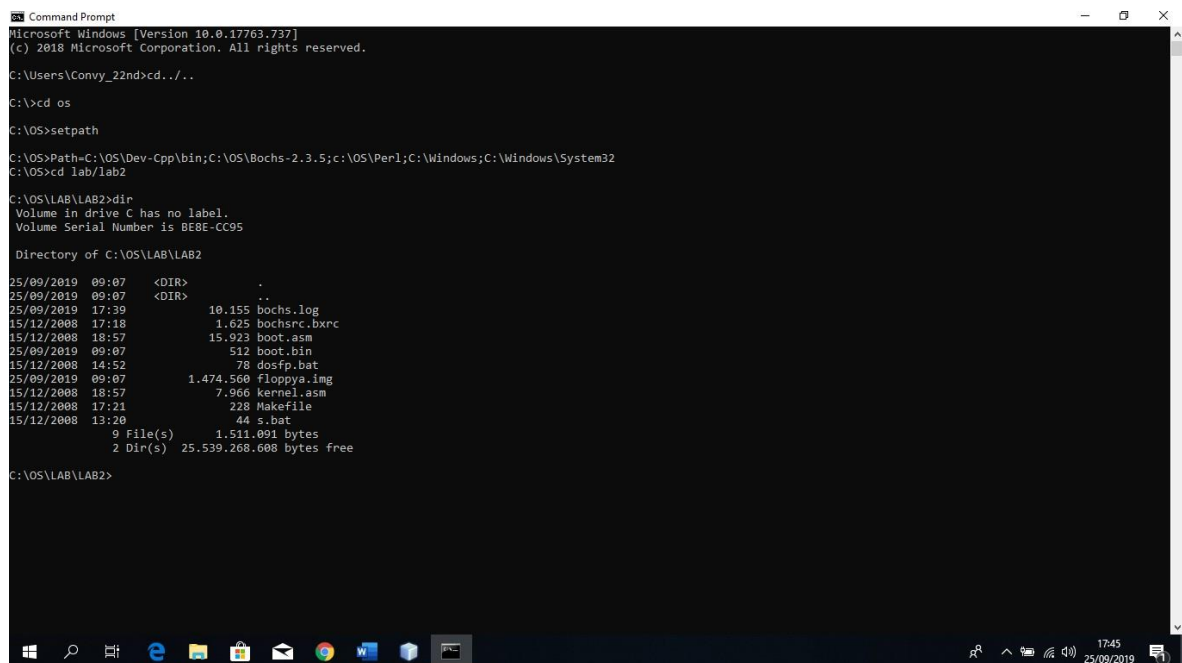


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MODUL 2

- 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 “floppy.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

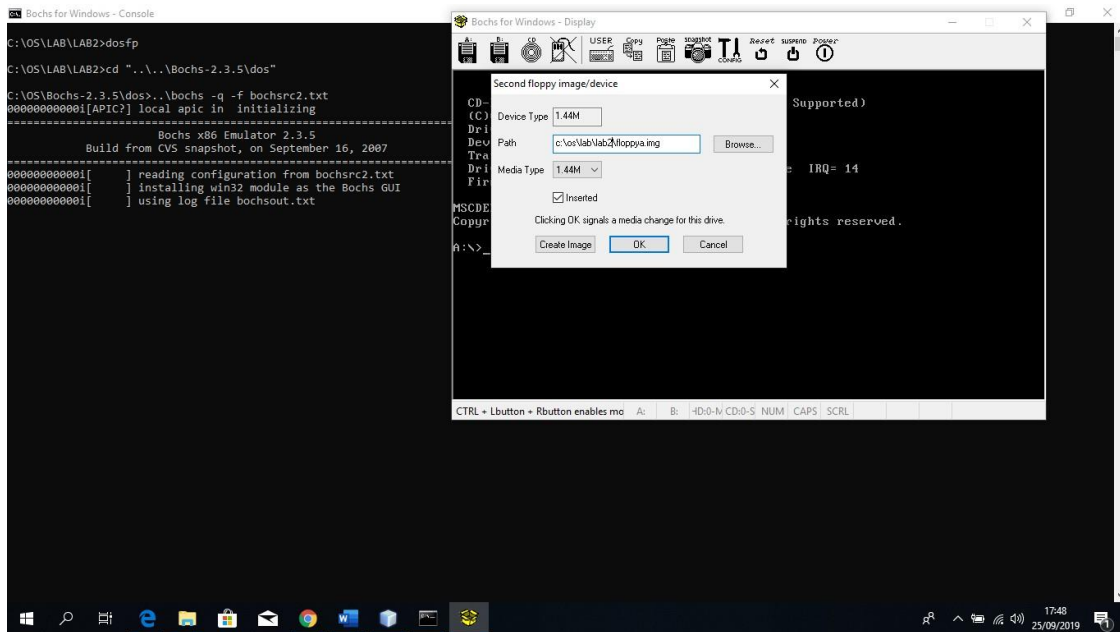
C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is BE8E-CC95

