAB\LAB2>cd "..\..\Bochs-2.3.5\dos"

C:\OS\Bochs-2.3.5>..\bochs -q -f bochsrc2.txt
000000000000[APIC?] local apic in initializing

-----
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
-----
000000000000[ ] reading configuration from bochsrc2.txt
000000000000[ ] installing win32 module as the Bochs GUI
000000000000[ ] using log file bochsout.txt
# in bx-win32_gui.c:exit(void)

Bochs is exiting with the following message:
[MGUI ] POWER button turned off.

-----
C:\OS\Bochs-2.3.5>cd "C:\os\lab\lab2"

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 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 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

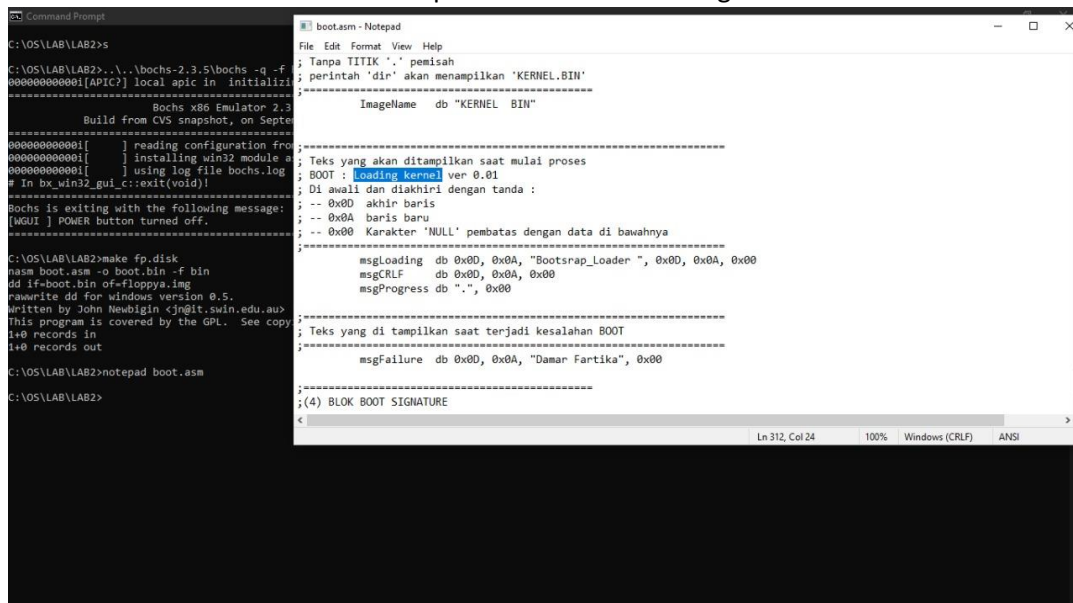
Booting from Floppy...
Starting BootCD.....

Microsoft(R) MS-DOS 7.1
(C)Copyright Microsoft Corp 1981-1999.

A:\>_

CTRL + Lbutton + Rbutton enables mo AI NUM CAPS SCRL
```

- 1.)Menyunting file “boot.asm” ketik “notepad boot.asm” lalu “Enter”, cari teks Loading Kernel” pada windows “Notepad”
- 2.)Sunting baris “Loading kernel ver 0.01” menjadi dengan “Belajar membuat BOOTSTRAP\_LOADER”
- 3.)Sunting juga baris “ERROR: Press Any Key to Reboot” dengan cara yang sama dengan nama “Damar Fartika L2001180126” \*Simpan file “boot.asm” dengan CTRL+S



```
Command Prompt
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:
[MGUI ] POWER button turned off.

