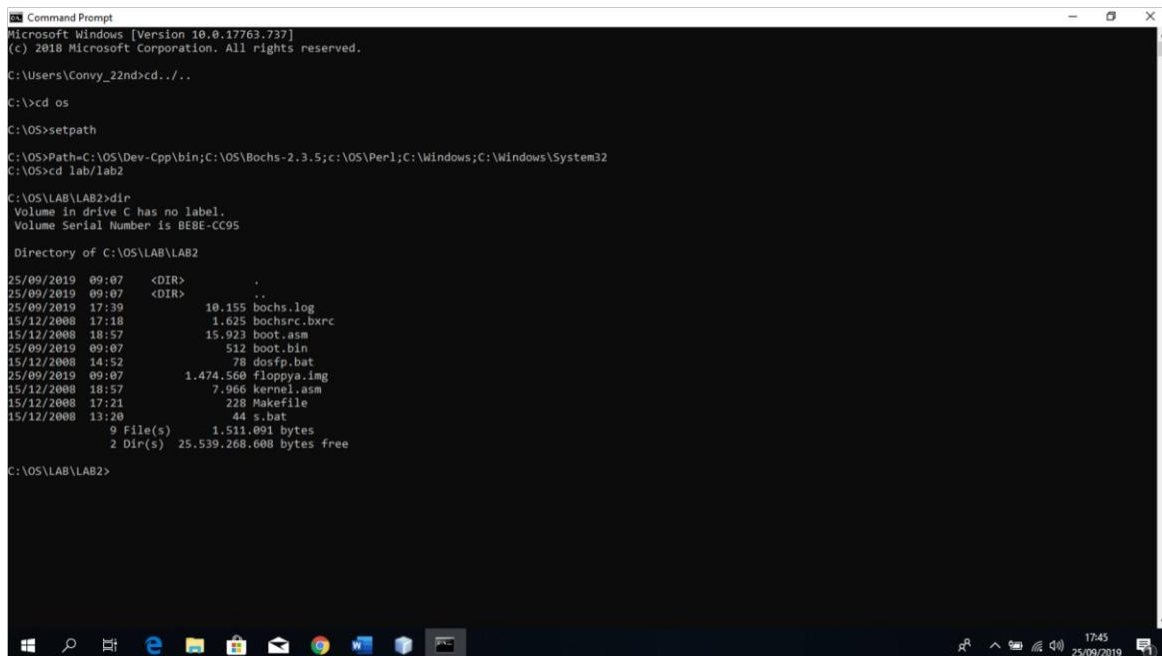


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Matkul : Praktikum Sistem Operasi

