

Laporan Praktikum Sistem Operasi

Kegiatan 1



Universitas Muhammadiyah Surakarta

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Disusun oleh :

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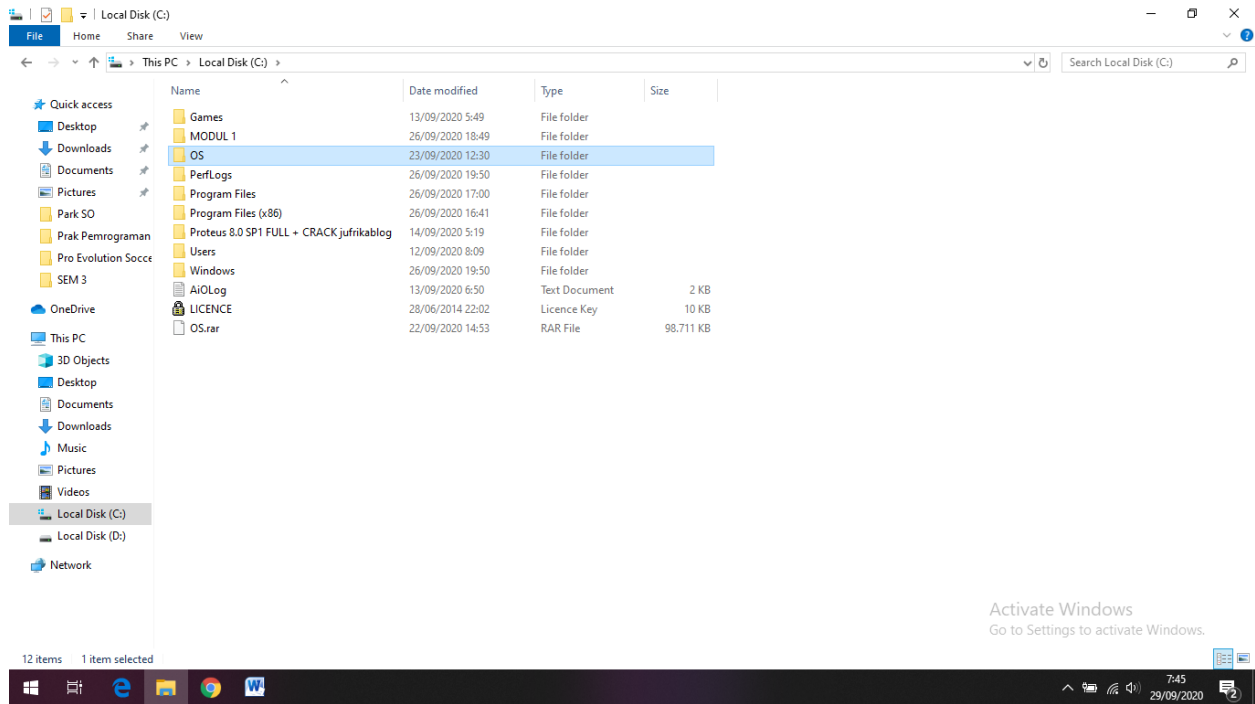
Kelas : F