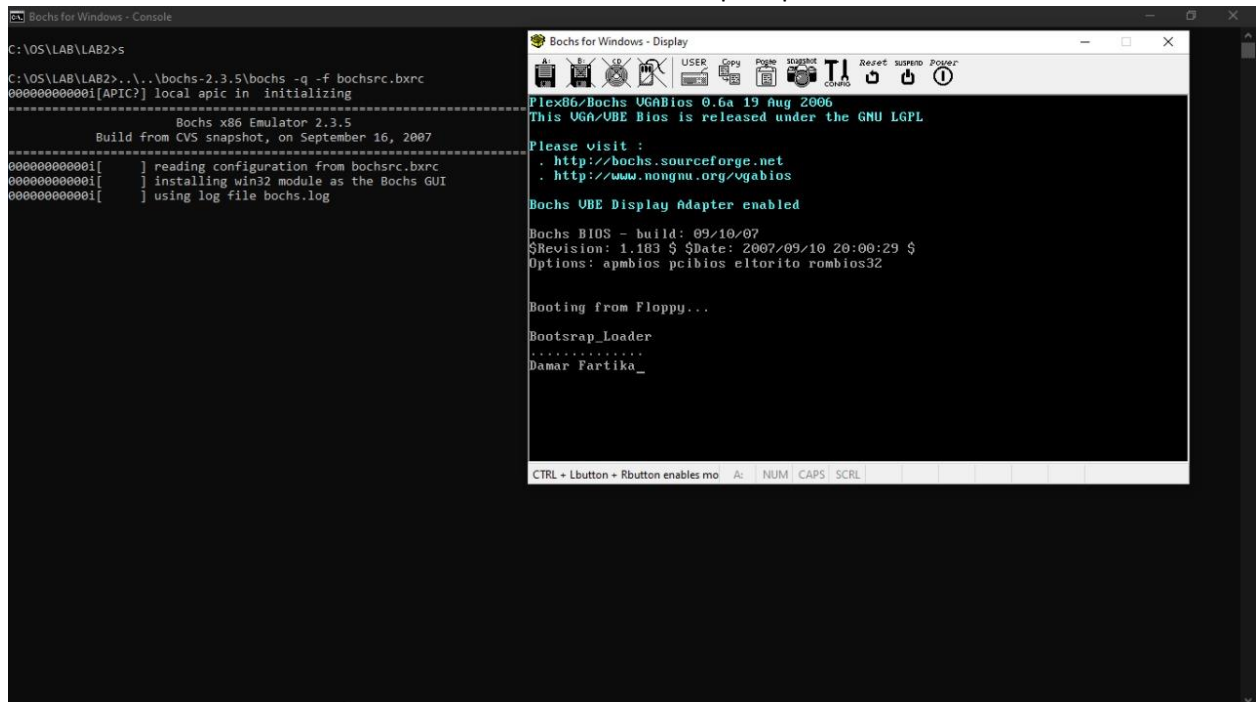
-----
C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppy.a.img
+write dd for windows version 0.5.
Written by John Newbigin <jngit.swin.edu.au>
This program is covered by the GPL. See copy
i+0 records in
i+0 records out

