

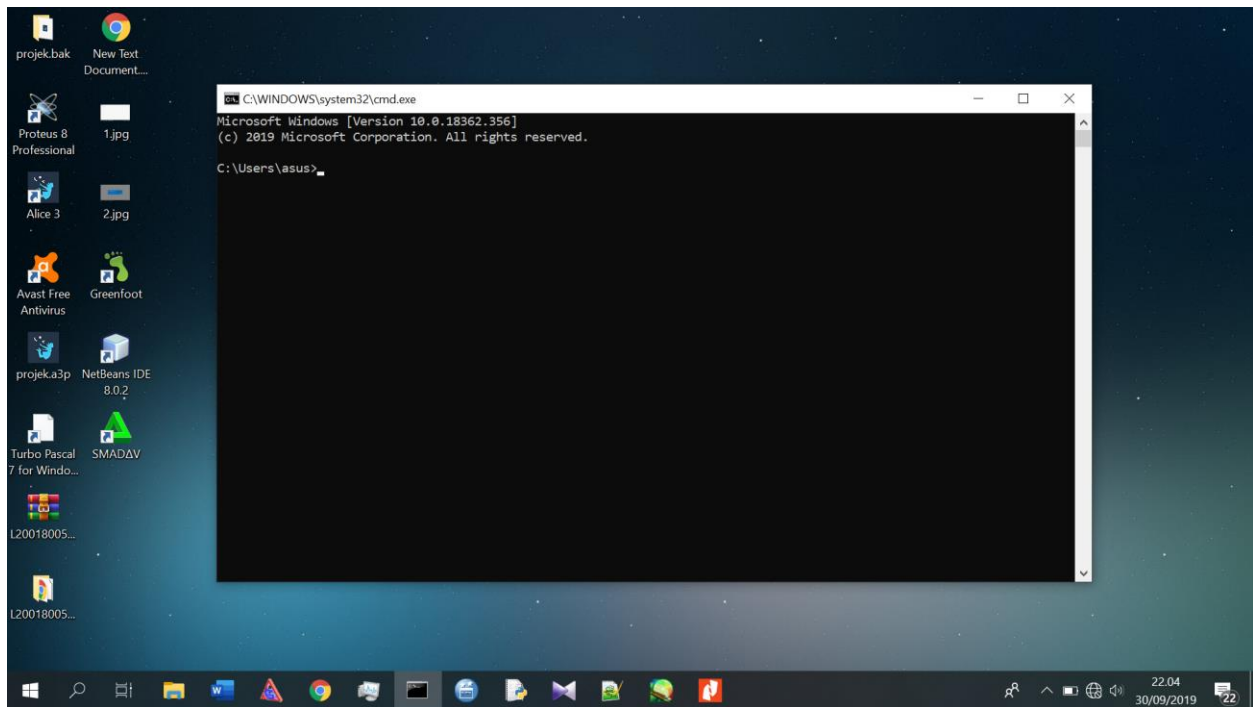
Nama : Amron Akhsanul Arif

NIM : L200180105

Kelas : C

## MODUL 2

Buka Command Prompt



Menuju ke direktori kerja

- \*Masuk ke direktori kerja C:\OS"

- \*Melihat isi direktori di dalam folder OS dengan perintah dir pada command prompt

- \*Menjalankan file setpath untuk mengatur lingkungan kerja

- \*ketik "cd LAB/LAB2" dilanjutkan perintah "dir" untuk melihat file didalamnya dan Menyiapkan file image "floppy.img"

- \*Memformat file "floppya.img" dan mengisi dengan system Operasi DOS versi 7

- \*Jalankan perintah "dosfp"

- \*Pada Bochs klik menu gambar floppy disk nomor dua dari kanan atau B

- \*Atur lokasi file image sehingga menunjukkan file "floppy.img" pada LAB2 dengan klik "Browser" dan atur lalu "Ok"

```
Command Prompt
Microsoft Windows [Version 10.0.18362.356]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\asus>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 OS
Volume Serial Number is 0E09-D999

Directory of C:\OS\LAB\LAB2

30/09/2019  21.48  <DIR>          .
30/09/2019  21.48  <DIR>          ..
15/12/2008  16.18                1.625 bochsrc.bxrc
15/12/2008  17.57                15.923 boot.asm
15/12/2008  13.52                 78 dosfp.bat
15/12/2008  17.57                7.966 kernel.asm
15/12/2008  16.21                228 Makefile
15/12/2008  12.20                 44 s.bat
               6 File(s)          25.864 bytes
               2 Dir(s)  56.389.828.608 bytes free

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

\*Memformat file "floppya.img" dan mengisi dengan system Operasi DOS versi 7

\*Jalankan perintah "dosfp"

\*Pada Bochs klik menu gambar floppy disk B

\*Atur lokasi file image sehingga menunjukkan file "floppy.img" pada LAB2 dengan klik "Browser" dan atur lalu "Ok"

```
Bochs for Windows - Console
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 OS
Volume Serial Number is 0E09-D999

Directory of C:\OS\LAB\LAB2

30/09/2019  21.48  <DIR>          .
30/09/2019  21.48  <DIR>          ..
15/12/2008  16.18                1.625 bochsrc.bxrc
15/12/2008  17.57                15.923 boot.asm
15/12/2008  13.52                 78 dosfp.bat
15/12/2008  17.57                7.966 kernel.asm
15/12/2008  16.21                228 Makefile
15/12/2008  12.20                 44 s.bat
               6 File(s)          25.864 bytes
               2 Dir(s)  56.389.828.608 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
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

Bochs for Windows - Display
CD-ROM Device Driver for (C)Copyright Oak Technology, Inc.
Driver Version : 0.0.0.0
Device Name : CD-ROM
Transfer Mode : PIO
Drive 0: Port= 1F0 (Parallel Port)
Firmware version : 0.0.0.0

