

PRAKTIKUM SISTEM OPERASI
LAPORAN KEGIATAN 1



MOHAMMAD DAFF IZZULHAQ

L200190204

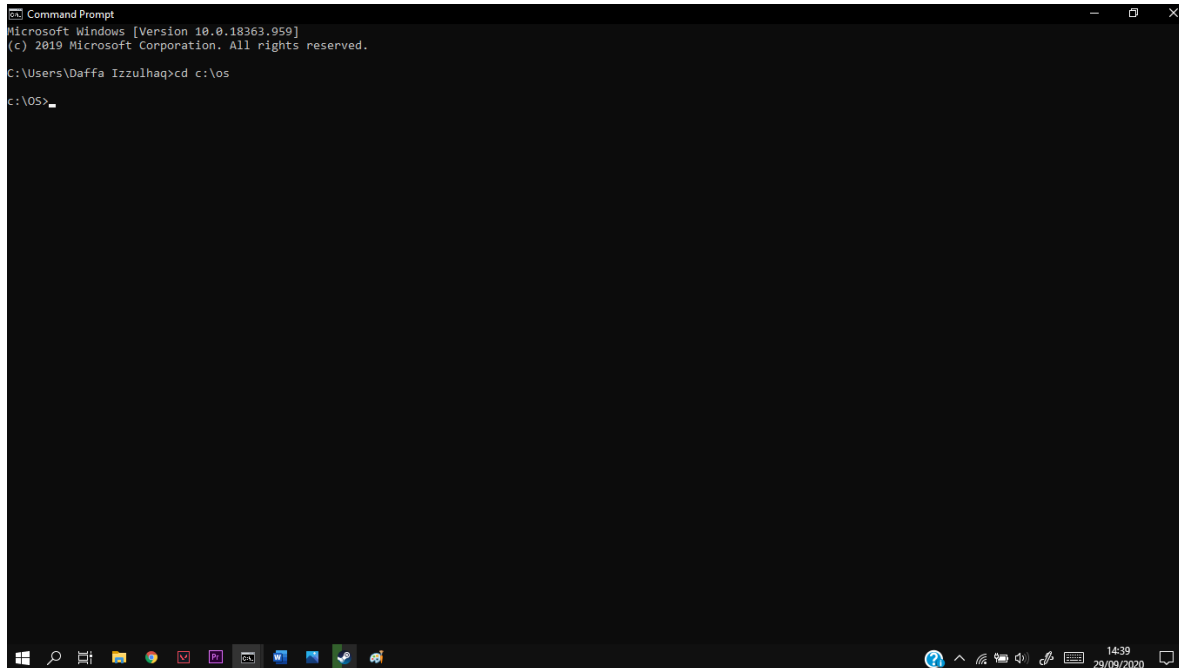
F

PROGRAM STUDI INFORMATIKA
FAKULTAS KOMUNIKASI DAN INFORMATIKA
UNIVERSITAS MUHAMMADIYAH
SURAKARTA

Langkah Kerja

Menuju ke Direktori kerja.

- Jalankan program “Command Prompt”
- Masuk ke direktori kerja “C:\OS” seperti pada gambar dibawah, dan kemudian tekan <ENTER>

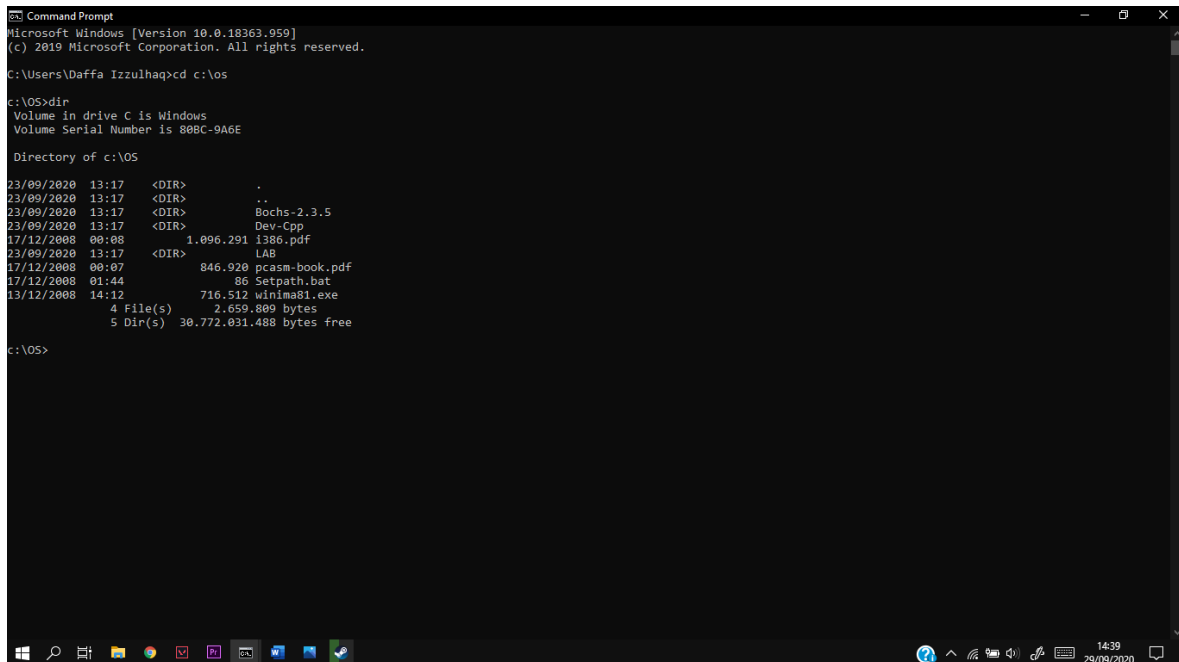


```
Microsoft Windows [Version 10.0.18363.959]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Daffa Izzulhaq>cd c:\os

c:\os>
```