Directory of C:\OS\LAB\LAB2

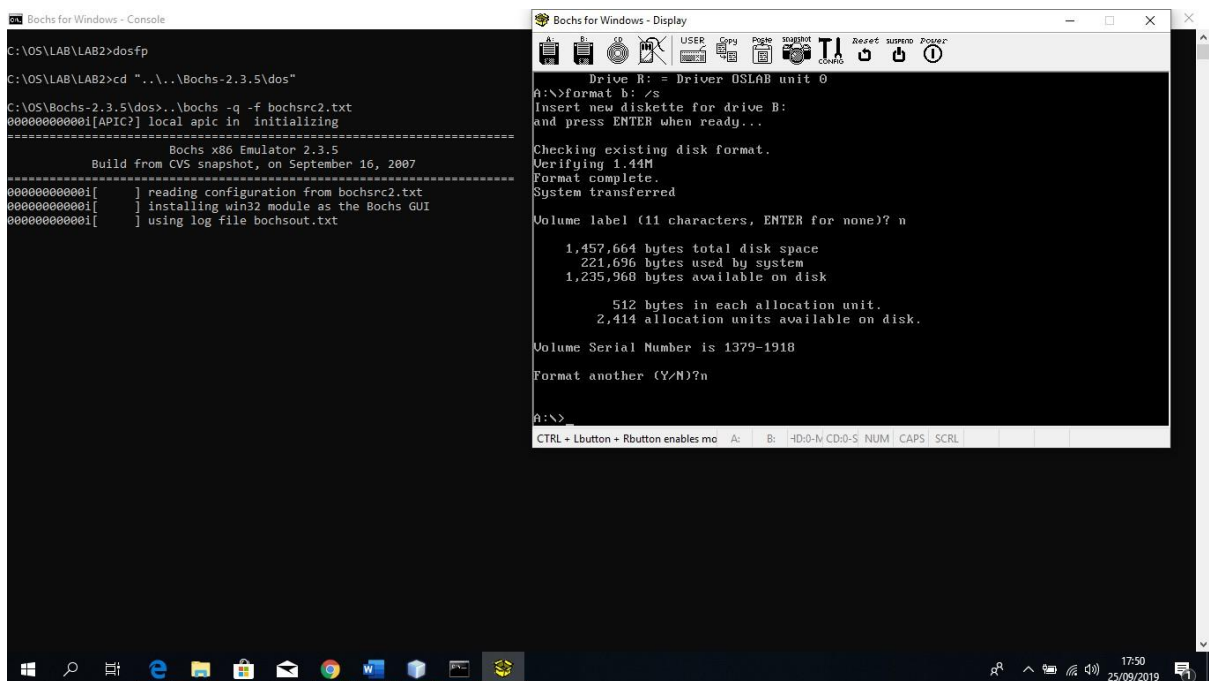
25/09/2019  09:07    <DIR>          .
25/09/2019  09:07    <DIR>          ..
25/09/2019  17:39             10.155 bochs.log
15/12/2008  17:18              1.625 bochsrc.bxrc
15/12/2008  18:57             15.923 boot.asm
25/09/2019  09:07              512 boot.bin
15/12/2008  14:52              78 dosfp.bat
25/09/2019  09:07         1.474.560 floppy.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
15/12/2008  13:20          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
- 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”



- 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.

```
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:
[VGUI ] 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”

```
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:
[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
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 VGABios 0.6a 19 Aug 2006
This VGA/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
```

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

```
Command Prompt
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

```
Bochs for Windows - Console
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
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
Plex86/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/ugabios

Bochs UBE Display Adapter enabled
Bochs BIOS - build: 09/10/07
$Revision: 1.183 $ $Date: 2007/09/10 20:00:29 $
Options: apmbios pcbios eltorito rombios32

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

CTRL + Lbutton + Rbutton enables me  AL NUM CAPS SCRL
```

