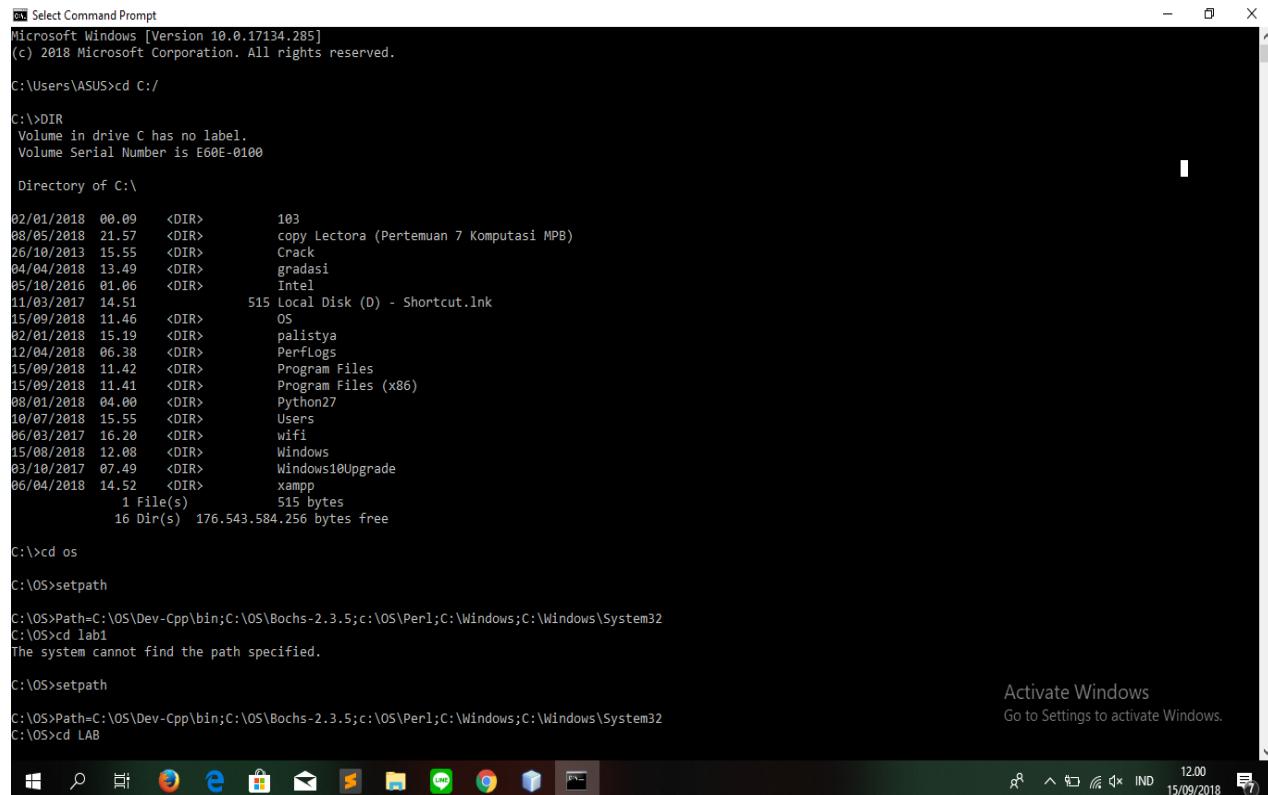


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MODUL 1

1. Kata "Dir" berfungsi untuk memeriksa apakah file tertentu terdapat di direktori.



```
Microsoft Windows [Version 10.0.17134.285]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\ASUS>cd C:/

C:>DIR
 Volume in drive C has no label.
 Volume Serial Number is E60E-0100

 Directory of C:\

02/01/2018  00.09    <DIR>          103
08/05/2018  21.57    <DIR>        copy Lectora (Pertemuan 7 Komputasi MPB)
26/10/2013  15.55    <DIR>        Crack
04/04/2018  13.49    <DIR>        gradasi
05/10/2016  01.06    <DIR>        Intel
11/03/2017  14.51    <DIR>      515 Local Disk (D) - Shortcut.lnk
15/09/2018  11.46    <DIR>        OS
02/01/2018  15.19    <DIR>        palistya
12/04/2018  06.38    <DIR>        PerfLogs
15/09/2018  11.42    <DIR>        Program Files
15/09/2018  11.41    <DIR>        Program Files (x86)
08/01/2018  04.00    <DIR>        Python27
10/07/2018  15.55    <DIR>        Users
06/03/2017  16.20    <DIR>        wifi
15/08/2018  12.08    <DIR>        Windows
03/10/2017  07.49    <DIR>        Windows10Upgrade
06/04/2018  14.52    <DIR>        xampp
               1 File(s)   515 bytes
               16 Dir(s)  176.543.584.256 bytes free

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 lab1
The system cannot find the path specified.

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
Activate Windows
Go to Settings to activate Windows.

R  ^  &  <  >  <<  >>  IND  12.00
15/09/2018
```

2. Ketik setpath agar bisa membantu memunculkan folder lab. Setelah itu ketik "notepad boot.asm" untuk memunculkan file yang terdapat pada folder lab. File akan tampil pada aplikasi notepad.

```
Directory of C:\

02/01/2018 00.09 <DIR> 103
08/05/2018 21.57 <DIR> copy Lectora (Pertemuan 7 Komputasi MPB)
26/10/2013 15.55 <DIR> Crack
04/04/2018 13.49 <DIR> gradasi
05/10/2016 01.06 <DIR> Intel
11/03/2017 14.51 515 Local Disk (D) - Shortcut.lnk
15/09/2018 11.46 <DIR> OS
02/01/2018 15.19 <DIR> palistya
12/04/2018 06.38 <DIR> PerfLogs
15/09/2018 11.42 <DIR> Program Files
15/09/2018 11.41 <DIR> Program Files (x86)
08/01/2018 04.00 <DIR> Python27
10/07/2018 15.55 <DIR> Users
06/03/2017 16.20 <DIR> wifi
15/08/2018 12.08 <DIR> Windows
03/10/2017 07.49 <DIR> Windows10Upgrade
06/04/2018 14.52 <DIR> xamp
    1 File(s) 515 bytes
16 Dir(s) 176.543.584.256 bytes free

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 lab1
The system cannot find the path specified.

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>
```

boot.asm - Notepad

```
File Edit Format View Help
; *****
; LAB-1 : boot-strap loader - real mode
; untuk memindahkan file OS dari floppy disk format DOS FAT12
; *****

; atur mode kerja 16 bit (real-mode)
[BITS 16]

; Menentukan lokasi awal dari program
[ORG 0x0000]

; loncat ke label START
jmp START

; Keterangan format floppy disk format FAT12

OEM_ID          db "QUASI-OS"
BytesPerSector   dw 0x2000
SectorsPerCluster dw 0x01
ReservedSectors  dw 0x0001
TotalFATs        db 0x02
MaxRootEntries   dw 0x00E0
TotalSectorsSmall dw 0x0B40
MediaDescriptor   db 0xF0
SectorsPerFAT     dw 0x0009
SectorsPerTrack   dw 0x0012
```

3. Ketik "notepad makefile" untuk membuat file di notepad. Dimana itu berisikan fungsi boot yang memunculkan sebuah fungsi untuk mengcopy byte dari file kedalam file lain. Yatu file floppya

```
Directory of C:\

02/01/2018 00.09 <DIR> 103
08/05/2018 21.57 <DIR> copy Lectora (Pertemuan 7 Komputasi MPB)
26/10/2013 15.55 <DIR> Crack
04/04/2018 13.49 <DIR> gradasi
05/10/2016 01.06 <DIR> Intel
11/03/2017 14.51 515 Local Disk (D) - Shortcut.lnk
15/09/2018 11.46 <DIR> OS
02/01/2018 15.19 <DIR> palistya
12/04/2018 06.38 <DIR> PerfLogs
15/09/2018 11.42 <DIR> Program Files
15/09/2018 11.41 <DIR> Program Files (x86)
08/01/2018 04.00 <DIR> Python27
10/07/2018 15.55 <DIR> Users
06/03/2017 16.20 <DIR> wifi
15/08/2018 12.08 <DIR> Windows
03/10/2017 07.49 <DIR> Windows10Upgrade
06/04/2018 14.52 <DIR> xamp
    1 File(s) 515 bytes
16 Dir(s) 176.543.584.256 bytes free

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 lab1
The system cannot find the path specified.

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>
```

Makefile - Notepad

```
#
# LAB01 - Makefile
#
fp.disk: boot
    dd if=boot.bin of=floppya.img

boot: boot.asm
    nasm boot.asm -o boot.bin -f bin

kernel: kernel.asm
    nasm kernel.asm -o kernel.bin -f bin

clean:
    rm -f *.bin boot kernel
```

4. Ketik del floppya yang berfungsi untuk menghapus file floppya.img dalam file LAB1

```
C:\OS\LAB\LAB1>Notepad boot.asm
C:\OS\LAB\LAB1>notepad Makefile
C:\OS\LAB\LAB1>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\OS\LAB\LAB1

15/09/2018 11.46 <DIR> .
15/09/2018 11.46 <DIR> ..
11/09/2017 10.48 8.358 bochsout.txt
15/12/2008 16.17 1.628 bochsrc.bxrc
17/10/2016 14.36 14.339 boot.asm
17/10/2016 14.50 512 boot.bin
11/09/2017 10.37 512 boots.bin
16/09/2007 16.22 18.432 bximage.exe
11/09/2017 10.21 10.321.920 c.img
26/02/2007 20.50 342.016 dd.exe
15/12/2008 00.47 78 dosfp.bat
11/09/2017 10.46 1.474.560 floppya.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
31/01/2000 05.00 261.120 tdump.exe
               14 File(s)   12.451.712 bytes
               2 Dir(s)  176.541.577.216 bytes free

C:\OS\LAB\LAB1>del floppya.img/p
C:\OS\LAB\LAB1\floppya.img, Delete (Y/N)? Y

C:\OS\LAB\LAB1>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\OS\LAB\LAB1

15/09/2018 12.06 <DIR> .
15/09/2018 12.06 <DIR> ..
11/09/2017 10.48 8.358 bochsout.txt
15/12/2008 16.17 1.628 bochsrc.bxrc
17/10/2016 14.36 14.339 boot.asm
```

5. Akan muncul pilihan Y/N maka ketik Y maka file floppya akan terhapus

```
C:\OS\LAB\LAB1>Command Prompt - bximage
11/09/2017 10.46 1.474.560 floppya.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
31/01/2000 05.00 261.120 tdump.exe
               14 File(s)   12.451.712 bytes
               2 Dir(s)  176.541.577.216 bytes free

C:\OS\LAB\LAB1>del floppya.img/p
C:\OS\LAB\LAB1\floppya.img, Delete (Y/N)? Y

C:\OS\LAB\LAB1>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\OS\LAB\LAB1

15/09/2018 12.06 <DIR> .
15/09/2018 12.06 <DIR> ..
11/09/2017 10.48 8.358 bochsout.txt
15/12/2008 16.17 1.628 bochsrc.bxrc
17/10/2016 14.36 14.339 boot.asm
17/10/2016 14.50 512 boot.bin
11/09/2017 10.37 512 boots.bin
16/09/2007 16.22 18.432 bximage.exe
11/09/2017 10.21 10.321.920 c.img
26/02/2007 20.50 342.016 dd.exe
15/12/2008 00.47 78 dosfp.bat
14/12/2008 11.45 7.966 kernel.asm
15/12/2008 16.21 227 Makefile
15/12/2008 12.20 44 s.bat
31/01/2000 05.00 261.120 tdump.exe
               13 File(s)   10.977.152 bytes
               2 Dir(s)  176.390.012.928 bytes free

C:\OS\LAB\LAB1>bximage
=====
Disk Image Creation Tool for Bochs
$ID: bximage_C,v 1.32 2006/06/16 07:29:33 vrupert Exp $
=====

Do you want to create a floppy disk image or a hard disk image?
Please type hd or fd. [hd] ]
```

6. Lalu ketik bximage yang berfungsi untuk membuat boot disk. Lalu ketik fd yang berfungsi untuk menampilkan pilihan size image

7. Lalu ketik floppya.image agar kembali masuk kedalam folder LAB

```
Command Prompt - bximage
16/09/2007 16.22          18.432 bximage.exe
11/09/2017 10.21          10.321.920 c.img
26/02/2007 20.50          342.016 dd.exe
15/12/2008 00.47          78 dosfp.bat
14/12/2008 11.45          7.966 kernel.asm
15/12/2008 16.21          227 Makefile
15/12/2008 12.20          44 s.bat
31/01/2000 05.00          261.120 tdump.exe
13 File(s)   10.977.152 bytes
2 Dir(s)    176.390.012.928 bytes free

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]
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
```

Activate Windows
Go to Settings to activate Windows.

8. Kemudian ketik dir untuk mengetahui apakah file floppya sudah ada pada file LAB1

9. Lalu ketik DosFp yang berfungsi untuk menampilkan bochs for windows

```
Bochs for Windows - Console
Press any key to continue

C:\OS\LAB\LAB1>dir
Volume in drive C has no label.
Volume Serial Number is E0E-E0100

Directory of C:\OS\LAB\LAB1

15/09/2018 12.27 <DIR> .
15/09/2018 12.27 <DIR> ..
11/09/2017 10.48     8.358 bochsout.txt
15/12/2008 16.17     1.628 bochsrc.bxrc
17/10/2016 14.36     14.339 boot.asm
17/10/2016 14.50      512 boot.bin
11/09/2017 10.37      512 boots.bin
16/09/2007 16.22     18.432 bximage.exe
11/09/2017 10.21     10.321.920 c.img
26/02/2007 20.50     342.016 dd.exe
15/12/2008 00.47      78 dosfp.bat
15/09/2018 12.27     1.474.560 floppya.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
31/01/2000 05.00     261.120 tdump.exe
14 File(s)   12.451.712 bytes
2 Dir(s)    176.012.763.136 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 : V340
Device Name : OSLAB
Transfer Mode : Programmed I/O
Drive 0: Port= 1FO (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 + Lbutton + Rbutton enables mouse
A: B: -HD:0-N CD:0-S NUM CAPS SCRL
Activate Windows
Go to Settings to activate Windows.
```

Activate Windows
Go to Settings to activate Windows.

10. Ketik dd if=floppya.img of=boots.bin count = 1 maksut dari perintah ini adalah menyalin byte data dari file 'floppya.img' kedalam file boots.bin sebanyak satu sektor mulai dari sektor 0.

```
Command Prompt
000000000001] reading configuration from bochsrc2.txt
000000000001] installing win32 module as the Bochs GUI
000000000001] using log file bochsout.txt
# in bx_w32_gui_::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\lab1"
C:\OS\LAB\LAB1>dd if=floppya.img of=boots.bin count=1
Rawrite 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>dir
Volume in drive C has no label.
Volume Serial Number is E0E-E0100

Directory of C:\OS\LAB\LAB1

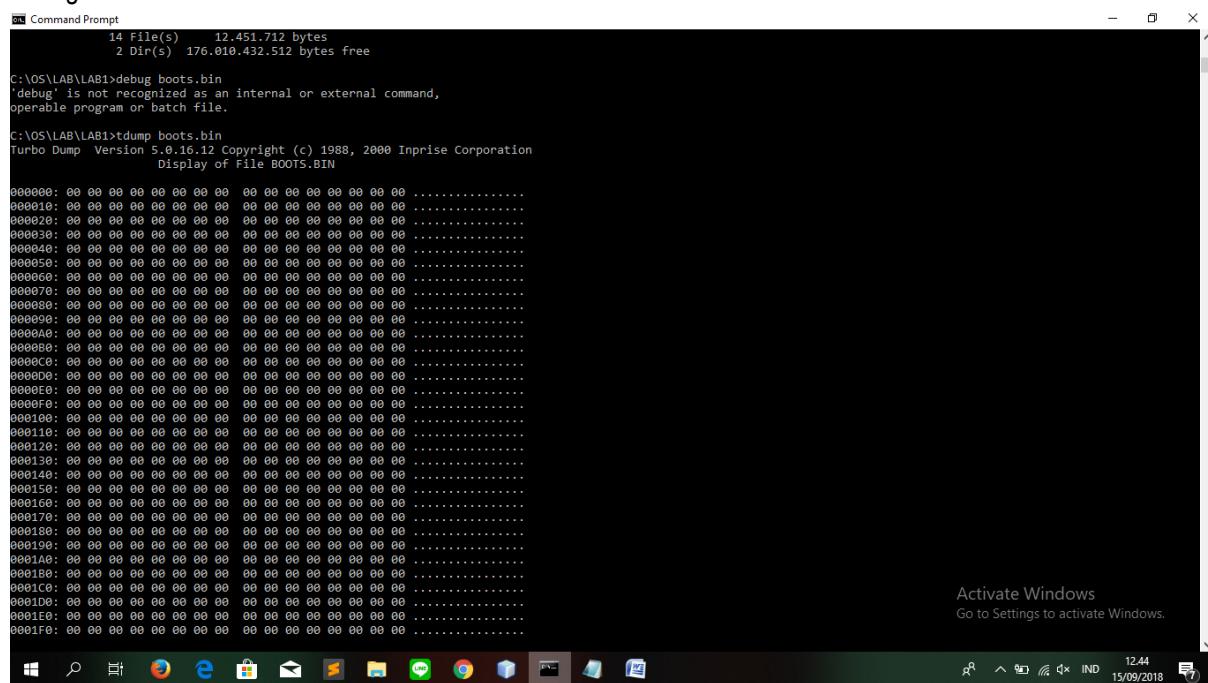
15/09/2018 12.27    <DIR>      .
15/09/2018 12.27    <DIR>      ..
11/09/2017 10.48        8.358 bochsout.txt
15/12/2008 16.17        1.628 bochsrc.bxrc
17/10/2016 14.36        14.339 boot.asm
17/10/2016 14.50          512 boot.bin
15/09/2018 12.38          512 boots.bin
16/09/2007 16.22        18.432 bximage.exe
11/09/2017 10.21        10.321.920 c.img
26/02/2007 20.50        342.016 dd.exe
15/12/2008 00.47          78 dosfp.bat
15/09/2018 12.27        1.474.560 floppya.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
31/01/2000 05.00        261.120 tdump.exe
               14 File(s)   12.451.712 bytes
               2 Dir(s)  176.010.432.512 bytes free

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

Activate Windows
Go to Settings to activate Windows.

12.41 15/09/2018

10. Ketik debug boots.bin maksut perintah ini adalah memindahi data file boots.bin ke dalam memori kerja 'debug'.



```
14 File(s) 12.451.712 bytes
2 Dir(s) 176.010.432.512 bytes free

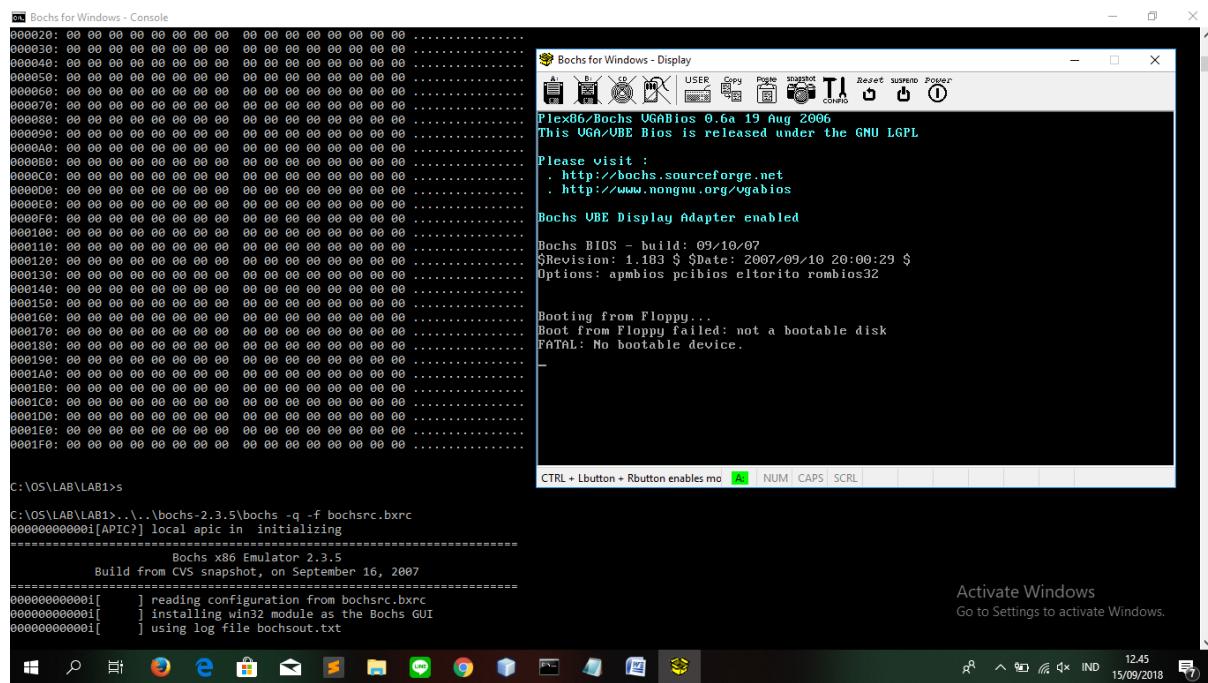
C:\OS\LAB\LAB1>debug boots.bin
'debug' is not recognized as an internal or external command,
operable program or batch file.

C:\OS\LAB\LAB1>tdump boots.bin
Turbo Dump Version 5.0.16.12 Copyright (c) 1988, 2000 Inprise Corporation
Display of File BOOTS.BIN

000000: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000010: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000020: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000030: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000040: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000050: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000060: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000070: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000080: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000090: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000A0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000B0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000C0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000100: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000110: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000120: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000130: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000140: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000150: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000160: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000170: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000180: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000190: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001A0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001B0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001C0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Activate Windows
Go to Settings to activate Windows.