- Masukkan perintah ‘dir’ untuk isi mengetahui isi direktori dalam folder OS



```
Microsoft Windows [Version 10.0.18363.959]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Daffa Izzulhaq>cd c:\os

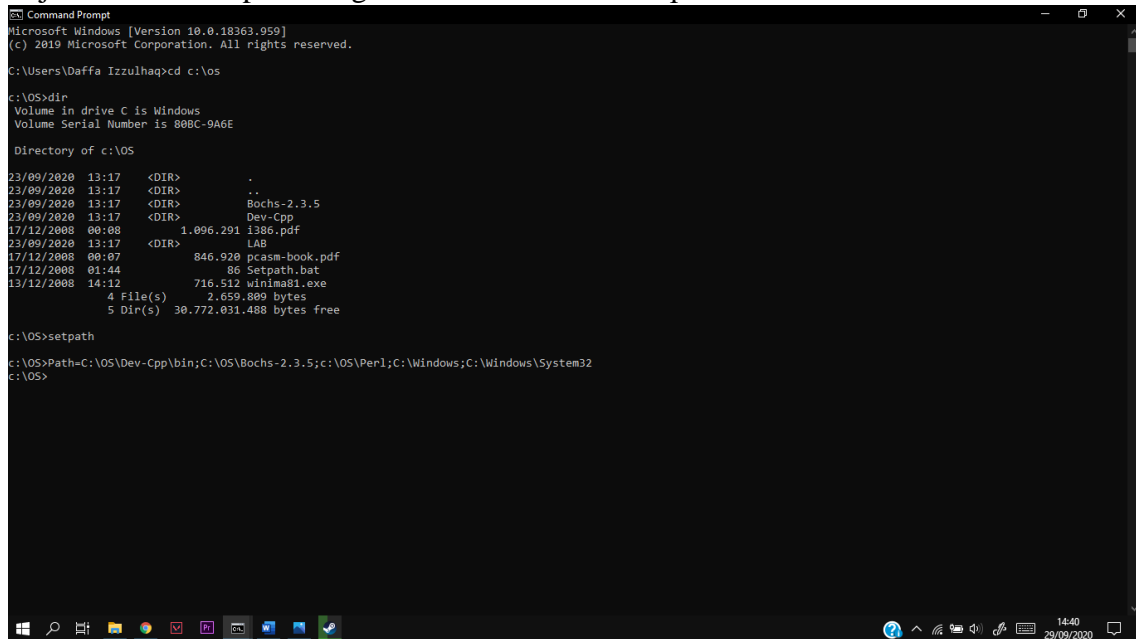
c:\os>dir
Volume in drive C is Windows
Volume Serial Number is 808C-9A6E

Directory of c:\os

23/09/2020 13:17 <DIR>      .
23/09/2020 13:17 <DIR>      ..
23/09/2020 13:17 <DIR>      Bochs-2.3.5
23/09/2020 13:17 <DIR>      Dev-Cpp
17/12/2008 00:08      1.096.291 i386.pdf
23/09/2020 13:17 <DIR>      LAB
17/12/2008 00:07      846.920 pcasm-book.pdf
17/12/2008 01:44           86 Setpath.bat
13/12/2008 14:12      716.512 winima01.exe
                4 File(s)      2.659.800 bytes
                5 Dir(s)  30.772.031.488 bytes free

c:\os>
```

d. jalankan file setpath dengan cara menuliskan 'setpath' dan kemudian di <ENTER>



```
Microsoft Windows [Version 10.0.18363.959]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Daffa Izzulhaq>cd c:\os

c:\OS>dir
Volume in drive C is Windows
Volume Serial Number is 80BC-9A6E

Directory of c:\OS

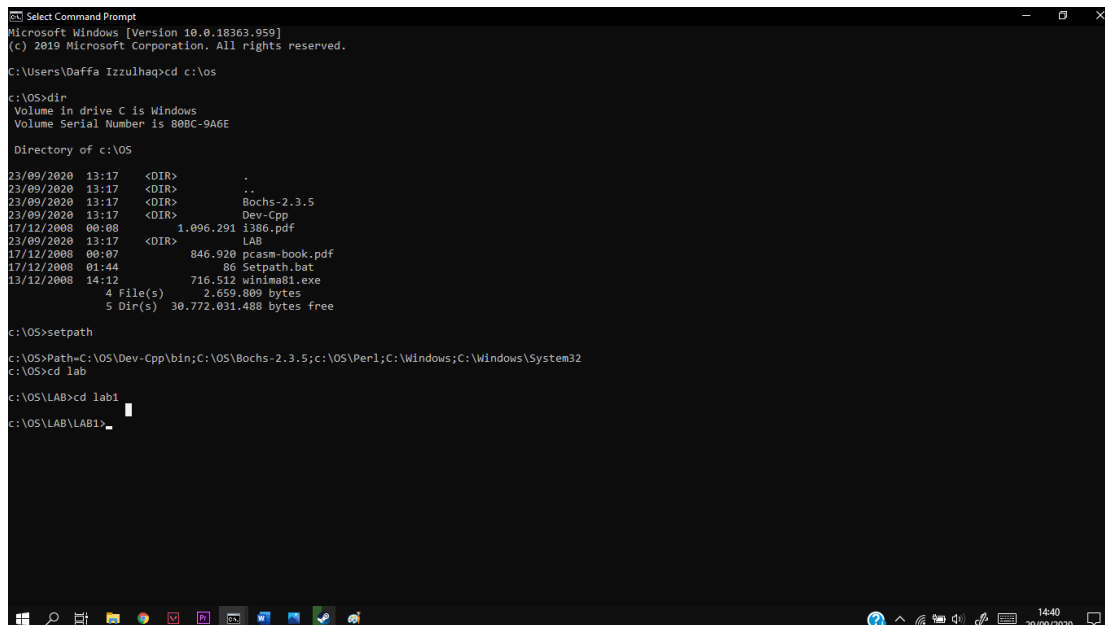
23/09/2020  13:17    <DIR>        .
23/09/2020  13:17    <DIR>        ..
23/09/2020  13:17    <DIR>        Bochs-2.3.5
23/09/2020  13:17    <DIR>        Dev-Cpp
17/12/2008  00:08             1.096.291  i386.pdf
23/09/2020  13:17    <DIR>        LAB
17/12/2008  00:07             846.920  pcasm-book.pdf
17/12/2008  01:44                86  Setpath.bat
13/12/2008  14:12             716.512  winima81.exe
               4 File(s)      2.659.809 bytes
               5 Dir(s)      30.772.031.488 bytes free

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>
```