- 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

The Notepad window displays the following assembly code for 'boot.asm':

```
;=====
ImageName db "KERNEL BIN"
;=====
; Teks yang akan ditampilkan saat mulai proses
; BOOT : Loading kernel ver 0.01
; Di awali dan diakhiri dengan tanda :
; -- 0x0D akhir baris
; -- 0x0A baris baru
; -- 0x00 Karakter 'NULL' pembatas dengan data di bawahnya
;=====
msgLoading db 0x0D, 0x0A, "Bootsrap Loader ", 0x0D, 0x0A, 0x00
msgCRLF db 0x0D, 0x0A, 0x00
msgProgress db ".", 0x00
;=====
; Teks yang di tampilkan saat terjadi kesalahan BOOT
;=====
msgFailure db 0x0D, 0x0A, "Rohmad Khoirudin : L200180101 author by: c
;=====
(4) BLOK 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

The Bochs console window shows the following output:

```
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 <jngit.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
149 records in
149 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 x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
Bochs BIOS - build: 09/10/07
$Revision: 1.183 $ $Date: 2007/09/10 20:00:29 $
Options: apmbios pcibios eltorito rombios32
Booting from Floppy...
Bootsrap Loader
.....
Rohmad Khoirudin : L200180101 author by: convy_22nd_
```

The Bochs display window shows the BIOS boot screen with the following text:

```
Flex86/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/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...
Bootsrap Loader
.....
Rohmad Khoirudin : L200180101 author by: convy_22nd_
```

- 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

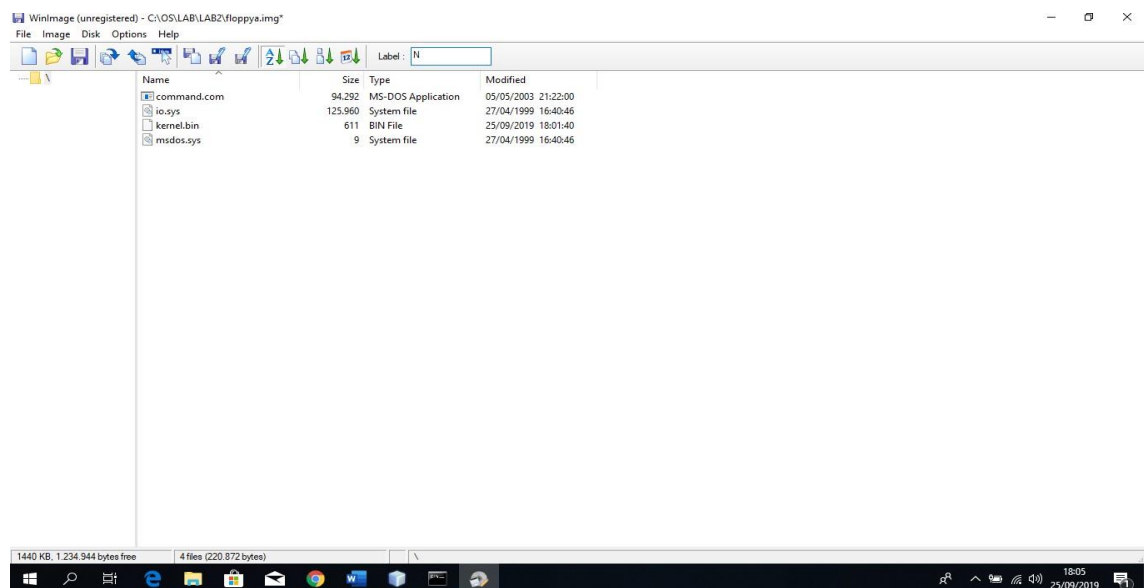
C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is BEBE-CC95

Directory of C:\OS\LAB\LAB2

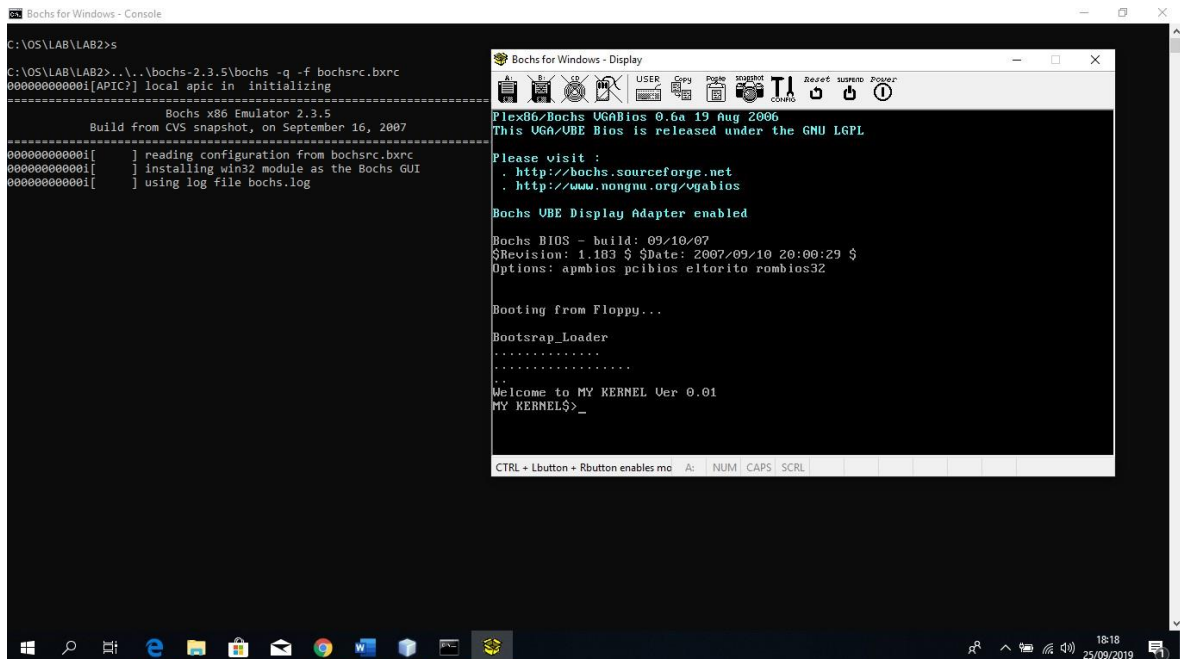
25/09/2019  18:01    <DIR>          .
25/09/2019  18:01    <DIR>          ..
25/09/2019  18:01                10,153 bochs.log
15/12/2008  17:18                1,625 bochssrc.bxrc
25/09/2019  17:59                15,935 boot.asm
25/09/2019  17:59                 512 boot.bin
15/12/2008  14:52                 78 dosfp.bat
25/09/2019  17:59          1,474,560 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>
```