MSCDEX Version 2.23
Copyright (C) Microsoft Corporation
Drive R: = Driver

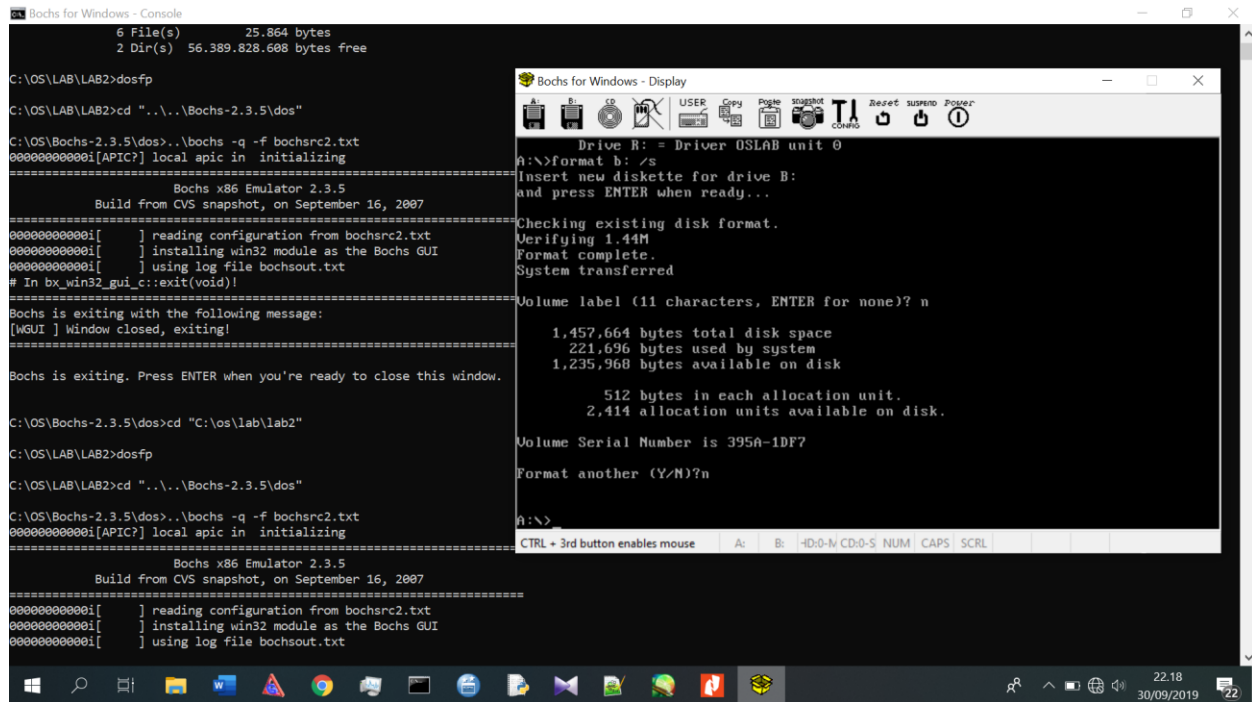
A:\>_

Second floppy image/device
Device Type 1.44M
Path c:\os\lab\lab2\floppya.img Browse...
Media Type none
[ ] Inserted
Clicking OK signals a media change for this drive.
Create Image OK Cancel