Melihat isi Direktori kerja

a. Masuk ke direktori kerja “C:\OS\LAB\LAB1” dengan menuliskan “cd lab\lab1” <ENTER>



```
Microsoft Windows [Version 10.0.18363.959]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Daffa Izzulhaq>cd c:\os

c:\OS>dir
Volume in drive C is Windows
Volume Serial Number is 80BC-9A6E

Directory of c:\OS

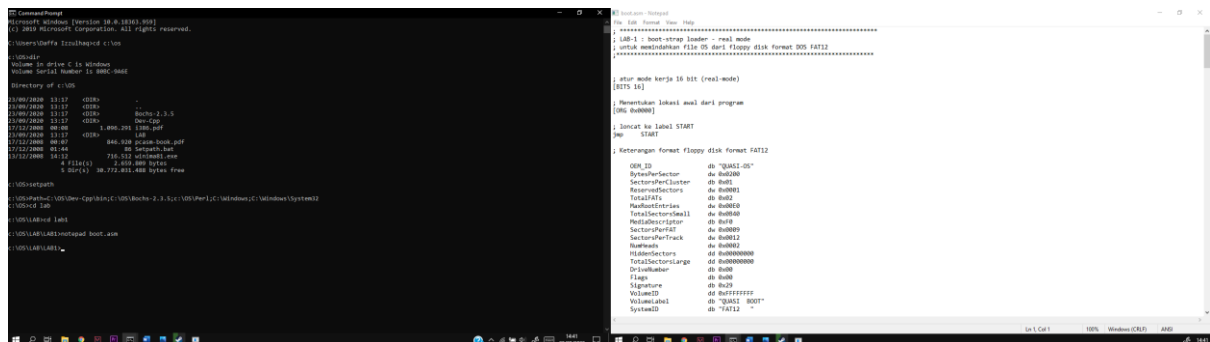
23/09/2020  13:17    <DIR>        .
23/09/2020  13:17    <DIR>        ..
23/09/2020  13:17    <DIR>        Bochs-2.3.5
23/09/2020  13:17    <DIR>        Dev-Cpp
17/12/2008  00:08             1.096.291  i386.pdf
23/09/2020  13:17    <DIR>        LAB
17/12/2008  00:07             846.920  pcasm-book.pdf
17/12/2008  01:44                86  Setpath.bat
13/12/2008  14:12             716.512  winima81.exe
               4 File(s)      2.659.809 bytes
               5 Dir(s)      30.772.031.488 bytes free

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

c:\OS\LAB>cd lab1
c:\OS\LAB\LAB1>
```

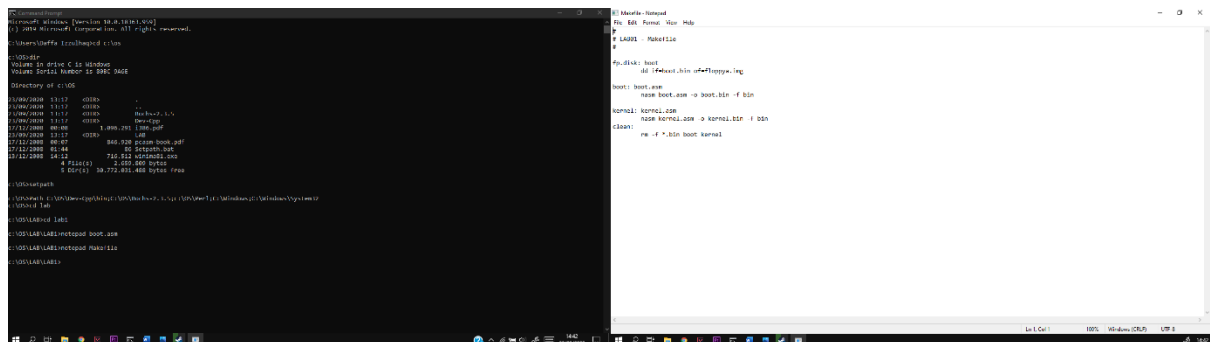
b. Untuk membuka file tsb, tuliskan “notepad boot.asm” kemudian <ENTER> dan jika yang dituliskan itu benar, akan muncul tampilan dari notepad.