11. Ketik "s" untuk menampilkan windows bochs for windows – display yang sedang melakukan proses booting namun tidak berhasil karena tidak menemukan diskboot.



```
000020: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000030: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000040: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000050: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000060: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000070: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000080: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000090: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000A0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000B0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000C0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0000F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000100: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000110: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000120: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000130: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000140: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000150: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000160: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000170: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000180: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000190: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001A0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001B0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001C0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0001F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Bochs for Windows - Display

Plex86-Bochs VGA/Bios 0.6a 19 Aug 2006
This VGA/VBE Bios is released under the GNU LGPL

Please visit :
. http://bochs.sourceforge.net
. http://www.nongnu.org/vgabios

Bochs VBE Display Adapter enabled

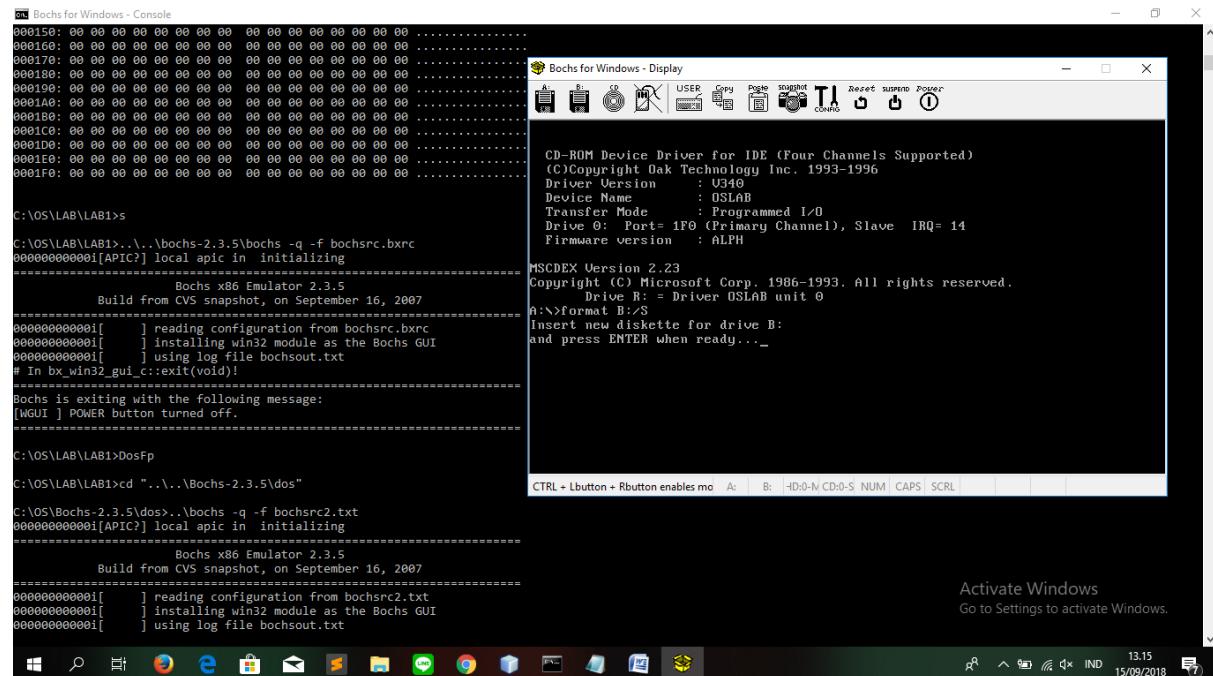
Bochs BIOS - build: 09/10/07
\$Revision: 1.103 \$ \$Date: 2007/09/10 20:00:29 \$
Options: apmbios pcibios eltorito rombios32

Booting from Floppy..
Boot from Floppy failed: not a bootable disk
FATAL: No bootable device.

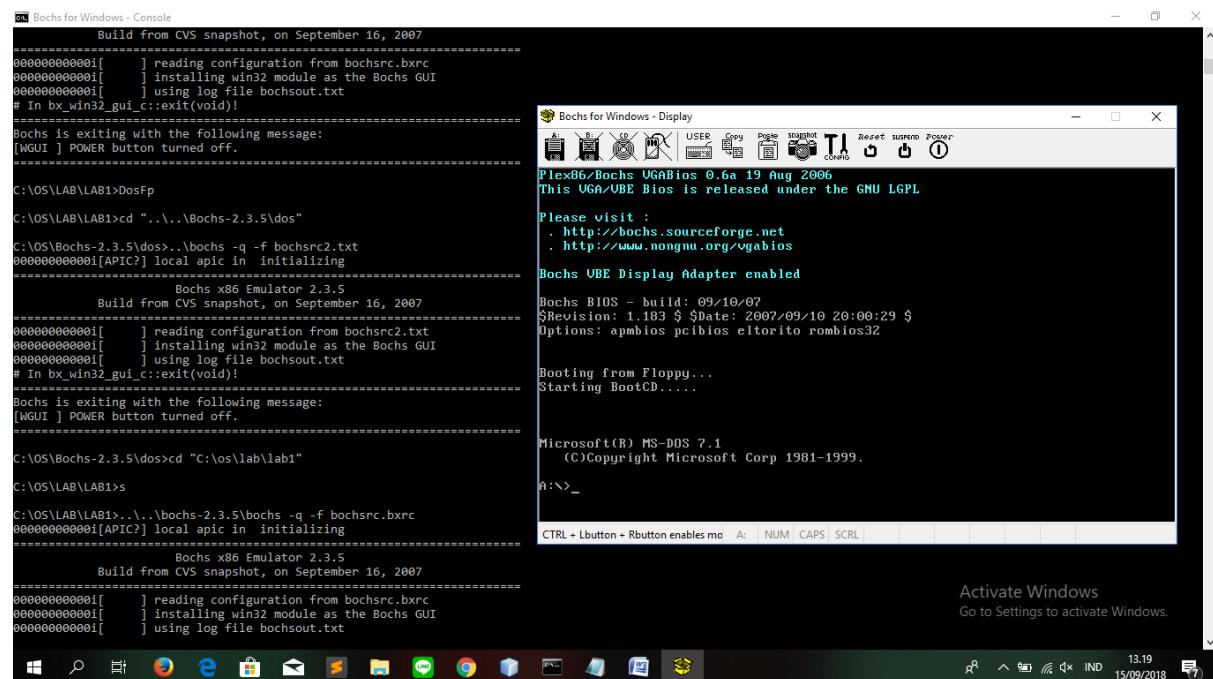
CTRL + Lbutton + Rbutton enables mouse

Activate Windows
Go to Settings to activate Windows.

12. Ketik " DosFp" dan akan muncul bochs for windows-display lalu masukan printah "format B:/S" lalu enter



14. Ketikkan " s" dan akan menampilkan proses booting pada bochs windows-display, jika benar maka hasil akhir akan sama seperti di buku Modul.



MODUL 2

1. Sebelum kita menjalan kan perintah. Kita ketik “setpath” untuk mengatur lingkungan kerja(PATH) selama kita melakukan praktikum. Lalu cek dir untuk mengetahui pada direktori kerja.

```
cmd Command Prompt
Microsoft Windows [Version 10.0.16299.15]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Customer>cd C:/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 is OS 10
Volume Serial Number is 46A0-22AE

Directory of C:\OS\LAB\LAB2

25/09/2018 15.20    <DIR>      .
25/09/2018 15.20    <DIR>      ..
25/09/2018 15.24        10.279 bochs.log
15/12/2008 16.18        1.625 bochsrc.bxrc
08/09/2016 06.33        15.926 boot.asm
08/09/2016 06.33        512 boot.bin
15/12/2008 13.52        78 dosfp.bat
25/09/2018 15.20        1.474.560 floppya.img
08/09/2016 06.36        7.959 kernel.asm
08/09/2016 06.36        604 kernel.bin
19/09/2018 12.10    <DIR>      LAB2
15/12/2008 16.21        228 Makefile
15/12/2008 12.20        44 s.bat
18 File(s)   1.511.815 bytes
3 Dir(s)   86.255.656.960 bytes free

C:\OS\LAB\LAB2>del floppya.img

C:\OS\LAB\LAB2>dir
Volume in drive C is OS 10
Volume Serial Number is 46A0-22AE

Directory of C:\OS\LAB\LAB2
```

2. Lalu ketik “del floppya.img” untuk menghapus file floppya pada direktori kerja. Untuk memastikannya ketik “dir”. Lalu setelah itu ketik ‘bxImage’seperti yang sudah dijelaskan pada modul.

```
cmd Command Prompt
C:\OS\LAB\LAB2>dir
Volume in drive C is OS 10
Volume Serial Number is 46A0-22AE

Directory of C:\OS\LAB\LAB2

25/09/2018 15.28    <DIR>      .
25/09/2018 15.28    <DIR>      ..
25/09/2018 15.24        10.279 bochs.log
15/12/2008 16.18        1.625 bochsrc.bxrc
08/09/2016 06.33        15.926 boot.asm
08/09/2016 06.33        512 boot.bin
15/12/2008 13.52        78 dosfp.bat
08/09/2016 06.36        7.959 kernel.asm
08/09/2016 06.36        604 kernel.bin
19/09/2018 12.10    <DIR>      LAB2
15/12/2008 16.21        228 Makefile
15/12/2008 12.20        44 s.bat
9 File(s)   37.255 bytes
3 Dir(s)   86.188.961.792 bytes free

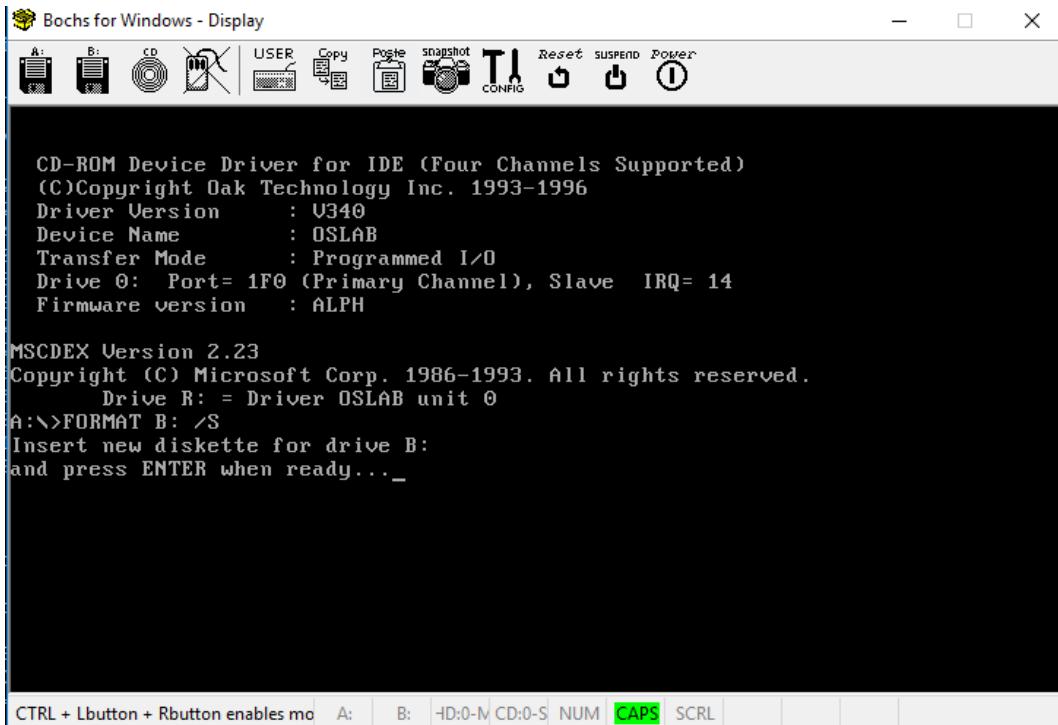
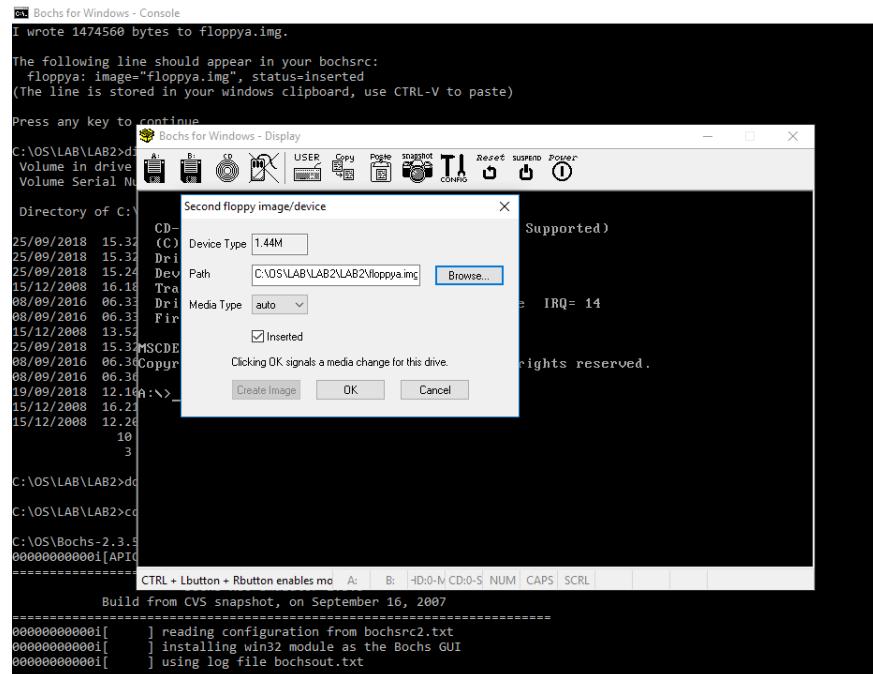
C:\OS\LAB\LAB2>bxImage
=====
Disk Image Creation Tool for Bochs
$Id: bximage.c,v 1.32 2006/06/16 07:29:33 vruppert Exp $
=====

Do you want to create a floppy disk image or a hard disk image?
Please type hd or fd. [hd] fd

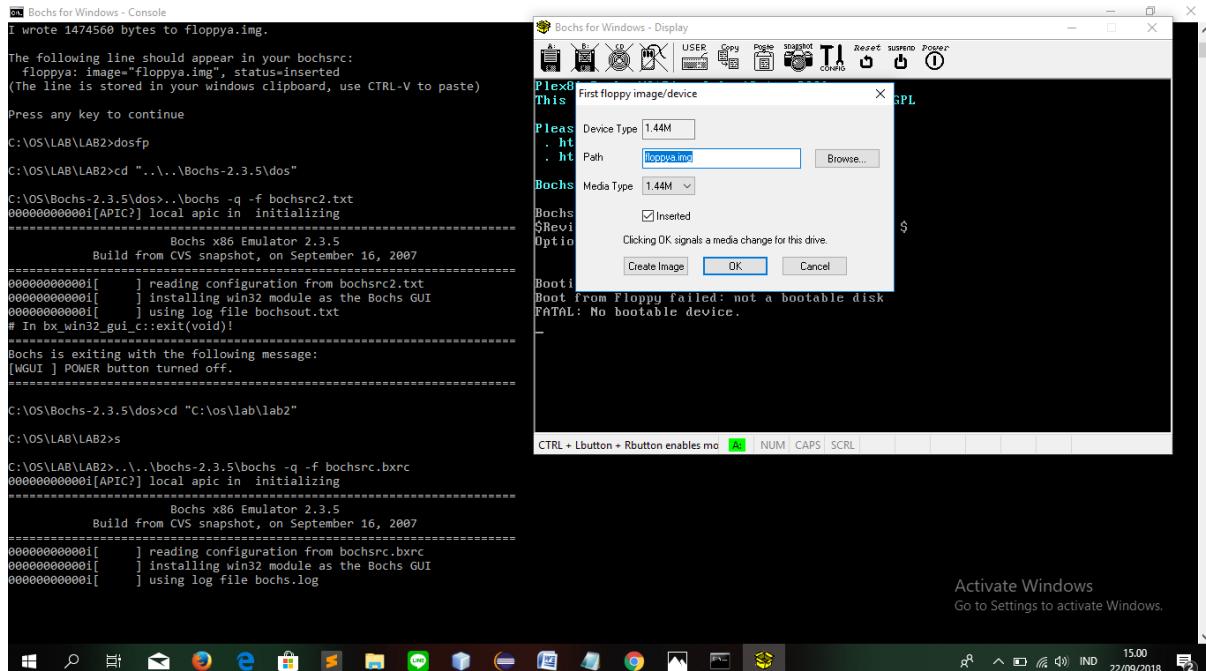
Choose the size of floppy disk image to create, in megabytes.
Please type 0.16, 0.18, 0.32, 0.36, 0.72, 1.2, 1.44, 1.68, 1.72, or 2.88.
[1.44] 1.44
I will create a floppy image with
  cyl=80
  heads=2
  sectors per track=18
  total sectors=2880
  total bytes=1474560

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

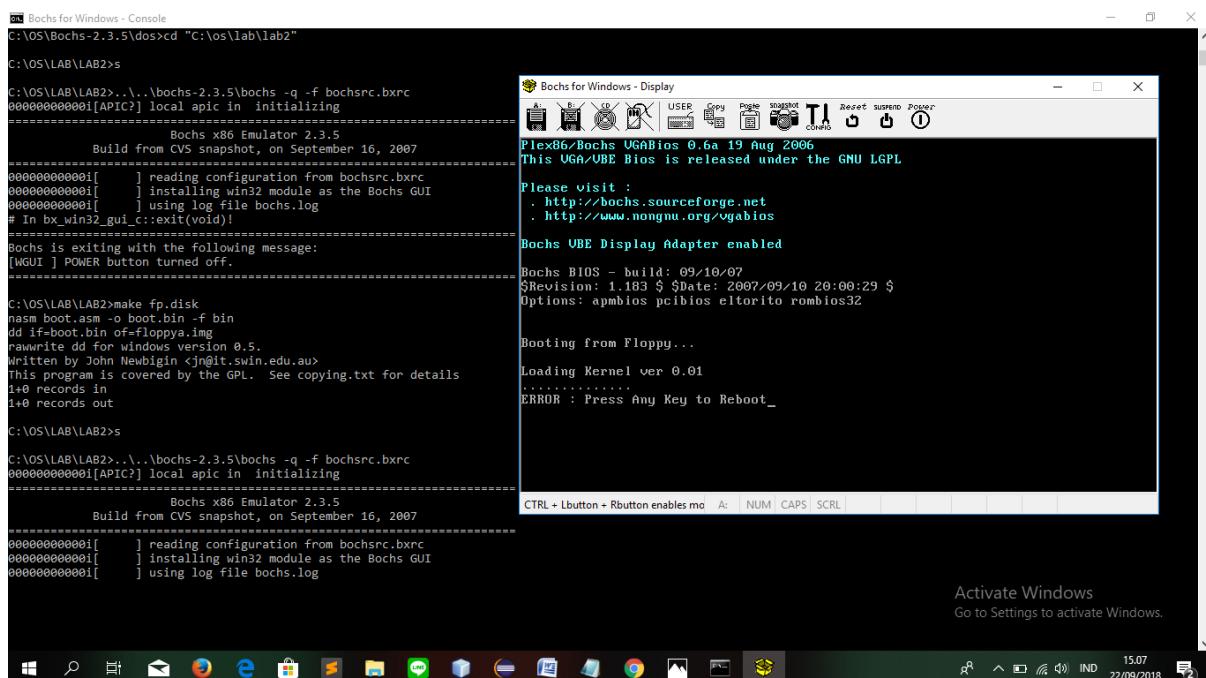
3. Lalu ketik floppya.img unntuk memanggil lagi dan cek dir kembali. Lalu ketik “dosfp” untuk memunculkan “Bochs (‘PC Simulator’)” lalu pastikan petunjuk lokasi floppya.img ke dalam LAB2. Lalu ketikan perintah selanjutnya yang ada pada modul.



4. Setelah menutup bochs dengan tanda power diatas, selanjutnya ketik “Format B:/S” . Lalu lanjutkan perintah mengetik “ s” lalu enter untuk menampilkan PC simulator yang akan melaksanakan proses boot disk.pastikan tekan drive A untuk memastikan terdapat file floppya lalu klik oke dan ketik tombol “power”.



5. Lalu ketik “make fp.disk” lalu enter.lalu jika benar akan muncul seperti gambar di modul. Lalu setelah itu ketik kembali “S” lalu enter dan akan muncul pc simulator sesuai yang terdapat di modul/dibawah ini :



6. Selanjutnya tutup pc simulator . selanjutnya menyunting file “ boot.asm” ketikan “Notepad boot.asm” lalu enter. Lalu tekan tombol CTRL+F untuk mencari file loading kernel dengan mudah. Lalu klik enter dan klik cancel sesuai perintah pada modul.

```

Command Prompt
C:\OS\LAB\LAB2>..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
000000000001[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc.bxrc
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] 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 fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppya.img
rawrite 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
000000000001[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc.bxrc
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] 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

```

7. Selanjutnya sunting baris variabel ‘msgloading’ seperti yang di modul. Lalu sunting juga kata-kata “ERROR : Press any key to reboot” dengan “nama Dan NIM mahasiswa” dengan cara yang sama yg di simpan pada variabel ‘msgFailure’ lalu simpan file boot.asm dengan cara tekan CTRL+S pada notepad.

```

Command Prompt
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:
[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
000000000001[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc.bxrc
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] 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 fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppya.img
process_begin: CreateProcess((null), dd if=boot.bin of=floppya.img, ...) failed.
make (e=2): The system cannot find the file specified.
make: *** [fp.disk] Error 2

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppya.img
rawrite 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

```

8. Dilanjutkan dengan mengetik “Make fp.disk” lalu Enter setelah itu ketik kembali “S” untuk menampilkan PC simulator dan akan muncul sesuai yang sudah kita sunting tadi. Jika kita salah menyunting maka hasil tidak akan sesuai. Di sini akan muncul tampilan “ Belajar membuat BOOTSTRAP-LOADER dan ROSSANTI KUSUMADEWI (L200170092)”

```

Bochs for Windows - Console
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\ Bochs for Windows - Display
C:\OS\LAB\ 0000000000
Plex86/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

# In bx_wi Bochs UBE Display Adapter enabled
Bochs is eBochs BIOS - build: 09/10/07
[WGUI ] PO$Revision: 1.183 $Date: 2007/09/10 20:00:29 $
Options: apmbios pcibios eltorito rombios32

C:\OS\LAB\ Booting from Floppy...
C:\OS\LAB\ nasm boot Belajar membuat BOOTSTRAP-LOADER
dd if=boot.....
rawrite d ROSSANTI KUSUMADEWI (L200170092)_
Written by
This program
1+0 record
1+0 record

C:\OS\LAB\ CTRL + Lbutton + Rbutton enables mo A: NUM CAPS SCRLL
C:\OS\LAB\ C:\OS\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 is exiting with the following message:
[WGUI ] POWER button turned off.
=====

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 E0E-E100

Directory of C:\OS\LAB\LAB2

22/09/2018 14.50 <DIR> .
22/09/2018 14.50 <DIR> ..
22/09/2018 15.32 10.276 bochs.log
15/12/2008 23.18 1.625 bochsrc.bxrc
22/09/2018 15.25 15.922 boot.asm
22/09/2018 15.27 512 boot.bin
16/09/2007 23.22 18.432 bximage.exe
27/02/2007 03.50 342.016 dd.exe
15/12/2008 20.52 78 dosfp.bat
22/09/2018 15.27 1.474.560 floppya.img
19/09/2018 12.09 7.966 kernel.asm
22/09/2018 15.33 611 kernel.bin
15/12/2008 23.21 228 Makefile
15/12/2008 19.20 44 s.bat
12 File(s) 1.872.270 bytes
2 Dir(s) 173.572.395.000 bytes free
=====
Activate Windows
Go to Settings to activate Windows.