Dosen Pengampu : Heru Setya Nugraha, ST., M.Kom

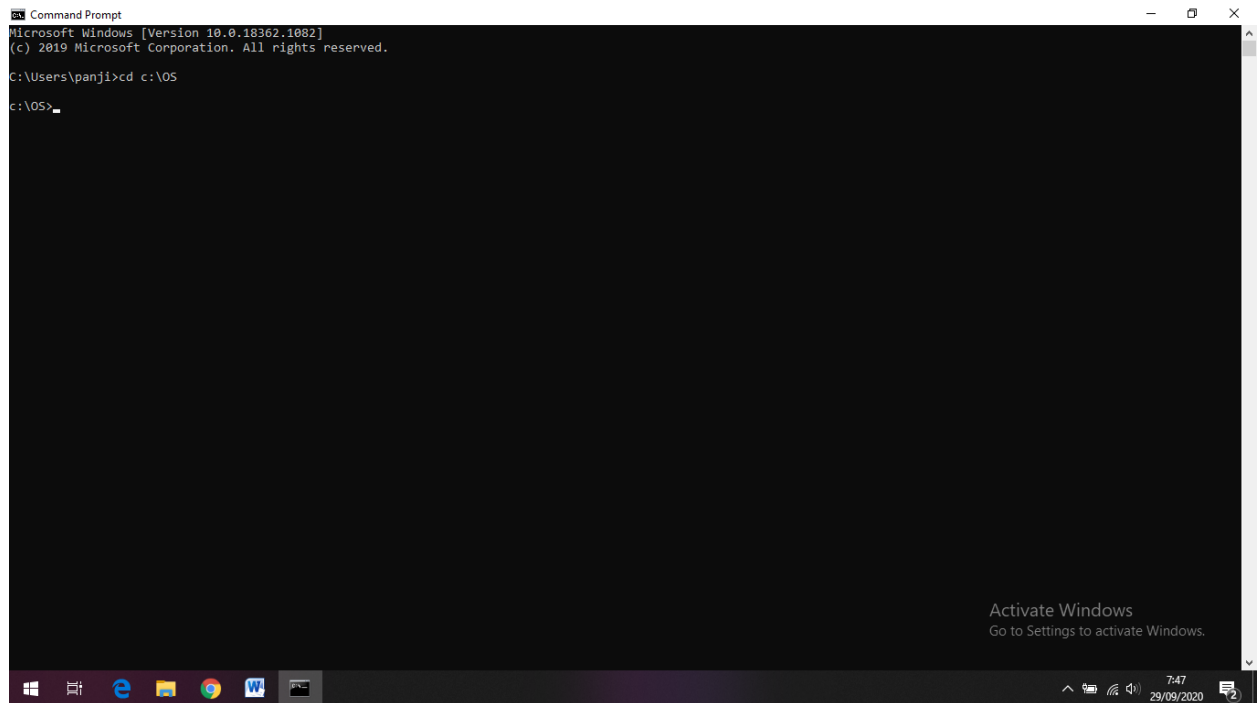
MODUL 1

Pengenalan Sistem Pengembangan OS dengan PC Simulator

1. Pertama mengekstract file OS.zip ke directory C



2. Lalu membuka file OS dengan Command Prompt



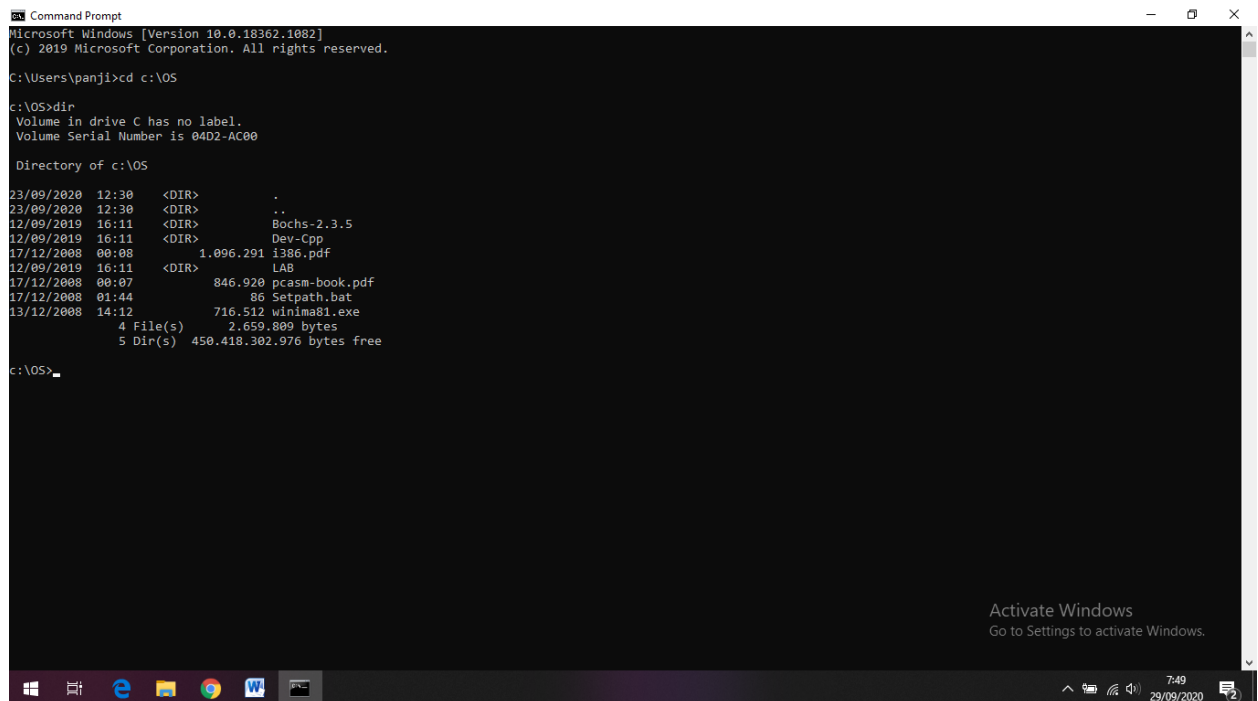
```
Microsoft Windows [Version 10.0.18362.1082]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\panji>cd c:\OS

c:\OS>
```

The screenshot shows a Windows 10 desktop with a dark theme. The taskbar at the bottom contains icons for the Start menu, File Explorer, Edge, and several other applications. The Command Prompt window is open, showing the user has navigated to the 'c:\OS' directory. An 'Activate Windows' watermark is visible in the bottom right corner of the window.

3. Setelah itu mengtik 'dir' untuk melihat isi folder dari OS



```
Microsoft Windows [Version 10.0.18362.1082]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\panji>cd c:\OS

c:\OS>dir
Volume in drive C has no label.
Volume Serial Number is 04D2-AC00

Directory of c:\OS

23/09/2020 12:30 <DIR> .
23/09/2020 12:30 <DIR> ..
12/09/2019 16:11 <DIR> Bochs-2.3.5
12/09/2019 16:11 <DIR> Dev-Cpp
17/12/2008 00:08 1.096.291 i386.pdf
12/09/2019 16:11 <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)      450.418.302.976 bytes free

c:\OS>
```

This screenshot shows the same Command Prompt window after the 'dir' command has been executed. It displays a detailed directory listing for the 'c:\OS' folder, including file names, sizes, and dates. The 'Activate Windows' watermark is still present in the bottom right corner.

4. Menulis perintah 'setpath' untuk menjalankan setpath

```
Microsoft Windows [Version 10.0.18362.1082]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\panji>cd c:\OS

c:\OS>dir
Volume in drive C has no label.
Volume Serial Number is 04D2-AC00

Directory of c:\OS

23/09/2020 12:30 <DIR>      .
23/09/2020 12:30 <DIR>      ..
12/09/2019 16:11 <DIR>      Bochs-2.3.5
12/09/2019 16:11 <DIR>      Dev-Cpp
17/12/2008 00:08      1.096.291 i386.pdf
12/09/2019 16:11 <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)      450.418.302.976 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>
```

