

Laporan Praktikum Sistem Operasi

Modul 2



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Disusun oleh :

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Program studi : Informatika

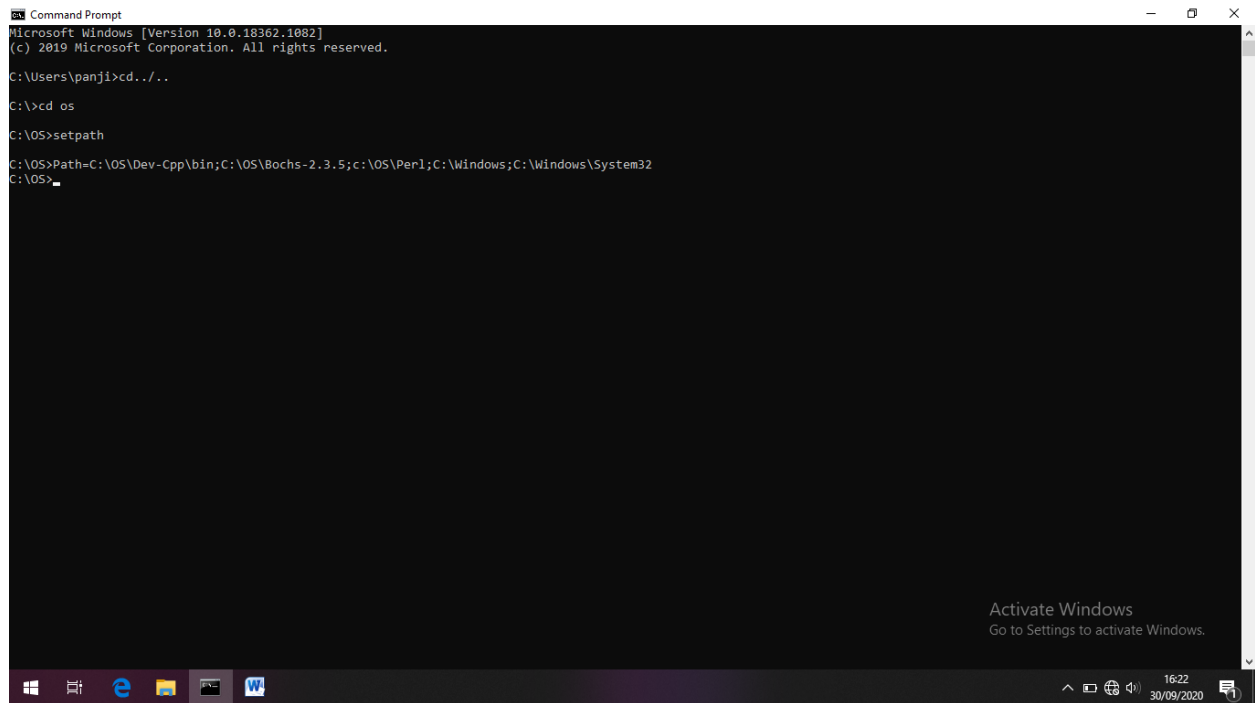
Universitas Muhammadiyah Surakarta

2020

MODUL 2

Langkah – langkah Pembuatan ‘DISK BOOT’

1. Pertama buka cmd, beri perintah ‘ cd .. /.. ‘ lalu ‘cd os ‘, lalu beri perintah ‘setpath’ untuk mengecek apakah file setpath ada didalam folder OS



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

C:\Users\panji>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>
```

The screenshot shows a Windows Command Prompt window. The user has navigated from the C:\Users\panji directory to C:\ by typing 'cd../..', then to C:\OS by typing 'cd os'. Finally, they typed 'setpath', which displays the current PATH environment variable: 'C:\OS>Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;C:\Windows;C:\Windows\System32'. The prompt is now 'C:\OS>'.

2. Lalu beri perintah ‘ cd lab/lab2 ‘, untuk membuka file LAB2 yg berada didalam LAB dan LAB berada didalam OS
Lalu beri perintah ‘dir’, untuk mengetahui isi folder LAB2

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

C:\Users\panji>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 04D2-AC00

Directory of C:\OS\LAB\LAB2

30/09/2020 12:58 <DIR>      .
30/09/2020 12:58 <DIR>      ..
30/09/2020 13:10          10,156 bochs.log
15/12/2008 16:18          1,625 bochsrc.bxrc
30/09/2020 12:57          15,931 boot.asm
30/09/2020 12:57           512 boot.bin
15/12/2008 13:52           78 dosfp.bat
30/09/2020 13:10       1,474,560 floppy.img
30/09/2020 13:07           7,959 kernel.asm
30/09/2020 13:08           604 kernel.bin
15/12/2008 16:21           228 Makefile
15/12/2008 12:20           44 s.bat
                10 File(s)      1,511,697 bytes
                2 Dir(s)      450,384,076,800 bytes free

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

3. Ketikkan perintah 'bximage' lalu pilih ' fd ' untuk pilihan type sistem yg kecil , dan pilih ukuran standar ' 1.44 ' , Enter

```
Command Prompt - bximage

C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is 04D2-AC00

Directory of C:\OS\LAB\LAB2

30/09/2020 12:58 <DIR>      .
30/09/2020 12:58 <DIR>      ..
30/09/2020 13:10          10,156 bochs.log
15/12/2008 16:18          1,625 bochsrc.bxrc
30/09/2020 12:57          15,931 boot.asm
30/09/2020 12:57           512 boot.bin
15/12/2008 13:52           78 dosfp.bat
30/09/2020 13:10       1,474,560 floppy.img
30/09/2020 13:07           7,959 kernel.asm
30/09/2020 13:08           604 kernel.bin
15/12/2008 16:21           228 Makefile
15/12/2008 12:20           44 s.bat
                10 File(s)      1,511,697 bytes
                2 Dir(s)      450,384,076,800 bytes free