```

9. Selanjutnya untuk menyiapkan file ‘KERNEL.BIN’ lakukan perintah ketik make kernel lalu enter jika benar maka akan muncul gambar seperti dibawah ini. Jika berhasil maka direktori kerja anda akan ada penambahan file “kernel.bin” agar lebih yakin silakan cek “dir”.

```

Command Prompt
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
# In bx_win32_gui ::exit(void)
=====
Bochs is exiting with the following message:
[WGUI ] POWER button turned off.
=====

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 E0E-E100

Directory of C:\OS\LAB\LAB2

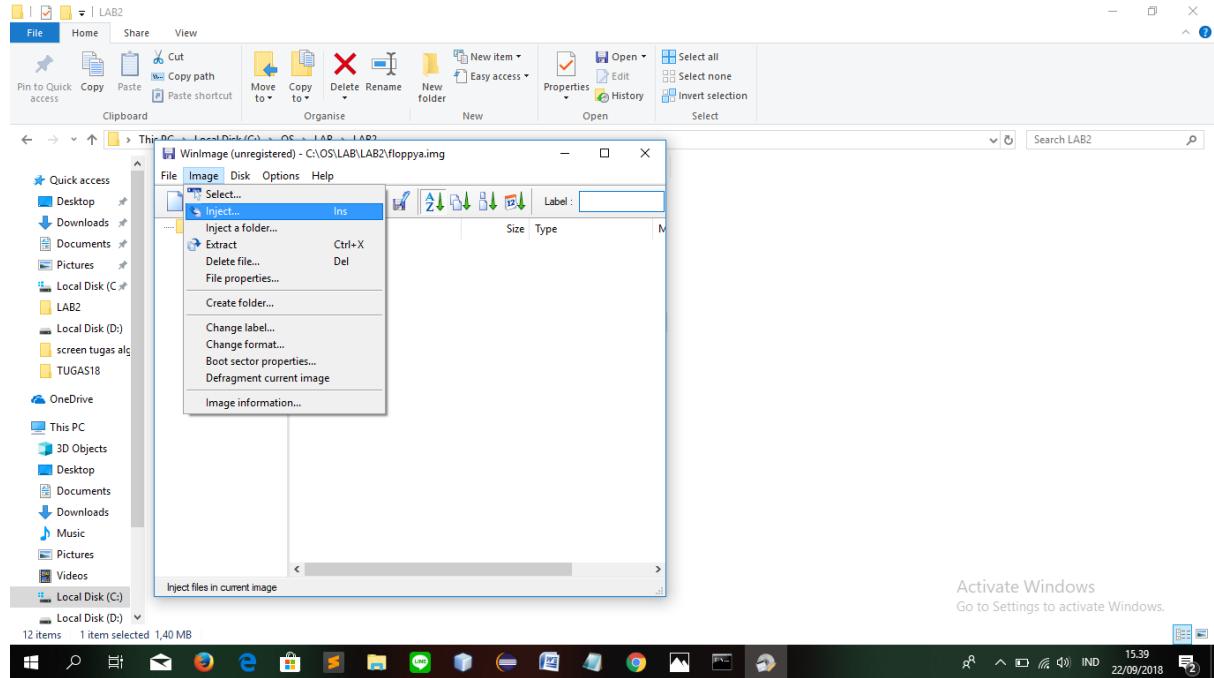
22/09/2018 14.50 <DIR> .
22/09/2018 14.50 <DIR> ..
22/09/2018 15.32 10.276 bochs.log
15/12/2008 23.18 1.625 bochsrc.bxrc
22/09/2018 15.25 15.922 boot.asm
22/09/2018 15.27 512 boot.bin
16/09/2007 23.22 18.432 bximage.exe
27/02/2007 03.50 342.016 dd.exe
15/12/2008 20.52 78 dosfp.bat
22/09/2018 15.27 1.474.560 floppya.img
19/09/2018 12.09 7.966 kernel.asm
22/09/2018 15.33 611 kernel.bin
15/12/2008 23.21 228 Makefile
15/12/2008 19.20 44 s.bat
12 File(s) 1.872.270 bytes
2 Dir(s) 173.572.395.000 bytes free
=====

Activate Windows
Go to Settings to activate Windows.

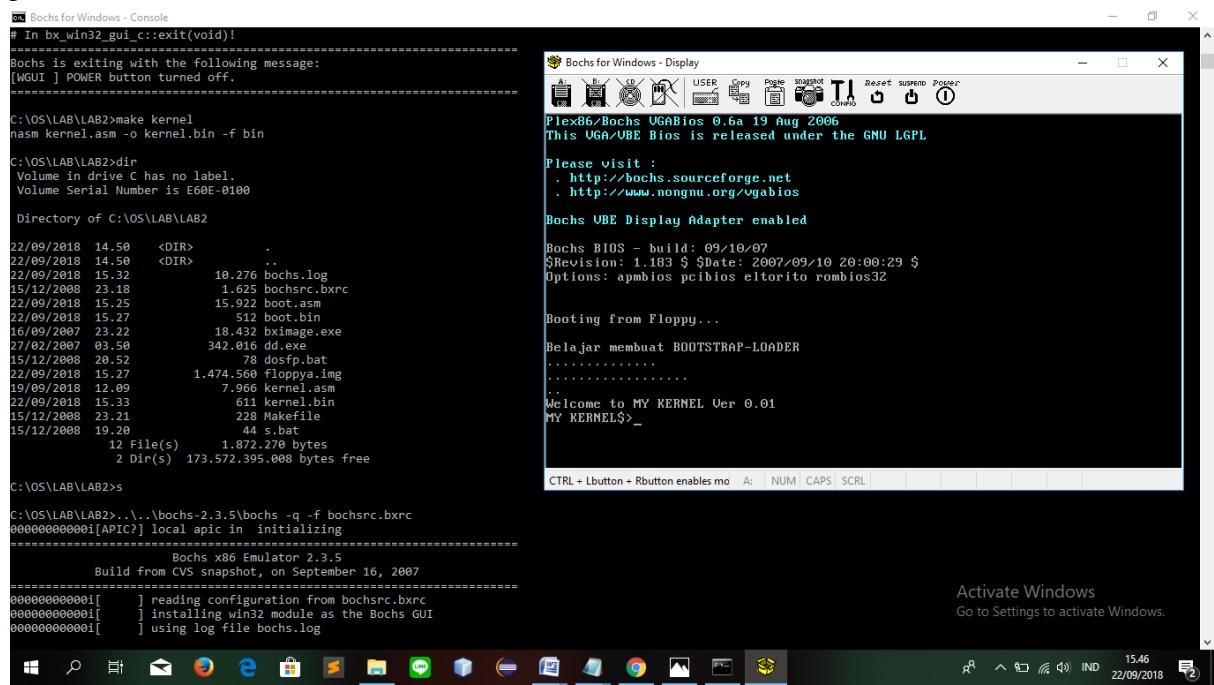
C:\OS\LAB\LAB2>

```

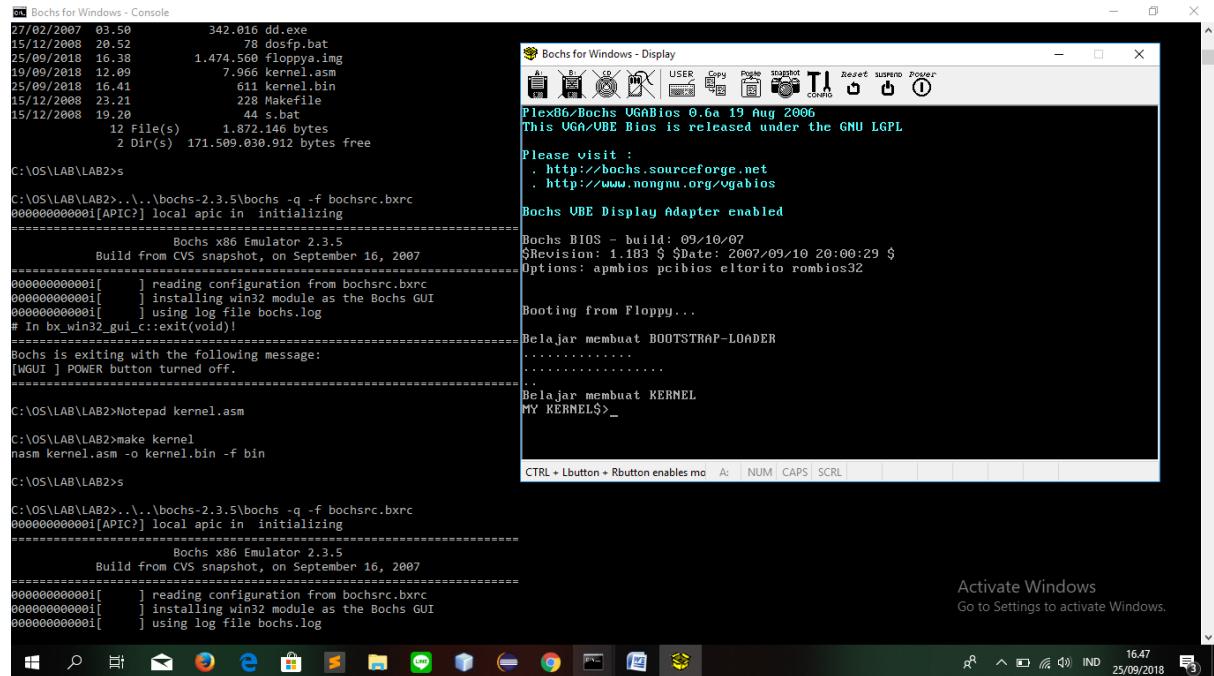
10. Lalu untuk memindahkan file ‘kernel.bin’ kedalam sebuah file image ‘floppya.img’. proses ini akan sedikit rumit, caranya sudah dijelaskan pada MODUL.cari file floppya yang ada pada data C lalu masukan file ‘kernel.bin’ pada window winImage klik menu iject dari file” kernel.bin” pada direktori kerja dan tekan tombol “OK”



11. Lalu ketik “S” yang akan memunculkan PC simulator jika benar maka akan mucul gambar dibawah ini:



12. Lalu lakukan modifikasi kecil pada file “kernel.asm” lalu ketik “Notepad kernel.asm” lalu cari Welcome to MY KERNEL lalu ganti “ belajar membuat kernel” lalu simpan . selanjutnya lakukan proses memindahkan file kernel.bin ke dalam floppya.img dengan winImage. Terakhir ketik “S” lalu jika benar akan tampil seperti gambar dibawah ini.



The screenshot shows a dual-pane interface. The left pane is a terminal window titled 'Bochs for Windows - Console' displaying command-line output. The right pane is a graphical display window titled 'Bochs for Windows - Display' showing a simulated floppy disk drive with a single file named 'kernel.bin'. The terminal output includes:

```

27/02/2007 03.50      342.016 dd.exe
15/12/2008 20.52      78 dosfp.bat
25/09/2018 16.38      1.474.560 floppya.img
19/09/2018 12.09      7.966 kernel.asm
25/09/2018 16.41      611 kernel.bin
15/12/2008 23.21      228 Makefile
15/12/2008 19.20      44 s.bat
12 File(s)   1.872.146 bytes
2 Dir(s)    171.509.030.912 bytes free

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
# In bx_win32_gui.c:_exit(void)
=====
Bochs is exiting with the following message:
[WGUT ] POWER button turned off.

=====
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
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

```

The right pane displays the Bochs BIOS splash screen with the message "Bochs UBE Display Adapter enabled". Below it, the simulated floppy disk is shown with the file "kernel.bin". The status bar at the bottom of the terminal window shows "CTRL + Lbutton + Rbutton enables mo". The taskbar at the bottom of the screen shows various icons for Windows applications like File Explorer, Task Manager, and Internet Explorer.

Proses diatas merupakan proses pengembangan sistem perasi yang paling dasar, setiap sistem operasi, seperti windows,linux,unix mac dll akan melakuka tahapan tersebut.

MODUL 3

1. Mulai melakukan debugging dengan memasukkan perintah "S". Layar pada PC Simulator akan terlihat gelap, tidak ada aktifitas, tidak ada kesalahan disana tetapi jalannya program dihentikan oleh "Bochs" menunggu masukan dari user.

```
Bochs for Windows - Console
Microsoft Windows [Version 10.0.16299.15]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Customer>cd C:/OS

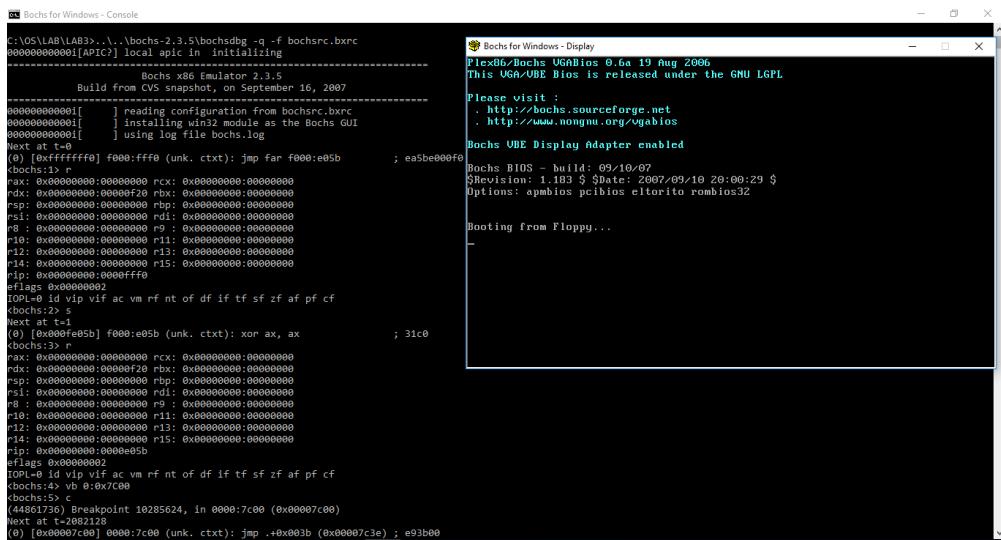
C:\OS>setpath

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\LAB3

C:\OS\LAB\LAB3>s

C:\OS\LAB\LAB3>..\..\bochs-2.3.5\bochsrcdbg -q -f bochsrc.bxrc
000000000001[APIC?]
local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc.bxrc
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochs.log
Next at t=0
(0) [0xfffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:00000f20 rbx: 0x00000000:00000000
rsp: 0x00000000:00000000 rbp: 0x00000000:00000000
rsi: 0x00000000:00000000 rdi: 0x00000000:00000000
r8 : 0x00000000:00000000 r9 : 0x00000000:00000000
r10: 0x00000000:00000000 r11: 0x00000000:00000000
r12: 0x00000000:00000000 r13: 0x00000000:00000000
r14: 0x00000000:00000000 r15: 0x00000000:00000000
rip: 0x00000000:000eff0
eflags 0x00000002
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:> s
Next at t=1
(0) [0x000fe05b] f000:e05b (unk. ctxt): xor ax, ax ; 31c0
```

2. Kondisi pada gambar di bawah menjelaskan kondisi PC pada mode "Real Mode" yang sedang akan menjalankan program yang pertama kali (0), yaitu program yang terdapat pada alamat 'F000:FFF0'



3. Melihat isi register CS dan IP dengan perintah 'r'.

The screenshot shows two windows. On the left is the 'Bochs for Windows - Console' window displaying assembly code with comments and registers. On the right is the 'Bochs for Windows - Display' window showing the BIOS boot process, including the message 'Bochs UBE Display Adapter enabled' and 'Bochs BIOS - build: 09/10/07'.

```

Bochs for Windows - Console
eflags 0x00000002
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:>4> vb 0:0x7C00
<bochs:>5> c
(44861736) Breakpoint 10285624, in 0000:7c00 (0x00007c00)
Next at t=2082128
(0) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x00007c3e) ; e93b00
<bochs:>6> s
Next at t=2082129
(0) [0x00007c3e] 0000:7c3e (unk. ctxt): cli ; fa
<bochs:>7> s
Next at t=2082130
(0) [0x00007c3f] 0000:7c3f (unk. ctxt): mov ax, 0x07c0 ; b8c007
<bochs:>8> s
Next at t=2082131
(0) [0x00007c42] 0000:7c42 (unk. ctxt): mov ds, ax ; 8ed8
<bochs:>9> s
Next at t=2082132
(0) [0x00007c44] 0000:7c44 (unk. ctxt): mov es, ax ; 8ec0
<bochs:>10> s
Next at t=2082133
(0) [0x00007c46] 0000:7c46 (unk. ctxt): mov fs, ax ; 8ee0
<bochs:>11> s
Next at t=2082134
(0) [0x00007c48] 0000:7c48 (unk. ctxt): mov gs, ax ; 8ee8
<bochs:>12> s
Next at t=2082135
(0) [0x00007c4a] 0000:7c4a (unk. ctxt): mov ax, 0x0000 ; b80000
<bochs:>13> s
Next at t=2082136
(0) [0x00007c4d] 0000:7c4d (unk. ctxt): mov ss, ax ; 8ed0
<bochs:>14> s
Next at t=2082137
(0) [0x00007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xfffff ; bcffff
<bochs:>15> s
Next at t=2082138
(0) [0x00007c52] 0000:7c52 (unk. ctxt): sti ; fb
<bochs:>16>

```

4. Jika ingin tahu tahapan detail yang dilakukan oleh PC, jalankan dengan perintah 's' secara berulang. Kemudian, kita suruh berhenti saat PC mulai memasuki tahapan proses BOOT, yang dimulai pada alamat 0000:7C00. Membandingkan 10 instruksi yang akan dieksekusi oleh PC dengan program yang terdapat pada 'boot.asm'.

The screenshot shows two windows. On the left is the 'Bochs for Windows - Console' window displaying assembly code with comments and registers. On the right is a 'Notepad' window titled 'bootasm - Notepad' containing the assembly code for 'boot.asm'.

```

Bochs for Windows - Console
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:>4> vb 0:0x7C00
<bochs:>5> c
(44861736) Breakpoint 10285624, in 0000:7c00 (0x00007c00)
Next at t=2082128
(0) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x00007c3e) ; e93b00
<bochs:>6> s
Next at t=2082129
(0) [0x00007c3e] 0000:7c3e (unk. ctxt): cli ; fa
<bochs:>7> s
Next at t=2082130
(0) [0x00007c3f] 0000:7c3f (unk. ctxt): mov ax, 0x07c0 ; b8c007
<bochs:>8> s
Next at t=2082131
(0) [0x00007c42] 0000:7c42 (unk. ctxt): mov ds, ax ; 8ed8
<bochs:>9> s
Next at t=2082132
(0) [0x00007c44] 0000:7c44 (unk. ctxt): mov es, ax ; 8ec0
<bochs:>10> s
Next at t=2082133
(0) [0x00007c46] 0000:7c46 (unk. ctxt): mov fs, ax ; 8ee0
<bochs:>11> s
Next at t=2082134
(0) [0x00007c48] 0000:7c48 (unk. ctxt): mov gs, ax ; 8ee8
<bochs:>12> s
Next at t=2082135
(0) [0x00007c4a] 0000:7c4a (unk. ctxt): mov ax, 0x0000 ; b80000
<bochs:>13> s
Next at t=2082136
(0) [0x00007c4d] 0000:7c4d (unk. ctxt): mov ss, ax ; 8ed0
<bochs:>14> s
Next at t=2082137
(0) [0x00007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xfffff ; bcffff
<bochs:>15> s
Next at t=2082138
(0) [0x00007c52] 0000:7c52 (unk. ctxt): sti ; fb
<bochs:>16>

bootasm - Notepad
File Edit Format View Help
;(3) Blok BOOT CODE
=====
START:
; Mengatur lokasi kode program pada alamat 7C00:0000, dan mengatur REGISTERS
    cli                                ; matikan aktifitas interupsi
    mov     ax, 0x07C0
    mov     ds, ax
    mov     es, ax
    mov     fs, ax
    mov     gs, ax

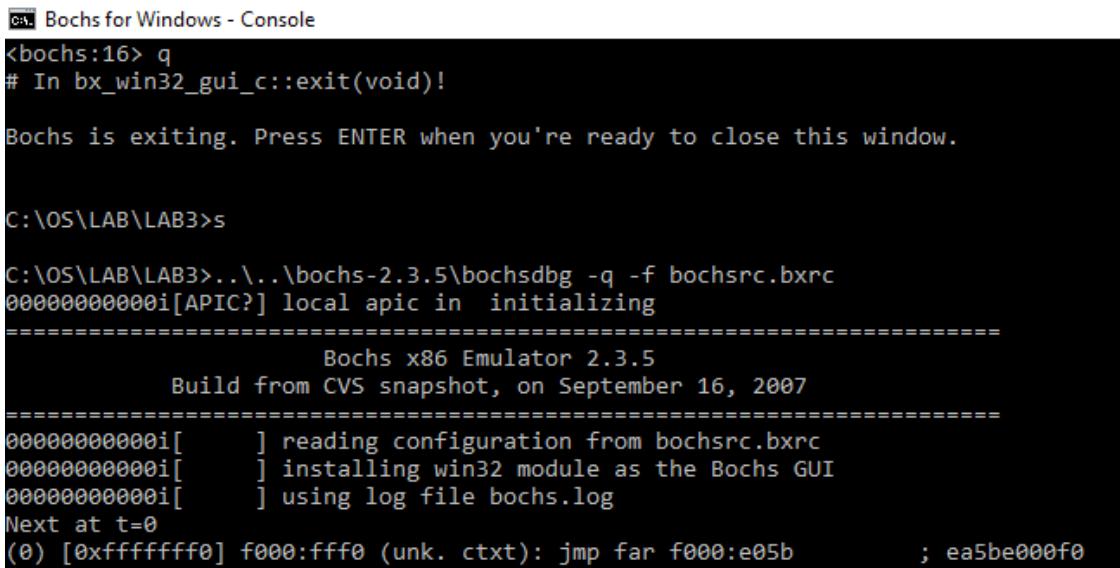
; Mengatur lokasi stack
    mov     ax, 0x0000
    mov     ss, ax
    mov     sp, 0xFFFF ; sp bergerak dari alamat atas ke bawah
    sti                                ; aktifkan aktifitas interupsi

; Menampilkan text di layar
    mov     si,msgLoading             ; mengambil lokasi text yang di simpan
    call    DisplayMessage

LOAD_ROOT:

```

5. Jika terjadi kesalahan, dapat menghentikan proses dengan perintah 'q'. Dan mengulangi proses dari awal atau klik tombol power pada pd simulator.



```

Bochs for Windows - Console
<bochs:16> q
# In bx_win32_gui_c::exit(void)!

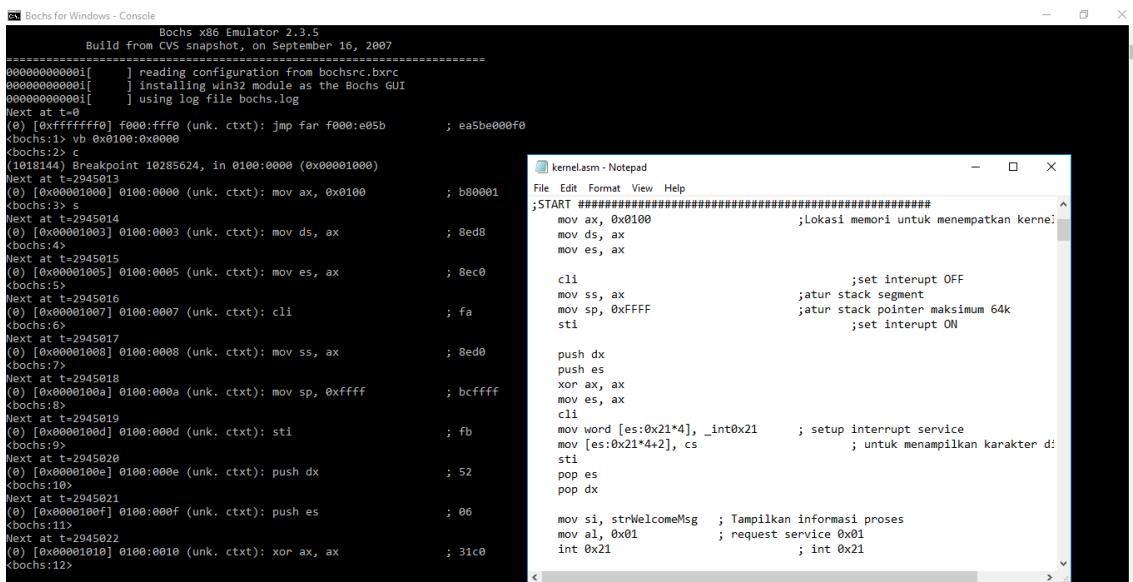
Bochs is exiting. Press ENTER when you're ready to close this window.

C:\OS\LAB\LAB3>s

C:\OS\LAB\LAB3>..\\bochs-2.3.5\bochsrc -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
Next at t=0
(0) [0xfffffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b           ; ea5be000f0

```

6. Teruskan langkah pc simulator step-by-step minimal sebanyak 10x, ketik 's' , step berikutnya dapat dilakukan dengan menekan tombol enter secara langsung.



The screenshot shows the Bochs console window on the left and a Notepad window on the right. The console output shows the step-by-step execution of the program, with the instruction at address 0x0000000000000000 being a jump to address 0x00000000e05b. The Notepad window contains assembly code for the kernel, specifically the setup interrupt service routine.

```

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
Next at t=0
(0) [0xfffffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b           ; ea5be000f0
<bochs:1> s
(101814) Breakpoint 10285624, in 0100:0000 (0x00001000)
Next at t=2945013
(0) [0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100           ; b80001
<bochs:2> s
(0) [0x00001004] 0100:0003 (unk. ctxt): mov ds, ax           ; 8ed8
<bochs:3>
Next at t=2945015
(0) [0x00001005] 0100:0005 (unk. ctxt): mov es, ax           ; 8ec0
<bochs:5>
Next at t=2945016
(0) [0x00001007] 0100:0007 (unk. ctxt): cli           ; fa
<bochs:6>
Next at t=2945017
(0) [0x00001008] 0100:0008 (unk. ctxt): mov ss, ax           ; 8ed0
<bochs:7>
Next at t=2945018
(0) [0x0000100a] 0100:000a (unk. ctxt): mov sp, 0xffff           ; bcffff
<bochs:8>
Next at t=2945019
(0) [0x0000100d] 0100:000d (unk. ctxt): sti           ; fb
<bochs:9>
Next at t=2945020
(0) [0x0000100e] 0100:000e (unk. ctxt): push dx           ; 52
<bochs:10>
Next at t=2945021
(0) [0x0000100f] 0100:000f (unk. ctxt): push es           ; 06
<bochs:11>
Next at t=2945022
(0) [0x00001010] 0100:0010 (unk. ctxt): xor ax, ax           ; 31c0
<bochs:12>

kernel.asm - Notepad
File Edit Format View Help
;START ##### lokasi memori untuk menempatkan kernel#####
        mov ax, 0x0100           ;atur stack segment
        mov ds, ax           ;atur stack pointer maksimum 64k
        mov es, ax           ;set interrupt ON
        cli           ;set interrupt OFF
        mov ss, ax           ;atur stack segment
        mov sp, 0xFFFF           ;atur stack pointer maksimum 64k
        sti           ;set interrupt ON
        push dx
        push es
        xor ax, ax
        mov es, ax
        cli
        mov word [es:0x21*4], _int0x21           ; setup interrupt service
        mov [es:0x21*4+2], cs           ; untuk menampilkan karakter di layar
        sti
        pop es
        pop dx
        mov si, strWelcomeMsg ; Tampilkan informasi proses
        mov al, 0x01           ; request service 0x01
        int 0x21           ; int 0x21

```

MODUL 4

PERCOBAAN PERTAMA

1. ketik ver.
2. ketik dir.

```
Command Prompt
Microsoft Windows [Version 10.0.17134.285]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\ASUS>ver
Microsoft Windows [Version 10.0.17134.285]

C:\Users\ASUS>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\Users\ASUS

26/09/2018 17.01 <DIR> .
26/09/2018 17.01 <DIR> ..
15/09/2018 14.30 <DIR> .eclipse
14/09/2017 21.09 <DIR> .gnome2
14/09/2017 21.09 1.171 .gvrngrc
11/11/2017 11.18 <DIR> .idlerc
06/07/2018 22.49 <DIR> .LINE
15/09/2018 13.26 <DIR> .nbi
15/09/2018 10.53 <DIR> .oracle_jre_usage
25/09/2018 17.40 <DIR> .p2
14/09/2017 20.56 <DIR> .PyCharmCE2017.2
06/07/2018 22.49 <DIR> .QtWebEngineProcess
13/10/2017 12.19 218 .recently-used.xbel
15/09/2018 14.30 <DIR> .tooling
26/09/2018 17.03 <DIR> .VirtualBox
18/08/2018 14.40 <DIR> 3D Objects
01/01/2018 23.18 0 C
15/09/2018 11.51 0 cd
18/08/2018 14.40 <DIR> Contacts
01/01/2018 23.06 0 d
18/08/2018 14.40 <DIR> Desktop
01/01/2018 23.23 0 dir
01/01/2018 23.23 0 dirbd
03/10/2018 16.50 <DIR> Documents
05/10/2018 23.19 <DIR> Downloads
15/09/2018 14.30 <DIR> eclipse-workspace
18/08/2018 14.40 <DIR> Favorites
24/04/2018 17.48 <DIR> greenfoot
28/09/2017 16.30 <DIR> GVR
21/10/2017 12.23 204.043 gvr_stderr.log
21/10/2017 12.25 824 gvr_stdout.log

Activate Windows
Go to Settings to activate Windows.

Windows PowerShell - 10.0.17134.285 - IND 10.04 07/10/2018
```

3. ketik cd.
4. ketik dir.

```
Command Prompt
21/10/2017 12.25 824 gvr_stdout.log
18/08/2018 14.40 <DIR> Links
18/08/2018 14.40 <DIR> Music
06/10/2018 16.24 <DIR> OneDrive
25/09/2018 17.52 <DIR> Pictures
20/09/2017 08.54 <DIR> PycharmProjects
18/08/2018 14.40 <DIR> Saved Games
18/08/2018 14.40 <DIR> Searches
06/10/2018 16.22 <DIR> Videos
 9 File(s) 206.256 bytes
 30 Dir(s) 171.196.178.432 bytes free

C:\Users\ASUS>cd..
'cd..' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\ASUS>cd
C:\Users\ASUS

C:\Users\ASUS>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\Users\ASUS

26/09/2018 17.01 <DIR> .
26/09/2018 17.01 <DIR> ..
15/09/2018 14.30 <DIR> .eclipse
14/09/2017 21.09 <DIR> .gnome2
14/09/2017 21.09 1.171 .gvrngrc
11/11/2017 11.18 <DIR> .idlerc
06/07/2018 22.49 <DIR> .LINE
15/09/2018 13.26 <DIR> .nbi
15/09/2018 10.53 <DIR> .oracle_jre_usage
25/09/2018 17.40 <DIR> .p2
14/09/2017 20.56 <DIR> .PyCharmCE2017.2
06/07/2018 22.49 <DIR> .QtWebEngineProcess
13/10/2017 12.19 218 .recently-used.xbel
15/09/2018 14.30 <DIR> .tooling
26/09/2018 17.03 <DIR> .VirtualBox
18/08/2018 14.40 <DIR> 3D Objects
01/01/2018 23.18 0 C
15/09/2018 11.51 0 cd
18/08/2018 14.40 <DIR> Contacts

Activate Windows
Go to Settings to activate Windows.

Windows PowerShell - 10.0.17134.285 - IND 10.09 07/10/2018
```

5. ketik cd windows.

6. ketik dir/p.

```
Windows Command Prompt
25/09/2018 17.52 <DIR> Pictures
20/09/2017 08.54 <DIR> PycharmProjects
18/08/2018 14.40 <DIR> Saved Games
18/08/2018 14.40 <DIR> Searches
06/10/2018 16.22 <DIR> Videos
9 File(s) 206.256 bytes
30 Dir(s) 171.196.014.592 bytes free

C:\Users\ASUS>cd windows
The system cannot find the path specified.

C:\Users\ASUS>dir/p
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\Users\ASUS

26/09/2018 17.01 <DIR> .
26/09/2018 17.01 <DIR> ..
15/09/2018 14.30 <DIR> .eclipse
14/09/2017 21.09 <DIR> .gnome2
14/09/2017 21.09 1.171 .gvrngrc
11/11/2017 11.18 <DIR> .idlrc
06/07/2018 22.49 <DIR> .LINE
15/09/2018 13.26 <DIR> .nbi
15/09/2018 10.53 <DIR> .oracle_jre_usage
25/09/2018 17.40 <DIR> .p2
14/09/2017 20.56 <DIR> .PyCharmCE2017.2
06/07/2018 22.49 <DIR> .QtWebEngineProcess
13/10/2017 12.19 218 .recently-used.xbel
15/09/2018 14.30 <DIR> .tooling
26/09/2018 17.03 <DIR> .VirtualBox
18/08/2018 14.40 <DIR> 3D Objects
01/01/2018 23.18 0 C
15/09/2018 11.51 0 cd
18/08/2018 14.40 <DIR> Contacts
01/01/2018 23.06 0 d
18/08/2018 14.40 <DIR> Desktop
01/01/2018 23.23 0 dir
01/01/2018 23.23 0 dirbd
03/10/2018 16.50 <DIR> Documents
05/10/2018 23.19 <DIR> Downloads
15/09/2018 14.30 <DIR> eclipse-workspace
Activate Windows
Go to Settings to activate Windows.

07/10/2018 10.11
```

7. ketik dir/w

```
Windows Command Prompt
01/01/2018 23.23 0 dir
01/01/2018 23.23 0 dirbd
03/10/2018 16.50 <DIR> Documents
05/10/2018 23.19 <DIR> Downloads
15/09/2018 14.30 <DIR> eclipse-workspace
18/08/2018 14.40 <DIR> Favorites
24/04/2018 17.48 <DIR> greenfoot
28/09/2017 16.30 <DIR> GVR
21/10/2017 12.23 204.043 gvr_stderr.log
21/10/2017 12.25 824 gvr_stdout.log
18/08/2018 14.40 <DIR> Links
18/08/2018 14.40 <DIR> Music
06/10/2018 16.24 <DIR> OneDrive
25/09/2018 17.52 <DIR> Pictures
20/09/2017 08.54 <DIR> PycharmProjects
18/08/2018 14.40 <DIR> Saved Games
18/08/2018 14.40 <DIR> Searches
Press any key to continue . . .
06/10/2018 16.22 <DIR> Videos
9 File(s) 206.256 bytes
30 Dir(s) 171.196.080.128 bytes free

C:\Users\ASUS>dir/w
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\Users\ASUS

[.] [...] [.eclipse] [.gnome2] [.gvrngrc] [.idlrc] [.LINE]
[.nbi] [...] [.oracle_jre_usage] [.p2] [...] cd [...] .recently-used.xbel [...] .tooling]
[.VirtualBox] [...] [3D Objects] C [...] [Contacts] d [...] [Desktop]
dir [...] dirbd [...] [Documents] [Downloads] [...] [eclipse-workspace] [Favorites] [greenfoot]
[GVR] [...] gvr_stderr.log [...] gvr_stdout.log [...] [Links] [Music] [OneDrive] [Pictures]
[PycharmProjects] [...] [Saved Games] [...] [Searches] [...] [Videos]
9 File(s) 206.256 bytes
30 Dir(s) 171.196.080.128 bytes free

C:\Users\ASUS>dir/a
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\Users\ASUS

07/10/2018 17.01 <DIR> .
Activate Windows
Go to Settings to activate Windows.

07/10/2018 10.12
```

8. ketik dir/a

```
C:\Users\ASUS>dir/a
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\Users\ASUS

26/09/2018 17.01 <DIR> .
26/09/2018 17.01 <DIR> ..
15/09/2018 14.30 <DIR> .eclipse
14/09/2017 21.09 <DIR> .gnome2
14/09/2017 21.09 1.171 .gvrngrc
11/11/2017 11.18 <DIR> .idlrc
06/07/2018 22.49 <DIR> .LINE
15/09/2018 13.26 <DIR> .nbi
15/09/2018 10.53 <DIR> .oracle_jre_usage
25/09/2018 17.40 <DIR> .p2
14/09/2017 20.56 <DIR> .PyCharmCE2017.2
06/07/2018 22.49 <DIR> .QtWebEngineProcess
13/10/2017 12.19 218 .recently-used.xbel
15/09/2018 14.30 <DIR> .tooling
26/09/2018 17.03 <DIR> .VirtualBox
10/07/2018 15.56 <DIR> AppData
01/01/2018 23.18 0 C
15/09/2018 11.51 0 cd
18/08/2018 14.40 <DIR> Contacts
01/01/2018 23.06 0 d
18/08/2018 14.40 <DIR> Desktop
01/01/2018 23.23 0 dir
01/01/2018 23.23 0 dirbd
03/10/2018 16.50 <DIR> Documents
05/10/2018 23.19 <DIR> Downloads
15/09/2018 14.30 <DIR> eclipse-workspace
18/08/2018 14.40 <DIR> Favorites
24/04/2018 17.48 <DIR> greenfoot
28/09/2017 16.30 <DIR> Gvr
21/10/2017 12.23 204.043 gvr_stderr.log
21/10/2017 12.25 824 gvr_stdout.log
07/10/2018 02.17 <DIR> IntelGraphicsProfiles
18/08/2018 14.40 <DIR> Links
01/12/2017 14.06 <DIR> MicrosoftEdgeBackups
18/08/2018 14.40 <DIR> Music
07/10/2018 02.15 6.029.312 NTUSER.DAT
10/07/2018 15.55 327.680 ntuser.dat.LOG1
10/07/2018 15.55 589.824 ntuser.dat.LOG2
10/07/2018 15.55 65.536 NTUSER.DAT(0bia3e78-841e-11e8-8f05-b8aea81f2312).TM.blf
10/07/2018 15.55 524.288 NTUSER.DAT(0bia3e78-841e-11e8-8f05-b8aea81f2312).TMContainer00000000000000000000000000000001.regtrans-ms
10/07/2018 15.55 524.288 NTUSER.DAT(0bia3e78-841e-11e8-8f05-b8aea81f2312).TMContainer00000000000000000000000000000002.regtrans-ms
10/07/2018 16.14 20 ntuser.ini
06/10/2018 16.24 <DIR> OneDrive
25/09/2018 17.52 <DIR> Pictures
20/09/2017 08.54 <DIR> PyCharmProjects
18/08/2018 14.40 <DIR> Saved Games
18/08/2018 14.40 <DIR> Searches
06/10/2018 16.22 <DIR> Videos
16 File(s) 8.267.204 bytes
33 Dir(s) 171.196.088.128 bytes free
```

Activate Windows
Go to Settings to activate Windows.

9. ketik exit untuk keluar dari command prompt

```
C:\Users\ASUS>exit
```

Activate Windows
Go to Settings to activate Windows.

Percobaan ketiga

1. Buat folder yg bernama files lalu arahkan kursor ke daerah yg kosong,klik kanan-new-microsoft word document lalu ganti dengan nama file1.
2. ketik ver
3. cd C:/
4. ketik dir
5. cd files
6. dir

```
Windows PowerShell
Copyright (c) Microsoft Corporation. All rights reserved.

C:\Users\ASUS>ver
Microsoft Windows [Version 10.0.17134.285]
C:\Users\ASUS>cd C:/
C:\  
C:\>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\

02/01/2018  00.09    <DIR>          103
27/09/2018  13.45    <DIR>          build
08/05/2018  21.57    <DIR>          copy Lectora (Pertemuan 7 Komputasi MPB)
26/10/2013  15.55    <DIR>          Crack
09/10/2018  00.03    <DIR>          files
04/04/2018  13.49    <DIR>          gradasi
05/10/2016  01.06    <DIR>          Intel
19/09/2018  12.35    282,922 LAB2.rar
11/03/2017  14.51    515 Local Disk (D) - Shortcut.lnk
27/09/2018  13.41    <DIR>          nbproject
25/09/2018  16.31    <DIR>          OS
02/01/2018  15.19    <DIR>          palistya
12/04/2018  06.38    <DIR>          PerfLogs
26/09/2018  17.01    <DIR>          Program Files
15/09/2018  11.41    <DIR>          Program Files (x86)
08/01/2018  04.00    <DIR>          Python27
27/09/2018  13.54    <DIR>          src
10/07/2018  15.55    <DIR>          Users
06/03/2017  16.20    <DIR>          wifi
17/09/2018  13.38    <DIR>          Windows
03/10/2017  07.49    <DIR>          Windows10Upgrade
06/04/2018  14.52    <DIR>          xamp
               2 File(s)      283,437 bytes free
               28 Dir(s)   170,388,025,344 bytes free

C:\>cd files
C:\files>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100
```

7. ketik cd files dan ketik dir
8. ketik ren file1.docx file.docx
9. ketik rename file.docx file2.docx
10. ketik dir untuk mengecek apakah nama file1 sudah berubah menjadi file2

The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command history is as follows:

```
26/09/2018 17.01    <DIR>      Program Files
15/09/2018 11.41    <DIR>      Program Files (x86)
08/01/2018 04.00    <DIR>      Python27
27/09/2018 13.54    <DIR>      src
10/07/2018 15.55    <DIR>      Users
06/03/2017 16.20    <DIR>      wifi
17/09/2018 13.38    <DIR>      Windows
03/10/2017 07.49    <DIR>      Windows10Upgrade
06/04/2018 14.52    <DIR>      xamp
      2 File(s)   283,437 bytes
     20 Dir(s)  170,388,025,344 bytes free

C:\>cd files
C:\files>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\files

09/10/2018 00.03    <DIR>      .
09/10/2018 00.03    <DIR>      ..
09/10/2018 00.03          0 file1.docx
      1 File(s)       0 bytes
      2 Dir(s)  170,388,553,728 bytes free

C:\files>ren file1.docx file.docx
C:\files>rename file.docx file2.docx
C:\files>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\files

09/10/2018 00.05    <DIR>      .
09/10/2018 00.05    <DIR>      ..
09/10/2018 00.03          0 file2.docx
      1 File(s)       0 bytes
      2 Dir(s)  170,388,094,976 bytes free

C:\files>
```

Activate Windows
Go to Settings to activate Windows.

Percobaan keempat

1. ketik cd..
2. buat folder baru pada drive C yg bernama files2
3. ketik copy C:\files C:\files2
4. ketik cd files
5. ketik copy c:\files\file2.docx d:\
6. ketik D:\
7. ketik dir untuk memastikan apakah file sudah ada pada drive D

```
Windows Command Prompt

C:\files>cd..
C:\files>copy C:\files C:\files2
C:\files\file2.docx
    1 file(s) copied.

C:\files>cd files
C:\files>copy c:\files\file2.docx d\
Overwrite d:\file2.docx? (Yes/No/All): y
    1 file(s) copied.

C:\files>D:
D:\>dir
 Volume in drive D has no label.
 Volume Serial Number is 3ED0-BDDC

 Directory of D:\

21/09/2018 22.05    <DIR>        APIKA
21/09/2018 22.20    <DIR>        ATI
08/10/2018 22.40    <DIR>        backgrounds ppt
08/10/2018 15.30    <DIR>        baru
09/10/2018 00.03    0 file2.docx
06/10/2018 16.40    <DIR>        iphone
02/01/2018 13.40    <DIR>        kegiatan1
05/10/2018 22.34    <DIR>        kunjungan
06/04/2018 00.35    515 Local Disk (C) - Shortcut.lnk
14/09/2018 20.37    <DIR>        mbD
20/03/2018 17.13    <DIR>        My Music
17/07/2018 22.30    <DIR>        Nasyid Video
09/10/2018 00.06    <DIR>        UNIVERSITAS
04/04/2018 00.01    708 Videos - Shortcut.lnk
            3 File(s)   1.223 bytes
           11 Dir(s)  204.087.242.752 bytes free

D:\>C:
C:\files>cd..
C:\files>del files
C:\files*, Are you sure (Y/N)? y

Activate Windows
Go to Settings to activate Windows.

08.54 09/10/2018
```

8. ketik C:

9. cd..