Jangan lakukan modifikasi terhadap program tersebut, dan langsung tutup kembali tampilan program yang dari notepad

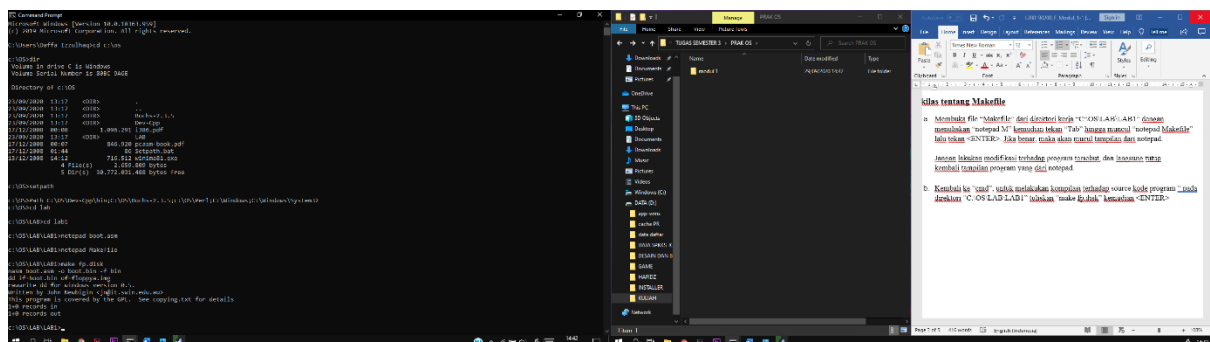
Sekilas tentang Makefile

a. Membuka file “Makefile” dari direktori kerja “C:\OS\LAB\LAB1” dengan menuliskan “notepad M” kemudian tekan “Tab” hingga muncul “notepad Makefile” lalu tekan <ENTER>. Jika benar, maka akan muncul tampilan dari notepad.



Jangan lakukan modifikasi terhadap program tersebut, dan langsung tutup kembali tampilan program yang dari notepad.

b. Kembali ke “cmd”, untuk melakukan kompilasi terhadap source code program “ pada direktori “C:\OS\LAB\LAB1” tuliskan “make fp.disk” kemudian <ENTER>



Mengenal ‘BOOT DISK’

a. Menghapus file “floppya.img” jika sudah ada pada direktori kerja. Tuliskan “del floppya.img ” kemudian <ENTER>

```
Command Prompt
C:\Users\Daffa Izzulhaq>cd c:\os
c:\os>dir
Volume in drive C is Windows
Volume Serial Number is 888C-9A6E

Directory of c:\os

23/09/2020  13:17    <DIR>          .
23/09/2020  13:17    <DIR>          ..
23/09/2020  13:17    <DIR>          Bochs-2.3.5
23/09/2020  13:17    <DIR>          Dev-Cpp
17/12/2008  00:08             1.096.291  i386.pdf
23/09/2020  13:17    <DIR>          LAB
17/12/2008  00:07             846.920  pcasm-book.pdf
17/12/2008  01:44                86  Setpath.bat
13/12/2008  14:12             716.512  winima81.exe
               4 File(s)                2.659.809 bytes
               5 Dir(s)  30.772.031.488 bytes free

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
c:\OS\LAB>cd lab1
c:\OS\LAB\LAB1>notepad boot.asm
c:\OS\LAB\LAB1>notepad Makefile
c:\OS\LAB\LAB1>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 Newbiggin <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\LAB1>del floppya.img
c:\OS\LAB\LAB1>
```

b. Jika sudah, tuliskan “bximage” untuk menampilkan windows seperti pada gambar di bawah ini.

```
Command Prompt - bximage
23/09/2020  13:17    <DIR>          .
23/09/2020  13:17    <DIR>          ..
23/09/2020  13:17    <DIR>          Bochs-2.3.5
23/09/2020  13:17    <DIR>          Dev-Cpp
17/12/2008  00:08             1.096.291  i386.pdf
23/09/2020  13:17    <DIR>          LAB
17/12/2008  00:07             846.920  pcasm-book.pdf
17/12/2008  01:44                86  Setpath.bat
13/12/2008  14:12             716.512  winima81.exe
               4 File(s)                2.659.809 bytes
               5 Dir(s)  30.772.031.488 bytes free

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
c:\OS\LAB>cd lab1
c:\OS\LAB\LAB1>notepad boot.asm
c:\OS\LAB\LAB1>notepad Makefile
c:\OS\LAB\LAB1>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 Newbiggin <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\LAB1>del floppya.img
c:\OS\LAB\LAB1>bximage
=====
bximage
Disk Image Creation Tool for Bochs
$Id: bximage.c,v 1.32 2006/06/16 07:29:33 vruppert Exp $
=====
Do you want to create a floppy disk image or a hard disk image?
Please type hd or fd. [hd]
```

c. Membuat ‘floopy image’ dengan menuliskan “fd” kemudian <ENTER> 2x

```
Command Prompt - bximage
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
c:\OS\LAB>cd lab1
c:\OS\LAB\LAB1>notepad boot.asm
c:\OS\LAB\LAB1>notepad Makefile
c:\OS\LAB\LAB1>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\LAB1>del floppya.img
c:\OS\LAB\LAB1>bximage
=====
bximage
Disk Image Creation Tool for Bochs
$Id: bximage.c,v 1.32 2006/06/16 07:29:33 vruppert Exp $
=====
Do you want to create a floppy disk image or a hard disk image?
Please type hd or fd. [hd] fd
Choose the size of floppy disk image to create, in megabytes.
Please type 0.16, 0.18, 0.32, 0.36, 0.72, 1.2, 1.44, 1.68, 1.72, or 2.88.
[1.44] 1.44
I will create a floppy image with
cyl=80
heads=2
sectors per track=18
total sectors=2880
total bytes=1474560
What should I name the image?
[a.img]
```