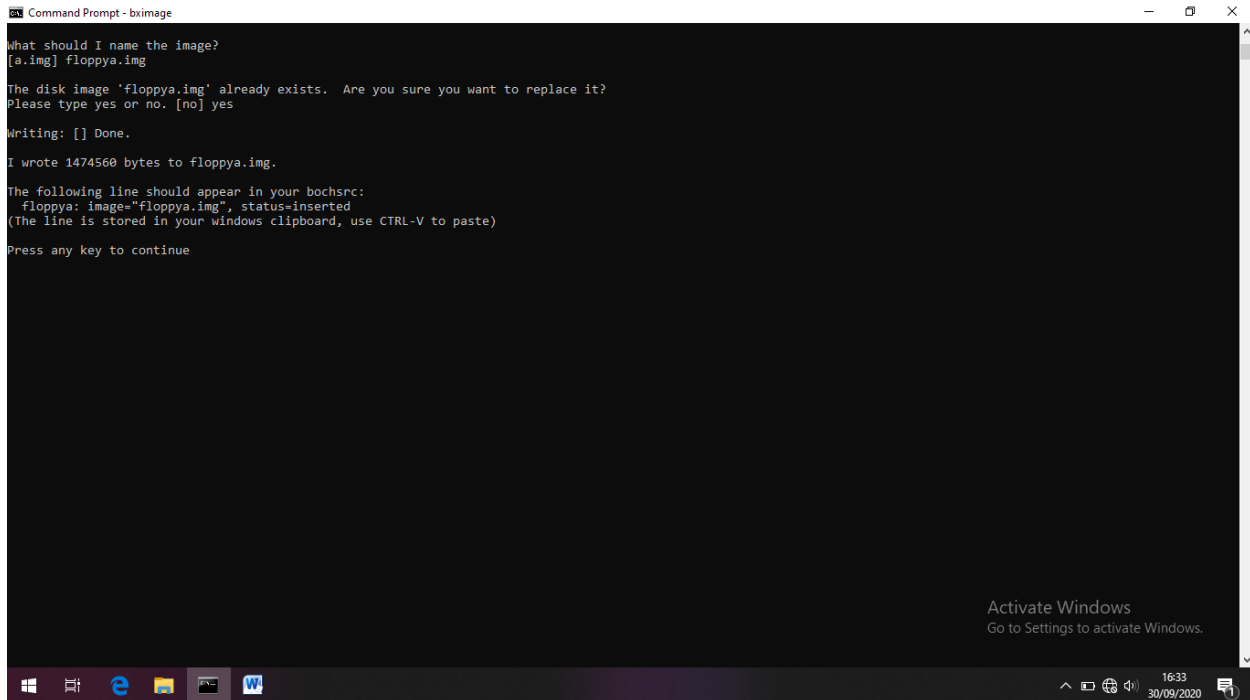
C:\OS\LAB\LAB2>bximage
-----
bximage
Disk Image Creation Tool for Bochs
$Id: bximage.c,v 1.32 2006/06/16 07:29:33 vruppert Exp $
-----

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]
```

4. Lalu ketikkan ‘ floppy.img ‘ untuk menamai file floppy , jika sudah ada file floppy.img yg sebelumnya dibuat pilih ‘yes’ untuk me-replace data floppy.img



```
Command Prompt - bxiimage

What should I name the image?
[a.img] floppya.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.

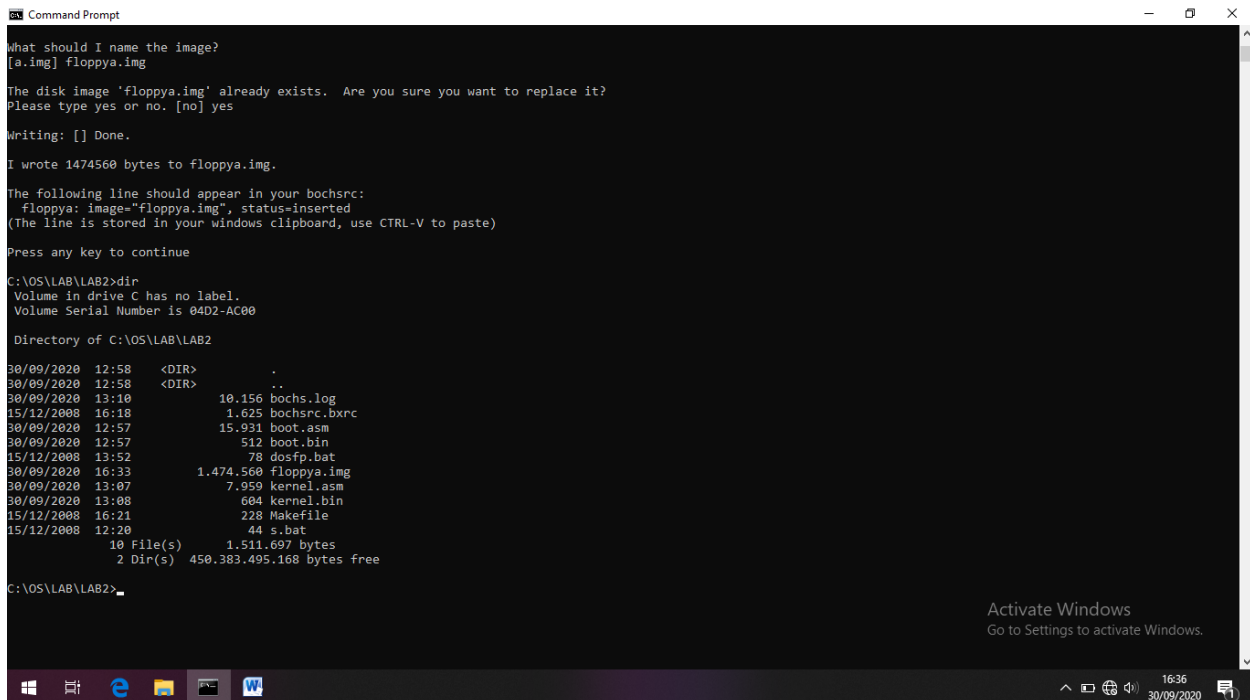
I wrote 1474560 bytes to floppya.img.