Modul 2

- 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 “floppya.img”



```
Microsoft Windows [Version 10.0.17763.737]
(c) 2018 Microsoft Corporation. All rights reserved.

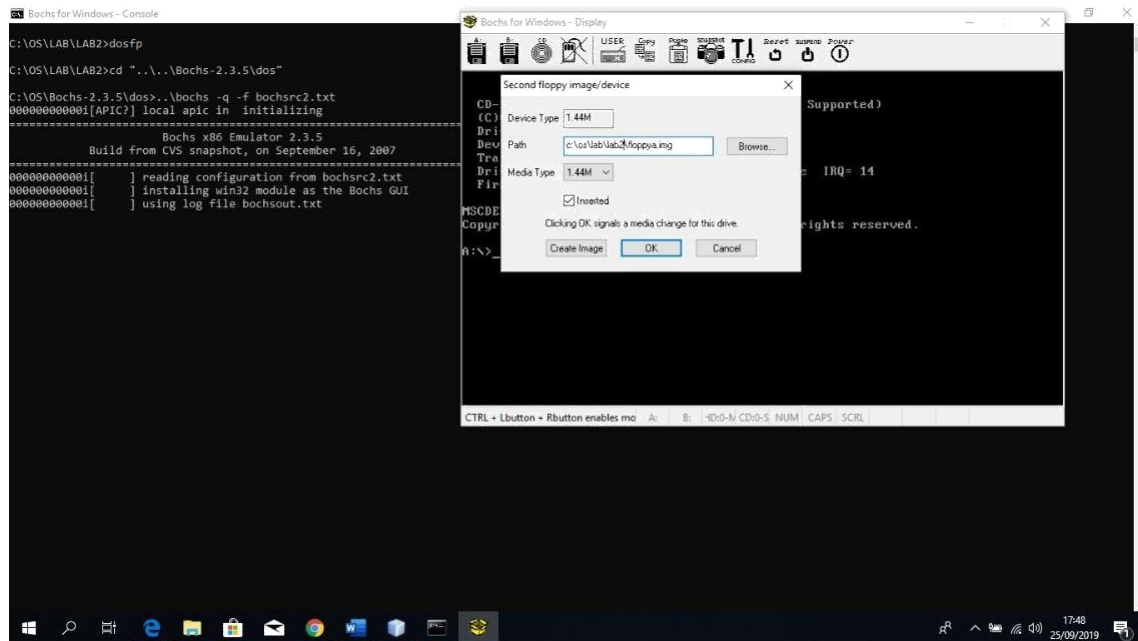
C:\Users\Convy_22nd>cd ../..
C:\>cd os
C:\OS>setpath
C:\OS>Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;c:\Windows;c:\Windows\System32
C:\OS>cd lab/lab2
C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is BEBE-CC95

Directory of C:\OS\LAB\LAB2

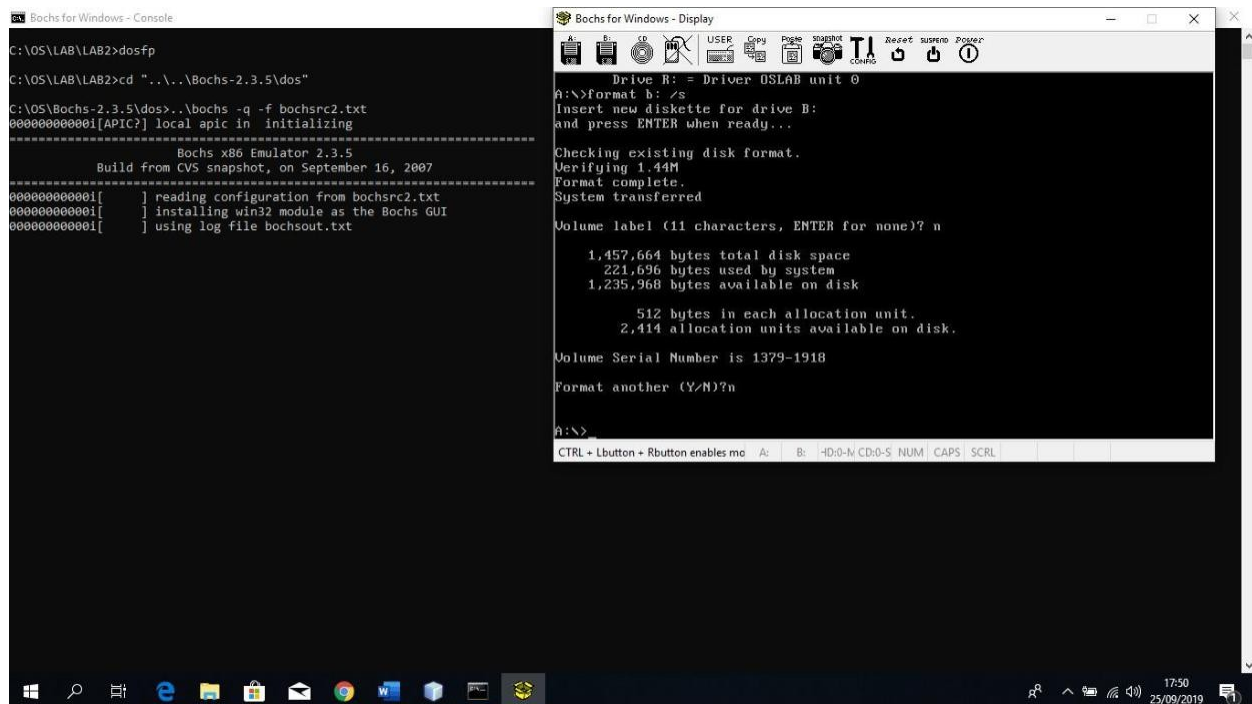
25/09/2019  09:07    <DIR>          .
25/09/2019  09:07    <DIR>          ..
25/09/2019  17:39             10,155 bochs.log
15/12/2008  17:18             1,625 bochs.rc
15/12/2008  18:57             15,923 boot.asm
25/09/2019  09:07             512 boot.bin
15/12/2008  14:52              78 dosfp.bat
25/09/2019  09:07      1,474,560 floppya.img
15/12/2008  18:57             7,966 kernel.asm
15/12/2008  17:21             228 Makefile
15/12/2008  13:20              44 s.bat
               9 File(s)      1,511,091 bytes
               2 Dir(s)  25,539,268,608 bytes free

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

- Memformat file “floppya.img” dan mengisi dengan system Operasi DOS versi 7
- alankan perintah “dosfp”
- Pada Bochs klik menu gambar floppy disk nomor dua dari kanan atau B
- Atur lokasi file image sehingga menunjukkan file “floppya.img” pada LAB2 dengan klik “Browser” dan atur lalu “Ok”



- 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.