d. Untuk memberikan nama file, tuliskan “floppya.img” kemudian <ENTER> lalu tekan tombol bebas untuk melanjutkan.

```
Command Prompt
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\LAB1>del floppya.img
c:\OS\LAB\LAB1>bximage
=====
bximage
Disk Image Creation Tool for Bochs
$Id: bximage.c,v 1.32 2006/06/16 07:29:33 vruppert Exp $
=====
Do you want to create a floppy disk image or a hard disk image?
Please type hd or fd. [hd] fd
Choose the size of floppy disk image to create, in megabytes.
Please type 0.16, 0.18, 0.32, 0.36, 0.72, 1.2, 1.44, 1.68, 1.72, or 2.88.
[1.44] 1.44
I will create a floppy image with
cyl=80
heads=2
sectors per track=18
total sectors=2880
total bytes=1474560
What should I name the image?
[a.img] floppya.img
Writing: [] Done.
I wrote 1474560 bytes to floppya.img.
The following line should appear in your bochsrc:
floppya: image="floppya.img", status=inserted
(The line is stored in your windows clipboard, use CTRL-V to paste)
Press any key to continue
c:\OS\LAB\LAB1>
```

e. Untuk memastikan file tersebut sudah ada atau belum, tuliskan “dir” kemudian <ENTER>.

```
Command Prompt
Please type 0.16, 0.18, 0.32, 0.36, 0.72, 1.2, 1.44, 1.68, 1.72, or 2.88.
[1.44] 1.44
I will create a floppy image with
  cyl=80
  heads=2
  sectors per track=18
  total sectors=2880
  total bytes=1474560
What should I name the image?
[a.img] floppy.img
Writing: [] Done.
I wrote 1474560 bytes to floppy.img.
The following line should appear in your bochsrc:
  Floppya: image="floppy.img", status=inserted
(The line is stored in your windows clipboard, use CTRL-V to paste)
Press any key to continue

c:\OS\LAB\LAB1>dir
Volume in drive C is Windows
Volume Serial Number is 80BC-9A6E

Directory of c:\OS\LAB\LAB1

29/09/2020  14:44    <DIR>        .
29/09/2020  14:44    <DIR>        ..
29/09/2020  13:31             10.156 bochsout.txt
15/12/2008  16:17             1.628 bochsrc.bxrc
14/12/2008  12:02             14.365 boot.asm
29/09/2020  14:42             512 boot.bin
16/09/2015  07:51             512 boots.bin
15/12/2008  00:47              78 dosfp.bat
29/09/2020  14:44          1.474.560 floppy.img
14/12/2008  11:45             7.966 kernel.asm
15/12/2008  16:21             227 Makefile
15/12/2008  12:20              44 s.bat
               10 File(s)          1.510.048 bytes
                2 Dir(s)  30.766.116.864 bytes free

c:\OS\LAB\LAB1>
```

File image floppy di atas belum dapat digunakan jika belum di format, cara untuk memformat “floppy.img” agar dapat digunakan adalah:

1. jalankan PC-simulator dari “Command Prompt” atau “cmd” dengan perintah “DosFp” <ENTER>. Dan jika benar akan muncul tampilan dari bochs PC-simulator seperti gambar di bawah.

```
Bochs for Windows - Console
I wrote 1474560 bytes to floppy.img.
The following line should appear in your bochsrc:
  Floppya: image="floppy.img", status=inserted
(The line is stored in your windows clipboard, use CTRL-V to paste)
Press any key to continue

c:\OS\LAB\LAB1>dir
Volume in drive C is Windows
Volume Serial Number is 80BC-9A6E

Directory of c:\OS\LAB\LAB1

29/09/2020  14:44    <DIR>        .
29/09/2020  14:44    <DIR>        ..
29/09/2020  13:31             10.156 bochsout.txt
15/12/2008  16:17             1.628 bochsrc.bxrc
14/12/2008  12:02             14.365 boot.asm
29/09/2020  14:42             512 boot.bin
16/09/2015  07:51             512 boots.bin
15/12/2008  00:47              78 dosfp.bat
29/09/2020  14:44          1.474.560 floppy.img
14/12/2008  11:45             7.966 kernel.asm
15/12/2008  16:21             227 Makefile
15/12/2008  12:20              44 s.bat
               10 File(s)          1.510.048 bytes
                2 Dir(s)  30.766.116.864 bytes free

c:\OS\LAB\LAB1>dosfp

c:\OS\LAB\LAB1>cd "..\..\Bochs-2.3.5\dos"

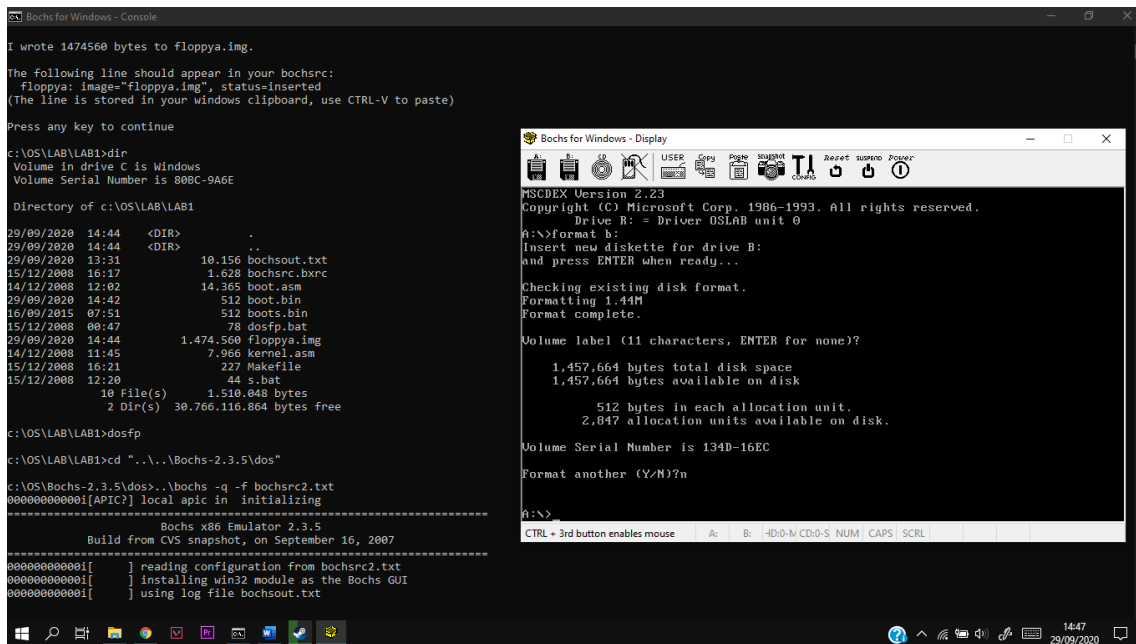
c:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
000000000000i[APIC?] local apic in  initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000i[ ] reading configuration from bochsrc2.txt
000000000000i[ ] installing win32 module as the Bochs GUI
000000000000i[ ] using log file bochsout.txt

Bochs for Windows - Display
CD-ROM Device Driver for IDE (Four Channels Supported)
(C)Copyright Oak Technology Inc. 1993-1996
Driver Version : U340
Device Name : OSLAB
Transfer Mode : Programmed I/O
Drive 0: Port= 1F0 (Primary Channel), Slave IRQ= 14
Firmware version : ALPH

MSCDEx Version 2.23
Copyright (C) Microsoft Corp. 1986-1993. All rights reserved.
Drive R: = Driver OSLAB unit 0
A:\>_

CTRL + 3rd button enables mouse
```