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

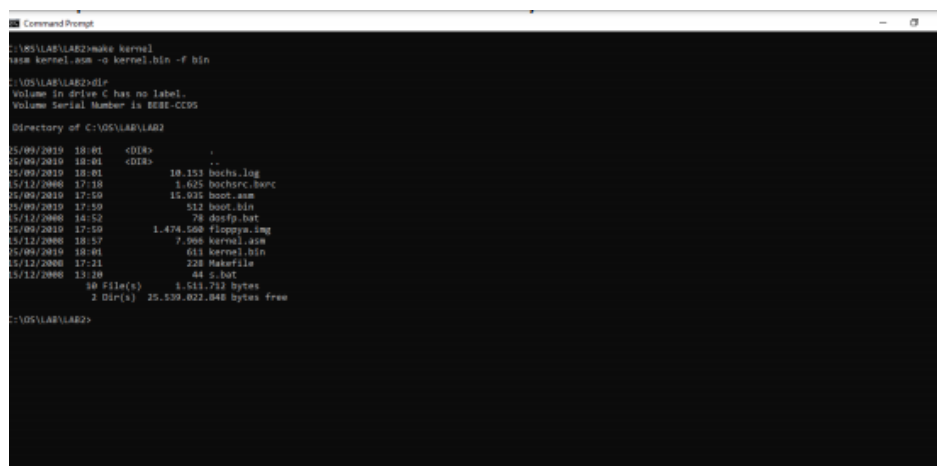
C:\OS\LAB\LAB2>

boot.asm - Notepad
File Edit Format View Help
; Tanpa TITIK '.' pemisah
; perintah 'dir' akan menampilkan 'KERNEL.BIN'
=====
ImageName db "KERNEL BIN"
=====
; Teks yang akan ditampilkan saat mulai proses
; BOOT : Loading Kernel ver 0.01
; Di awal dan diakhiri dengan tanda :
; -- 0x00 akhir baris
; -- 0x0A baris baru
; -- 0x00 Karakter 'NULL' pembatas dengan data di bawahnya
=====
msgLoading db 0x00, 0x0A, "Bootstrap Loader ", 0x00, 0x0A, 0x00
msgCRLF db 0x00, 0x0A, 0x00
msgProgress db " ", 0x00
=====
; Teks yang di tampilkan saat terjadi kesalahan BOOT
=====
msgFailure db 0x00, 0x0A, "Damar Fartika", 0x00
=====
; (4) BLOK BOOT SIGNATURE
<
```

- 1.) Ulangi kompilasi file “boot.asm” dan jalankan perintah “Make fp.disk” lalu “Enter”
- 2.) Jalankan PC-Simulator ketik “s” lalu “Enter” maka akan tampil seperti ini

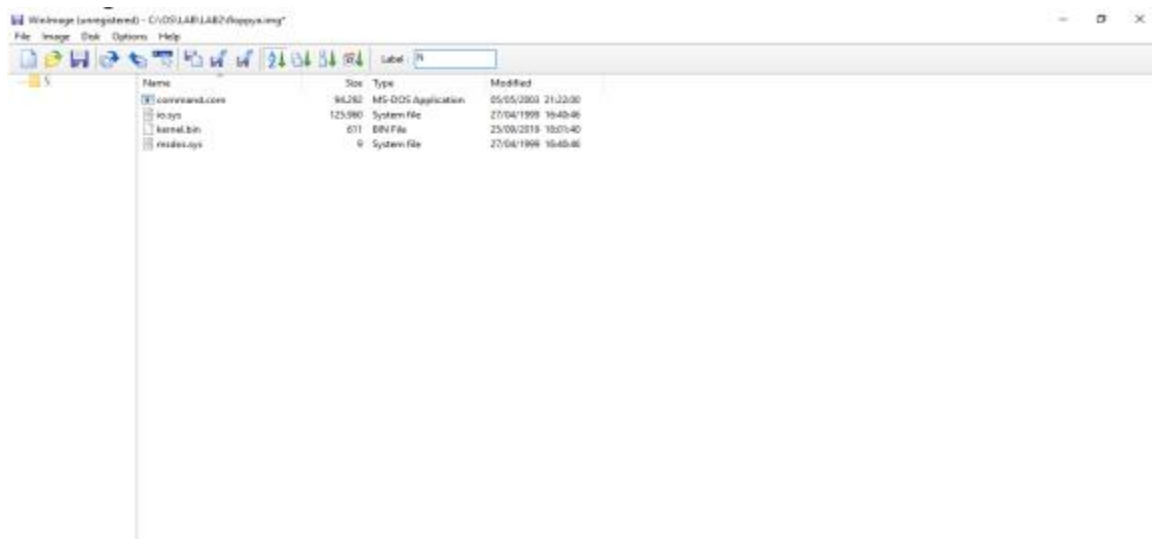