```

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
000000000000i[APIC?] local apic in  initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000i[      ] reading configuration from bochsrc2.txt
000000000000i[      ] installing win32 module as the Bochs GUI
000000000000i[      ] 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>

```

- BOOT PC-Simulator dengan file “floppy.img”
- Pindah direktori kerja pada windows “Command Prompt” dan jalankan perintah “s” lalu “Enter”

```

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
000000000000i[APIC?] local apic in  initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000i[      ] reading configuration from bochsrc2.txt
000000000000i[      ] installing win32 module as the Bochs GUI
000000000000i[      ] 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
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
=====

```

- Kompilasi source code “boot.asm” dan memindah hasil ke bootsector “floppya.img”. Pindah ke direktori kerja “LAB2”
- Jalankan perintah “make fp.disk”

```

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>

```

- Jalankan PC-Simulator ketik “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
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
Flex86/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: 1.103 $ $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_

```

- Menyunting file “boot.asm” ketik “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 “msgFailure”
- Simpan file “boot.asm” dengan CTRL+S

```

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

boot.asm - Notepad
File Edit Format View Help
=====
ImageName db "KERNEL BIN"
=====
;
; Teks yang akan ditampilkan saat mulai proses
; BOOT : Loading kernel ver 0.01
; Di awali 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, "Rohmad Khoirudin : L200180101 author by: c
;
; (4) BLOK BOOT SIGNATURE
;
=====
Windows (CRLF) Ln 325, Col 90 100%