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

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

5. Ketikkan perintah ‘ dir ‘ untuk melihat file ‘floppy.img’ yg anda replace tadi



```
Command Prompt

What should I name the image?
[a.img] floppya.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

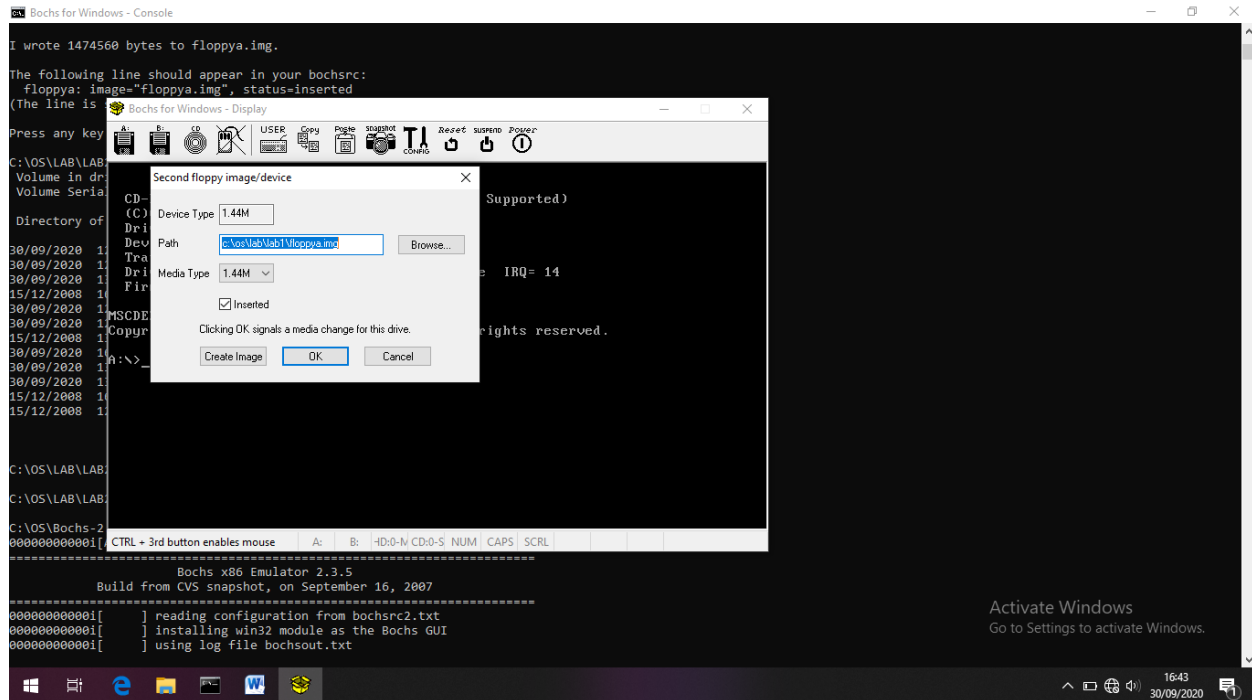
C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is 04D2-AC00

Directory of C:\OS\LAB\LAB2

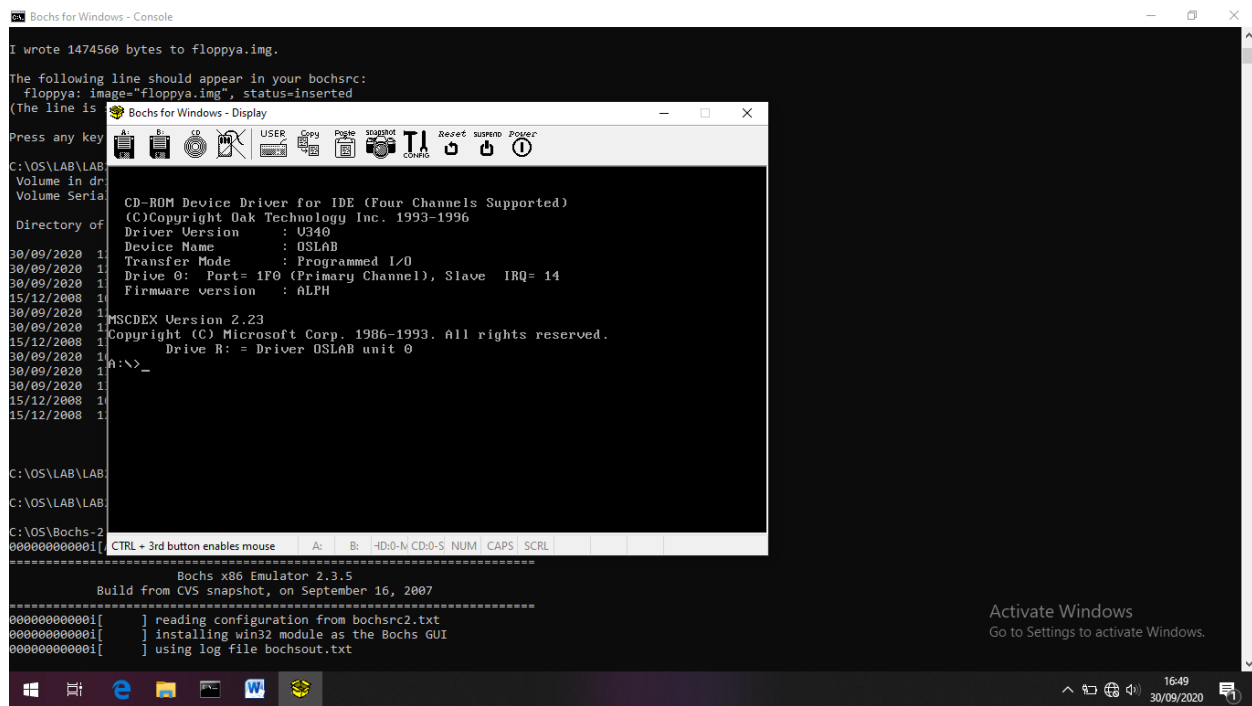
30/09/2020  12:58    <DIR>          .
30/09/2020  12:58    <DIR>          ..
30/09/2020  13:10             10,156 bochs.log
15/12/2008  16:18             1,625 bochsrc.bxrc
30/09/2020  12:57             15,931 boot.asm
30/09/2020  12:57              512 boot.bin
15/12/2008  13:52              78 dosfp.bat
30/09/2020  16:33      1,474,560 floppya.img
30/09/2020  13:07             7,959 kernel.asm
30/09/2020  13:08             604 kernel.bin
15/12/2008  16:21              228 Makefile
15/12/2008  12:20              44 s.bat
               10 File(s)      1,511,697 bytes
               2 Dir(s)      450,383,495,168 bytes free

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

6. Lalu beri perintah 'dosfp' untuk membuka 'Bosch for windows' lalu pilih 'Change floppy Format B: media'



7. Lalu ganti path dengan pilih 'browser', pilih folder 'LAB2' dan pilih file floppy.img yg ada didalamnya , lalu tekan OK



-
- The screenshot shows a Windows 10 desktop environment. A terminal window titled "Bochs for Windows - Display" is open, showing the output of the Bochs emulator. The output includes the following text:
- ```

I wrote 1474560 bytes to floppy.a.img.

The following line should appear in your bochsrc:
floppya: image="floppya.img", status=inserted
(The line is

Bochs for Windows - Display
Press any key
C:\OS\LAB\LAB
Volume in dr
Volume Serial
Directory of
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:\>format b:/s
Insert new diskette for drive B:
and press ENTER when ready...
Checking existing disk format.
Formatting 1.44M
Format complete.
System transferred
C:\OS\LAB\LAB
Volume label (11 characters, ENTER for none)? _
C:\OS\Bochs-2
000000000001[CTRL+3rd button enables mouse A: B: HD0-H CD0-S NUM CAPS SCRL