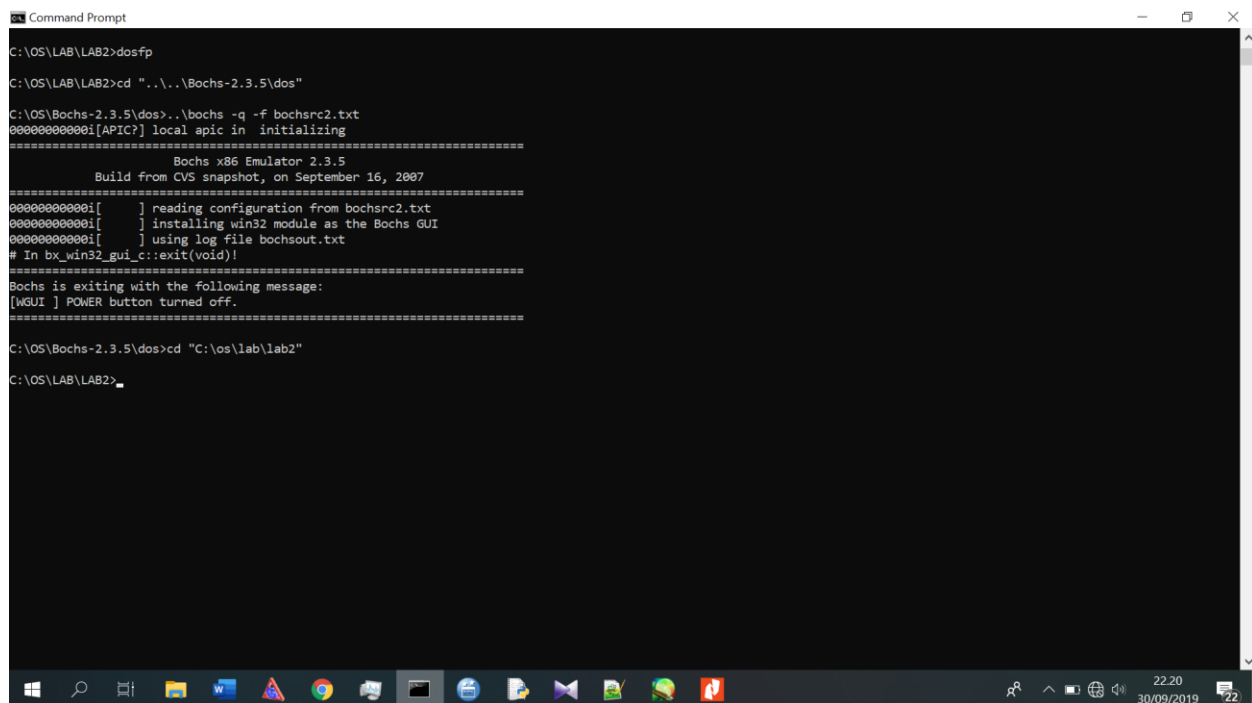
CTRL + 3rd button enables mouse A: B: HD:0-M CD:0-S NUM CAPS SCRL
```

\*Pada prompt "A:>" ketik dengan "A:>Format B:/S"

\*Jika tidak ada kesalahan maka "floppy.img" maka dapat digunakan untuk booting.

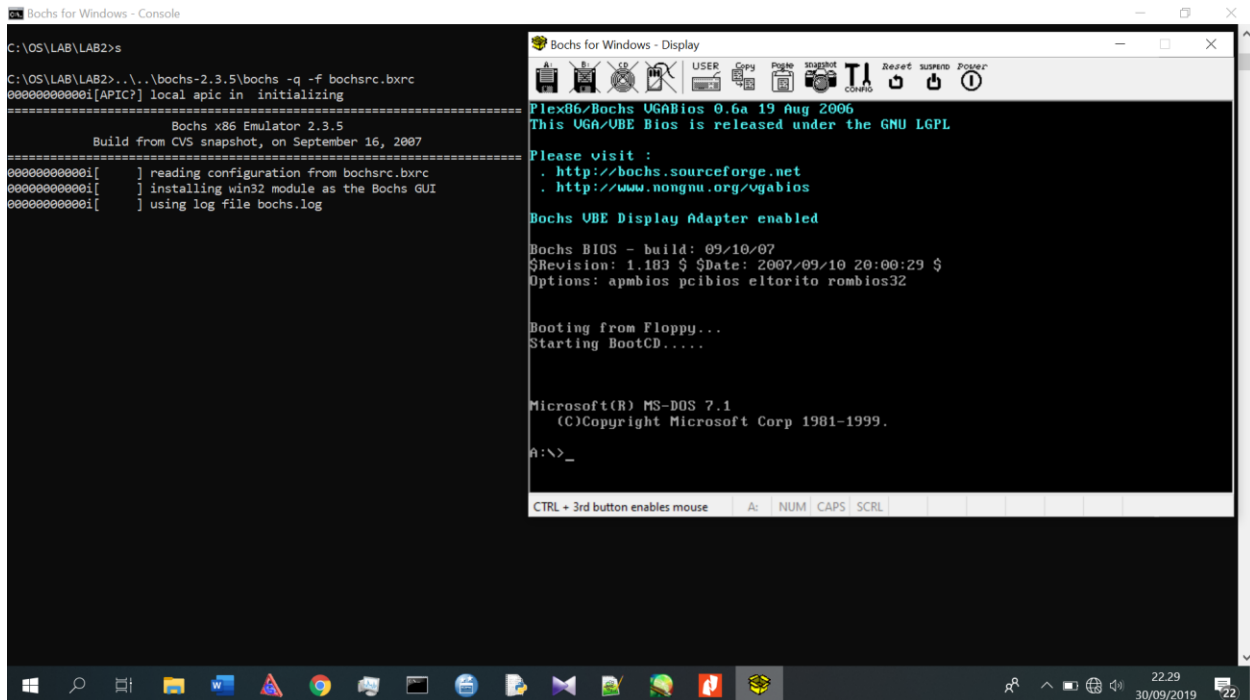


\*Tutup Windows "Bochs" klik menu "Power" . Pada windows "Command Prompt" akan tampak bekas aktifitas "Bochs" seperti dibawah ini.



\*BOOT PC-Simulator dengan file "floppy.img"

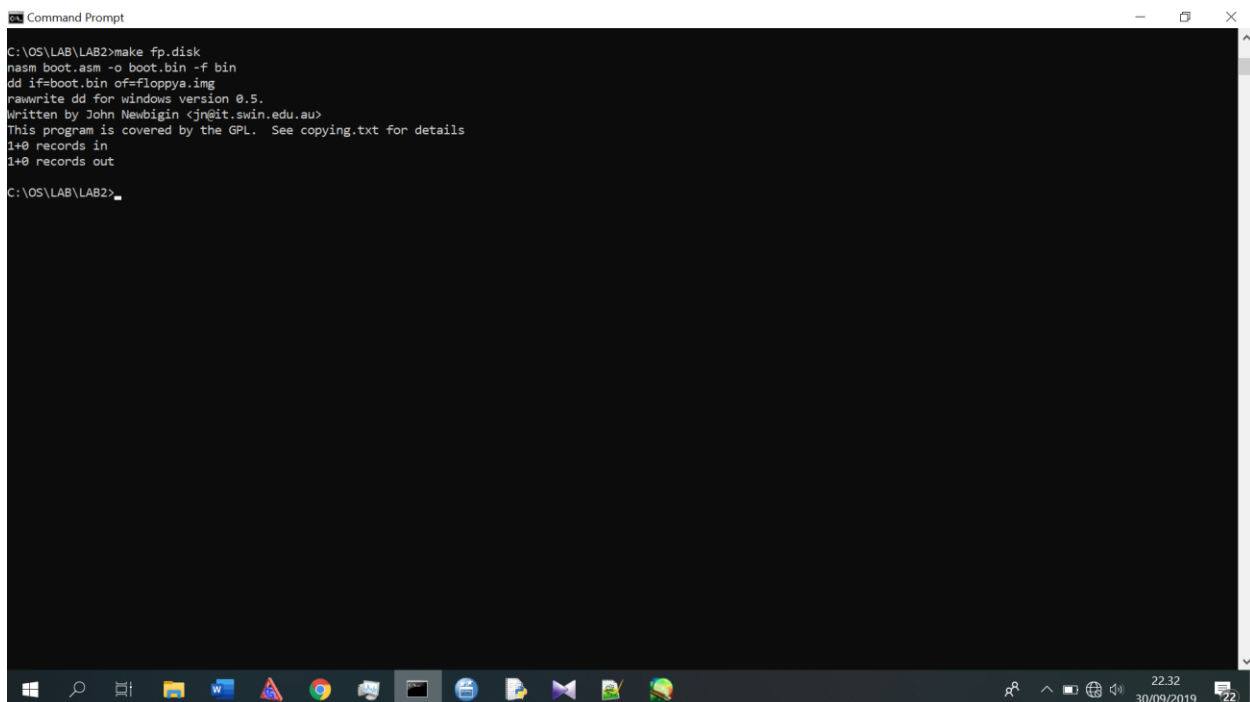
\*Pindah direktori kerja pada windows "Command Prompt" dan jalankan perintah "s" lalu "Enter"



\*Kompilasi source code "boot.asm" dan memindah hasil ke bootsector "floppya.img".

Pindah ke direktori kerja "LAB2"

\*Jalankan perintah "make fp.disk"



\*Jalankan PC-Simulator ketika "s" lalu "Enter" maka akan tampil seperti ini