10. ketik del files lalu yes

11. ketik perintah cd C:/Users

12. ketik perintah cd ASUS

13. ketik perintah xcopy desktop D:baru\ /s/e lalu pilih atau ketik a

```
as Command Prompt

D:\>C:
C:\files>cd..
C:\>del files
C:\files*, Are you sure (Y/N)? y
C:\>cd C:/Users
C:\Users>cd ASUS

C:\Users\ASUS>xcopy desktop D:baru\ /s/e
desktop\flip PDF Professional.lnk
desktop\Google Chrome.lnk
desktop\Greenfoot.lnk
desktop\GVRing.lnk
desktop\halaman.html
desktop\HSPA Modem.lnk
desktop\IDLE (Python 3.6 32-bit).lnk
desktop\Internet Download Manager.lnk
desktop\Microsoft Edge.lnk
desktop\Microsoft Office Excel 2007.lnk
desktop\Microsoft Office PowerPoint 2007.lnk
desktop\Microsoft Office Publisher 2007.lnk
desktop\Microsoft Office Word 2007.lnk
desktop\Notepad++.lnk
desktop\PhotoScape.lnk
desktop\Photoshop CSS.lnk
desktop\Python 3.6 (32-bit).lnk
desktop\style.css
desktop\Windows 10 Update Assistant.lnk
19 File(s) copied

C:\Users\ASUS>d:
D:\>dir
 Volume in drive D has no label.
 Volume Serial Number is 3ED0-BDDC

 Directory of D:\

21/09/2018 22.05 <DIR>      APIKA
21/09/2018 22.20 <DIR>      ATI

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

14. ketik perintah d:

15. ketik perintah dir

16. ketik perintah cd baru

17. ketik perintah dir

```
OK Command Prompt
19 File(s) copied
C:\Users\ASUS>d:
D:>dir
Volume in drive D has no label.
Volume Serial Number is 3ED0-BDDC

Directory of D:\

21/09/2018 22.05      <DIR>          APLIKA
21/09/2018 22.20      <DIR>          ATI
08/10/2018 22.40      <DIR>          backgrounds ppt
09/10/2018 10.24      <DIR>          baru
09/10/2018 10.13          0 file2.docx
06/10/2018 16.40      <DIR>          iphone
02/07/2018 13.40      <DIR>          kegiatan1
05/10/2018 22.34      <DIR>          kunjungan
06/04/2018 00.35          515 Local Disk (C) - Shortcut.lnk
14/09/2018 20.37      <DIR>          mbD
20/03/2018 17.13      <DIR>          My Music
17/07/2018 22.30      <DIR>          Nasyid Video
09/10/2018 00.06      <DIR>          UNIVERSITAS
04/04/2018 00.01          708 Videos - Shortcut.lnk
            3 File(s)           1.223 bytes
           11 Dir(s)  204.085.710.848 bytes free

D:>cd baru
D:\baru>dir
Volume in drive D has no label.
Volume Serial Number is 3ED0-BDDC

Directory of D:\baru

09/10/2018 10.24      <DIR>          .
09/10/2018 10.24      <DIR>          .
28/04/2018 10.18          1.222 Flip PDF Professional.lnk
10/07/2018 16.15          2.332 Google Chrome.lnk
24/04/2018 15.55          2.002 Greenfoot.lnk
14/09/2017 21.08          1.016 GvRng.lnk
13/12/2017 01.52          580 halaman.html
06/07/2017 17.14          1.059 HSPA Modem.lnk
14/09/2017 21.06          2.682 IDLE (Python 3.6 32-bit).lnk
Activate Windows
Go to Settings to activate Windows.
10.37
09/10/2018
```

```
OK Command Prompt
06/10/2018 16.40      <DIR>          iphone
02/07/2018 13.40      <DIR>          Kegiatan1
05/10/2018 22.34      <DIR>          kunjungan
06/04/2018 00.35          515 Local Disk (C) - Shortcut.lnk
14/09/2018 20.37      <DIR>          mbD
20/03/2018 17.13      <DIR>          My Music
17/07/2018 22.30      <DIR>          Nasyid Video
09/10/2018 00.06      <DIR>          UNIVERSITAS
04/04/2018 00.01          708 Videos - Shortcut.lnk
            3 File(s)           1.223 bytes
           11 Dir(s)  204.085.710.848 bytes free

D:>cd baru
D:\baru>dir
Volume in drive D has no label.
Volume Serial Number is 3ED0-BDDC

Directory of D:\baru

09/10/2018 10.24      <DIR>          .
09/10/2018 10.24      <DIR>          .
28/04/2018 10.18          1.222 Flip PDF Professional.lnk
10/07/2018 16.15          2.332 Google Chrome.lnk
24/04/2018 15.55          2.002 Greenfoot.lnk
14/09/2017 21.08          1.016 GvRng.lnk
13/12/2017 01.52          580 halaman.html
06/07/2017 17.14          1.059 HSPA Modem.lnk
14/09/2017 21.06          2.682 IDLE (Python 3.6 32-bit).lnk
04/06/2018 13.50          1.078 Internet Download Manager.lnk
10/07/2018 16.16          1.417 Microsoft Edge.lnk
17/02/2017 15.35          2.671 Microsoft Office Excel 2007.lnk
17/02/2017 15.35          2.661 Microsoft Office PowerPoint 2007.lnk
17/02/2017 15.35          2.627 Microsoft Office Publisher 2007.lnk
17/02/2017 15.35          2.709 Microsoft Office Word 2007.lnk
27/09/2017 15.09          1.714 Notepad++.lnk
05/10/2016 01.14          1.100 PhotoShop.lnk
05/10/2016 01.13          893 Photoshop CS5.lnk
14/09/2017 21.06          1.491 Python 3.6 (32-bit).lnk
13/12/2017 01.53          449 style.css
03/10/2017 07.48          797 Windows 10 Update Assistant.lnk
            19 File(s)           30.500 bytes
           2 Dir(s)  204.085.710.848 bytes free
Activate Windows
Go to Settings to activate Windows.
10.38
09/10/2018
```

Percobaan kelima

1. ketik perintah c:
2. ketik perintah cd C:/
3. ketik perintah md baru
4. ketik perintah dir

```
Windows Command Prompt
D:\baru>cd..
C:\Users\ASUS>cd..
'cd..' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\ASUS>cd C:/
C:\>md baru

C:\>dir
 Volume in drive C has no label.
 Volume Serial Number is E60E-0100

 Directory of C:\

02/01/2018  00.09  <DIR>          103
09/18/2018  09.31  <DIR>          baru
27/09/2018  13.45  <DIR>          build
08/05/2018  21.57  <DIR>          copy Lectora (Pertemuan 7 Komputasi MP8)
26/10/2013  15.55  <DIR>          Crack
09/18/2018  08.51  <DIR>          files
09/18/2018  08.44  <DIR>          files2
04/04/2018  13.49  <DIR>          gradasi
05/10/2016  01.06  <DIR>          Intel
19/09/2018  12.35              282.922 LAB2.rar
11/03/2017  14.51              515 Local Disk (D) - Shortcut.lnk
27/09/2018  13.41  <DIR>          nbproject
25/09/2018  16.31  <DIR>          OS
02/01/2018  15.19  <DIR>          palistya
12/04/2018  06.38  <DIR>          PerfLogs
26/09/2018  17.01  <DIR>          Program Files
15/09/2018  11.41  <DIR>          Program Files (x86)
08/01/2018  04.00  <DIR>          Python27
27/09/2018  13.54  <DIR>          src
10/07/2018  15.55  <DIR>          Users
06/03/2017  16.20  <DIR>          wifi
17/09/2018  13.38  <DIR>          Windows
03/18/2017  07.49  <DIR>          Windows10Upgrade
06/04/2018  14.52  <DIR>          xampp
               2 File(s)      283.437 bytes
               22 Dir(s)   170.342.952.960 bytes free

C:\>rd baru
Activate Windows
Go to Settings to activate Windows.

09:33 10/09/2018
```

5. ketik perintah rd baru

6. ketik perintah dir

```
on Command Prompt
22 Dir(s) 170.342.952.960 bytes free

C:\>rd baru
C:\>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\

02/01/2018  00.09    <DIR>          103
27/09/2018  13.45    <DIR>          build
08/05/2018  21.57    <DIR>          copy Lectora (Pertemuan 7 Komputasi MPB)
26/10/2013  15.55    <DIR>          Crack
09/10/2018  08.51    <DIR>          files
09/10/2018  08.44    <DIR>          files2
04/04/2018  13.49    <DIR>          gradasi
05/10/2016  01.06    <DIR>          Intel
19/09/2018  12.35    282.922 LAB2.rar
11/03/2017  14.51    515 Local Disk (D) - Shortcut.lnk
27/09/2018  13.41    <DIR>          nbproject
25/09/2018  16.31    <DIR>          OS
02/01/2018  15.19    <DIR>          palistya
12/04/2018  06.38    <DIR>          PerfLogs
26/09/2018  17.01    <DIR>          Program Files
15/09/2018  11.41    <DIR>          Program Files (x86)
08/01/2018  04.00    <DIR>          Python27
27/09/2018  13.54    <DIR>          src
10/07/2018  15.55    <DIR>          Users
06/03/2017  16.20    <DIR>          wifi
17/09/2018  13.38    <DIR>          Windows
03/10/2017  07.49    <DIR>          Windows10Upgrade
06/04/2018  14.52    <DIR>          xamp
      2 File(s)          283.437 bytes
      21 Dir(s)  170.342.887.424 bytes free

C:\>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\

02/01/2018  00.09    <DIR>          103
27/09/2018  13.45    <DIR>          build

```

7. ketik perintah rmdir baru1

8. ketik perintah dir

9. ketik perintah md \komputer

```

Command Prompt
C:>rmdir barui
C:>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\

02/01/2018  00.09      <DIR>          103
27/09/2018  13.45      <DIR>          build
08/05/2018  21.57      <DIR>          copy Lectora (Pertemuan 7 Komputasi MPB)
26/10/2013  15.55      <DIR>          Crack
09/10/2018  10.23      <DIR>          files
09/10/2018  10.20      <DIR>          files2
04/04/2018  13.49      <DIR>          gradasi
05/10/2016  01.06      <DIR>          Intel
09/10/2018  09.43      <DIR>          komputer
19/09/2018  12.35      282.922 LAB2.rar
11/03/2017  14.51      515 Local Disk (D) - Shortcut.lnk
27/09/2018  13.41      <DIR>          nbproject
25/09/2018  16.31      <DIR>          OS
02/01/2018  15.19      <DIR>          palistya
12/04/2018  06.38      <DIR>          PerfLogs
26/09/2018  17.01      <DIR>          Program Files
15/09/2018  11.41      <DIR>          Program Files (x86)
08/01/2018  04.00      <DIR>          Python27
27/09/2018  13.54      <DIR>          src
10/07/2018  15.55      <DIR>          Users
06/03/2017  16.20      <DIR>          wifi
17/09/2018  13.38      <DIR>          Windows
03/10/2017  07.49      <DIR>          Windows10Upgrade
06/04/2018  14.52      <DIR>          xampp
              2 File(s)   283.437 bytes
              22 Dir(s)  170.341.203.968 bytes free

C:>md \komputer
A subdirectory or file \komputer already exists.

C:>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Activate Windows
Go to Settings to activate Windows.

Directory of C:\

Windows Taskbar icons
10:28 09/10/2018
```

10. dir

```

Command Prompt
17/09/2018  13.38      <DIR>          Windows
03/10/2017  07.49      <DIR>          Windows10Upgrade
06/04/2018  14.52      <DIR>          xampp
              2 File(s)   283.437 bytes
              22 Dir(s)  170.341.203.968 bytes free

C:>md \komputer
A subdirectory or file \komputer already exists.

C:>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Activate Windows
Go to Settings to activate Windows.

Directory of C:\

02/01/2018  00.09      <DIR>          103
27/09/2018  13.45      <DIR>          build
08/05/2018  21.57      <DIR>          copy Lectora (Pertemuan 7 Komputasi MPB)
26/10/2013  15.55      <DIR>          Crack
09/10/2018  10.23      <DIR>          files
09/10/2018  10.20      <DIR>          files2
04/04/2018  13.49      <DIR>          gradasi
05/10/2016  01.06      <DIR>          Intel
09/10/2018  09.43      <DIR>          komputer
19/09/2018  12.35      282.922 LAB2.rar
11/03/2017  14.51      515 Local Disk (D) - Shortcut.lnk
27/09/2018  13.41      <DIR>          nbproject
25/09/2018  16.31      <DIR>          OS
02/01/2018  15.19      <DIR>          palistya
12/04/2018  06.38      <DIR>          PerfLogs
26/09/2018  17.01      <DIR>          Program Files
15/09/2018  11.41      <DIR>          Program Files (x86)
08/01/2018  04.00      <DIR>          Python27
27/09/2018  13.54      <DIR>          src
10/07/2018  15.55      <DIR>          Users
06/03/2017  16.20      <DIR>          wifi
17/09/2018  13.38      <DIR>          Windows
03/10/2017  07.49      <DIR>          Windows10Upgrade
06/04/2018  14.52      <DIR>          xampp
              2 File(s)   283.437 bytes
              22 Dir(s)  170.341.203.968 bytes free

C:>
```

11. md \files\film

12. cd files

13. dir

14. exit

```

Command Prompt
02/01/2018 00.09 <DIR> 103
27/09/2018 13.45 <DIR> build
08/05/2018 21.57 <DIR> copy Lectora (Pertemuan 7 Komputasi MPB)
26/10/2013 15.55 <DIR> Crack
09/10/2018 10.23 <DIR> files
09/10/2018 10.20 <DIR> files2
04/04/2018 13.49 <DIR> gradasi
05/10/2016 01.06 <DIR> Intel
09/10/2018 09.43 <DIR> komputer
19/09/2018 12.35 282.922 LAB2.rar
11/07/2017 14.51 515 Local Disk (D) - Shortcut.lnk
27/09/2018 13.41 <DIR> nbproject
25/09/2018 16.31 <DIR> OS
02/01/2018 15.19 <DIR> palistya
12/04/2018 06.38 <DIR> PerfLogs
26/09/2018 17.01 <DIR> Program Files
15/09/2018 11.41 <DIR> Program Files (x86)
08/01/2018 04.00 <DIR> Python27
27/09/2018 13.54 <DIR> src
10/07/2018 15.55 <DIR> Users
06/03/2017 16.20 <DIR> wifi
17/09/2018 13.38 <DIR> Windows
03/10/2017 07.49 <DIR> Windows10Upgrade
06/04/2018 14.52 <DIR> xamp
      2 File(s) 283.437 bytes
     22 Dir(s) 170.341.269.504 bytes free

C:\>md \files\film
C:\>cd files
C:\files>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\files

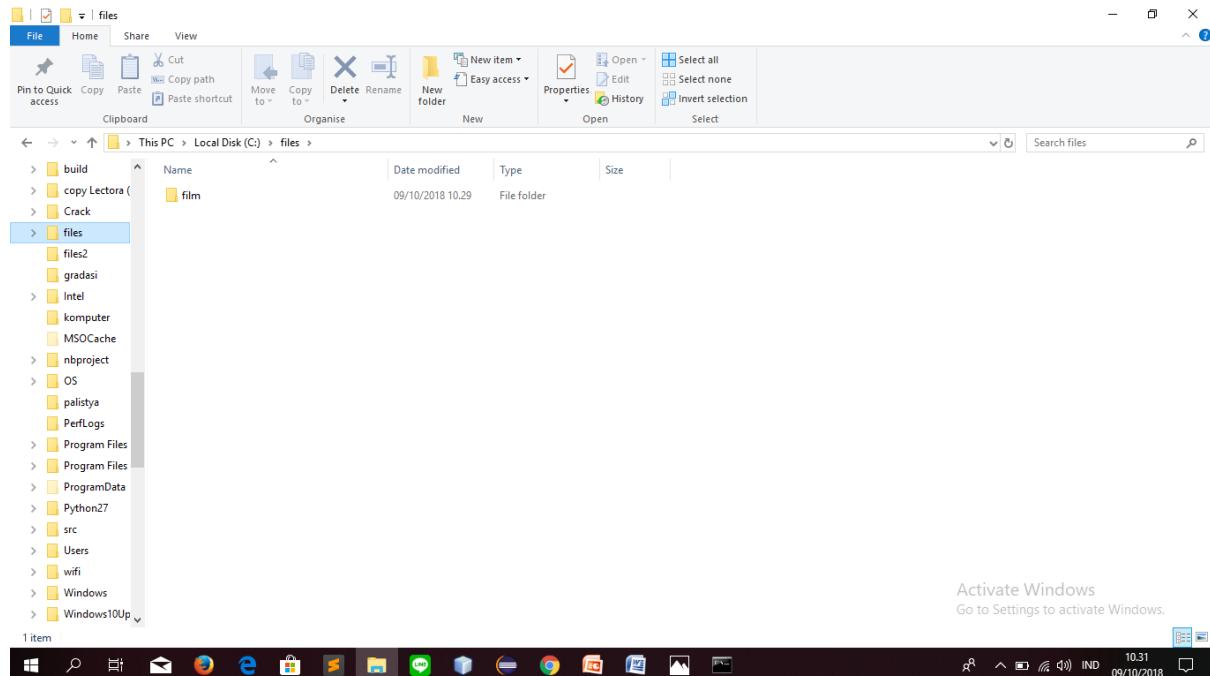
09/10/2018 10.29 <DIR> .
09/10/2018 10.29 <DIR> ..
09/10/2018 10.29 <DIR> film
      0 File(s)          0 bytes
     3 Dir(s) 170.340.143.104 bytes free

Activate Windows
Go to Settings to activate Windows.

C:\files>exit

```

Hasil :



Percobaan ke enam:

1. ulangi langkah 1 dan 5
2. masuk ke C:\files\film arah kan cursor klik kanan-new-mc word lalu buat pindah docx

3. arahkan cursor pada daerah kosong lalu klik kanan-ne-mc word buat pindah.txt
4. ketik perintah move c:\files\film\pindah.docx c:\files2
5. ketik perintah move c:\files\film\pindah.txt c:\files2
6. ketik perintah cd files2
7. dir
8. cd..
9. tree c:\files
10. tree c:\windows

```

Command Prompt - tree c:\windows
Microsoft Windows [Version 10.0.17134.285]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\ASUS>cd C:/
C:>move c:\files\film\pindah.docx c:\files2
  1 file(s) moved.

C:>move c:\files\film\pindah.txt c:\files2
  1 file(s) moved.

C:>cd files2
C:\files2>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\files2

09/10/2018  11:04    <DIR>          .
09/10/2018  11:04    <DIR>          ..
09/10/2018  10:13            0 file2.docx
09/10/2018  11:02            0 pindah.docx
09/10/2018  11:02            0 pindah.txt
               3 File(s)           0 bytes
               2 Dir(s)  169.829.638.144 bytes free

C:\files2>cd..
C:\>tree c:\files
Folder PATH listing
Volume serial number is E60E-0100
C:\FILES
└───film

C:\>tree c:\windows
Folder PATH listing
Volume serial number is E60E-0100
C:\WINDOWS
├───addons
├───appcompat
├───appraiser
│   └───AltData
└───Telemetry

```

Activate Windows
Go to Settings to activate Windows.

TUGAS :

Langkah-langkahnya

1. buatlah folder baru pada drive D yang bernama multimedia
2. buatlah folder baru pada drive C yang bernama masuk dan buat lah folder baru dengan mengarahkan cursor ke daerah yang kosong kemudian klik kanan-new folder,beri nama dengan music.mp3
3. buat lah folder baru dengan mengarahkan cursor ke daerah yang kosong kemudian klik kanan-new folder beri nama gambar.jpg
4. buat lah folder baru dengan mengarahkan cursor ke daerah yang kosong kemudian klik kanan-new folder beri nama document.docx
5. buat lah folder baru dengan mengarahkan cursor ke daerah yang kosong kemudian klik kanan-new folder beri nama teks.txt
6. ketik perintah copy c:\masuk\musik.mp3 d:\multimedia
7. ketik perintah copy c:\masuk\gambar.jpg d:\multimedia
8. ketik perintah copy c:\masuk\document.docx d:\multimedia
9. ketik perintah copy c:\masuk\teks.txt d:\multimedia

Fungsi perintah dari nomer 6 sampai 9 itu untuk mengcopy file pada Drive C masuk sesuai isinya yg akan dicopy pada drive D multimedia

10. ketik dir untuk mengeceknya.

Bukti ada pada Gambar di bawah ini:

```
Windows PowerShell [Version 10.0.17134.285]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\ASUS>cd C:/
C:>cd masuk
C:\masuk>copy c:/masuk/musik.mp3 d:\multimedia
The syntax of the command is incorrect.

C:\masuk>copy c:\masuk\musik.mp3 d:\multimedia
1 file(s) copied.

C:\masuk>copy c:\masuk\gambar.jpg d:\multimedia
1 file(s) copied.

C:\masuk>copy c:\masuk\document.docx d:\multimedia
1 file(s) copied.

C:\masuk>copy c:\masuk\teks.txt d:\multimedia
1 file(s) copied.