5. Lalu, 'cd c:\LAB1 ' untuk menjalankan LAB1

```
Microsoft Windows [Version 10.0.18362.1082]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\panji>cd c:\OS

c:\OS>dir
Volume in drive C has no label.
Volume Serial Number is 04D2-AC00

Directory of c:\OS

23/09/2020 12:30 <DIR>      .
23/09/2020 12:30 <DIR>      ..
12/09/2019 16:11 <DIR>      Bochs-2.3.5
12/09/2019 16:11 <DIR>      Dev-Cpp
17/12/2008 00:08      1.096.291 i386.pdf
12/09/2019 16:11 <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)      450.418.302.976 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\lab1

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

6. Menulis perintah 'dir' untuk membuka isi folder LAB1

```
Command Prompt
Volume in drive C has no label.
Volume Serial Number is 04D2-AC00

Directory of c:\OS

23/09/2020 12:30 <DIR>      .
23/09/2020 12:30 <DIR>      ..
12/09/2019 16:11 <DIR>      Bochs-2.3.5
12/09/2019 16:11 <DIR>      Dev-Cpp
17/12/2008 00:08      1.096.291 i386.pdf
12/09/2019 16:11 <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)      450.418.302.976 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\lab1

c:\OS\LAB\LAB1>dir
Volume in drive C has no label.
Volume Serial Number is 04D2-AC00

Directory of c:\OS\LAB\LAB1

23/09/2020 12:51 <DIR>      .
23/09/2020 12:51 <DIR>      ..
23/09/2020 12:56      10.230 bochsout.txt
15/12/2008 16:17      1.628 bochsrc.bxrc
14/12/2008 12:02      14.365 boot.asm
23/09/2020 12:36      512 boot.bin
16/09/2015 07:51      512 boots.bin
15/12/2008 00:47      78 dosfp.bat
23/09/2020 12:54      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)      1.510.122 bytes
                2 Dir(s)      450.423.607.296 bytes free

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

7. Lalu mengetik perintah 'del.floppya.img' untuk menghapus file floppy.img

```
Command Prompt

Directory of c:\OS

23/09/2020 12:30 <DIR>      .
23/09/2020 12:30 <DIR>      ..
12/09/2019 16:11 <DIR>      Bochs-2.3.5
12/09/2019 16:11 <DIR>      Dev-Cpp
17/12/2008 00:08      1.096.291 i386.pdf
12/09/2019 16:11 <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)      450.418.302.976 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\lab1

c:\OS\LAB\LAB1>dir
Volume in drive C has no label.
Volume Serial Number is 04D2-AC00

Directory of c:\OS\LAB\LAB1

23/09/2020 12:51 <DIR>      .
23/09/2020 12:51 <DIR>      ..
23/09/2020 12:56      10.230 bochsout.txt
15/12/2008 16:17      1.628 bochsrc.bxrc
14/12/2008 12:02      14.365 boot.asm
23/09/2020 12:36      512 boot.bin
16/09/2015 07:51      512 boots.bin
15/12/2008 00:47      78 dosfp.bat
23/09/2020 12:54      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)      1.510.122 bytes
                2 Dir(s)      450.423.607.296 bytes free

c:\OS\LAB\LAB1>del floppy.img

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

8. Melakukan kompilasi code program dengan perintah 'make fp disk' lalu akan muncul output boot.bin

```
Command Prompt

Directory of c:\OS\LAB\LAB1
23/09/2020 12:51 <DIR> .
23/09/2020 12:51 <DIR> ..
23/09/2020 12:56      10.230 bochsout.txt
15/12/2008 16:17      1.628 bochsrc.bxrc
14/12/2008 12:02      14.365 boot.asm
23/09/2020 12:36      512 boot.bin
16/09/2015 07:51      512 boots.bin
15/12/2008 00:47       78 dosfp.bat
23/09/2020 12:54    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)      1.510.122 bytes
2 Dir(s)      450.423.607.296 bytes free

c:\OS\LAB\LAB1>del floppy.img

c:\OS\LAB\LAB1>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppy.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>
```

9. Mengetik perintah 'bximage' untuk membuat floppy.img baru

```
Command Prompt - bximage

Directory of c:\OS\LAB\LAB1
23/09/2020 12:51 <DIR> .
23/09/2020 12:51 <DIR> ..
23/09/2020 12:56      10.230 bochsout.txt
15/12/2008 16:17      1.628 bochsrc.bxrc
14/12/2008 12:02      14.365 boot.asm
23/09/2020 12:36      512 boot.bin
16/09/2015 07:51      512 boots.bin
15/12/2008 00:47       78 dosfp.bat
23/09/2020 12:54    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)      1.510.122 bytes
2 Dir(s)      450.423.607.296 bytes free

c:\OS\LAB\LAB1>del floppy.img

c:\OS\LAB\LAB1>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppy.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>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] _
```

10. Pilih 'fd' untuk memilih type file yg lebih kecil

```
Command Prompt - bximage

Directory of c:\OS\LAB\LAB1
23/09/2020 12:51 <DIR> .
23/09/2020 12:51 <DIR> ..
23/09/2020 12:56          10.230 bochsout.txt
15/12/2008 16:17          1.628 bochsrc.bxrc
14/12/2008 12:02          14.365 boot.asm
23/09/2020 12:36           512 boot.bin
16/09/2015 07:51           512 boots.bin
15/12/2008 00:47           78 dosfp.bat
23/09/2020 12:54       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)          1.510.122 bytes
2 Dir(s)          450.423.607.296 bytes free

c:\OS\LAB\LAB1>del floppy.img

c:\OS\LAB\LAB1>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppy.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>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]

Activate Windows
Go to Settings to activate Windows.
```

11. Pilih ukuran 1.44 dengan mengetik '1.44'

```
Command Prompt - bximage

14/12/2008 12:02          14.365 boot.asm
23/09/2020 12:36           512 boot.bin
16/09/2015 07:51           512 boots.bin
15/12/2008 00:47           78 dosfp.bat
23/09/2020 12:54       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)          1.510.122 bytes
2 Dir(s)          450.423.607.296 bytes free

c:\OS\LAB\LAB1>del floppy.img

c:\OS\LAB\LAB1>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppy.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>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]
```

12. Lalu ketik 'floppy.img' memberi nama image