```
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
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 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_

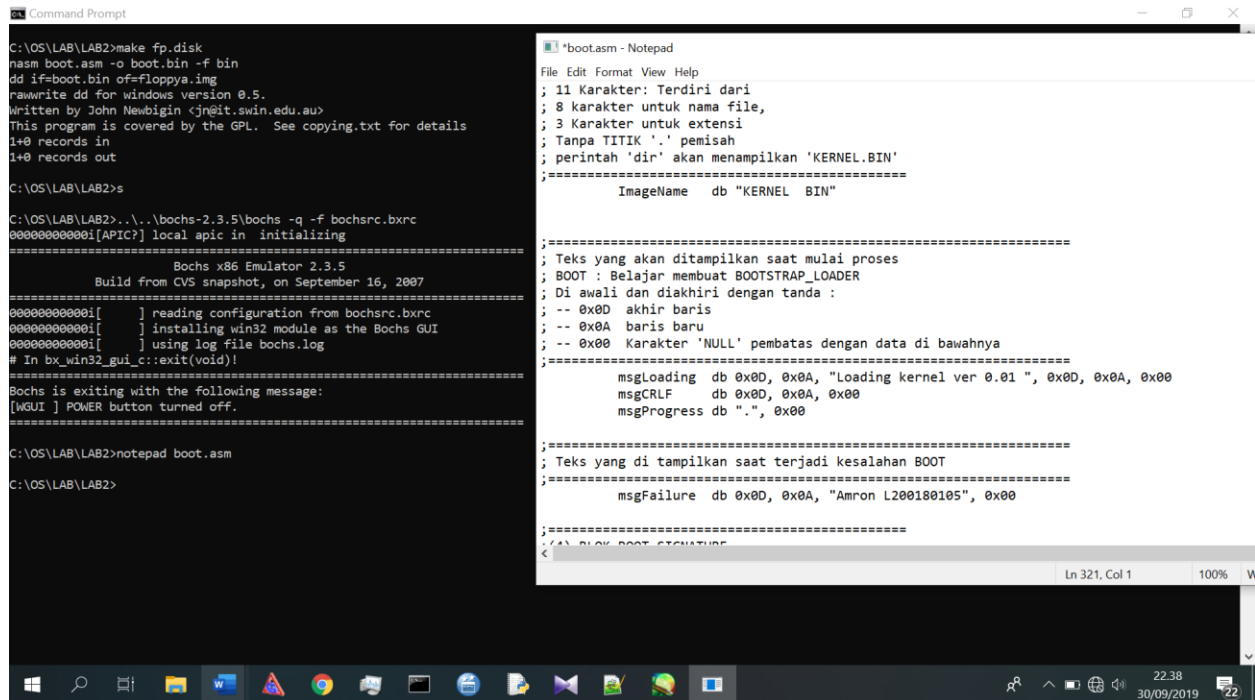
CTRL + 3rd button enables mouse  A: NUM CAPS SCRL
```

\*Menyunting file "boot.asm" ketika "notepad boot.asm" lalu "Enter", cari teks "Loading Kernel" pada windows "Notepad"

\*Sunting baris "Loading kernel ver 0.01" menjadi dengan "Belajar membuat BOOTSTRAP\_LOADER"

\*Sunting juga baris "ERROR: Press Any Key to Reboot" dengan cara yang sama dengan nama "Amron L200180105"

\*Simpan file "boot.asm" dengan CTRL+S



```
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
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
# In bx_win32_gui_c::exit(void)!
=====
Bochs is exiting with the following message:
[VGUI ] POWER button turned off.
=====

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

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

```
*boot.asm - Notepad
File Edit Format View Help
; 11 Karakter: Terdiri dari
; 8 Karakter untuk nama file,
; 3 Karakter untuk ekstensi
; Tanpa TITIK '.' pemisah
; perintah 'dir' akan menampilkan 'KERNEL.BIN'
;=====
ImageName db "KERNEL BIN"

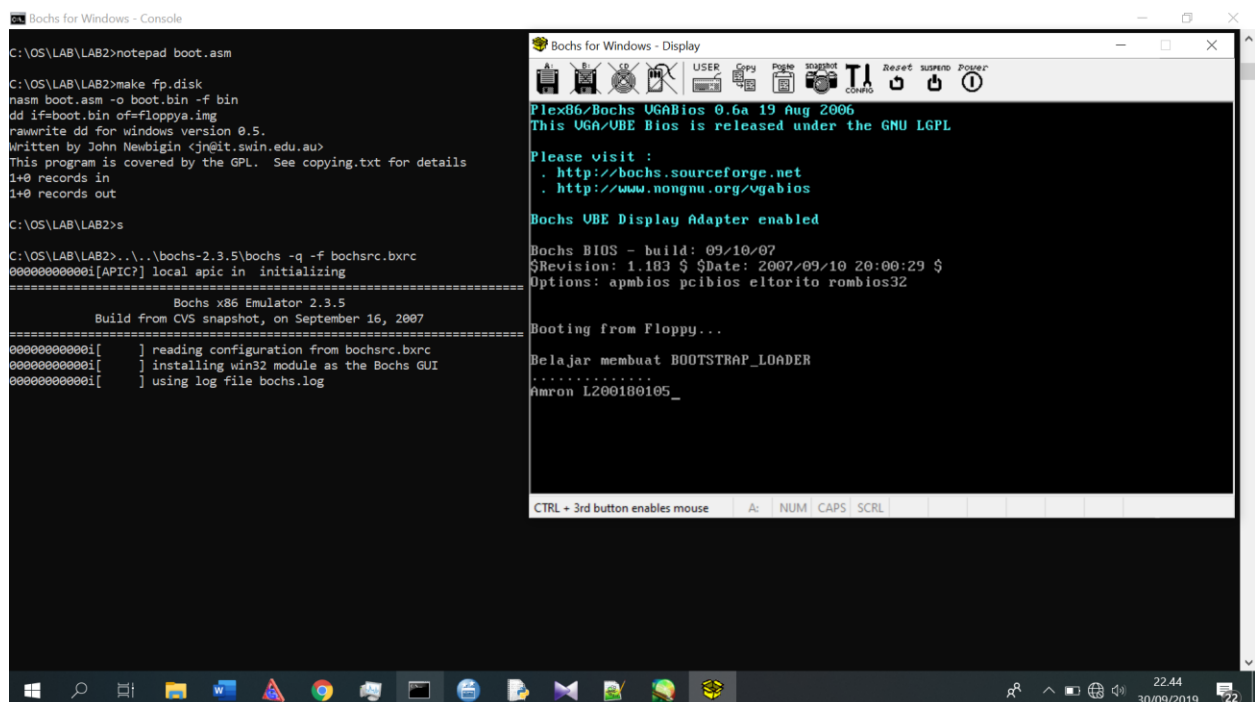
;=====
; Teks yang akan ditampilkan saat mulai proses
; BOOT : Belajar membuat BOOTSTRAP_LOADER
; Di awali dan diakhiri dengan tanda :
; -- 0x0D akhir baris
; -- 0x0A baris baru
; -- 0x00 Karakter 'NULL' pembatas dengan data di bawahnya
;=====
msgLoading db 0x0D, 0x0A, "Loading kernel ver 0.01 ", 0x0D,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

;=====
; Teks yang di tampilkan saat terjadi kesalahan BOOT
;=====
msgFailure db 0x0D, 0x0A, "Amron L200180105", 0x00

;=====
; (A) BLOCK BOOT SIGNATURE
<
```