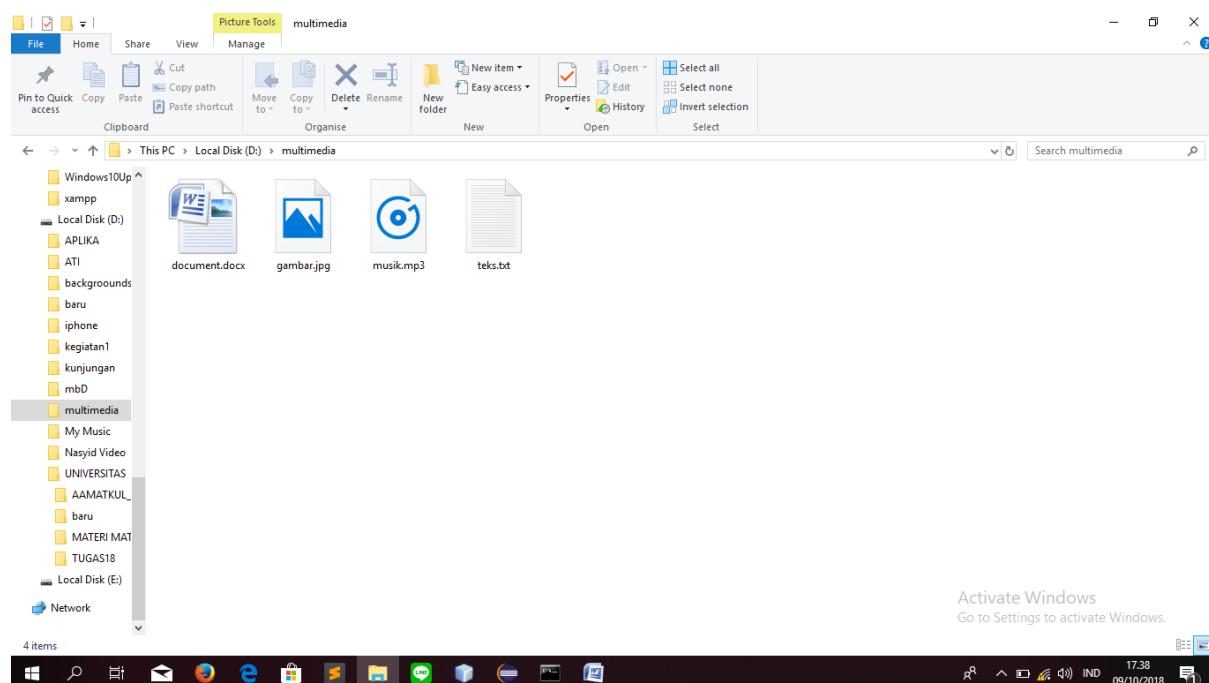
C:\masuk>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\masuk

09/10/2018 17:11 <DIR> .
09/10/2018 17:11 <DIR> ..
09/10/2018 16:58 0 document.docx
09/10/2018 16:57 0 gambar.jpg
09/10/2018 16:57 0 musik.mp3
09/10/2018 16:58 0 teks.txt
               4 File(s)      0 bytes
              2 Dir(s) 169,940,283,392 bytes free

C:\masuk>
```

Activate Windows
Go to Settings to activate Windows.



MODUL 5

1. 5 Distro Linux

- **Linux Mint**

Salah satu distro linux terbaik untuk tahun 2018 adalah Linux Mint. Distro ini cocok bagi pengguna Linux baru. Linux Mint dilengkapi dengan banyak perangkat lunak untuk memenuhi kebutuhan produktivitas pengguna saat beralih dari Mac atau Windows, seperti LibreOffice, dll. Mint juga memiliki dukungan yang lebih baik untuk format media proprietary. Hal ini memungkinkan pengguna untuk memutar video, DVD dan file musik MP3 tanpa harus repot-repot menginstall codex-nya terlebih dahulu.

- **Ubuntu**

Ubuntu merupakan salah satu distro Linux yang paling populer. Sama dengan Linux Mint, distro ini sangat direkomendasikan untuk pemula yang baru mencoba Linux, karena distro ini sangat mudah diakses dengan komunitas yang besar. Versi baru Ubuntu dirilis setiap enam bulan sekali. Pada saat artikel ini ditulis, Ubuntu telah dirilis sampai versi Ubuntu 17.10. Setiap tahun, Canonical, yang merupakan pengembang Ubuntu, merilis versi Ubuntu LTS (long-term service). Versi ini menjamin pengguna lima tahun security dan general maintenance update. Jadi, pengguna dapat terus menggunakan Ubuntu tanpa perlu melakukan upgrade penuh setiap beberapa bulan sekali. Untuk versi non-LTS, security dan maintenance update-nya hanya diberikan selama satu tahun sejak tanggal rilis.

- **Kali Linux**

Kali Linux, yang dulunya dikenal dengan nama BackTrack, adalah salah satu distro Linux yang dirancang khusus untuk Penetration Testing dan Security Auditing. Kali Linux dikembangkan, didanai dan dikelola oleh Offensive Security, sebuah perusahaan pelatihan keamanan informasi terkemuka. Berbasis Debian, Kali Linux mempunyai ratusan pre-install tool di dalamnya untuk kebutuhan penetration testing. Distro ini juga telah

dipakai oleh banyak security professional, yang juga merupakan spesialis di bidang penetration testing, forensik, reverse engineering, dan vulnerability assessment.

- **CentOS 7**

CentOS 7 adalah salah satu distro Linux terbaik untuk tahun 2018, yang merupakan distro cabang dari versi Enterprise Red Hat Linux dan difokuskan untuk stability (stabilitas). Layaknya Red Hat, security dan maintenance update untuk CentOS didukung sampai 10 tahun dari awal rilis. CentOS khusus dirancang untuk menjadi distro atau OS yang super-reliable. Oleh karena itu, distro ini sangat cocok digunakan untuk server. CentOS sendiri sangat jarang digunakan untuk pemakaian sehari-hari di PC desktop atau laptop pengguna.

- **openSUSE**

Sebelumnya dikenal sebagai SUSE Linux dan kemudian SuSE Linux Professional, openSUSE ditujukan untuk para pengembang dan administrator sistem. Untuk alasan itu, distro ini mempunyai protokol keamanan yang sangat ketat. OpenSUSE ini mempunyai dua varian distro utama: openSUSE Leap dan openSUSE Tumbleweed. Pengembangan Leap menggunakan source code dari SUSE Linux Enterprise, yang membuatnya jauh lebih stabil dari Tumbleweed. Versi baru dari openSUSE Leap ini dirilis kira-kira setahun sekali dan didukung selama tiga tahun.

Berbeda dari Leap, pengembangan Tumbleweed didasarkan pada Factory, base development dari openSUSE sendiri. Tumbleweed menggunakan model peluncuran rolling. Dengan kata lain, suatu package aplikasi akan tersedia untuk didownload setelah diuji. Artinya, Tumbleweed berisi aplikasi terbaru yang stabil dan bagus untuk penggunaan sehari-hari.

2. 20 Perintah Dasar Linux

- ls = melihat isi direktori
- mkdir = menciptakan direktori
- cd = mengubah direktori
- rmdir = menghapus direktori
- cat = Menampilkan isi file dan menciptakan file
- cp = Menyalin file
- rm = menghapus file
- mv = mengganti nama file/direktori dan memindahkan file ke direktori lain
- ln = link ke file lain
- lp = Mencetak isi file
- find = mencari file
- chmod = untuk mengubah model akses terhadap file atau direktori
- chgrp = mengubah grup file
- chown = mengubah kepemilikan dari file
- echo = Menampilkan tulisan yang di buat setelah perintah echo dan itu tidak disimpan.
- sort = Mengurutkan suatu file teks menurut abjad.
- cut = Mengambil kolom tertentu dari baris-baris masukannya yang ditentukan pada option -c.
- uniq = Menghilangkan baris – baris berurutan yang mengalami duplikasi.
- locate = Mencari suatu file pada direktori lain yang sedang tidak dikunjungi.
- finger = Melihat informasi user yang telah ditambahkan oleh perintah chfn.

3. Pengertian Init 0, Init 1, Init 2, Init 3, Init 4, Init 5, Init 6

1. Init 0 => Digunakan utk maintenance, diagnostic hardware, booting selain dari disk misal dari cdrom.

command : init 0, shutdown -i0

2. Init 1 => Single user mode, digunakan utk menambahkan patches, backup/restore system. di level ini kita bisa menjalankan/access semua file tapi user lain tidak bisa login ke dalam sytem kita.

command: init 1, shutdown -i1

3. Init 2 => multiuser mode, biasanya utk digunakan dalam network. tapi disini tidak ada resources yang di share.

command: init2, shutdown -i2

4. Init 3 ==> memperluas multiuser mode,kita bisa membuat local resources share pada network kita. sehingga kita bisa berbagi data dilevel ini dalam network.

command: init 3, shutdown -i3

5. Init 4 ==> utk alternative multiuser mode tetapi saat ini belum bisa digunakan.

command: init4, shutdown -i4

6. Init 5 ==> utk shutdown/ power off.

command: init5, shutdown -i5

7. Init 6 ==> men stop operating system kemudian reboot dan kembali ke initdefault nya yang ada di /etc/inittab

command: init 6, shutdown -i6

4. Pengertian Quota

Quota adalah nilai batas yang ditetapkan untuk mengelola akses ke sumber daya sistem dan jaringan atau jumlah penyimpanan yang digunakan oleh User atau Group tertentu.

Disk quota bisa diterapakan per user atau per group.

jika diterapkan per user maka quota yang diterapkan mutlak milik user tersebut. misal : user Ical memiliki disk quota 5 MB, maka total 5MB tersebut adalah mutlak milik user Ical.

jika disk quota diterapkan per group maka kapasitas yang ditetapkan adalah milik bersama group tersebut. misal : user Ical dan RedHat adalah anggota group Linux's. Jika group Linux's diberi quota sebesar 10 MB maka kapasitas tersebut adalah milik user Ical dan RedHat. Jadi misalkan user Ical menggunakan sebanyak 6MB maka masih terdapat 4MB untuk digunakan oleh user RedHat.

Pembatasan disk quota ditentukan oleh dua kategori yaitu hard limit dan soft limit.

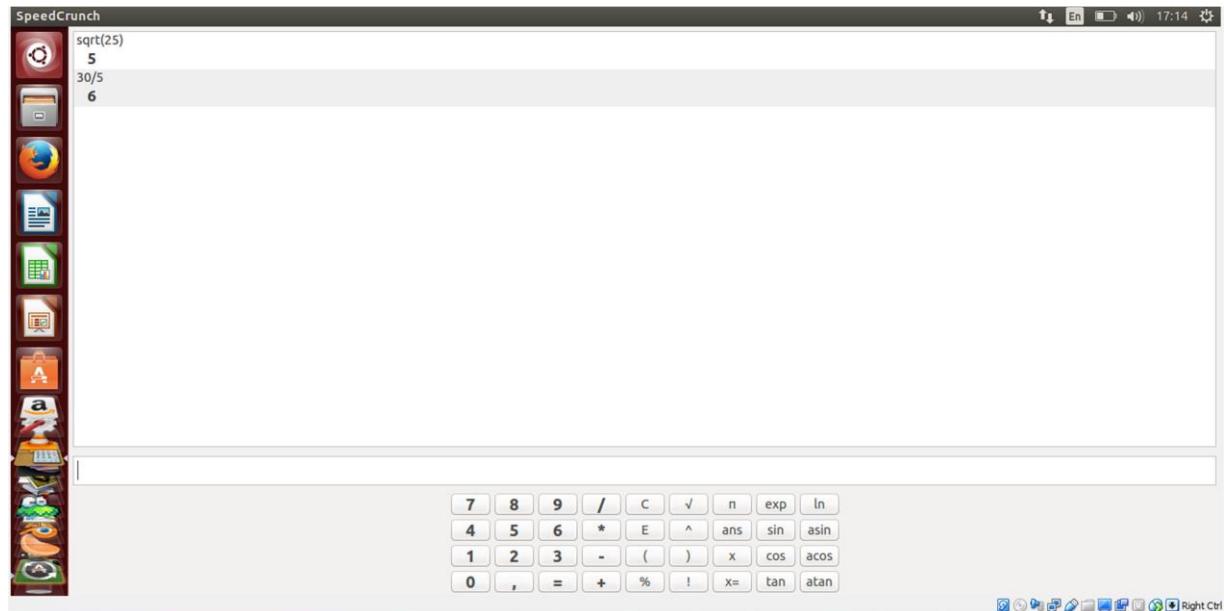
Hard Limit adalah batas yang tidak dapat dilewati. jika user telah mencapai batas hard limit maka user tersebut tidak dapat memasukkan data lagi ke hard disk. Contoh jika user Ical memiliki quota 5 MB dan sudah digunakan 4.9 MB dengan demikian sisanya tinggal 0.1 MB jika kemudian dia mencoba untuk menyimpan file sebesar 0.4MB maka sistem akan menolaknya.

Soft Limit adalah batas yang bisa dilewati. Namun hanya dalam periode tertentu, periode tersebut disebut dengan grace period. Default nilai grace period adalah 7 hari. Umumnya nilai hard limit lebih besar dari soft limit. Untuk lebih jelas perhatikan contoh berikut, misalkan user Ical diberikan soft limit sebesar 10 MB, hard limit 15 MB, serta grace period 3 hari. Jika user optimus sudah menggunakan kapasitas hard disk sebesar 12 MB maka nilai soft limitnya sudah terlewati, dengan demikian perhitungan grace period dimulai, jika dalam waktu 3 hari user optimus belum mengurangi penggunaan disknya sampai di bawah soft limit, maka dia tidak dapat menggunakan disk lagi walaupun nilai hard limitnya belum dicapai, jika user optimus mengurangi batas penggunaan disknya sampai di bawah 10 MB maka nilai grace period kembali di reset ke 3 hari.

MODUL 6

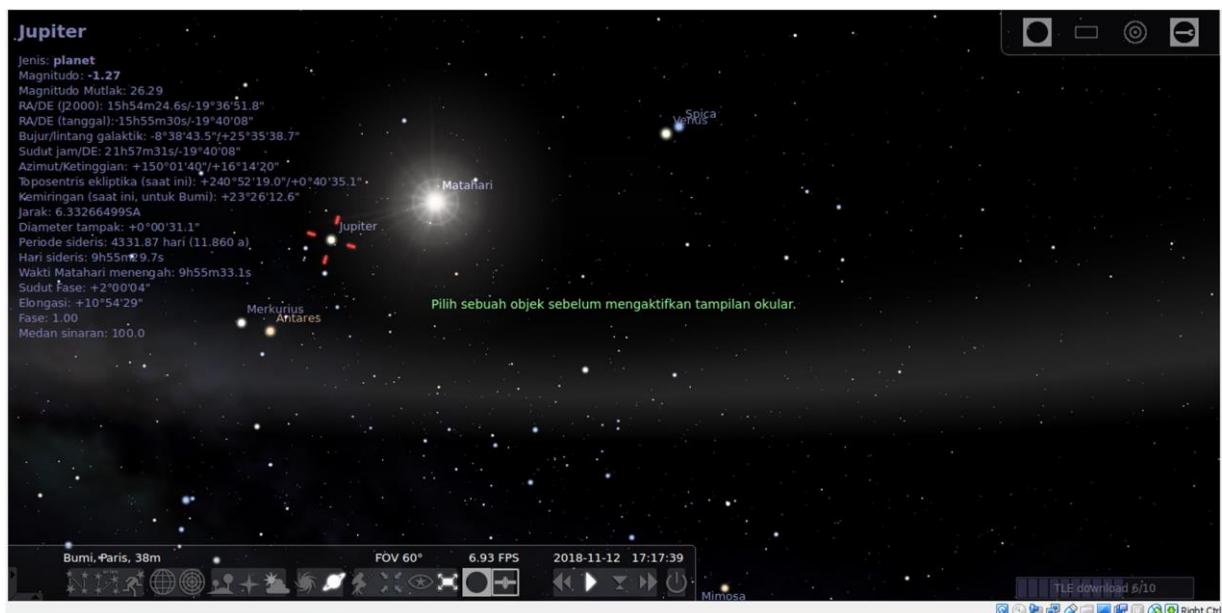
Menginstal 10 aplikasi yang berbeda pada linux dan sebutkan fungsinya

1. Speed Crunch



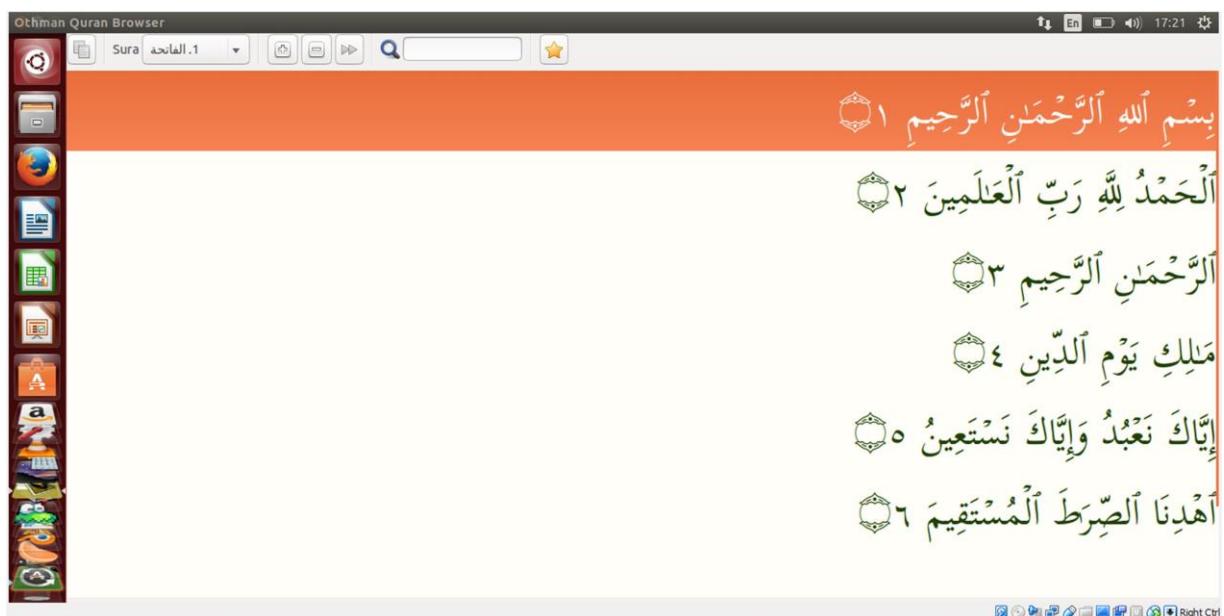
Fungsi : aplikasi kalkulator sains

2. Stellarium



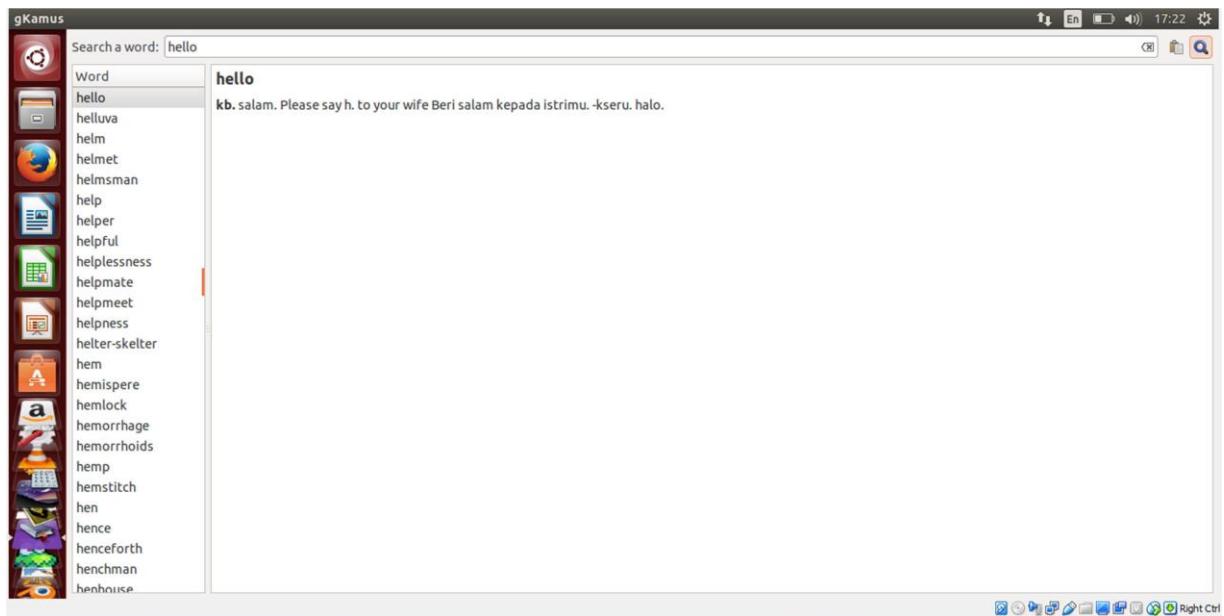
Fungsi : aplikasi menunjukkan langit secara realistik dalam 3D, seperti apa yang Anda lihat dengan mata telanjang, teropong atau teleskop.

3. Othman Quran



Fungsi : aplikasi Al-Qur'an gratis di Ubuntu

4. gKamus



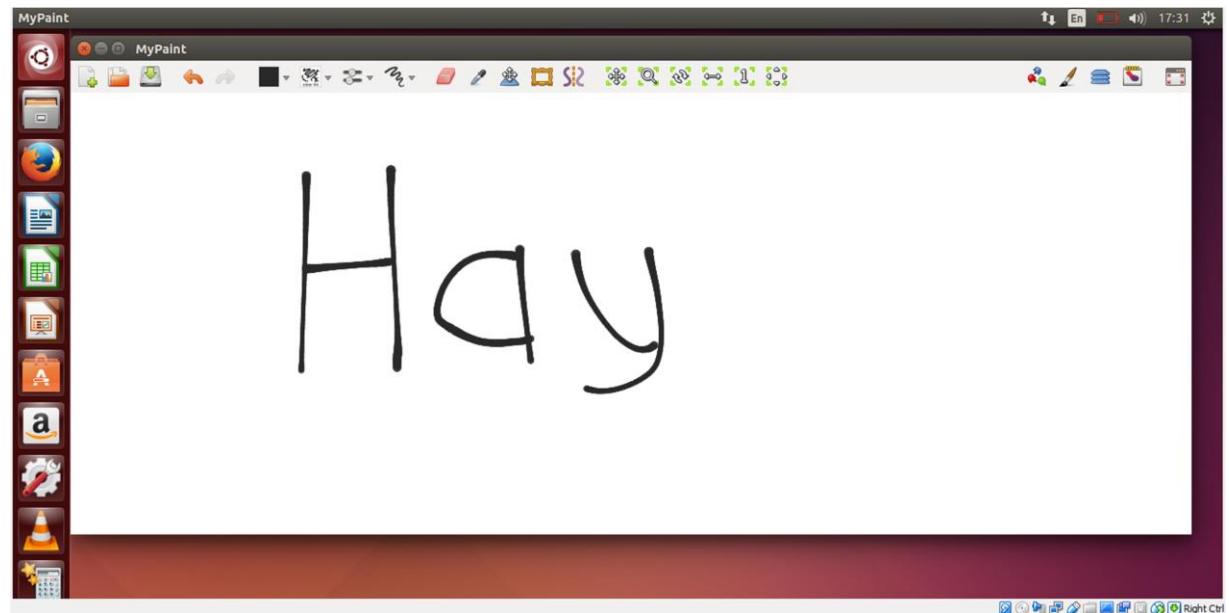
Fungsi : aplikasi penerjemah inggris-indonesia dan sebaliknya

5. Frogatto



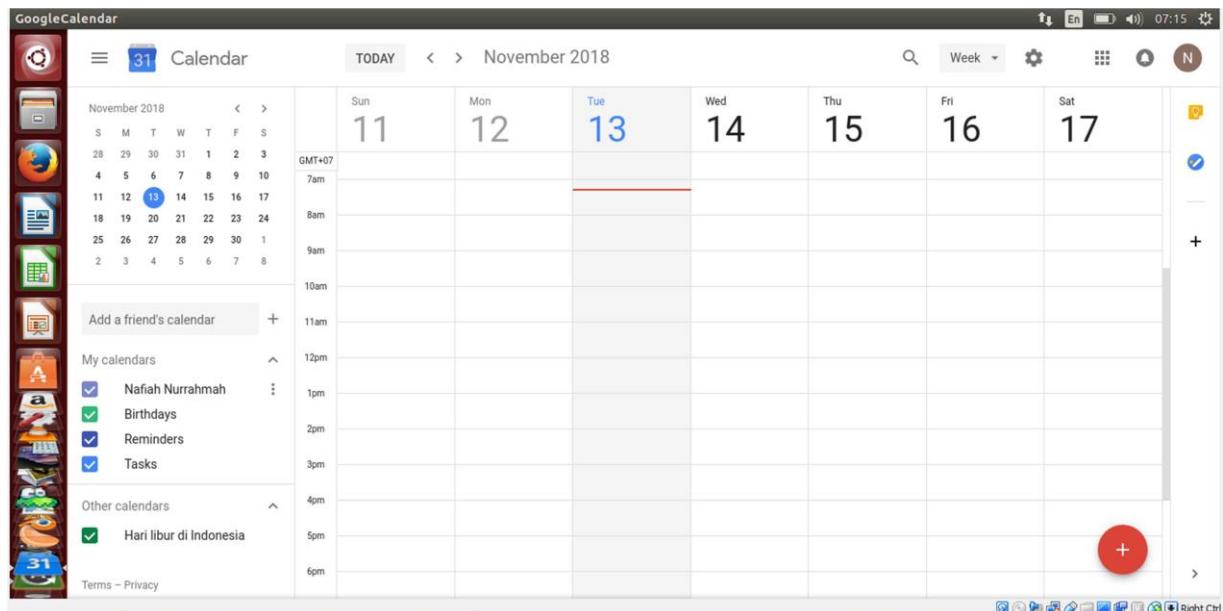
Fungsi : aplikasi game yang menghibur

6. MyPaint



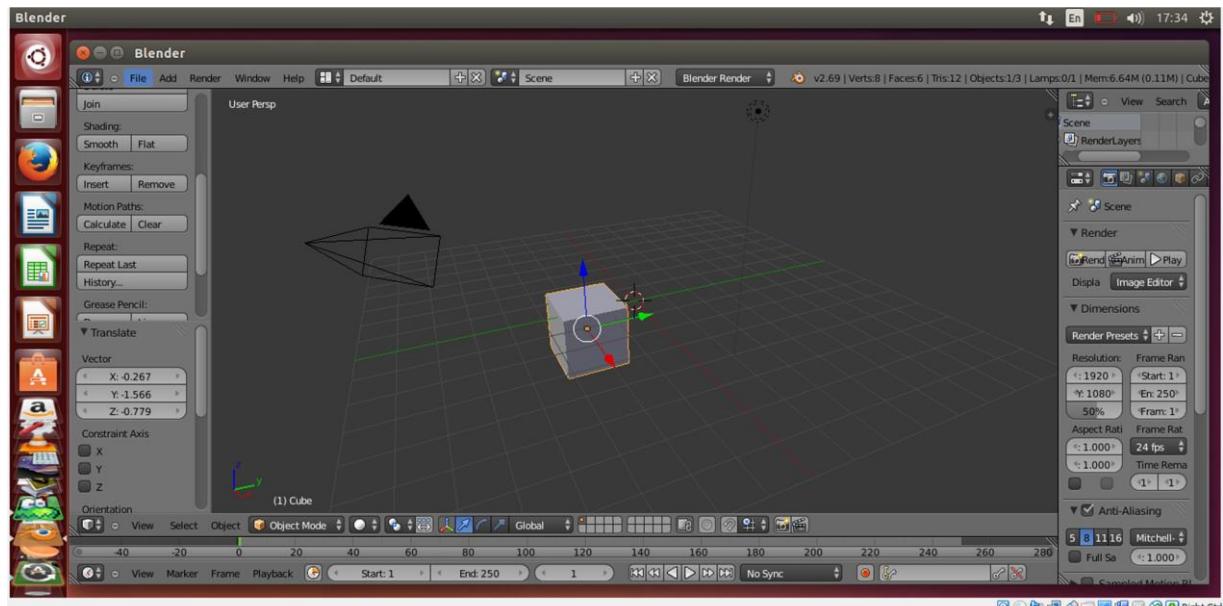
Fungsi : aplikasi yang mempermudah membuat dan mengedit gambar seperti aplikasi Paint pada Windows.

7. Google Calendar



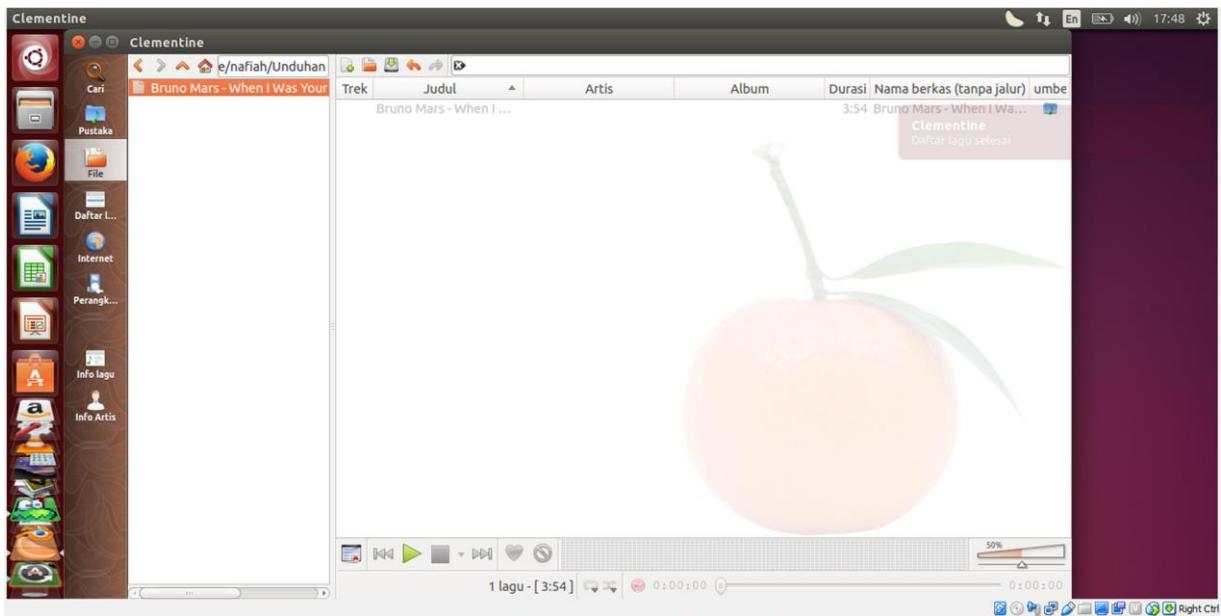
Fungsi : aplikasi kalender yang memudahkan user dalam pengingat tugas atau acara

8. Blender



Fungsi : membuat sebuah animasi 3D dengan menggunakan fitur-fitur yang sudah tersedia di dalamnya seperti rotasi,3D transformation, coordinat system, dsb

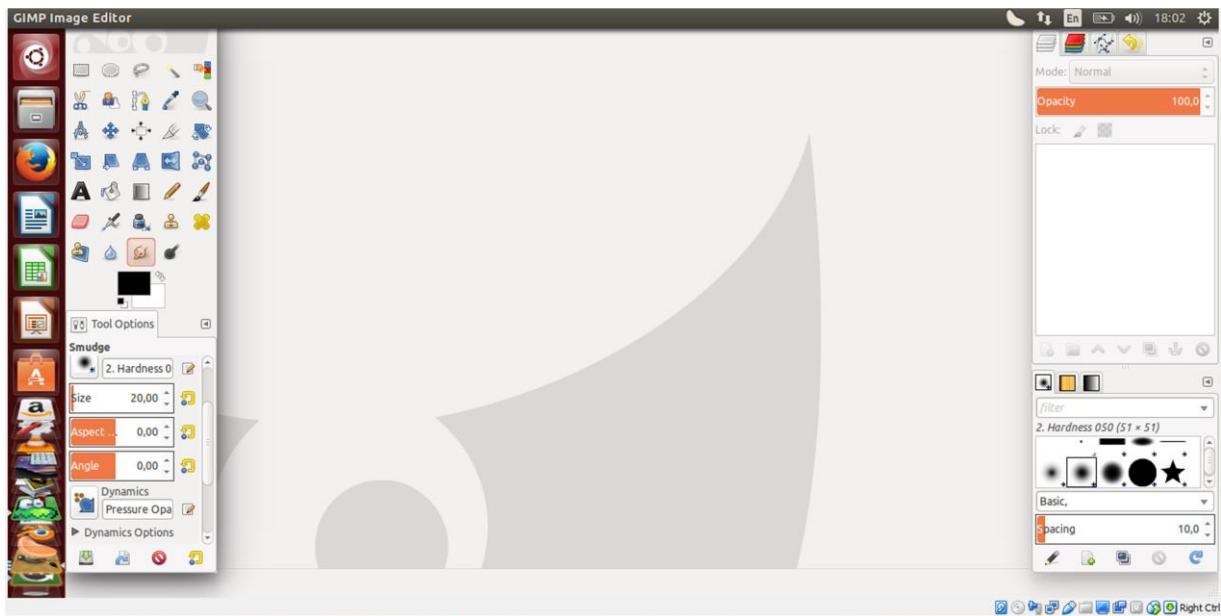
9. Clementine



Fungsi : aplikasi pemutar music yang

cepat dan mudah

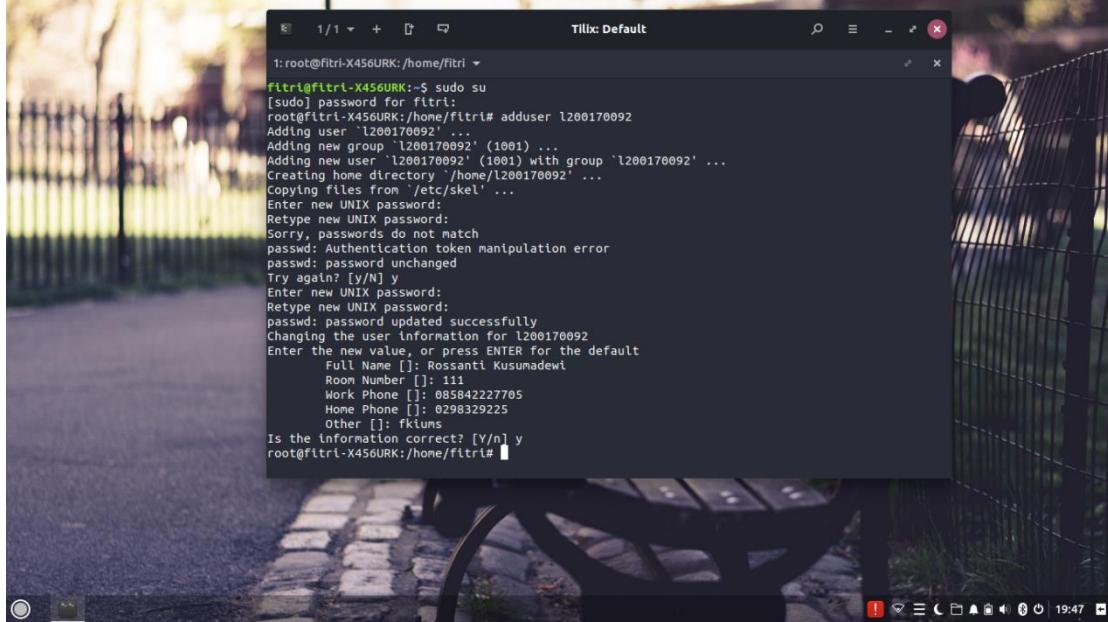
10. GIMP ImageEditor



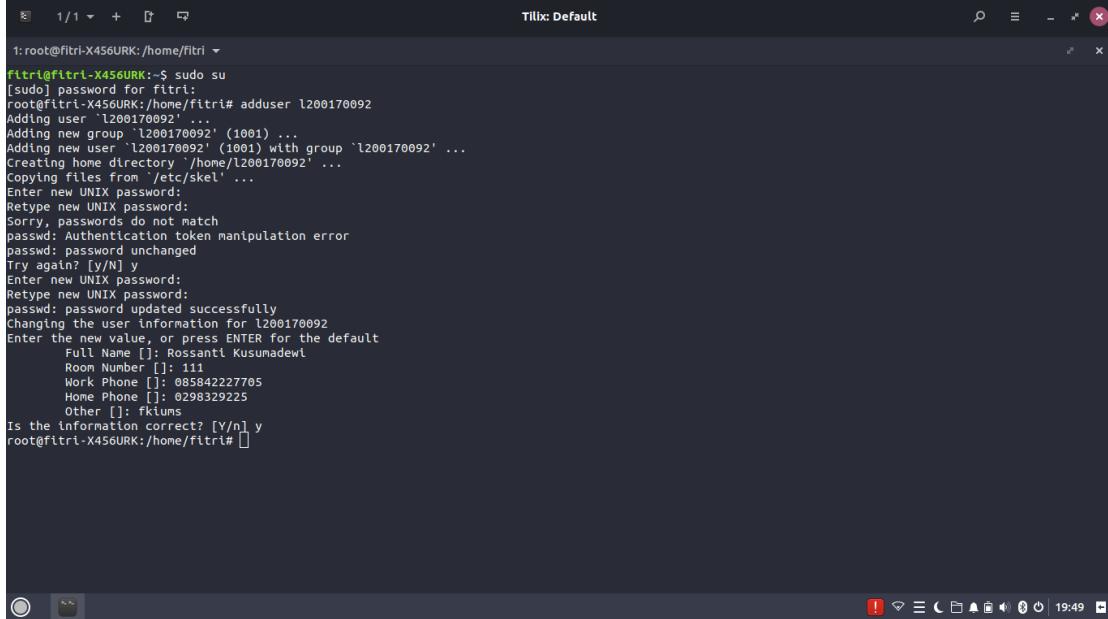
Fungsi : aplikasi pengolahan gambar, termasuk perbaikan foto, penggabungan dan pembuatan gambar

MODUL 7

1. PRAKTIKUM 1

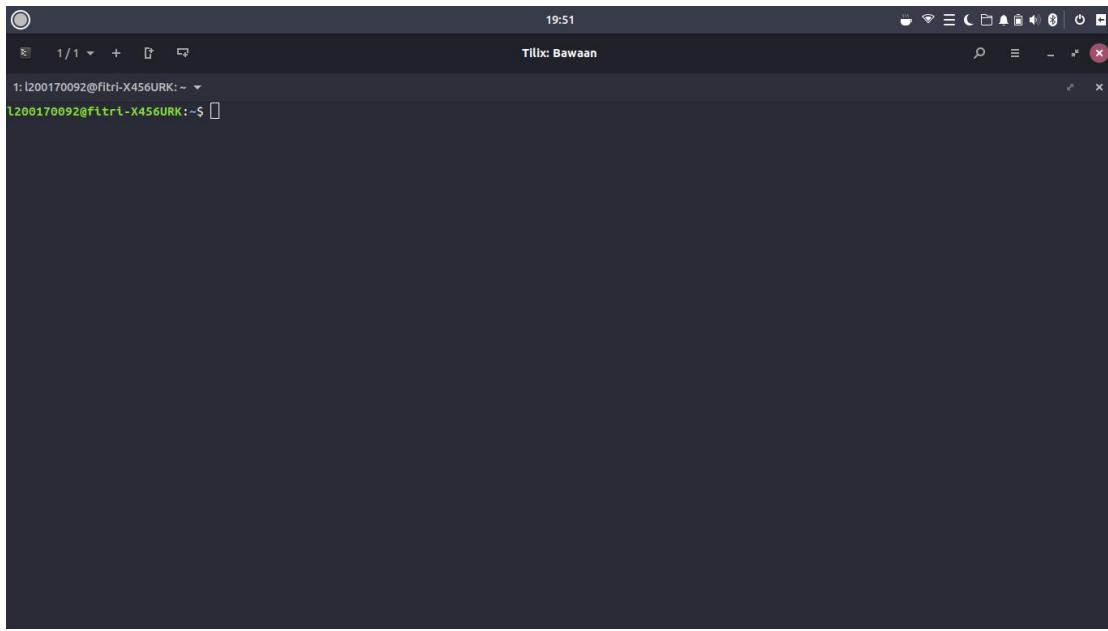