```
Command Prompt - bximage
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] floppy.img

The disk image 'floppya.img' already exists. Are you sure you want to replace it?
Please type yes or no. [no]
```

Activate Windows
Go to Settings to activate Windows.

13. Pilih 'yes' untuk replace floppy.img

```
Command Prompt
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] floppy.img

The disk image 'floppya.img' already exists. Are you sure you want to replace it?
Please type yes or no. [no] yes

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>
```

Activate Windows
Go to Settings to activate Windows.

[illegible]

The screenshot shows a Windows 10 desktop environment. A terminal window titled "Bochs for Windows - Console" is open, displaying the following text:

```

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 disk image of 1.44 megabytes.
cyl=80
heads=2
sectors per track=18
total sectors=1474560
total bytes=1474560

What should I name the disk image?
[a.img] floppy.a
Copyright (C) Microsoft Corp. 1986-1993. All rights reserved.
Drive R: = Driver OSLAB unit 0
The disk image 'a.img' is now ready to use.
Please type yes or no.
[yes] yes
Insert new diskette for drive B:
and press ENTER when ready...

Writing: [ ] Done
I wrote 1474560 bytes to the disk image.
The following line shows the disk image's format:
floppya: image, format=msdos
(The line is stored in the file bochsout.txt)
Press any key to continue...

c:\OS\LAB\LAB1>cd c:\OS\LAB\LAB1
512 bytes in each allocation unit.
2,847 allocation units available on disk.

Volume Serial Number is 4051-1004

c:\OS\Bochs-2.3>format a:
Format another (Y/N)? [N] N
=====
CTRL + 3rd button enables mouse
=====
Build from CVS snapshot, on September 16, 2007
=====
[ ] reading configuration from bochsrc2.txt
[ ] installing win32 module as the Bochs GUI
[ ] using log file bochsout.txt

```

A Bochs GUI window titled "Bochs for Windows-2.3" is also open, showing the virtual hardware configuration. The window includes a toolbar with icons for various functions like "USER", "COPY", "PASTE", "SNAPSHOT", "CONFIG", "RESET", "SUSPEND", and "POWER". The main area displays the following information:

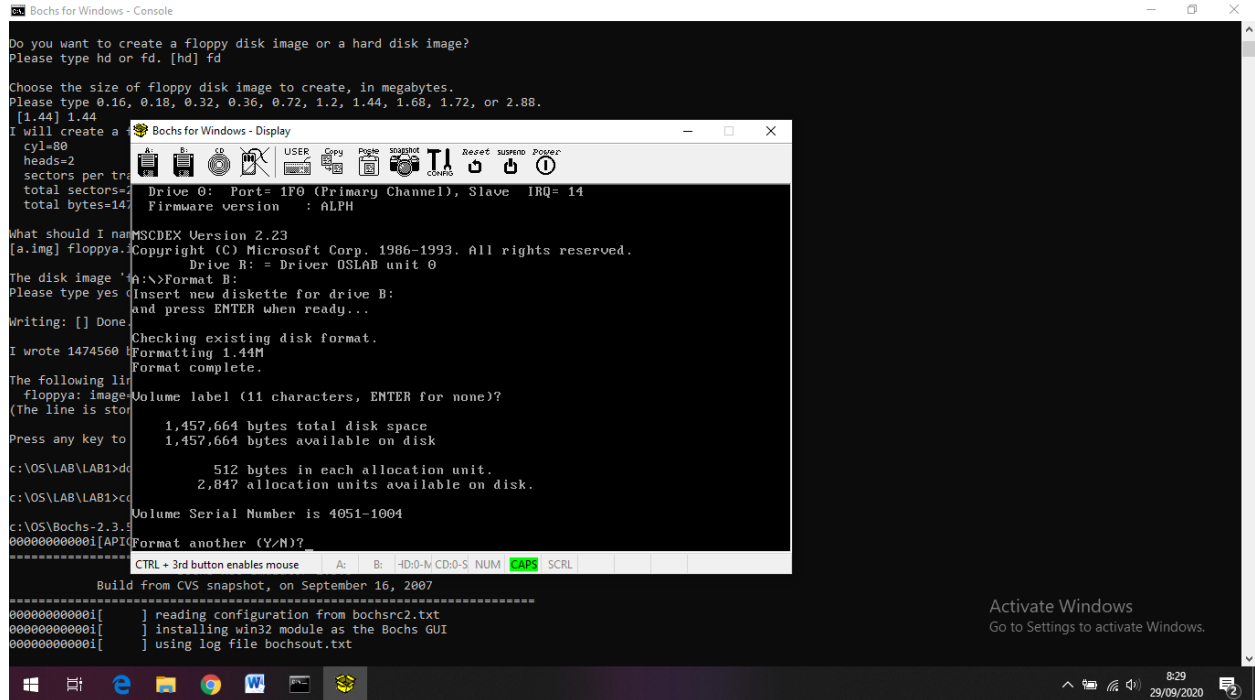
```