\*Ulangi kompilasi file "boot.asm" dan jalankan perintah "Make fp.disk" lalu "Enter"

\* Jalankan PC-Simulator ketik "s" lalu "Enter" maka akan tampil seperti ini



```
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
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...

Belajar membuat BOOTSTRAP_LOADER
.....
Amron L200180105_

CTRL + 3rd button enables mouse  A: NUM CAPS SCRL
```

\*Menyiapkan file "kernel.bin" Prototype source code program kernel disimpan pada file "kernel.asm"

lalu periksa pada direktori kerja anda.

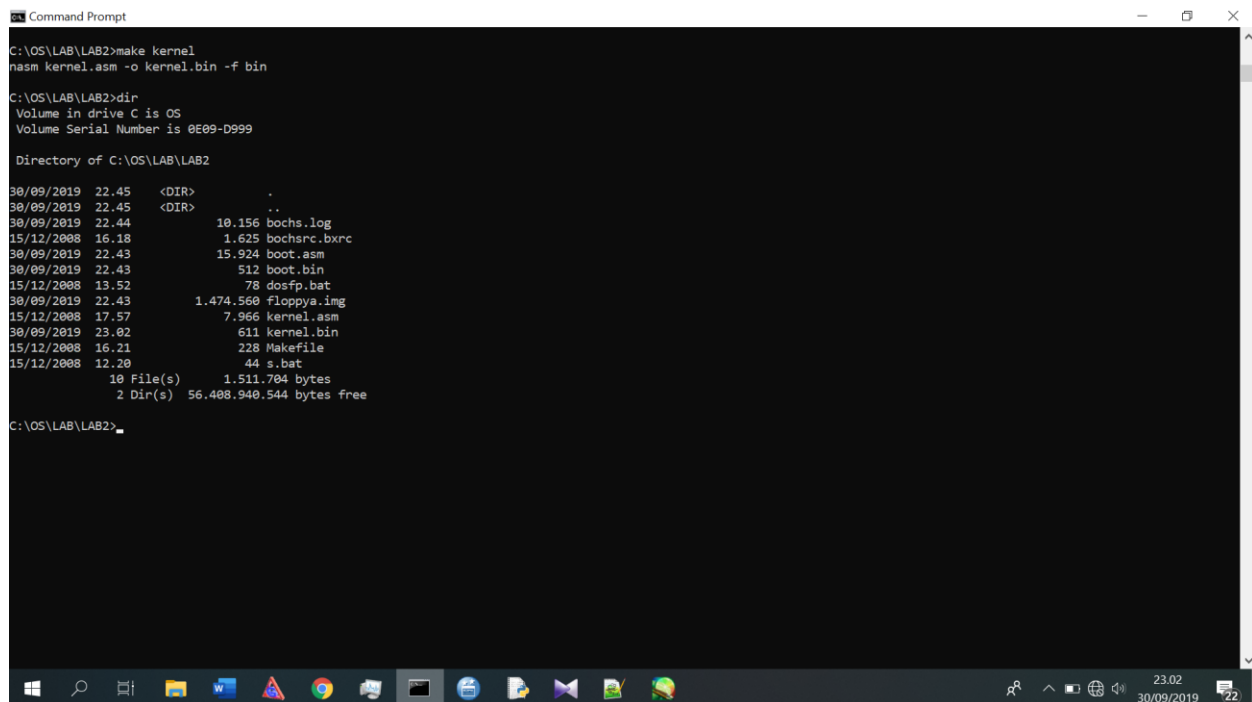
\*Lakukan proses kompilasi untuk menghasilkan file "kernel.bin"

\*Lalu jalankan perintah "make kernel"

\*Apabila tidak ada kesalahan, berarti proses kompilasi berhasil pada direktori kerja dan terdapat file

baru yaitu "kernel.bin"