- 1.)Menyiapkan file “kernel.bin” Prototype source code program kernel disimpan pada file “kernel.asm” lalu periksa pada direktori kerja anda.
- 2.)Lakukan proses kompilasi untuk menghasilkan file “kernel.bin”
- 3.)Lalu jalankan perintah “make kernel”
- 4.)Apabila tidak ada kesalahan, berarti proses kompilasi berhasil pada direktori kerja dan terdapat file baru yaitu “kernel.bin”
- 5.)Ketik perintah “dir” untuk melihat isi file didalamnya



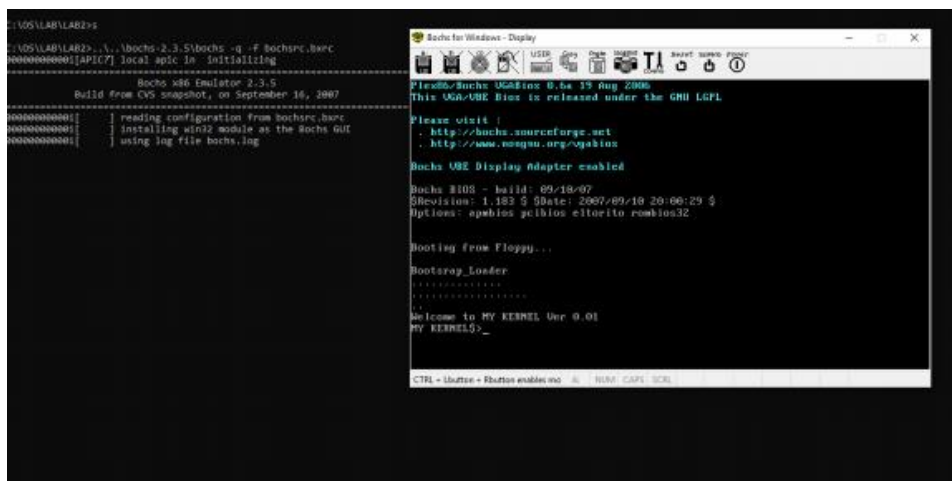


- 1.)Memindahkan file “kernel.bin” ke dalam file image “floppy.img”
- 2.)Untuk melakukan ini dengan menggunakan program shareware namanya “winimage”
- 3.)Buka direktori kerja “C:\OS\LAB\LAB2” dengan Windows Explore Klik double pada file “floppy.img” atau panggil program winimage klik “Start | All Programs| Winimage| Winimage
- 4,)Kemudian klik open dan cari file “floppy.img” pada direktori kerja untuk memasukkan file “kernel.bin” pada Windows “Winimage” klik menu “image| inject”