```
1:root@fitri-X456URK:/home/fitri ~
fitri@fitri-X456URK:~$ sudo su
[sudo] password for fitri:
root@fitri-X456URK:/home/fitri# adduser l200170092
Adding user 'l200170092' ...
Adding new group 'l200170092' (1001) ...
Adding new user 'l200170092' (1001) with group 'l200170092' ...
Creating home directory '/home/l200170092' ...
Copying files from '/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
Sorry, passwords do not match
passwd: Authentication token manipulation error
passwd: password unchanged
Try again? [y/N] y
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for l200170092
Enter the new value, or press ENTER for the default
    Full Name []: Rossanti Kusumadewi
    Room Number []: 111
    Work Phone []: 085842227705
    Home Phone []: 0298329225
    Other []: fkiums
Is the information correct? [Y/n] y
root@fitri-X456URK:/home/fitri#
```



```
1:root@fitri-X456URK:/home/fitri ~
fitri@fitri-X456URK:~$ sudo su
[sudo] password for fitri:
root@fitri-X456URK:/home/fitri# adduser l200170092
Adding user 'l200170092' ...
Adding new group 'l200170092' (1001) ...
Adding new user 'l200170092' (1001) with group 'l200170092' ...
Creating home directory '/home/l200170092' ...
Copying files from '/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
Sorry, passwords do not match
passwd: Authentication token manipulation error
passwd: password unchanged
Try again? [y/N] y
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for l200170092
Enter the new value, or press ENTER for the default
    Full Name []: Rossanti Kusumadewi
    Room Number []: 111
    Work Phone []: 085842227705
    Home Phone []: 0298329225
    Other []: fkiums
Is the information correct? [Y/n] y
root@fitri-X456URK:/home/fitri#
```

2. PRAKTIKUM 2



```
1: l200170092@fitri-X456URK:~ ▾
l200170092@fitri-X456URK:~$ touch latihan
l200170092@fitri-X456URK:~$ chmod 666 latihan
l200170092@fitri-X456URK:~$ ls -l
total 40
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Desktop
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Dokumen
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Gambar
-rw-rw-rw 1 l200170092 l200170092 0 Nov 21 19:51 latihan
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Musik
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Publik
drwxr-xr-x 3 l200170092 l200170092 4096 Nov 21 19:51 snap
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:45 Templates
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Unduhan
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Video
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:45 模板
l200170092@fitri-X456URK:~$ chmod 640 latihan
l200170092@fitri-X456URK:~$ ls -l
total 40
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Desktop
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Dokumen
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Gambar
-rw-r----- 1 l200170092 l200170092 0 Nov 21 19:51 latihan
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Musik
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Publik
drwxr-xr-x 3 l200170092 l200170092 4096 Nov 21 19:51 snap
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:45 Templates
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Unduhan
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Video
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:45 模板
l200170092@fitri-X456URK:~$
```


The screenshot shows a terminal window titled "Tilix: Bawaan". The terminal is running on a system with the identifier "l200170092@fitri-X456URK". The session starts with the command "ls -l", which lists the contents of the current directory. The output shows a folder named "latihan" with various permissions and timestamps. Subsequent commands show the user changing file permissions for this folder using "chmod" and then listing the files again to verify the changes. The terminal window has a dark theme and includes standard Linux navigation keys at the top.