Drive 0: Port= 1F0 (Primary Channel), Slave  IRQ= 14
Firmware version : ALPH

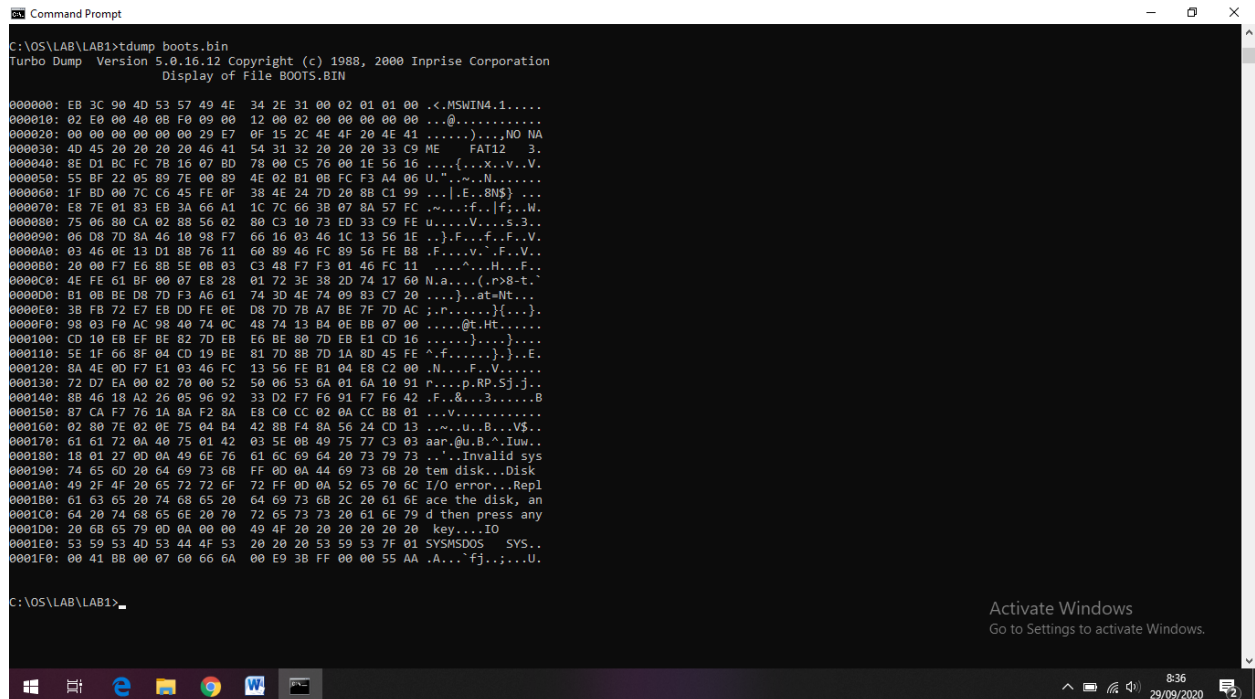
```

The taskbar at the bottom of the screen shows the Windows Start button, several application icons (including a file explorer, a web browser, and a terminal), and the system clock showing 8:29 on 29/09/2020. A watermark for "Activate Windows" is visible in the bottom right corner.

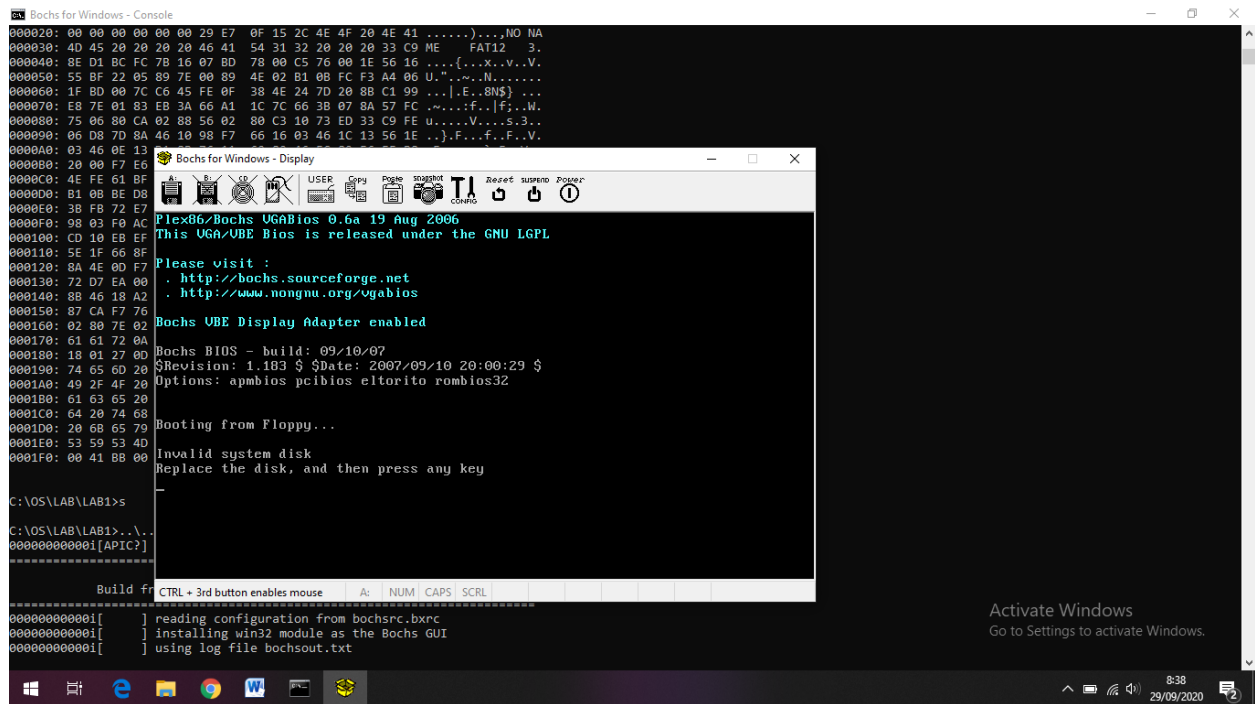
16. Ketik ' n ' karena sudah selesai lalu tekan tombol 'power' untuk mematikan PC Simulator



17. Memindah data bost.bin dengan mengetikkan perintah 'tdump boots.bin'



18. Ketik perintah 's' untuk membuka simulator