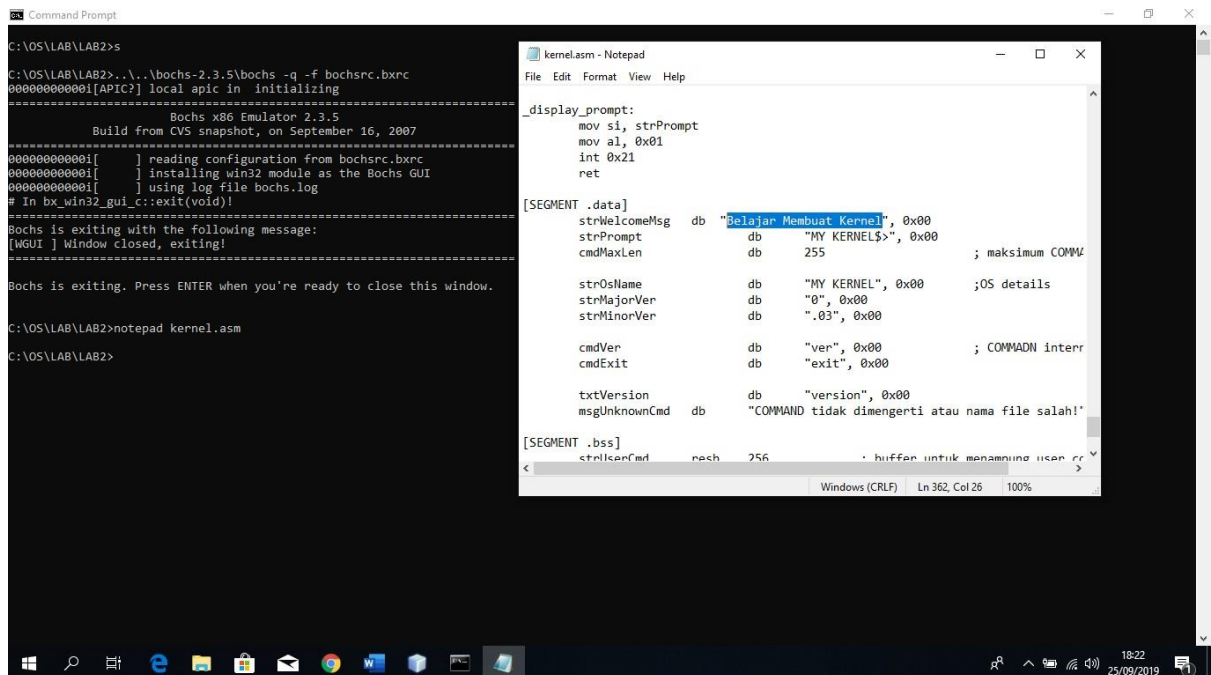
- Memindahkan file “kernel.bin” ke dalam file image “floppy.img”
- Untuk melakukan ini dengan menggunakan program shareware namanya “winimage”
- Buka direktori kerja “C:\OS\LAB\LAB2” dengan Windows Explore
- Klik double pada file “floppy.img” atau panggil program winimage klik “Start | All Programs|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