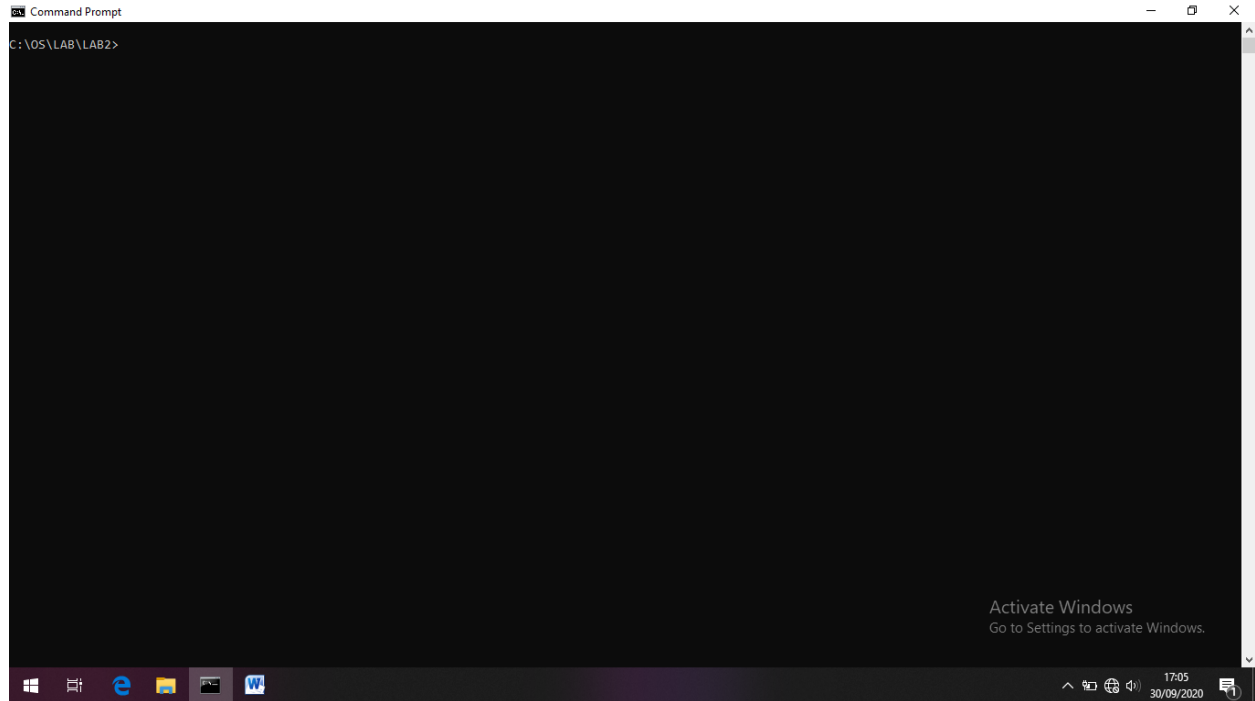
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007

000000000001[] reading configuration from bochsrc2.txt
000000000001[] installing win32 module as the Bochs GUI
000000000001[] using log file bochsout.txt

```
- The taskbar at the bottom shows the Start button, task view button, and several pinned applications: Edge, File Explorer, Task Manager, Word, and a yellow icon. The system tray on the right shows the date and time as 16:52 on 30/09/2020, along with icons for network, volume, and power.

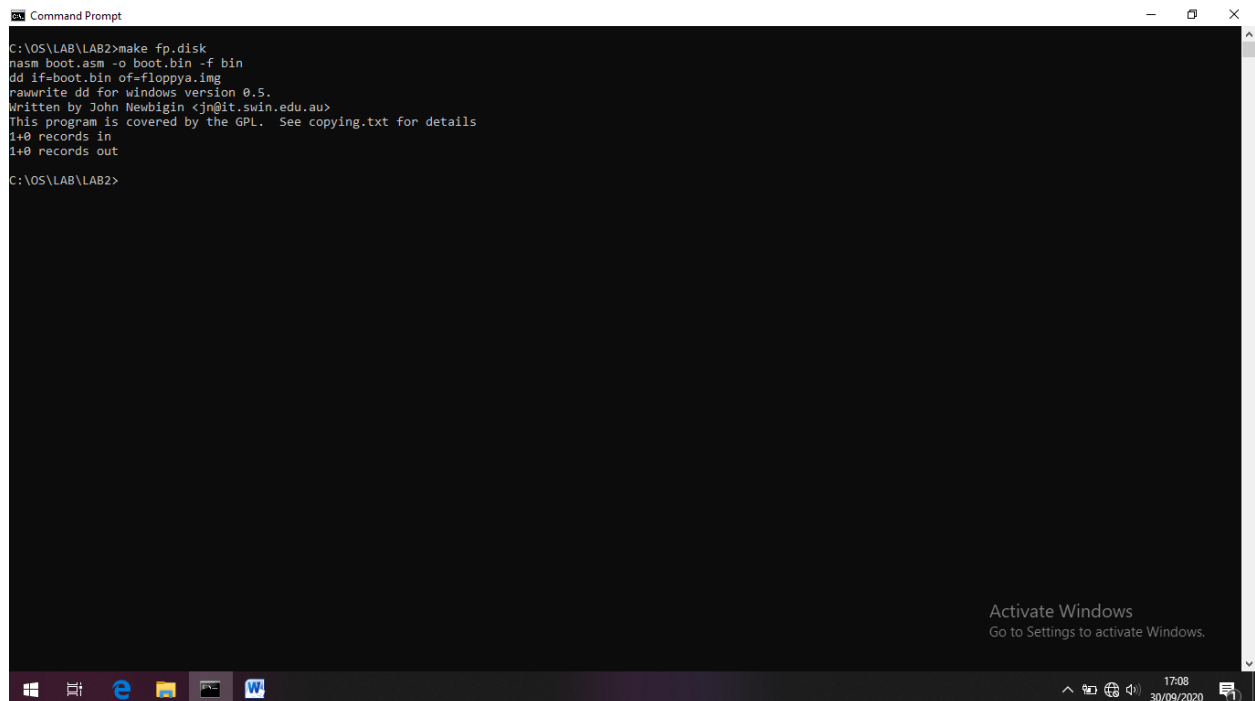
- 
- The screenshot shows a Windows Command Prompt window titled "Bochs for Windows - Console". It lists files in the current directory:
- 30/09/2020 12:57 15.931 boot.asm
  - 30/09/2020 12:57 512 boot.bin
  - 15/12/2008 13:52 78 dosfp.bat
  - 30/09/2020 16:33 1.474.560 floppya.img
  - 30/09/2020 13:07 7.959 kernel.asm
  - 30/09/2020 13:08 604 kernel.bin
  - 15/12/2008 16:21 778 Makefile
- The user runs the command `bochs -f bootdisk.bxrc`. The output includes:
- A warning about changing floppy B media.
  - Release information: Plex06, Bochs UCBios 0.6a 19 Aug 2006, released under the GNU LGPL.
  - Links to bochs.sourceforge.net and www.nongnu.org/vgabios.
  - Message: "Bochs VBE Display Adapter enabled"
  - BIOS build information: "Bochs BIOS - build: 09/10/07", Revision: 1.183, Date: 2007/09/10 20:00:29, Options: apmbios pcibios eltorito rombios32.
  - "Bootng from Floppy..."
  - "Bochs is exiting Starting BootCD...."
  - DOS version: "Microsoft(R) MS-DOS 7.1 (C)Copyright Microsoft Corp 1981-1999."
  - Prompt: `A:> _`
- At the bottom, there's a status bar indicating "Build from CVS snapshot, on September 16, 2007" and "CTRL + 3rd button enables mouse". A watermark for "Activate Windows" is visible in the bottom right corner.

## 10. Ketikkan perintah 'cls' untuk membuat class baru



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

## 11. Beri perintah 'make fp.disk' lalu Enter, untuk mngecek ' boot.asm'



```
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>
```

The screenshot shows a Windows 10 desktop environment. In the background, a terminal window titled "Bochs for Windows - Console" displays the following commands and output:

```
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
```

In the foreground, a Bochs emulator window titled "Bochs for Windows - Display" is open. It shows the BIOS boot screen with the following text:

```
Plex86/Bochs VGABios 0.6a 19 Aug 2006
This VGA/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...