\*Ketik perintah "dir" untuk melihat isi file didalamnya



```
Command Prompt
C:\OS\LAB\LAB2>make kernel
nasm kernel.asm -o kernel.bin -f bin

C:\OS\LAB\LAB2>dir
Volume in drive C is OS
Volume Serial Number is 0E09-D999

Directory of C:\OS\LAB\LAB2

30/09/2019  22:45  <DIR>      .
30/09/2019  22:45  <DIR>      ..
30/09/2019  22:44             10,156 bochs.log
15/12/2008  16:18             1,625 bochsrc.bxrc
30/09/2019  22:43             15,924 boot.asm
30/09/2019  22:43              512 boot.bin
15/12/2008  13:52              78 dosfp.bat
30/09/2019  22:43         1,474,560 floppy.img
15/12/2008  17:57              7,966 kernel.asm
30/09/2019  23:02              611 kernel.bin
15/12/2008  16:21              228 Makefile
15/12/2008  12:20              44 s.bat
               10 File(s)         1,511,704 bytes
               2 Dir(s)  56,408,940,544 bytes free

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

\*Memindahkan file "kernel.bin" ke dalam file image "floppy.img"

\*Untuk melakukan ini dengan menggunakan program shareware namanya "winimage"

\*Buka direktori kerja "C:\OS\LAB\LAB2" dengan Windows Explore

\*Klik double pada file "floppy.img" atau panggil program winimage klik "Start | All Programs|

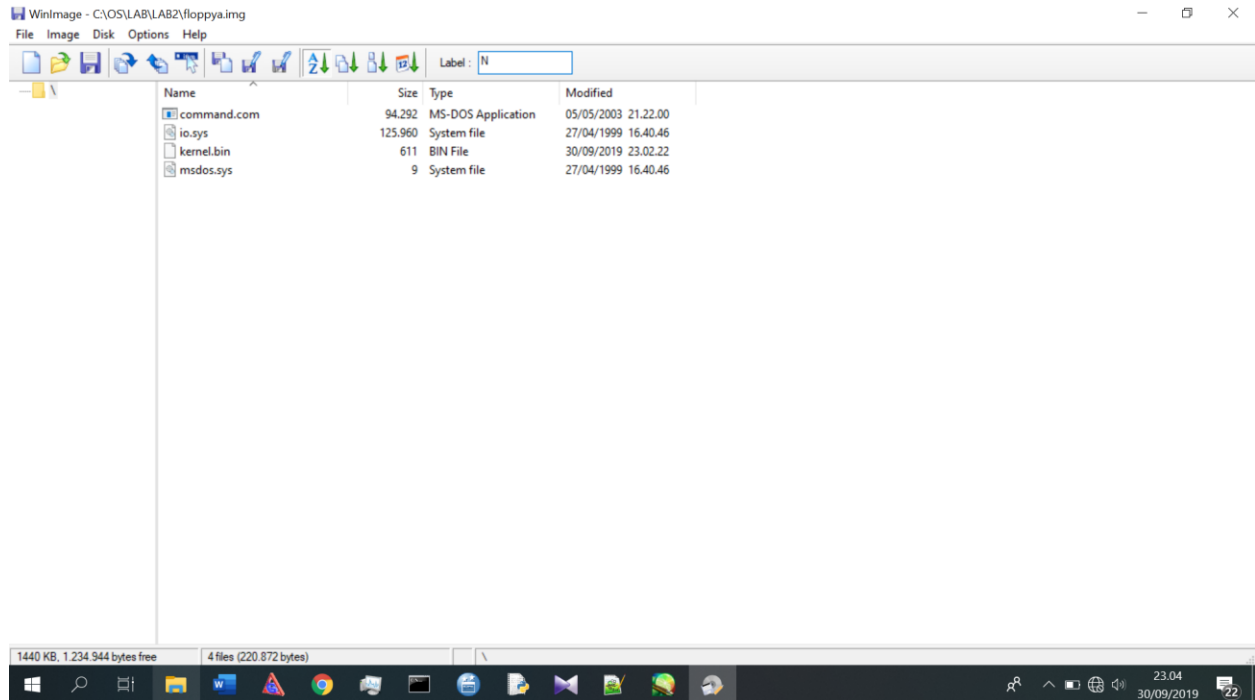
Winimage| Winimage

\*Kemudian klik open dan cari file "floppy.img" pada direktori kerja untuk memasukkan file "kernel.bin"

pada Windows "Winimage" klik menu "image| inject"

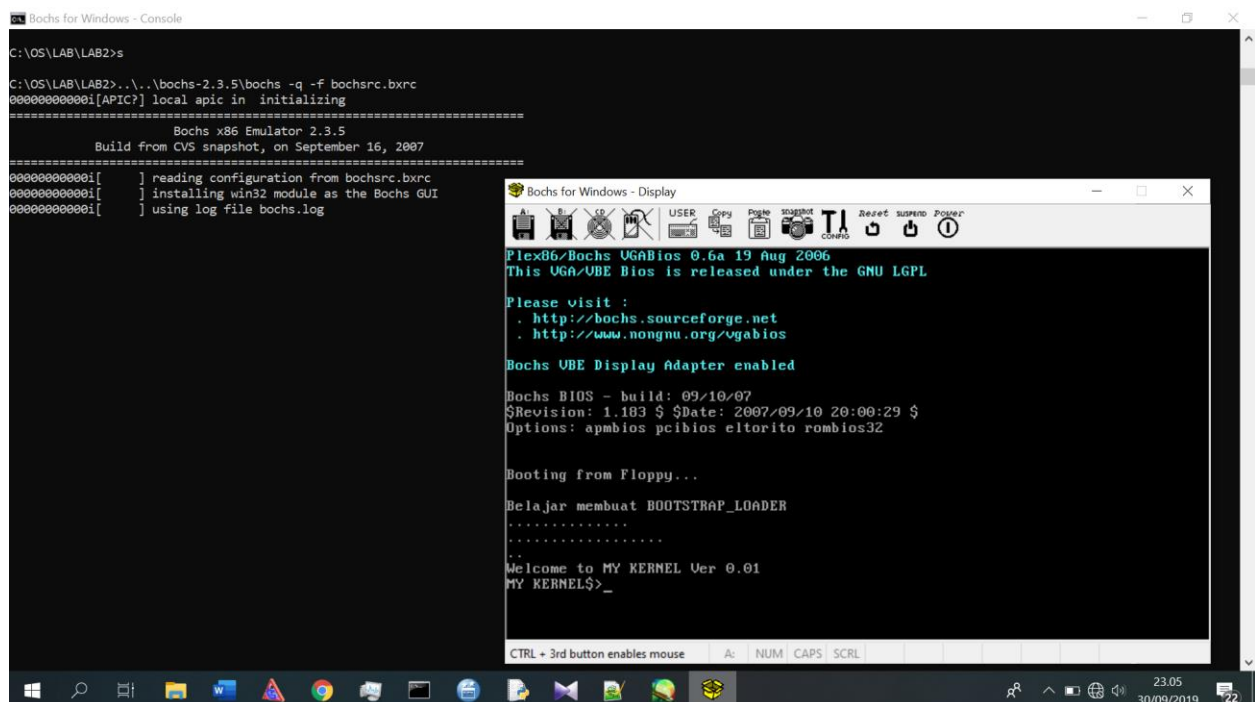
\*Lalu cari file "kernel.bin" pada direktori kerja dan OK. Lalu simpan dengan "File| Save" dan keluar dari

Winimage



\*Kembali ke Windows "Command Prompt"direktori kerja

\* Jalankan PC-Simulator ketik "s" lalu "Enter" maka akan tampil seperti ini

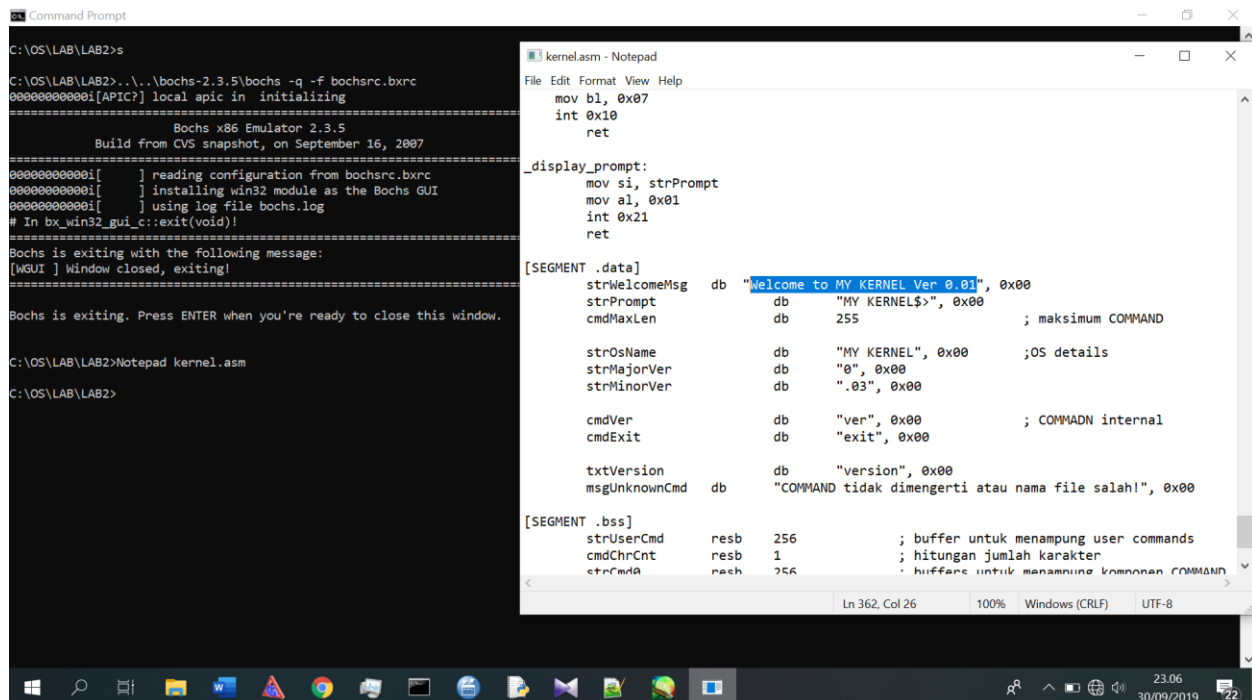


\*Memodifikasi file "kernel.asm"

\*Jalankan perintah "Notepad kernel.asm" lalu "Enter". Cari teks "Welcome to MY KERNEL. . . ." ganti dengan teks "Belajar membuat KERNEL"



\*Lalu simpan file "kernel.asm" tekan CTRL+S