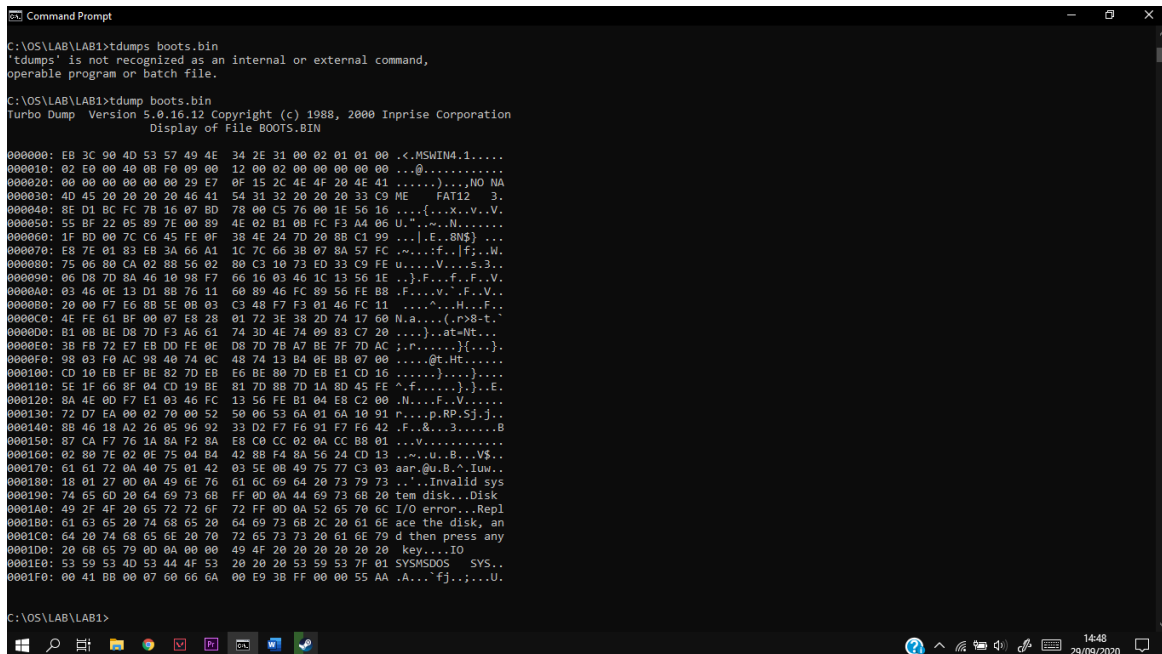
2. Selanjutnya dari prompt “A:\>” ketikkan “format B:” <ENTER> 2x



Melihat Data dalam Boot Sector

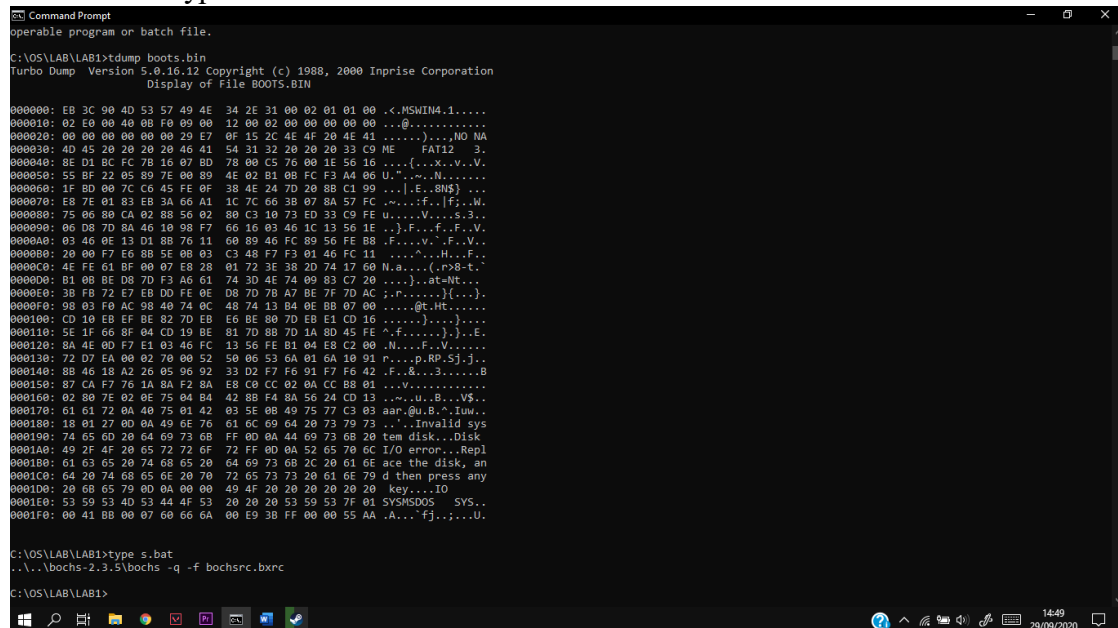
Untuk memindah data dalam file 'boots.bin' ke dalam memori kerja 'debug' bisa dengan menuliskan "debug boots.bin" atau dengan "tdump boots.bin"