Bela jar membuatBOOTSTRAP-LOADER
.....
ERROR : Press Any Key to Reboot_
```

The Bochs window also features a toolbar with icons for various functions like file operations, settings, and power. At the bottom of the Bochs window, a status bar indicates "CTRL + 3rd button enables mouse".

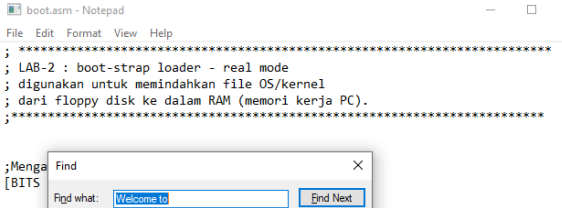
```
C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppya.img
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\LAB2>s

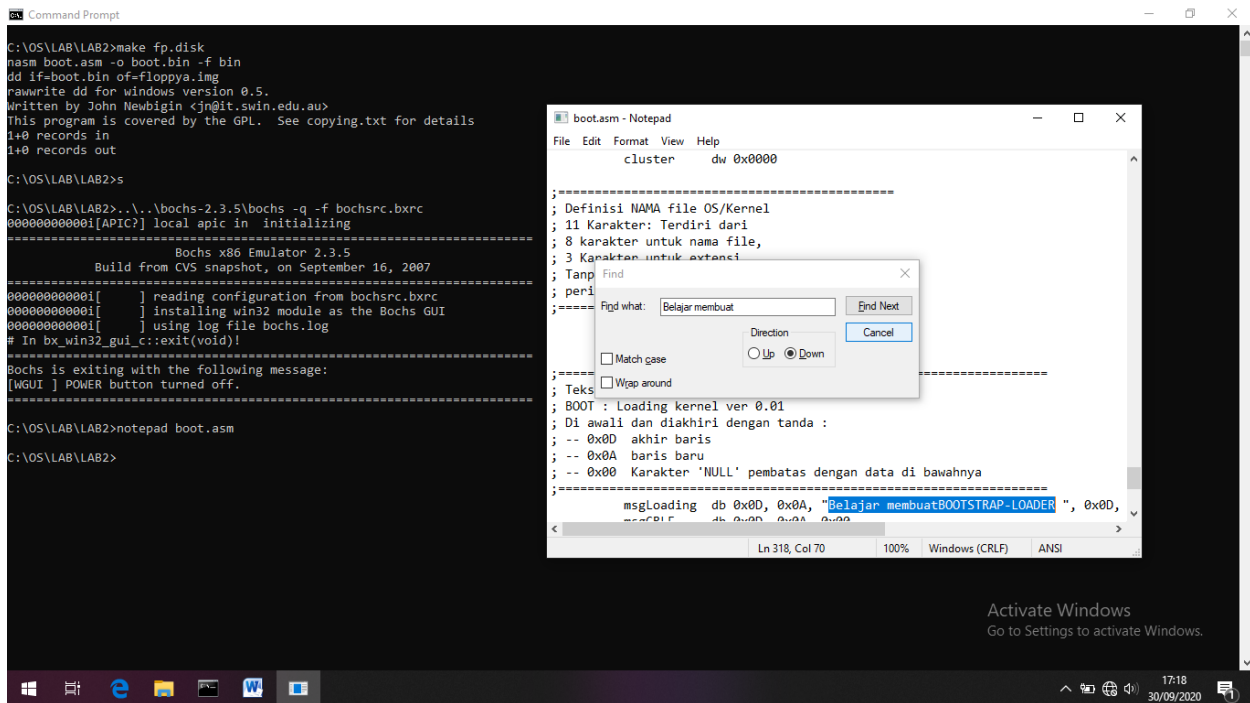
C:\OS\LAB\LAB2>.\..\bochs-2.3.5\bochs -g -f bochsrc.bxrc
00000000000i[APIC] local apic in Initializing
=====
 Bochs x86 Emulator 2.3.5
 Build from CVS snapshot, on September 16, 2007
=====
00000000000i[] reading configuration from bochsrc.bxrc
00000000000i[] installing win32 module as the Bochs GUI
00000000000i[] using log file bochs.log
In bx_win32_gui_c.:exit(void)!
=====
Bochs is exiting with the following message:
[WGUI] POWER button turned off.
=====