```
Command Prompt
C:\OS\LAB\LAB2>s
C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
0000000000i[APIC?] local apic in  initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
0000000000i[      ] reading configuration from bochsrc.bxrc
0000000000i[      ] installing win32 module as the Bochs GUI
0000000000i[      ] using log file bochs.log
# in bx_win32_gui.c::exit(void)!
=====
Bochs is exiting with the following message:
[VGUI ] 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>
```

```
kernel.asm - Notepad
File Edit Format View Help
mov bl, 0x07
int 0x10
ret

_display_prompt:
mov si, strPrompt
mov al, 0x01
int 0x21
ret

[SEGMENT .data]
strWelcomeMsg db "Welcome to MY KERNEL Ver 0.01", 0x00
strPrompt      db "MY KERNEL$>", 0x00
cmdMaxLen      db 255 ; maksimum COMMAND

strOsName      db "MY KERNEL", 0x00 ; OS details
strMajorVer    db "0", 0x00
strMinorVer    db ".03", 0x00

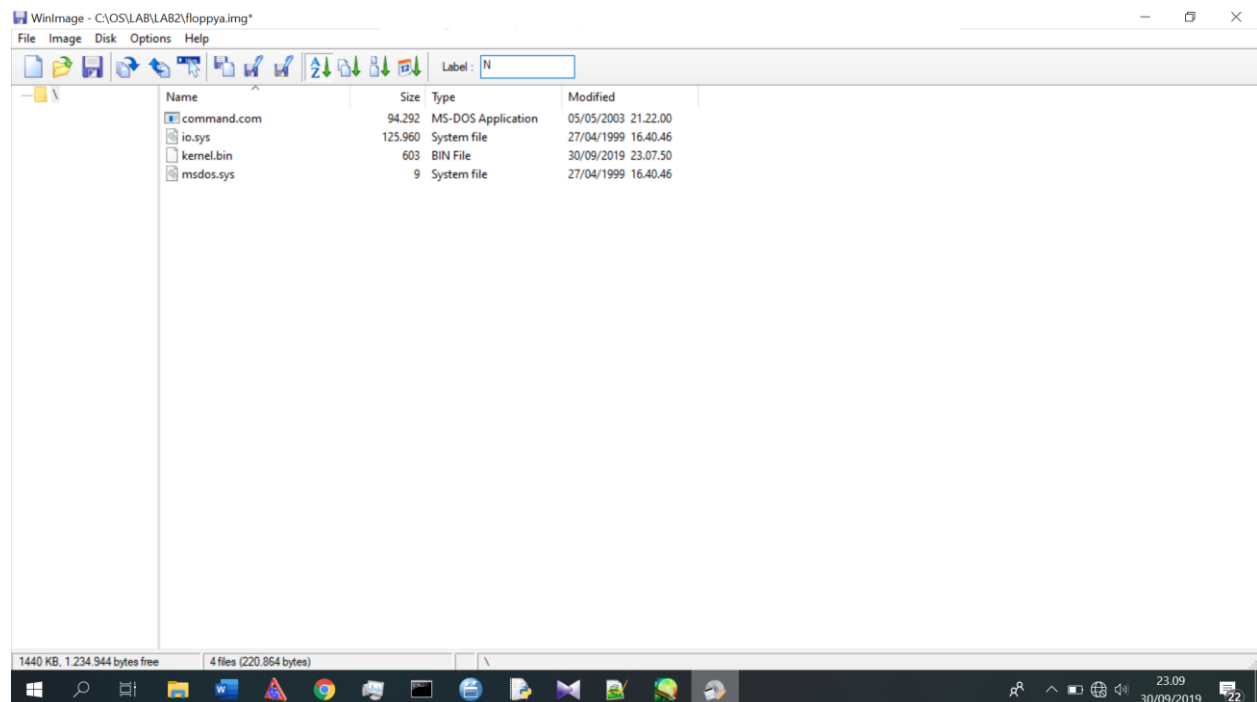
cmdVer         db "ver", 0x00 ; COMMAND internal
cmdExit        db "exit", 0x00

txtVersion     db "version", 0x00
msgUnknownCmd  db "COMMAND tidak dimengerti atau nama file salah!", 0x00

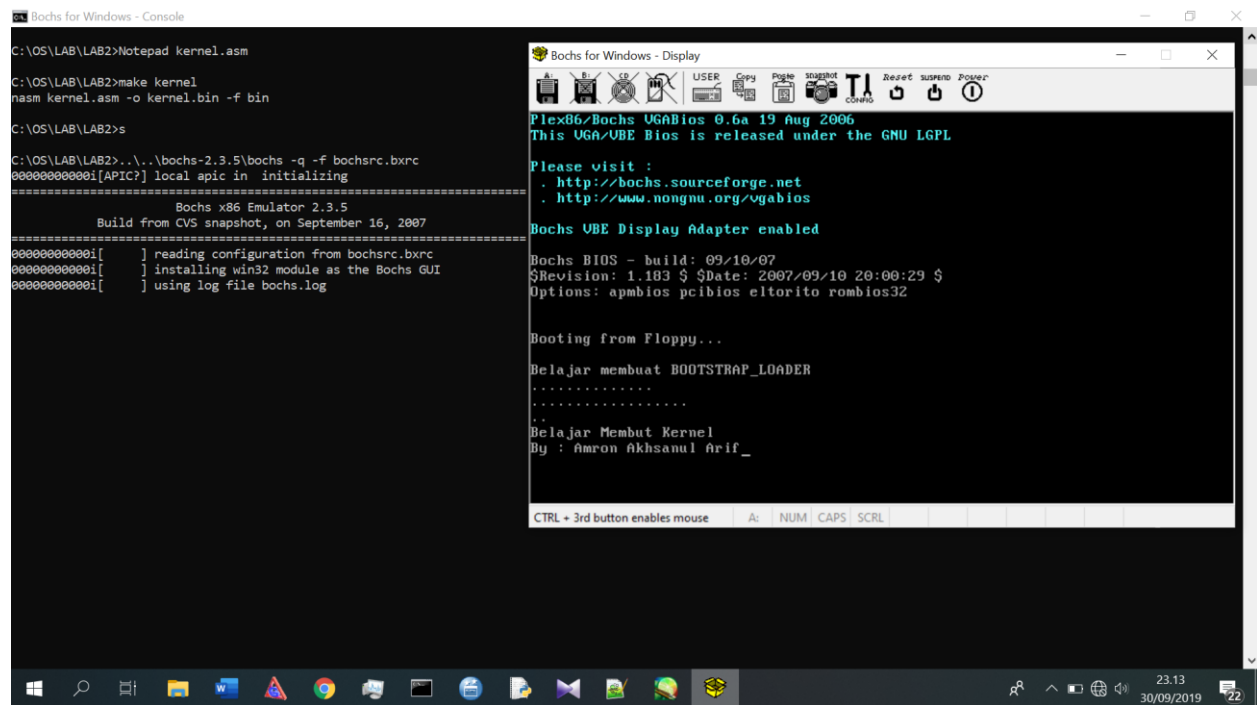
[SEGMENT .bss]
strUserCmd     resb 256 ; buffer untuk menampung user commands
cmdChrCnt      resb 1 ; hitungan jumlah karakter
strCmdA        resb 256 ; buffers untuk menampung komponen COMMAND
```

\*Ulangi proses kompilasi dengan perintah "make kernel" lalu "Enter"

\*Lalu lakukan proses memindahkan file "kernel.bin" kedalam file "floppya.img" dengan Winimage



\*Jalankan PC-Simulator ketik "s" lalu "Enter" maka akan tampil seperti ini :



```
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
0000000000i[APIC?] local apic in  initializing
=====
                Bochs x86 Emulator 2.3.5
                Build from CVS snapshot, on September 16, 2007
=====
0000000000i[      ] reading configuration from bochsrc.bxrc
0000000000i[      ] installing win32 module as the Bochs GUI
0000000000i[      ] using log file bochs.log

Bochs for Windows - Display

Flex86/Bochs UGABios 0.6a 19 Aug 2006
This UGA/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...

Belajar membuat BOOTSTRAP_LOADER
.....
..
Belajar Membut Kernel
By : Amron Akhsanul Arif_

CTRL + 3rd button enables mouse  A: NUM CAPS SCRL
```