a. Tuliskan "tdump boots.bin" kemudian <ENTER>



‘Boot’ PC-Simulator dengan File Image ‘floppya.img’

a. Tuliskan “type s.bat” kemudian <ENTER>



```
Command Prompt
operable program or batch file.

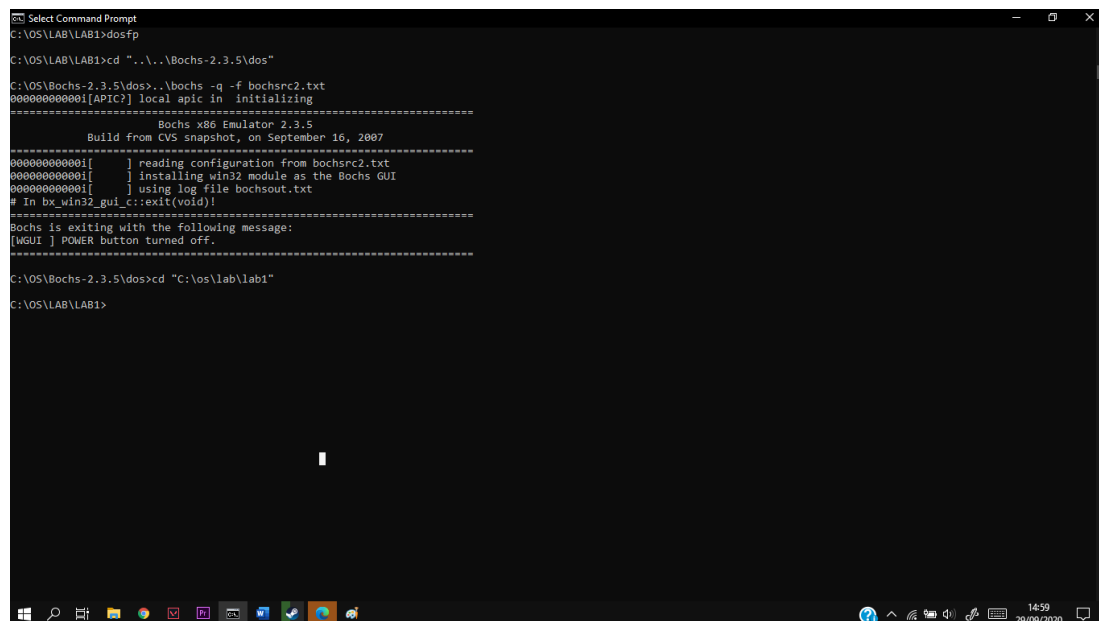
C:\OS\LAB\LAB1>type s.bat
Turbo Dump Version 5.0.16.12 Copyright (c) 1988, 2000 Inprise Corporation
Display of File 800T5.BIN

000000: EB 3C 00 4D 53 57 49 4E 34 2E 31 00 02 01 01 00 .<.MSWIN4.1....
000010: 02 E0 00 40 00 F0 09 00 12 00 02 00 00 00 00 00 ...@.....
000020: 00 00 00 00 00 00 29 E7 0F 15 2C 4E 4F 20 4E 41 .....NO NA
000030: 40 45 20 20 20 20 46 41 54 21 32 20 20 20 33 C9 ME FAT12 3.
000040: 8E D1 9C FC 70 16 07 8D 70 00 C5 76 00 1E 56 16 ....{...x.v.v.
000050: 55 BF 22 05 89 7E 00 89 4E 02 B1 08 FC F3 A4 06 U"...N.....
000060: 1F BD 00 7C C6 45 FE 0F 38 4E 24 7D 20 88 C1 99 ...|.E..BNS| ...
000070: E8 7E 01 83 EB 3A 66 A1 1C 7C 66 3B 07 8A 57 FC ....|f..|fj..W.
000080: 75 06 80 CA 02 88 56 02 80 C3 10 73 ED 33 C9 FE u.....V...s.3..
000090: 06 D0 7D 8A 46 10 98 F7 66 16 03 46 1C 13 56 1E ..)F...f..F..V.
0000A0: 03 46 0E 13 D1 8B 76 11 60 89 46 FC 89 56 FE B8 .F...V...f..V..
0000B0: 20 00 F7 E6 8B 5E 08 03 C3 48 F7 F3 01 46 FC 11 ....^..H...F..
0000C0: 4E FE 61 BF 00 07 E8 28 01 72 3E 38 2D 74 17 60 N.a....(r)x8-t.
0000D0: B1 08 BE D8 7D F3 A6 61 74 3D 4E 74 09 83 C7 20 ....)...at=nt...
0000E0: 3B F0 72 E7 EB D0 FE 0E D8 7D 70 A7 BE 7F 7D AC ;.C.....}{...}.
0000F0: 98 03 F0 AC 98 40 74 0C 48 74 13 B4 0E 8B 07 00 ....@t.Ht.....
000100: CD 10 E8 EF 0E 82 7D EB E6 BE 80 7D EB E1 CD 16 .....}{...}....
000110: 5E 1F 66 8F 04 CD 19 BE 81 7D 8B 7D 1A 8D 45 FE ^f.....}.E.
000120: 8A 4E 0D F7 E1 03 46 FC 13 56 FE B1 04 E8 C2 00 .N....F..V.....
000130: 72 D7 EA 00 02 70 00 52 50 06 53 6A 01 6A 10 91 r....p.RP.Sj.).
000140: 8B 46 18 A2 26 05 96 92 33 D2 F7 F6 91 F7 F6 42 .F.&...2.....B
000150: 87 CA F7 76 1A 8A F2 8A E8 C0 CC 02 0A CC B8 01 ...V.....
000160: 02 80 7E 02 0E 75 04 B4 42 8B F4 8A 56 24 CD 13 .~..u..B...V$.
000170: 61 61 72 0A 40 75 01 42 03 5E 0B 49 75 77 C3 03 aar.@.B.^Iuw..
000180: 18 01 27 00 0A 49 6E 76 61 6C 69 64 20 73 79 73 ...'.Invalid sys
000190: 74 65 6D 20 64 69 73 69 FF 00 0A 44 69 73 68 20 tem disk...Disk
0001A0: 49 2F 4F 20 65 72 72 6F 72 FF 00 0A 52 65 70 6C I/O error...Repl
0001B0: 61 63 65 20 74 68 65 20 64 69 73 68 2C 20 61 6E ace the disk, an
0001C0: 64 20 74 68 65 6E 20 70 72 65 73 73 20 61 6E 79 d then press any
0001D0: 20 68 65 79 00 0A 00 00 49 4F 20 20 20 20 20 20 key....IO
0001E0: 53 59 53 40 53 44 4F 53 20 20 20 53 59 53 7F 01 SYSHSDOS SYS..
0001F0: 00 41 8B 00 07 60 66 6A 80 E9 3B FF 00 00 55 AA .A...'.fj...U.

C:\OS\LAB\LAB1>type s.bat
..\..\bochs-2.3.5\bochs -q -f bochsrc.bxrc

C:\OS\LAB\LAB1>
```