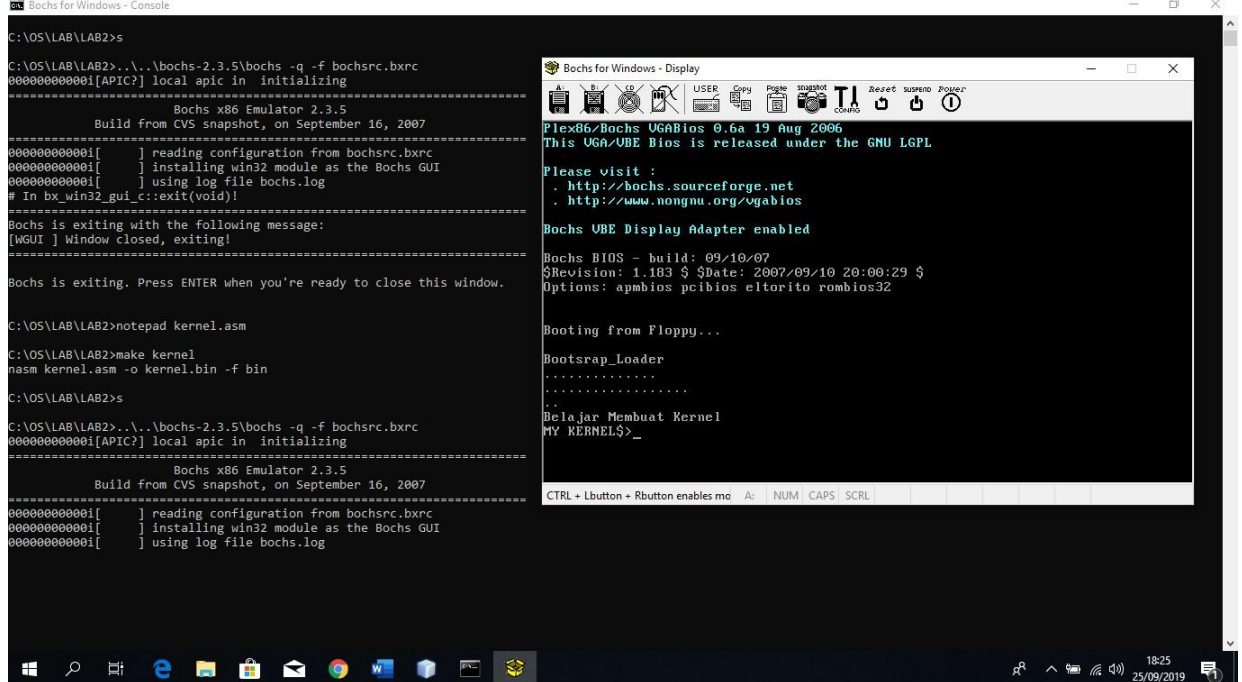
- Kembali ke Windows “Command Prompt” direktori kerja
- Jalankan PC-Simulator ketik “s” lalu “Enter” maka akan tampil seperti ini



- 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 “floppya.img” dengan Winimage

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