- 5.)Lalu cari file “kernel.bin” pada direktori kerja dan OK. Lalu simpan dengan “File| Save” dan keluar dari Winimage

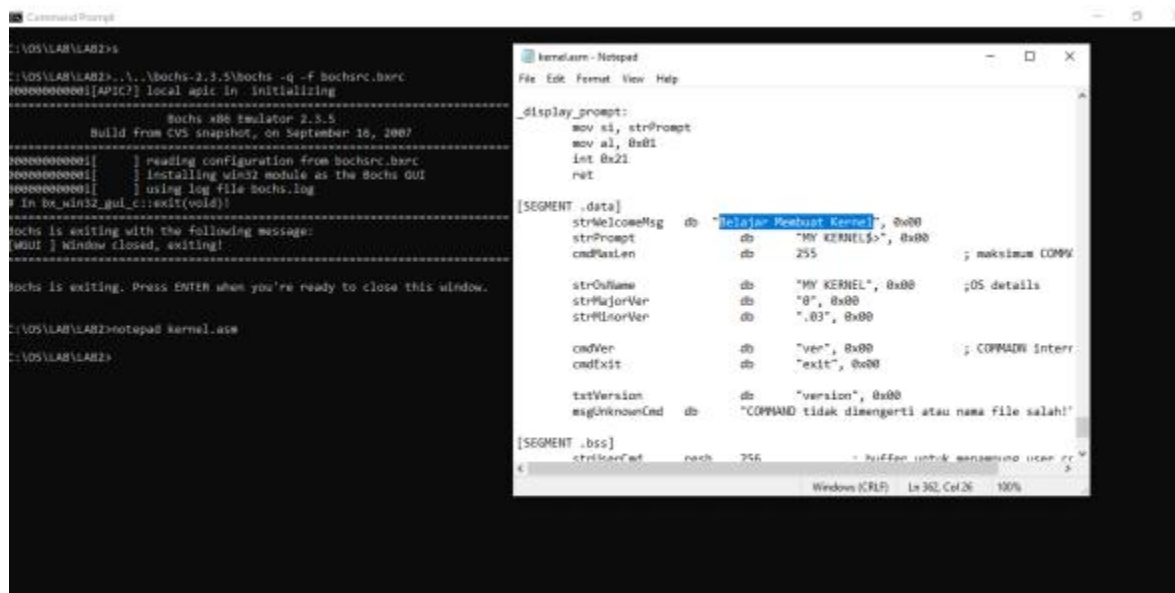


Kembali ke Windows “Command Prompt”direktori kerja

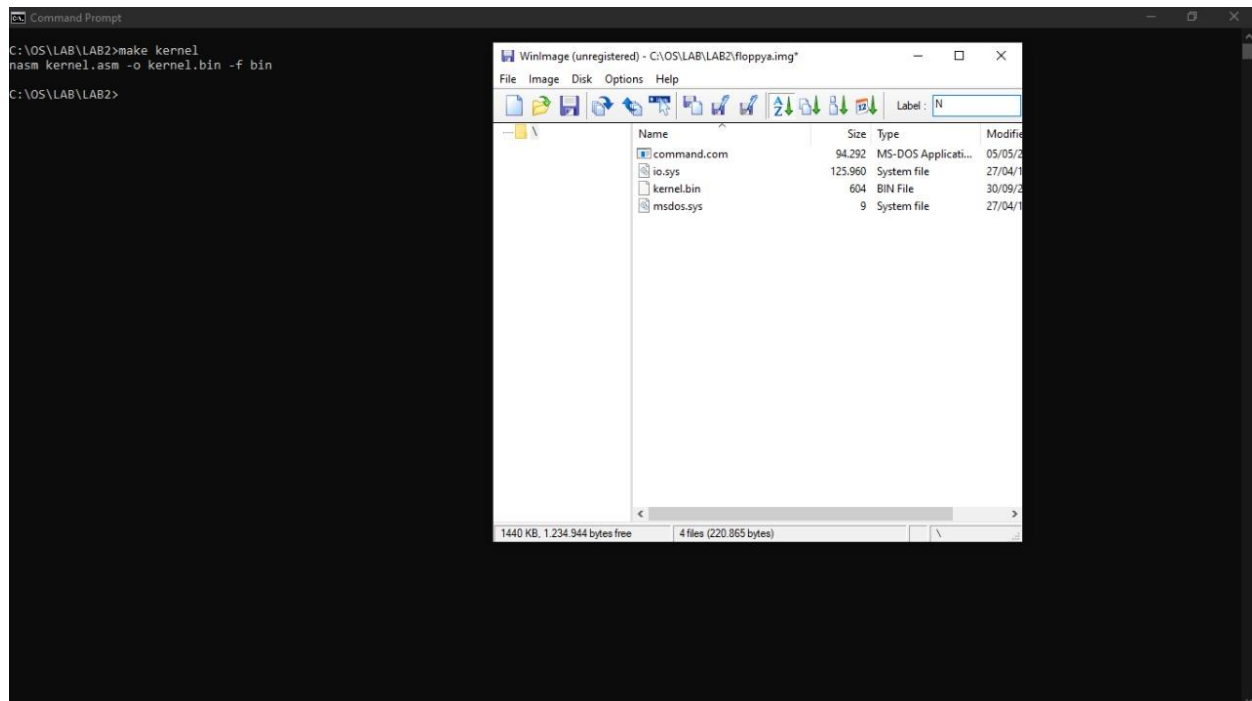
Jalankan PC-Simulator ketik “s” lalu “Enter” maka akan tampil seperti ini



- 1.)Memodifikasi file “kernel.asm” lalu Jalankan perintah “Notepad kernel.asm” lalu “Enter”. Cari teks “Welcome to MY KERNEL. . . .” ganti dengan teks “Belajar membuat KERNEL”
- 2.)Lalu simpan file “kernel.asm” tekan CTRL+S



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



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



```
Bochs for Windows - Console
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
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 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: 1.103 $ $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 mo A: NUM CAPS SCRL
```