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

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

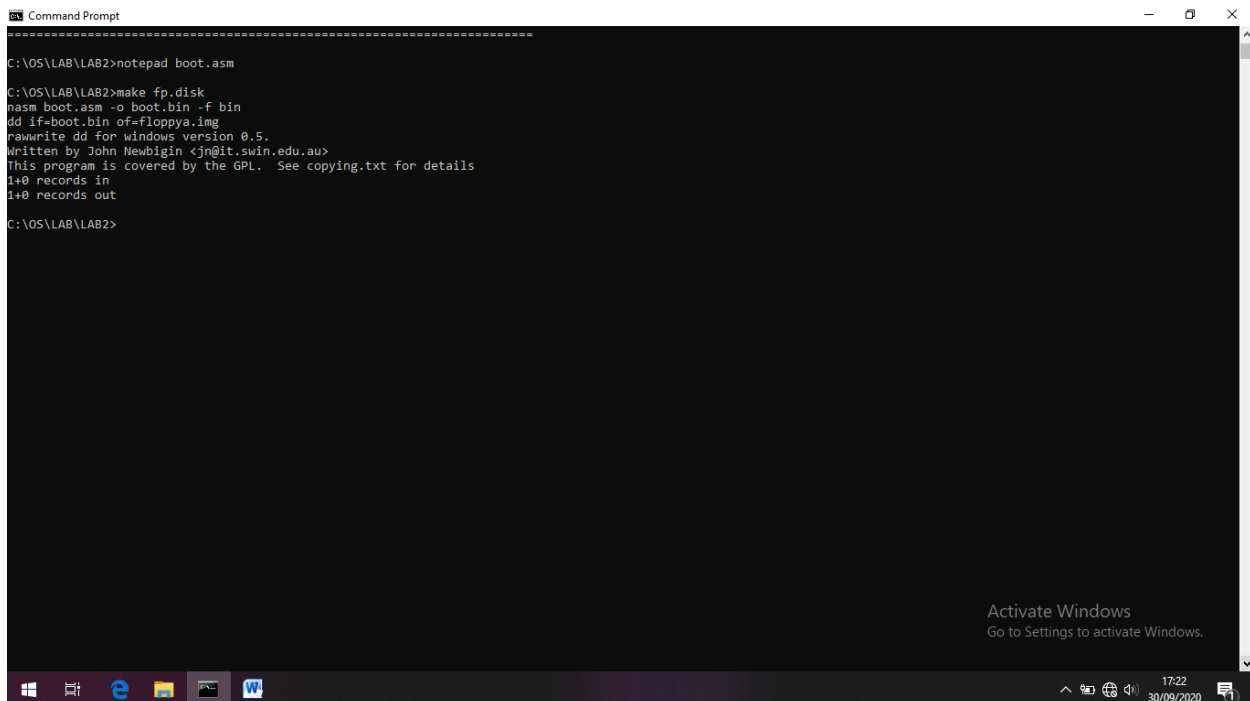




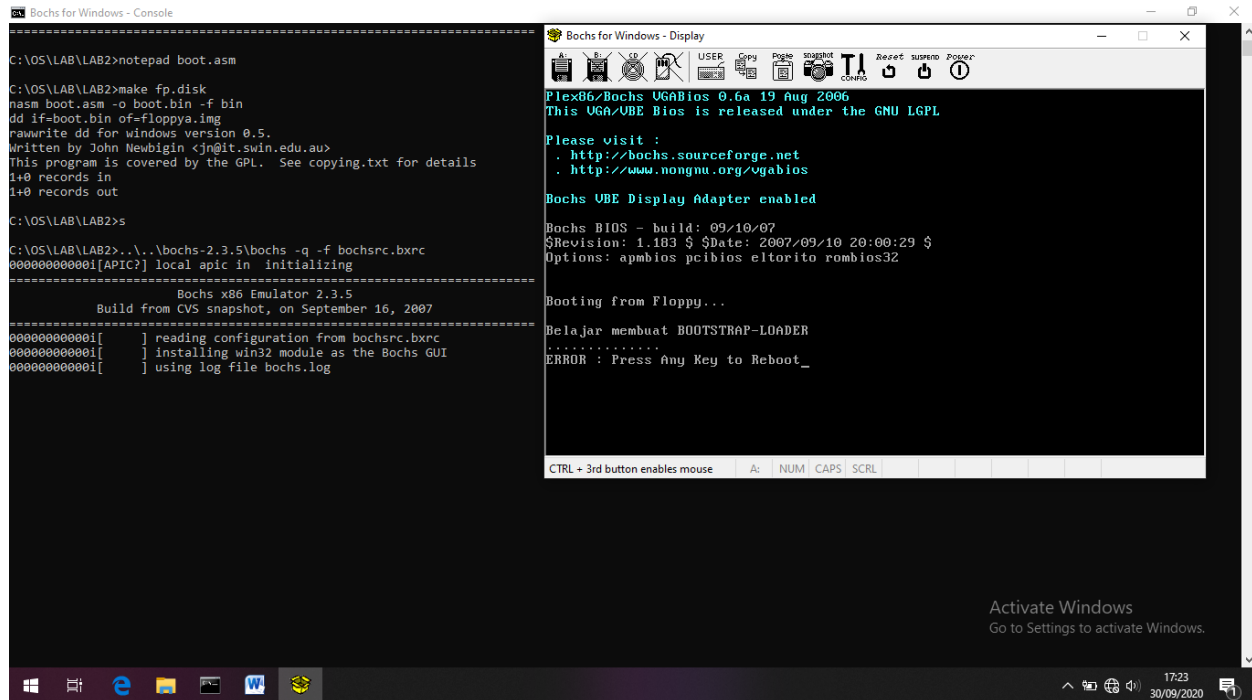


Setelah itu save , dan close

14. Setelah itu cek lagi 'boot' dengan perintah 'boot.asm'

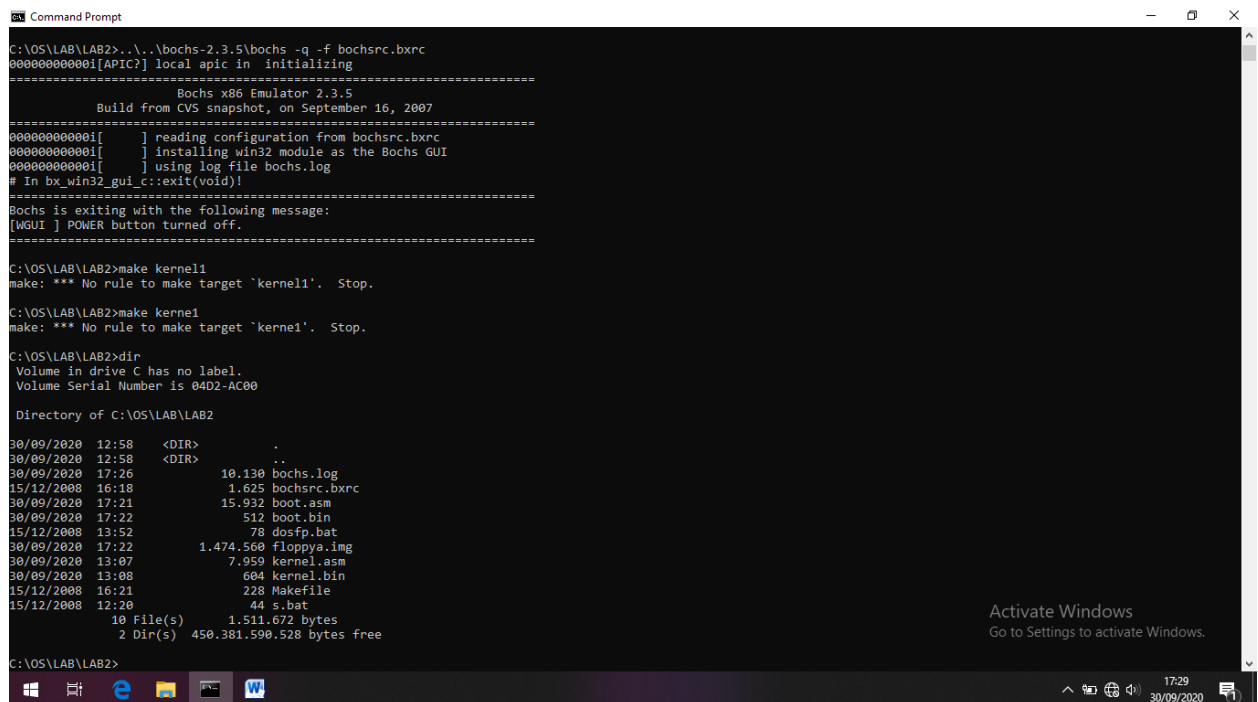


15. Lalu beri perintah 's' untuk mengecek kata yg di 'Booting from floppy' lalu tekan 'power' untuk keluar



```
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
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
=====
Booting from Floppy...
Belajar membuat BOOTSTRAP-LOADER
.....
ERROR: Press Any Key to Reboot_
=====
CTRL + 3rd button enables mouse A: NUM. CAPS SCRL
```