```
Bochs for Windows - Console
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 31 32 20 20 33 C9 ME FAT12 3.
000040: 8E D1 BC FC 7B 16 07 BD 78 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 8B C1 99 ...|.E..8N$} ...
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 D8 7D 8A 46 10 98 F7 66 16 03 46 1C 13 56 1E ..).F...f..F..V.
0000A0: 03 46 0E 13
0000B0: 20 00 F7 E6
0000C0: 4E FE 61 BF
0000D0: B1 09 BE 08
0000E0: 30 FB 72 E7
0000F0: 98 03 F0 AC
000100: CD 10 EB EF
000110: 5E 1F 66 8F
000120: 8A 4E 0D F7
000130: 72 D7 EA 00
000140: 88 46 18 A2
000150: 87 CA F7 76
000160: 02 80 7E 02
000170: 61 61 72 8A
000180: 18 01 27 6D
000190: 74 65 60 20
0001A0: 49 2F 4F 20
0001B0: 61 63 65 20
0001C0: 64 20 74 68
0001D0: 20 68 65 79
0001E0: 53 59 53 4D
0001F0: 00 41 B8 00

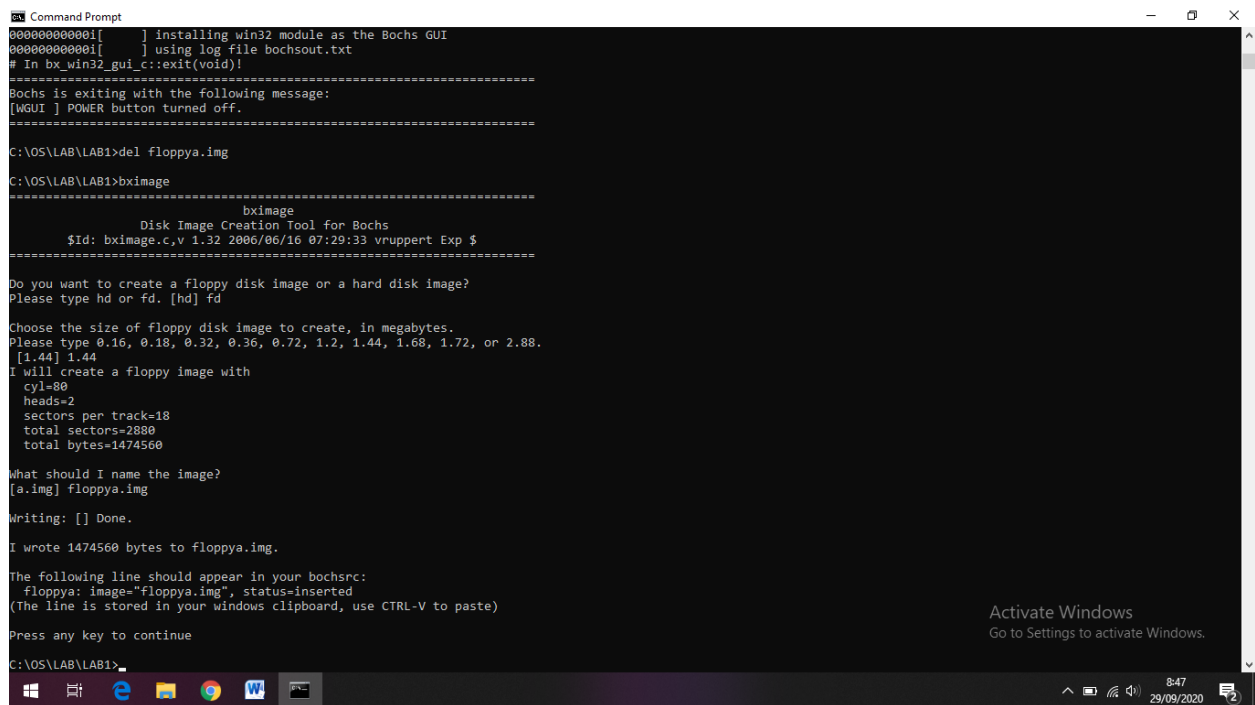
C:\OS\LAB\LAB1>s

C:\OS\LAB\LAB1>..
00000000000i[APIC?]
=====
Build fr CTRL+3rd button enables mouse / NUM/ CAPS/ SCRL
00000000000i[ ] reading configuration from bochssrc.bxrc
00000000000i[ ] installing win32 module as the Bochs GUI
00000000000i[ ] using log file bochsout.txt

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/ugabios
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...
Invalid system disk
Replace the disk, and then press any key

Activate Windows
Go to Settings to activate Windows.
```

19. Karena floppy.img belum diisi system file maka boot invalid, selanjutnya mengetik perintah 'del floppy.img' dan membuat img baru dengan 'bximage', lalu pilih type 'fd' dengan ukuran '144' dan dinamai floppy.img



```
Command Prompt
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:
[WGUI ] POWER button turned off.
=====

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.