```

- 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
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
=====
FlexB6/Bochs UGABios 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/ugabios
Bochs UBE 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
.....
Rohmad Khoirudin : L200180101 author by: convey_22nd_
CTRL + Lbutton + Rbutton enables mo 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

```

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

C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is BE8E-CC95

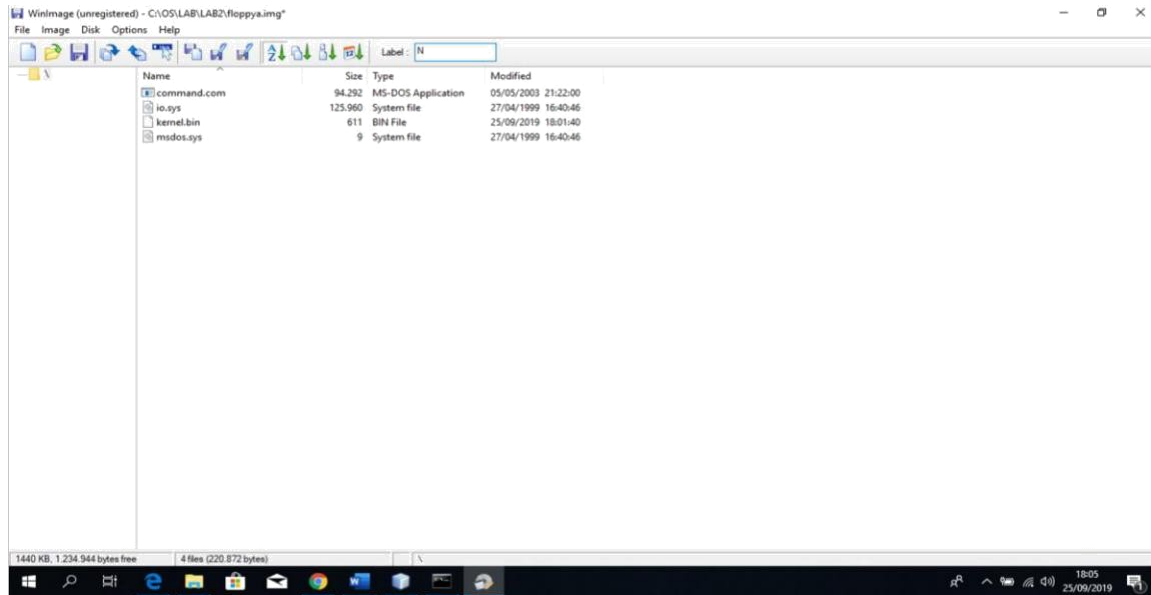
Directory of C:\OS\LAB\LAB2

25/09/2019  18:01    <DIR>          .
25/09/2019  18:01    <DIR>          ..
25/09/2019  18:01             10.153 bochs.log
15/12/2008  17:18             1.625 bochssrc.bxrc
25/09/2019  17:59             15.935 boot.asm
25/09/2019  17:59              512 boot.bin
15/12/2008  14:52              78 dosfp.bat
25/09/2019  17:59       1.474.500 floppy.img
15/12/2008  18:57           7.966 kernel.asm
25/09/2019  18:01           611 kernel.bin
15/12/2008  17:21           228 Makefile
15/12/2008  13:20              44 s.bat
               10 File(s)       1.511.712 bytes
               2 Dir(s)  25.539.022.848 bytes free

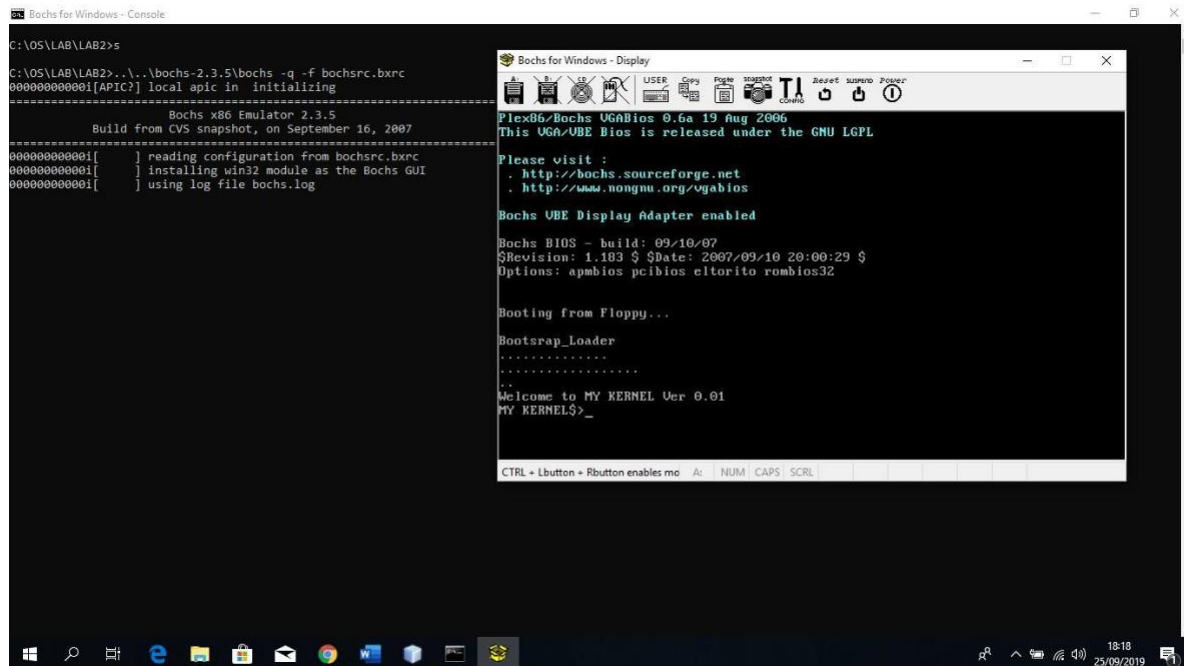
C:\OS\LAB\LAB2>