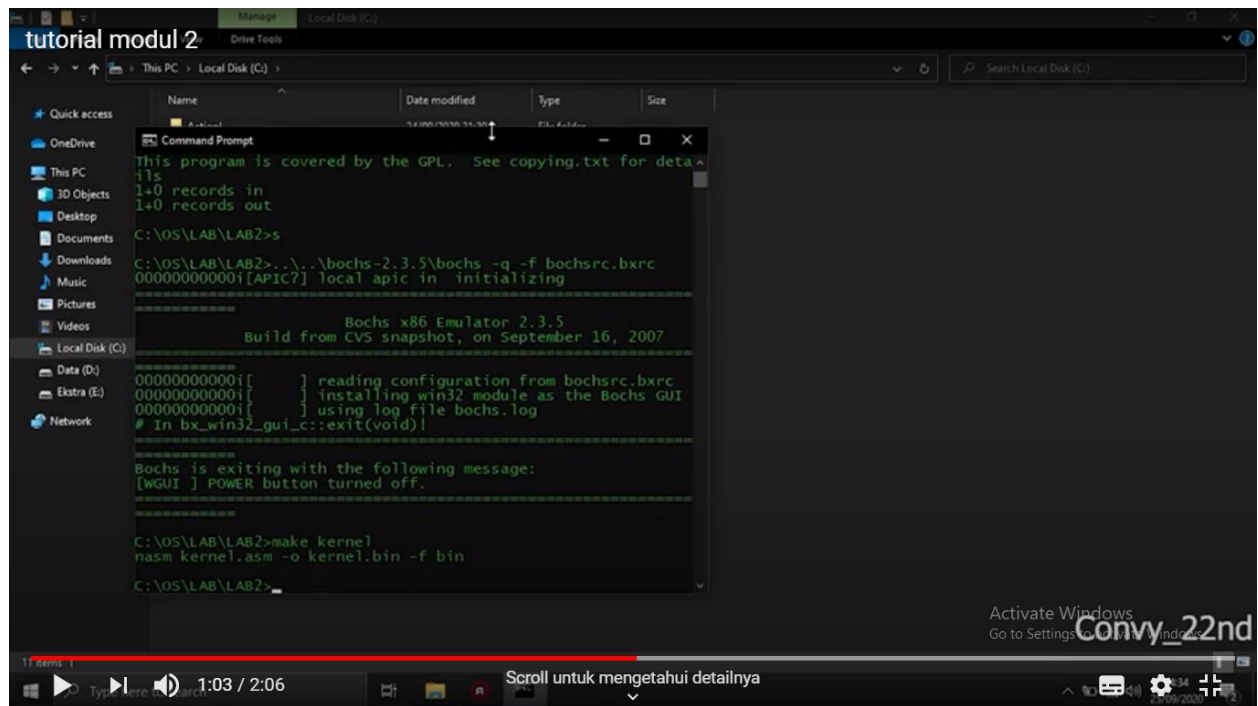
16. Lalu beri perintah 'make kernel' jika file kernel.asm dan kernel.bin sudah ada maka akan seperti gambar dibawah



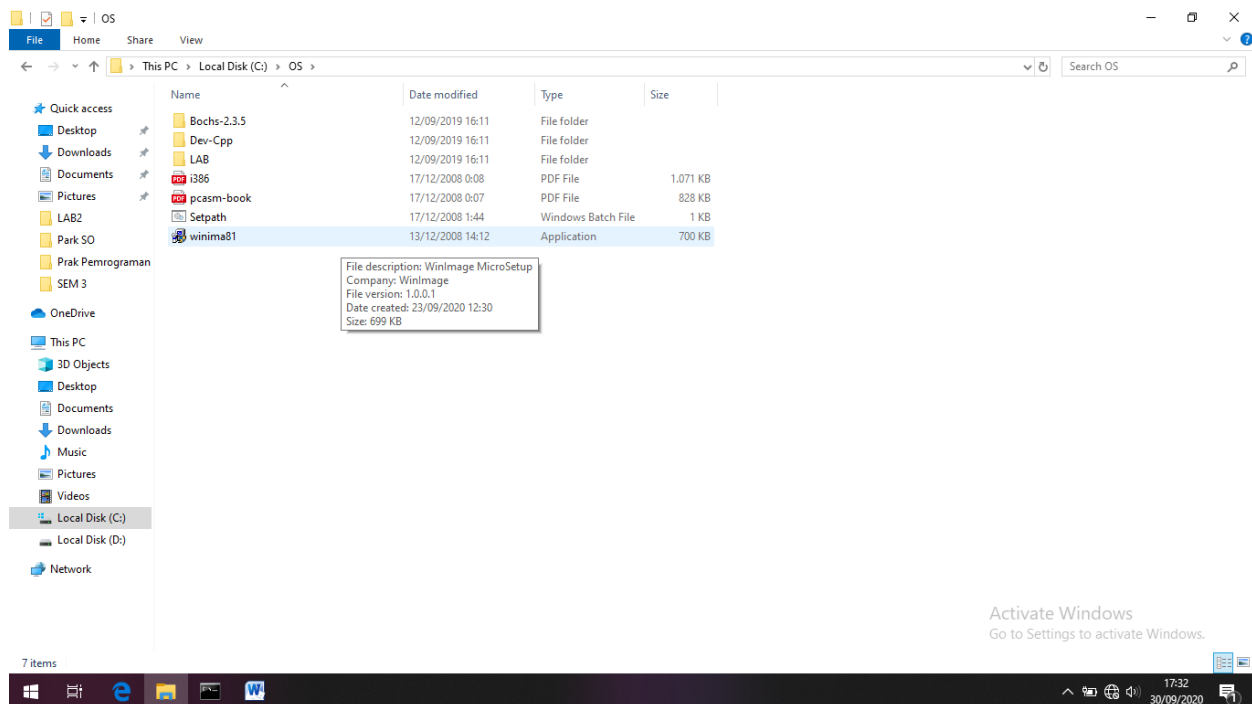
```
C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
0000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
0000000000i[] reading configuration from bochsrc.bxrc
0000000000i[] installing win32 module as the Bochs GUI
0000000000i[] using log file bochs.log
=====
In bx_win32_gui_c::exit(void)!
=====
Bochs is exiting with the following message:
[WGUI] POWER button turned off.
=====
C:\OS\LAB\LAB2>make kernel
make: *** No rule to make target `kernel'. Stop.
C:\OS\LAB\LAB2>make kernel
make: *** No rule to make target `kernel'. Stop.
C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is 04D2-AC00
Directory of C:\OS\LAB\LAB2
30/09/2020 12:58 <DIR> .
30/09/2020 12:58 <DIR> ..
30/09/2020 17:26 10,130 bochs.log
15/12/2008 16:18 1,625 bochsrc.bxrc
30/09/2020 17:21 15,932 boot.asm
30/09/2020 17:22 512 boot.bin
15/12/2008 13:52 78 dosfp.bat
30/09/2020 17:22 1,474,560 floppya.img
30/09/2020 13:07 7,959 kernel.asm
30/09/2020 13:08 604 kernel.bin
15/12/2008 16:21 228 Makefile
15/12/2008 12:20 44 s.bat
10 File(s) 1,511,672 bytes
2 Dir(s) 450,381,590,528 bytes free
C:\OS\LAB\LAB2>
```

Dan untuk mengetahuinya beri perintah 'dir'