c. Tuliskan “DosFp” dan <ENTER>



```
Select Command Prompt
C:\OS\LAB\LAB1>dosfp

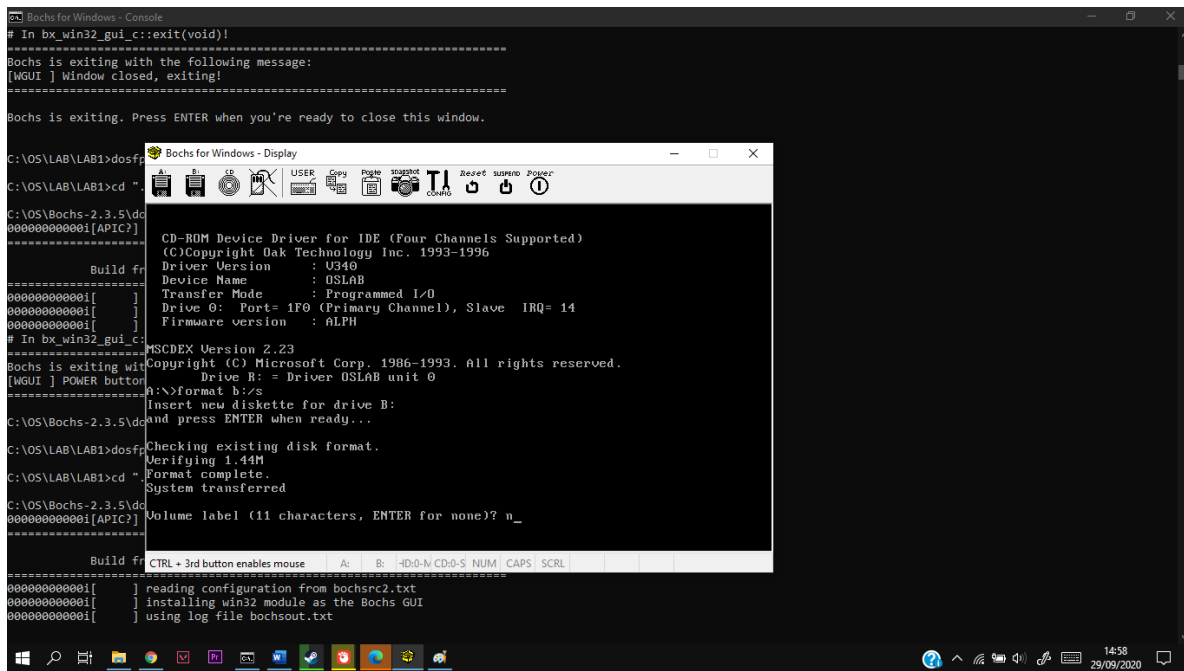
C:\OS\LAB\LAB1>cd "C:\OS\LAB\LAB1\bochs-2.3.5\dos"

C:\OS\bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
000000000001[APIC?] local apic in Initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochsout.txt
# In bx_win32_gui_c::exit(void)!
=====
Bochs is exiting with the following message:
[GUI] POWER button turned off.
=====

C:\OS\bochs-2.3.5\dos>cd "C:\os\lab\lab1"

C:\OS\LAB\LAB1>
```

d. Pada tampilan ‘Bochs’ masukkan perintah “formatnB:/S” kemudian <ENTER> lalu tuliskan “n” dan <ENTER>



e. Selanjutnya Matikan PC-Simulator dengan klik tombol power dan coba ketik “s” lalu <ENTER> pada “cmd”. Jika berhasil akan seperti di bawah ini.