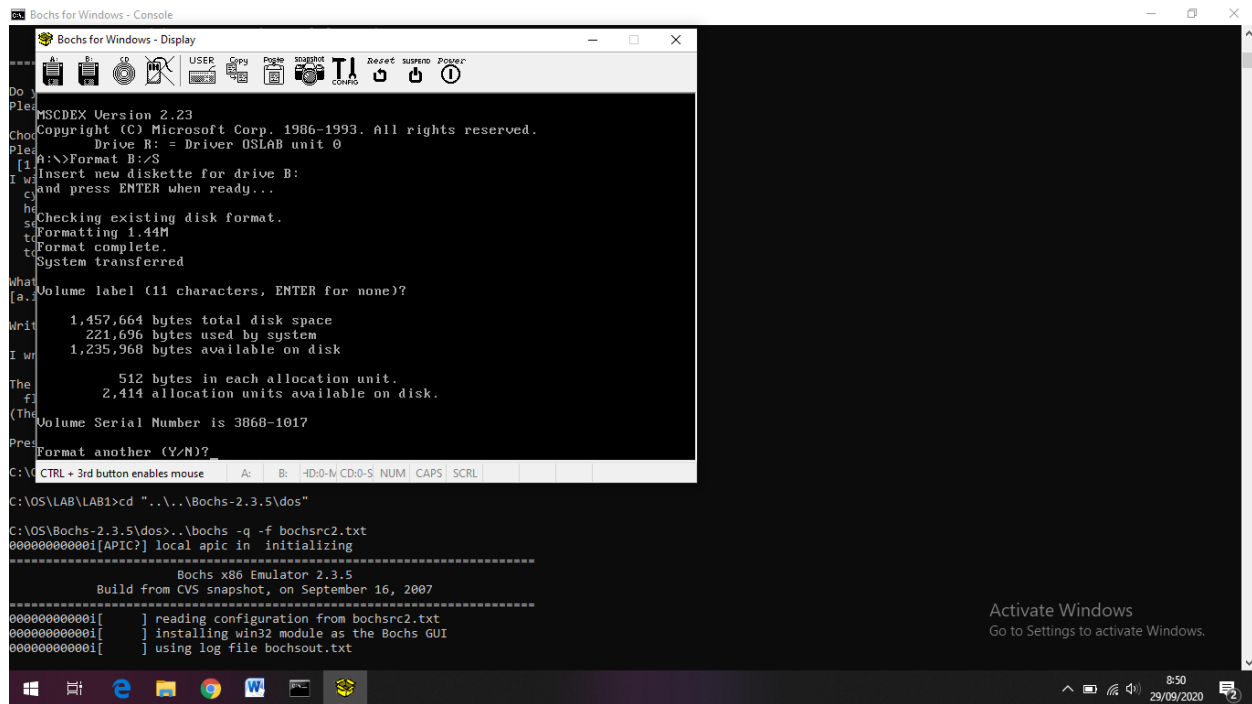
I wrote 1474560 bytes to floppya.img.

The following line should appear in your bochssrc:
floppya: image="floppya.img", status=inserted
(The line is stored in your windows clipboard, use CTRL-V to paste)