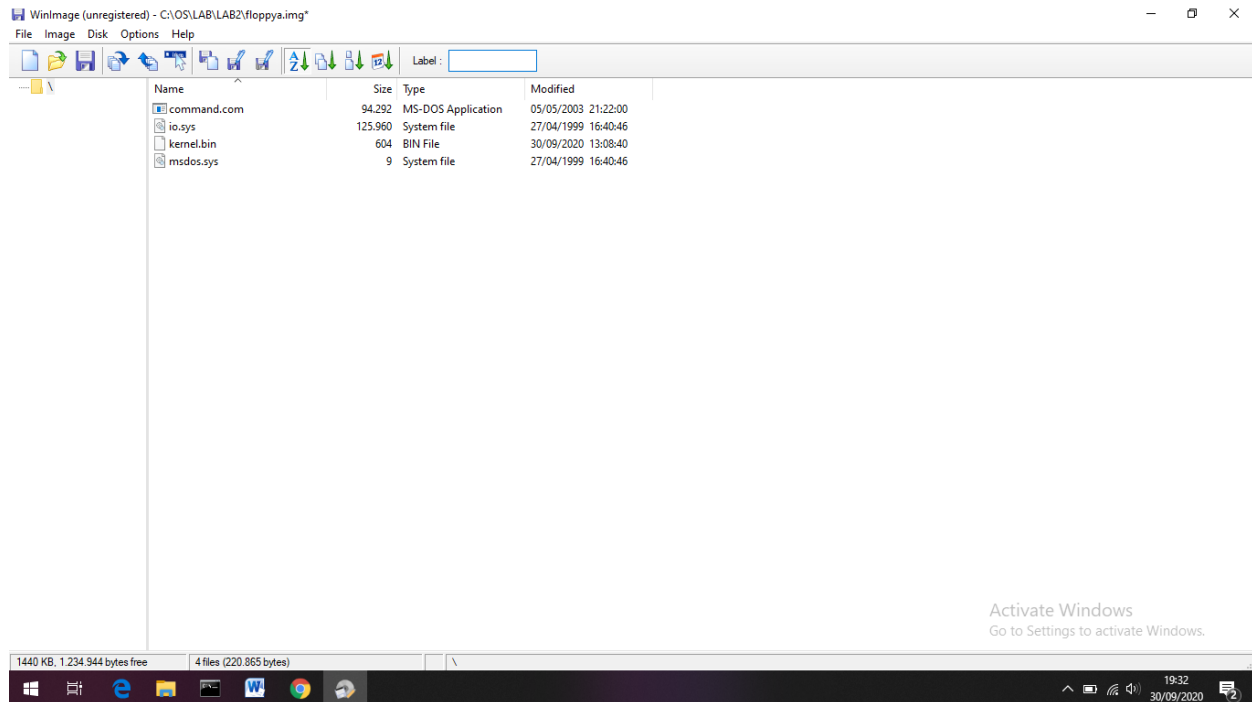
Jika kernel.asm dan kernel.bin dimasukkan



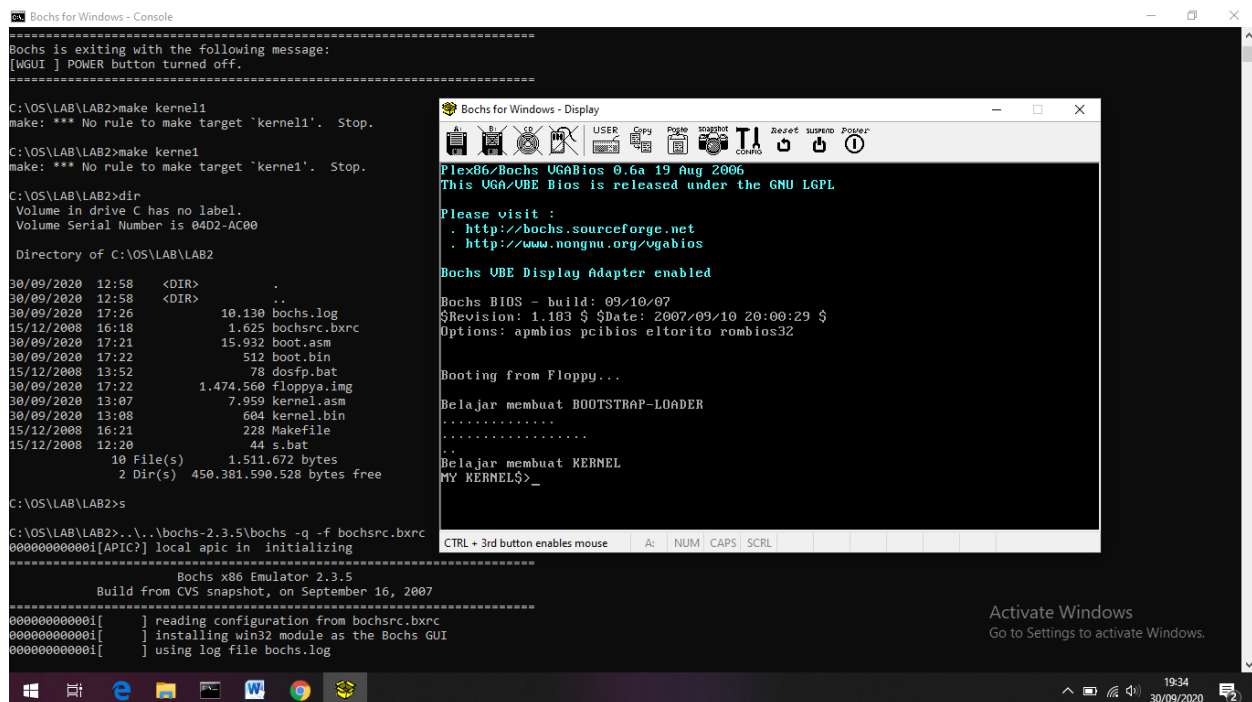
17. Lalu install 'WinImage', click 'next' saja terus sampai ketemu tanda 'accept' maka centang 'accept' tersebut lalu 'next' sampai 'install'



18. Lalu buka 'WinImage', dan pilih 'open file', cari folder LAB2 di directory C, dan pilih file yg didalamnya yaitu 'floppya.img'. Setelah itu pilih 'Inject', lalu pilih 'kernel.bin'. Lalu save kemudian close.



19. Lalu ketik 's' untuk melihat apakah output pada 'Bosch for windows' sesuai dengan program yg kita inginkan.



Program pembuatan ' disk boot ' dengan menggunakan ' WinImage ' telah selesai. Untuk memastikan apakah 'floppya.img' benar-benar dapat digunakan pada PC yg sebenarnya, anda dapat memindah isi 'floppya.img' ke dalam floppy sebenarnya dengan program ' WinImage ' (sudah tentu pada PC anda harus ada FDD Drive) , jalankan program 'WinImage' buka file 'floppya.img' dan klik menu 'disk | Write disk'. Selanjutnya lakukan proses "BOOT" pada PC anda dengan floppy tersebut, jika pada langkah anda tidak ada kesalahan maka pada PC akan ditampilkan teks seperti pada PC Simulator.