```

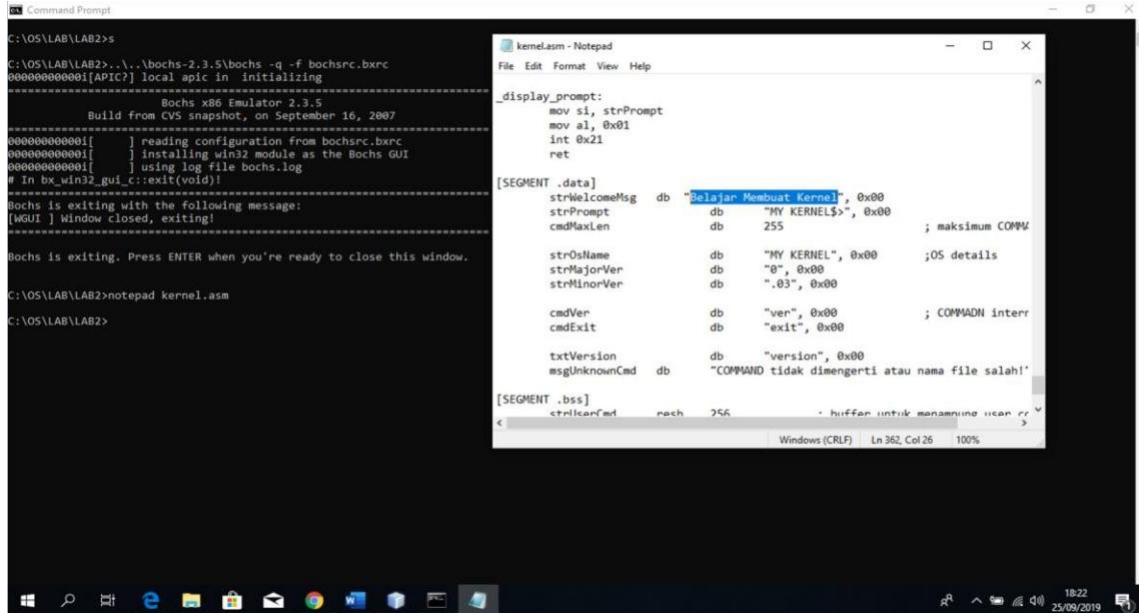
- Memindahkan file “kernel.bin” ke dalam file image “floppy.img”
- Untuk melakukan ini dengan menggunakan program shareware namanya “winimage”
- Buka direktori kerja “C:\OS\LAB\LAB2” dengan Windows Explore
- Klik double pada file “floppy.img” atau panggil program winimage klik “Start | All Programs| 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



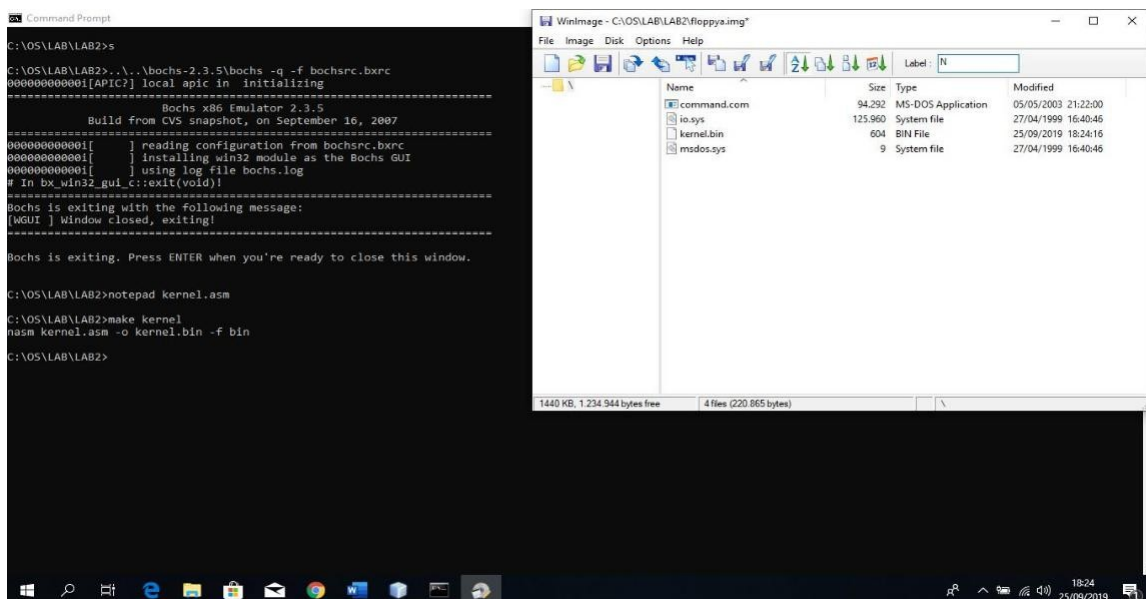
- Kembali ke Windows “Command Prompt” direktori kerja
- Jalankan PC-Simulator ketik “s” lalu “Enter” maka akan tampil seperti ini



- 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



- 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

The screenshot shows a Windows 10 desktop with a console window and a Bochs emulator window. The console window displays the following commands and output:

```
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:
[NGUI ] 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
```

The Bochs for Windows - Display window shows the following text:

```
Plx00/Bochs UGA/UE BIOS 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...

Bootstrap Loader
.....
.....
..
..
Belajar Membuat Kernel
MY KERNEL$>_

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