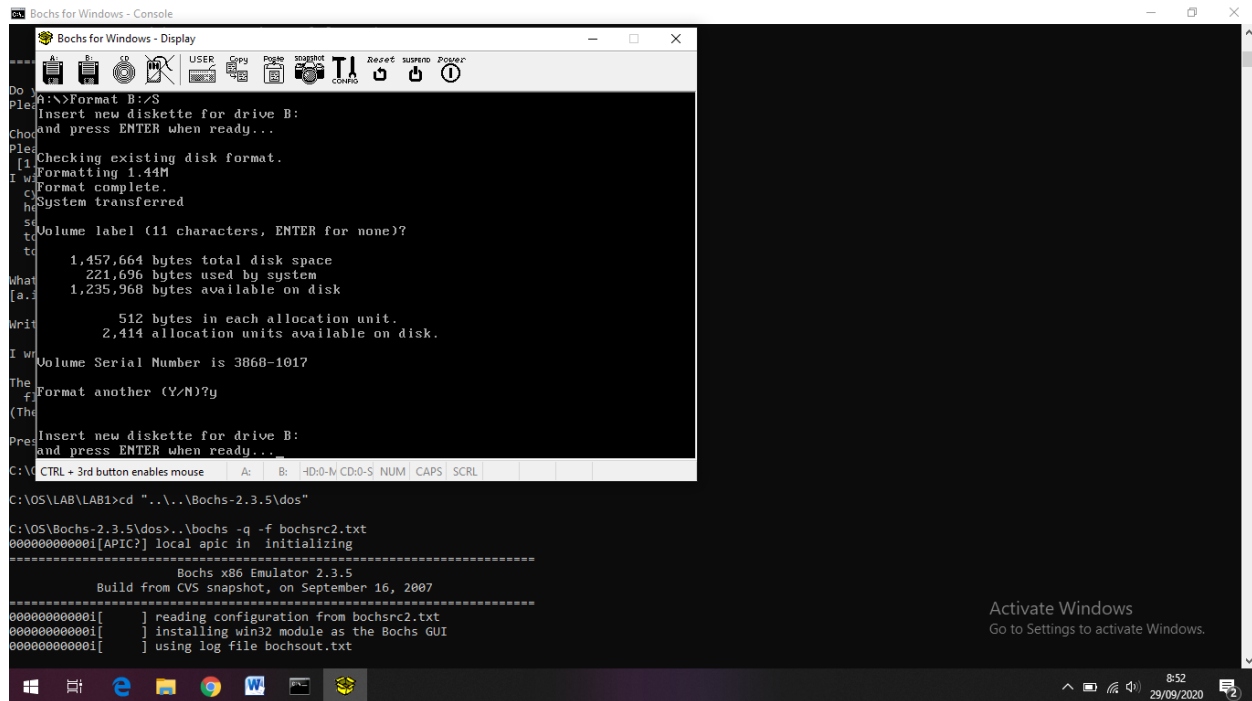
Press any key to continue

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

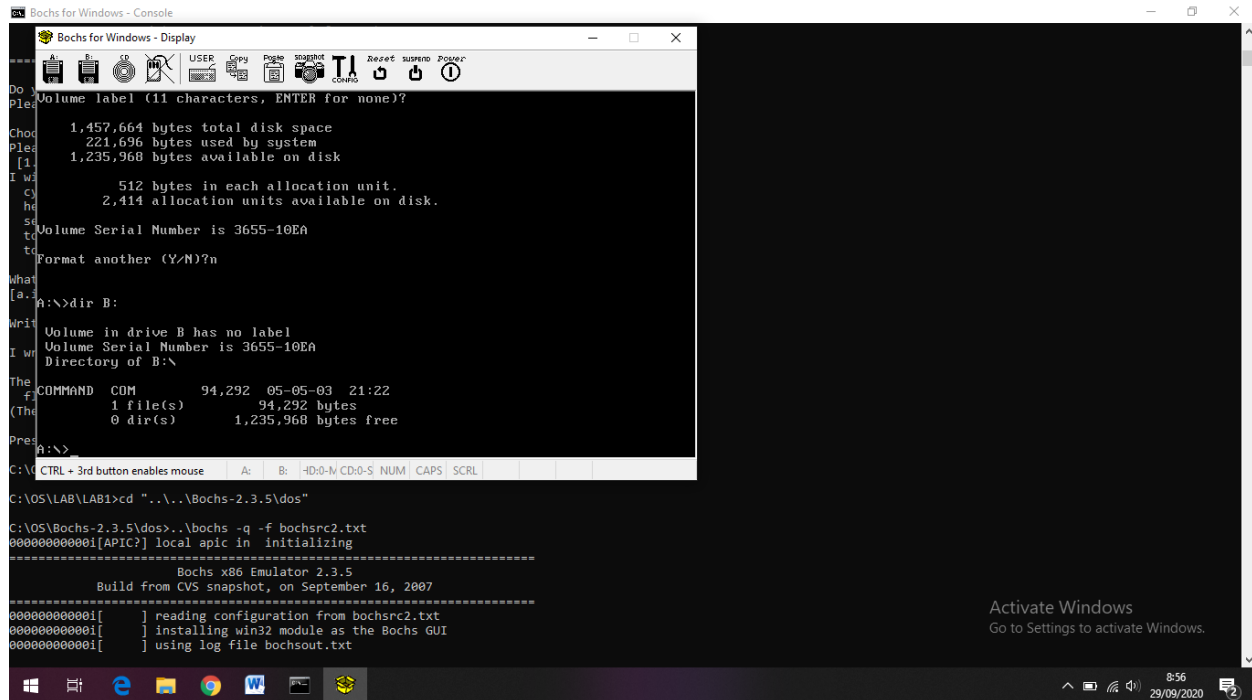
20. Buka simulator dengan 'dosfp' lalu masukka 'Format B:/S' lalu Enter



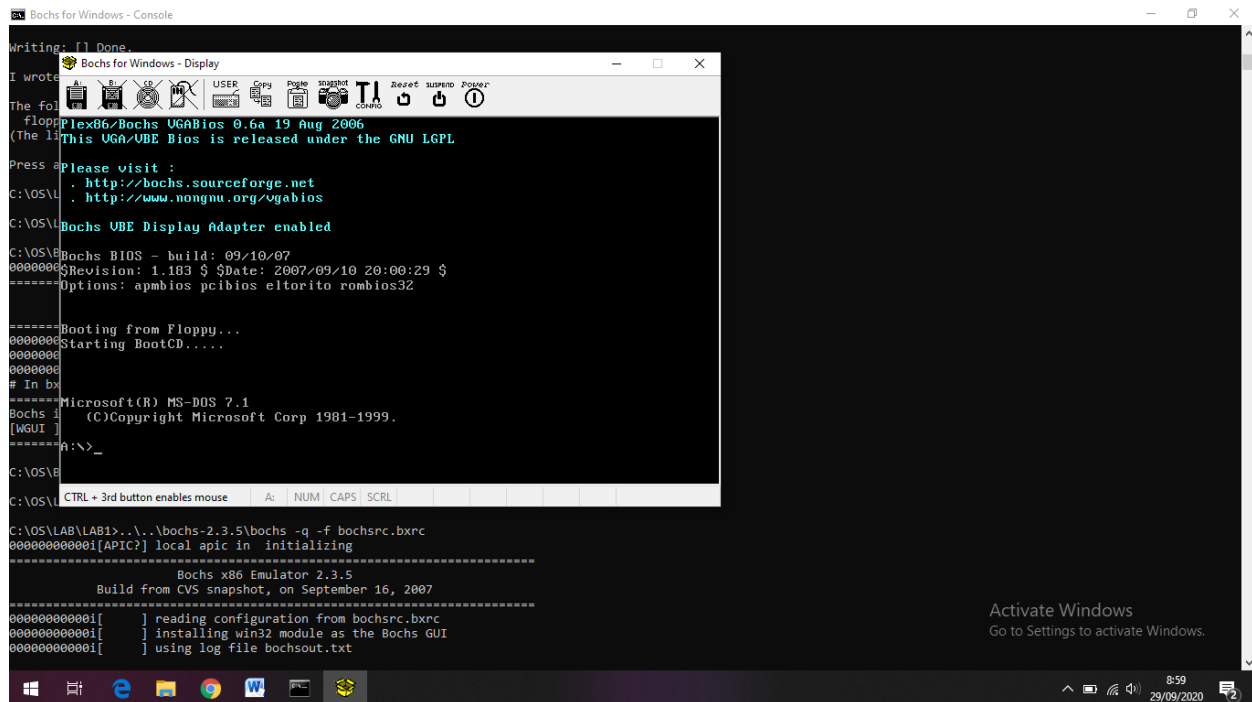
21. Format lagi dengan mengetik 'y' lalu Enter



22. Ketik ' n ' karena format telah selesai , selanjutnya ketik ' dir B:' untuk mengecek bahwa floppy.img sudah terisi system file , lalu tekan ' power ' untuk menutup Simulator



23. Mencoba menggunakan floppy.img sebagai boot.disk dengan perintah 's'



'startingBootCD' berarti sistem boot CD sudah berjalan menggunakan sistem CD tetapi sistem floppy.img sudah dimasukkan kedalamnya . Jadi bisa dibilang sistem floppy.img sudah berjalan.