```
l200170092@fitri-X456URK:~ $ ls -l
total 40
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Desktop
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Dokumen
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:54 Gambar
--wx-wx-w- 1 l200170092 l200170092 0 Nov 21 19:51 latihan
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Musik
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Publik
drwxr-xr-x 3 l200170092 l200170092 4096 Nov 21 19:51 snap
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:45 Templates
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Unduhan
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:51 Video
drwxr-xr-x 2 l200170092 l200170092 4096 Nov 21 19:45 模板
l200170092@fitri-X456URK:~ $ chmod 000 latihan
l200170092@fitri-X456URK:~ $ ls -l latihan
----- 1 l200170092 l200170092 0 Nov 21 19:51 latihan
l200170092@fitri-X456URK:~ $ chmod +r latihan
l200170092@fitri-X456URK:~ $ ls -l latihan
-r--r--r- 1 l200170092 l200170092 0 Nov 21 19:51 latihan
l200170092@fitri-X456URK:~ $ chmod +w latihan
l200170092@fitri-X456URK:~ $ ls -l latihan
-rw-r--r- 1 l200170092 l200170092 0 Nov 21 19:51 latihan
l200170092@fitri-X456URK:~ $ chmod +x latihan
l200170092@fitri-X456URK:~ $ ls -l latihan
-rwxr-xr-x 1 l200170092 l200170092 0 Nov 21 19:51 latihan
l200170092@fitri-X456URK:~ $ chmod -x latihan
l200170092@fitri-X456URK:~ $ ls -l latihan
l200170092@fitri-X456URK:~ $ chmod +w latihan
l200170092@fitri-X456URK:~ $ ls -l latihan
-rw-r--r- 1 l200170092 l200170092 0 Nov 21 19:51 latihan
l200170092@fitri-X456URK:~ $ chmod -w latihan
l200170092@fitri-X456URK:~ $ ls -l latihan
-r--r--r- 1 l200170092 l200170092 0 Nov 21 19:51 latihan
l200170092@fitri-X456URK:~ $ chmod -r latihan
l200170092@fitri-X456URK:~ $ ls -l latihan
----- 1 l200170092 l200170092 0 Nov 21 19:51 latihan
l200170092@fitri-X456URK:~ $
```

3. PRAKTIKUM 3

The screenshot shows a terminal window titled "Tilix: Default". The command entered is:

```
1:root@fitri-X456URK:/bin ~
GNU nano 2.9.3
#!/bin/sh
WAKTU="Tanggal dan jam saat ini: `c"
JMLUSER="Jumlah user: `c"
AKU="Status personal: `c"
echo -e "$WAKTU"
date
echo -e "$JMLUSER"
who | wc -l
echo -e "$SAKU"
whoami
exit 0
```

The status bar at the bottom shows keyboard shortcuts for various functions like Get Help, Write Out, Where Is, Cut Text, Justify, Cur Pos, Undo, Redo, Mark Text, Copy Text, and WhereIs Next.

The screenshot shows a terminal window titled "Tilix: Default". The command entered is:

```
1:root@fitri-X456URK:/bin ~
ftrifitri-X456URK:~$ sudo su
[sudo] password for fitri:
root@fitri-X456URK:/home/fitri# usermod -aG sudo l200170092
root@fitri-X456URK:/home/fitri# su l200170092
To run the command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

l200170092@fitri-X456URK:/home/fitris cd/bin
bash: cd/bin: No such file or directory
l200170092@fitri-X456URK:/home/fitri$ cd /bin
l200170092@fitri-X456URK:/bin$ sudo su
[sudo] password for l200170092:
root@fitri-X456URK:/bin# nano infol200170092.sh
root@fitri-X456URK:/bin# nano infol200170092.sh
root@fitri-X456URK:/bin# nano infol200170092.sh
root@fitri-X456URK:/bin# nano infol200170092.sh
root@fitri-X456URK:/bin# chmod 777 infol200170092.sh
root@fitri-X456URK:/bin# infol200170092.sh
-e Tanggal dan jam saat ini: Rab Nov 21 20:12:47 WIB 2018
-e Jumlah user: 1
-e Status personal: root
root@fitri-X456URK:/bin#
```

The status bar at the bottom shows system icons and the time 20:11.

MODUL 8

Fork.c

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
int main() {
    pid_t pid;
    int x = 5;
    pid = fork();
    x++;
    if (pid < 0)
    {
        printf("Process creation error"); exit(-1);
    }
    else if (pid == 0)
    {
        printf("Child Process: ");
        printf("\nProcess id is %d", getpid());
        printf("\nValue of x is %d", x);
        printf("\nProcess id of parent is %d\n\n", getppid());
    }
    else
    {
        printf("\nParent Process: ");
        printf("\nProcess id is %d", getpid());
        printf("\nValue of x is %d", x);
        printf("\nProcess id of shell is %d\n", getppid());
    }
}
```

```
root@nafiah-VirtualBox:/home/nafiah# gcc fork.c -o fork
root@nafiah-VirtualBox:/home/nafiah# ./fork

Parent Process:
Process id is 2840
Value of x is 6
Process id of shell is 2726
root@nafiah-VirtualBox:/home/nafiah# Child Process:
Process id is 2841
Value of x is 6
Process id of parent is 1604
```

Wait.c

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/wait.h>

int main() {
    int i, status;
    pid_t pid;
    pid = fork();

    if(pid < 0) {
        printf("\nPembuatan proses gagal\n");
        exit(-1);
    }
    else if(pid > 0)
    {
        wait(NULL);
        printf("\nParent starts\nNomor Genap :");
        for(i=2;i<=10;i+=2)
            printf ("%3d",i);
        printf("\nParent ends\n");
    }
    else if(pid == 0)
    {
        printf("Child starts\nNomor Ganjil :");
        for(i=1;i<10;i+=2)
            printf ("%3d",i);
        printf("\nChild ends\n");
    }
}
```

```

root@nafiah-VirtualBox:/home/nafiah# gcc wait.c -o wait
root@nafiah-VirtualBox:/home/nafiah# ./wait
Child starts
Nomor Ganjil :  1  3  5  7  9
Child ends

Parent starts
Nomor Genap :  2  4  6  8 10
Parent ends
root@nafiah-VirtualBox:/home/nafiah#

```

Exec.c



```

exec.c x fork.c x stat.c x wait.c x dirlist.c x
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
#include <wait.h>
int main(int argc, char*argv[]) {
    pid_t pid;
    int i;

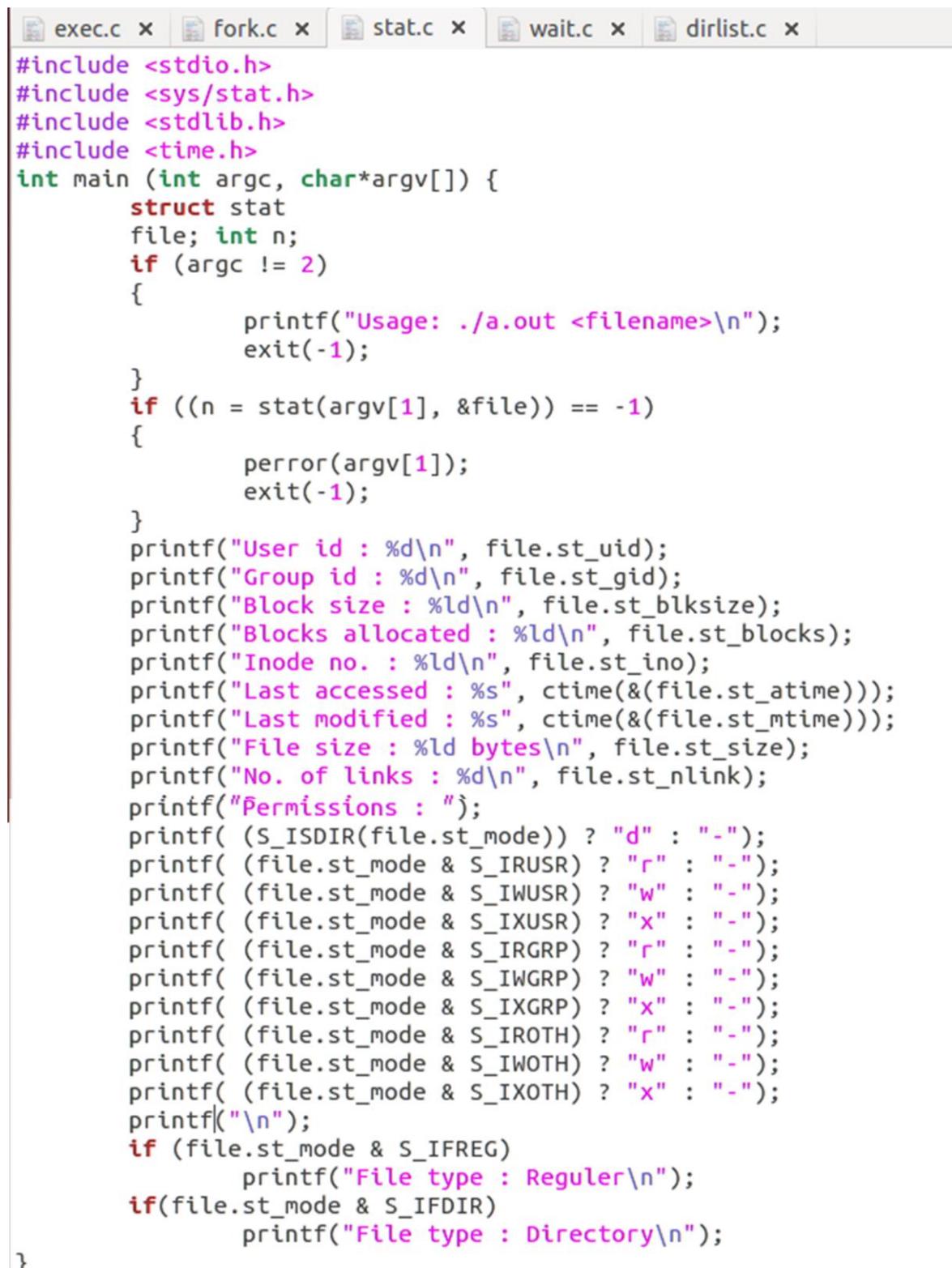
    if (argc != 3)
    {
        printf("\nInsufficient arguments to load program");
        printf("\nUsage: ./a.out <path> <cmd>\n");
        exit(-1);
    }

    switch(pid = fork())
    {
        case -1:
            printf("Fork Failed");
            exit(-1);
        case 0:
            printf("Child process");
            i = execl(argv[1], argv[2], NULL);
            if (i < 0)
            {
                printf("%s program not loaded using exec system cal\n", argv[2]);
                exit(-1);
            }
    }
    switch(pid = fork())
    {
        case -1:
            printf("Fork Failed");
            exit(-1);
        case 0:
            printf("Child process");
            i = execl(argv[1], argv[2], NULL);
            if (i < 0)
            {
                printf("%s program not loaded using exec system cal\n", argv[2]);
                exit(-1);
            }
        default:
            wait(NULL);
            printf("Child Terminated\n");
            exit(0);
    }
}

```

```
root@nafiah-VirtualBox:/home/nafiah# gcc exec.c -o exec
root@nafiah-VirtualBox:/home/nafiah# ./exec /bin/ls
Desktop  dirlist.c  Dokumen  exec  exec.c~  fork.c  Gambar  Publik  stat.c  Templat  Video  wait.c
dirlist  dirlist.c~  examples.desktop  exec.c  fork  fork.c~  Musik  stat  stat.c~  Unduhan  wait  wait.c~
Child Terminated
root@nafiah-VirtualBox:/home/nafiah#
```

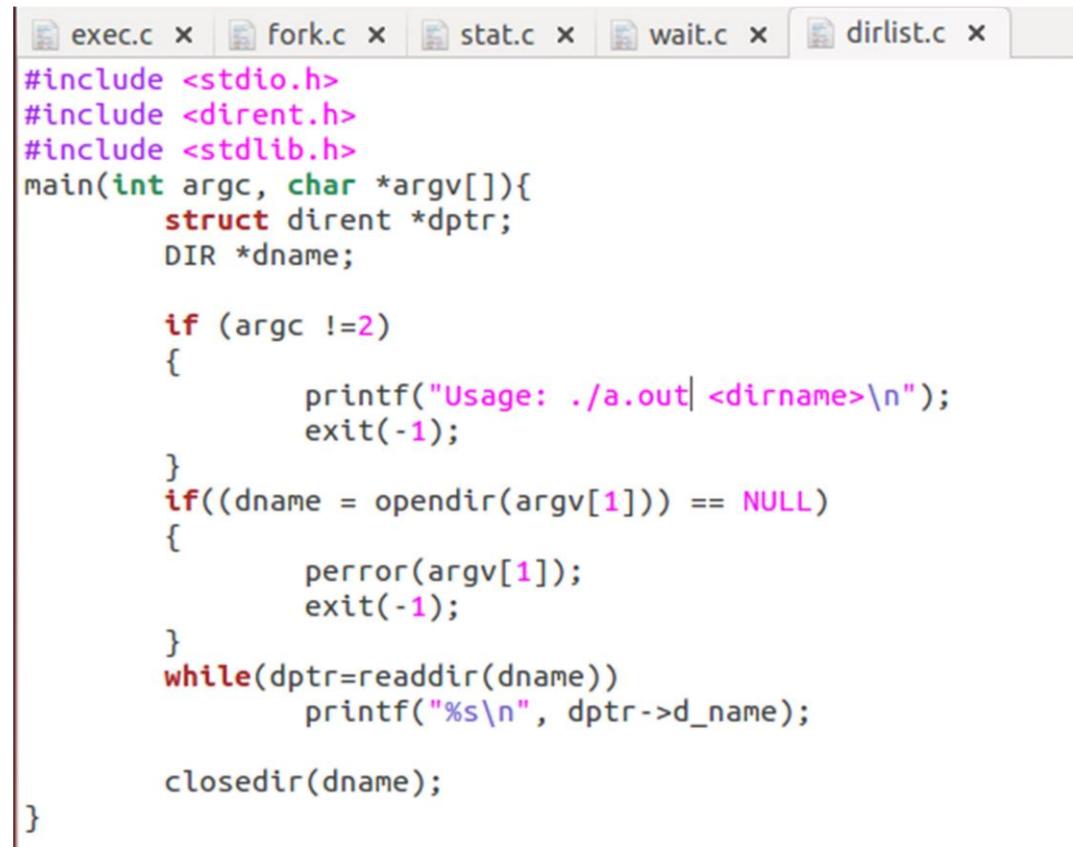
Stat.c



```
#include <stdio.h>
#include <sys/stat.h>
#include <stdlib.h>
#include <time.h>
int main (int argc, char*argv[])
{
    struct stat
        file; int n;
    if (argc != 2)
    {
        printf("Usage: ./a.out <filename>\n");
        exit(-1);
    }
    if ((n = stat(argv[1], &file)) == -1)
    {
        perror(argv[1]);
        exit(-1);
    }
    printf("User id : %d\n", file.st_uid);
    printf("Group id : %d\n", file.st_gid);
    printf("Block size : %ld\n", file.st_blksize);
    printf("Blocks allocated : %ld\n", file.st_blocks);
    printf("Inode no. : %ld\n", file.st_ino);
    printf("Last accessed : %s", ctime(&(file.st_atime)));
    printf("Last modified : %s", ctime(&(file.st_mtime)));
    printf("File size : %ld bytes\n", file.st_size);
    printf("No. of links : %d\n", file.st_nlink);
    printf("Permissions : ");
    printf( (S_ISDIR(file.st_mode)) ? "d" : "-");
    printf( (file.st_mode & S_IRUSR) ? "r" : "-");
    printf( (file.st_mode & S_IWUSR) ? "w" : "-");
    printf( (file.st_mode & S_IXUSR) ? "x" : "-");
    printf( (file.st_mode & S_IRGRP) ? "r" : "-");
    printf( (file.st_mode & S_IWGRP) ? "w" : "-");
    printf( (file.st_mode & S_IXGRP) ? "x" : "-");
    printf( (file.st_mode & S_IROTH) ? "r" : "-");
    printf( (file.st_mode & S_IWOTH) ? "w" : "-");
    printf( (file.st_mode & S_IXOTH) ? "x" : "-");
    printf("\n");
    if (file.st_mode & S_IFREG)
        printf("File type : Regular\n");
    if(file.st_mode & S_IFDIR)
        printf("File type : Directory\n");
}
```

```
root@nafiah-VirtualBox:/home/nafiah# gcc stat.c -o stat
root@nafiah-VirtualBox:/home/nafiah# ./stat
Usage: ./a.out <filename>
root@nafiah-VirtualBox:/home/nafiah#
```

Dirlist.c



```
#include <stdio.h>
#include <dirent.h>
#include <stdlib.h>
main(int argc, char *argv[]){
    struct dirent *dptr;
    DIR *dname;

    if (argc !=2)
    {
        printf("Usage: ./a.out| <dirname>\n");
        exit(-1);
    }
    if((dname = opendir(argv[1])) == NULL)
    {
        perror(argv[1]);
        exit(-1);
    }
    while(dptr=readdir(dname))
        printf("%s\n", dptr->d_name);

    closedir(dname);
}
```

```
root@nafiah-VirtualBox:/home/nafiah# gcc dirlist.c -o dirlist
root@nafiah-VirtualBox:/home/nafiah# ./dirlist
Usage: ./a.out <dirname>
root@nafiah-VirtualBox:/home/nafiah#
```

MODUL 9

The screenshot shows a terminal window titled "lab-fki@lab-fki: ~". The window title bar includes standard icons for minimize, maximize, and close. Below the title bar is a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The main area of the window is a text editor titled "GNU nano 2.9.3" with the file name "fcreate.c" displayed. The code in the editor is:

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <fcntl.h>
#include <unistd.h>
main(int argc, char *argv[])
{
    int fd, n, len;
    char buf[100];
    if (argc != 2)
    {
        printf("Usage: ./a.out <filename>\n");
        exit(-1);
    }
    fd = open(argv[1], O_WRONLY|O_CREAT|O_TRUNC, 0644);
    if(fd < 0)
    {
        printf("File creation problem\n");
        exit(-1);
    }
}
```

Below the code, there is a status bar with the message "[Read 28 lines]". At the bottom of the window, there is a menu of keyboard shortcuts:

- ^G Get Help
- ^O Write Out
- ^W Where Is
- ^K Cut Text
- ^J Justify
- ^C Cur Pos
- ^X Exit
- ^R Read File
- ^V Replace
- ^U Uncut Text
- ^T To Spell
- ^_ Go To Line

lab-fki@lab-fki: ~

File Edit View Search Terminal Help

GNU nano 2.9.3 fcreate.c

```
        printf("Usage: ./a.out <filename>\n");
        exit(-1);
    }
    fd = open(argv[1], O_WRONLY|O_CREAT|O_TRUNC, 0644);
    if(fd < 0)
    {
        printf("File creation problem\n");
        exit(-1);
    }
    printf("Tekan Ctrl+D di akhir baris:\n");

    while((n = read(0, buf, sizeof(buf))) > 0)
    {
        len = strlen(buf);
        write(fd, buf, len);
    }
    close(fd);
}
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line

```
lab-fki@lab-fki: ~
File Edit View Search Terminal Help
a.out      file.txt    lllll.txt    tugas
chel       fork        Music        Untitled\ Document\ 1
Desktop    fork.c      nano.save   Videos
dirlist.c.save fork.c.save  nano.save.1  wait
Documents  fread       nano.save.2  wait.c
Downloads  fread.c    Pictures    wait.c.save
exec.c     haha.txt   Public      wait.c.save.1
fcreate    L200170022  stat.c     work.c
fcreate.c   latihan    Templates   yussynta.sh.save
fia        latihan.txt test.txt
root@lab-fki:/home/lab-fki# gcc fcreate.c -o fia
fcreate.c:6:1: warning: return type defaults to 'int' [-Wimplicit-int]
main(int argc, char *argv[]) {
^_____
root@lab-fki:/home/lab-fki# touch coba.txt
root@lab-fki:/home/lab-fki# ./fia coba.txt
Tekan Ctrl+D di akhir baris:
praktikumroot@lab-fki:/home/lab-fki# cat coba.txt
praktikum@root@lab-fki:/home/lab-fki# ./fia coba.txt
Tekan Ctrl+D di akhir baris:
1111
root@lab-fki:/home/lab-fki# cat coba.txt
1111
root@lab-fki:/home/lab-fki#
```

lab-fki@lab-fki: ~

File Edit View Search Terminal Help

GNU nano 2.9.3 fread.c

```
include <stdio.h>
#include <stdlib.h>
#include <fcntl.h>
#include <unistd.h>
int main(int argc, char *argv[]) {
    int fd,i;
    char buf[100];
    if (argc < 2)
    {
        printf("Usage: ./a.out <filename>\n");
        exit(-1);
    }

    fd = open(argv[1], O_RDONLY);
    if(fd == -1)
    {
        printf("%s file does not exist\n", argv[1]);
        exit(-1);
    }
    [ Read 25 lines ]
^G Get Help  ^O Write Out  ^W Where Is  ^K Cut Text  ^J Justify  ^C Cur Pos
^X Exit      ^R Read File  ^\ Replace   ^U Uncut Text ^T To Spell  ^_ Go To Line
```

lab-fki@lab-fki: ~

File Edit View Search Terminal Help

GNU nano 2.9.3 fread.c

```
        exit(-1);
}

fd = open(argv[1], O_RDONLY);
if(fd == -1)
{
    printf("%s file does not exist\n", argv[1]);
    exit(-1);
}
printf("Isi dari file %s adalah : \n", argv[1]);
while(read(fd, buf, sizeof(buf)) > 0)
    printf("%s", buf);

close(fd);
}
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line

```
lab-fki@lab-fki: ~
File Edit View Search Terminal Help
root@lab-fki:/home/lab-fki# ./lala coba.txt
bash: ./lala: No such file or directory
root@lab-fki:/home/lab-fki# gcc Fread.c -o lala
Fread.c:5:1: warning: return type defaults to 'int' [-Wimplicit-int]
 main(int argc, char *argv[]) {
 ^~~~
Fread.c: In function 'main':
Fread.c:19:2: error: expected ';' before '}' token
 }
 ^
root@lab-fki:/home/lab-fki# nano Fread.c
root@lab-fki:/home/lab-fki# gcc Fread.c -o lala
Fread.c: In function 'main':
Fread.c:19:2: error: expected ';' before '}' token
 }
 ^
root@lab-fki:/home/lab-fki# nano Fread.c
root@lab-fki:/home/lab-fki# nano Fread.c
root@lab-fki:/home/lab-fki# nano Fread.c
root@lab-fki:/home/lab-fki# gcc Fread.c -o lala
root@lab-fki:/home/lab-fki# ./lala coba.txt
Isi dari file coba.txt adalah :
1111
root@lab-fki:/home/lab-fki# nano Fread.c
```

lab-fki@lab-fki: ~

File Edit View Search Terminal Help

GNU nano 2.9.3 Fappend.c

```
include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include <fcntl.h>
#include <unistd.h>
int main(int argc, char *argv[]){
    int fd, n, len;
    char buf[100];
    if (argc != 2)
    {
        printf("Usage: ./a.out <filename>\n");
        exit(-1);
    }
    fd = open(argv[1], O_APPEND|O_WRONLY|O_CREAT, 0644);
    if (fd < 0)
    {
        perror(argv[1]);
        exit(-1);
    }
[ Read 27 lines ]
^G Get Help  ^O Write Out  ^W Where Is  ^K Cut Text  ^J Justify  ^C Cur Pos
^X Exit      ^R Read File  ^\ Replace   ^U Uncut Text ^T To Spell  ^_ Go To Line
```

lab-fki@lab-fki: ~

File Edit View Search Terminal Help

GNU nano 2.9.3 fappend.c

```
        printf("Usage: ./a.out <filename>\n");
        exit(-1);
    }
    fd = open(argv[1], O_APPEND|O_WRONLY|O_CREAT, 0644);
    if (fd < 0)
    {
        perror(argv[1]);
        exit(-1);
    }

    while((n = read(0, buf, sizeof(buf))) >0)
    {
        len = strlen(buf);
        write(fd, buf, len);
    }
    close(fd);
}
```

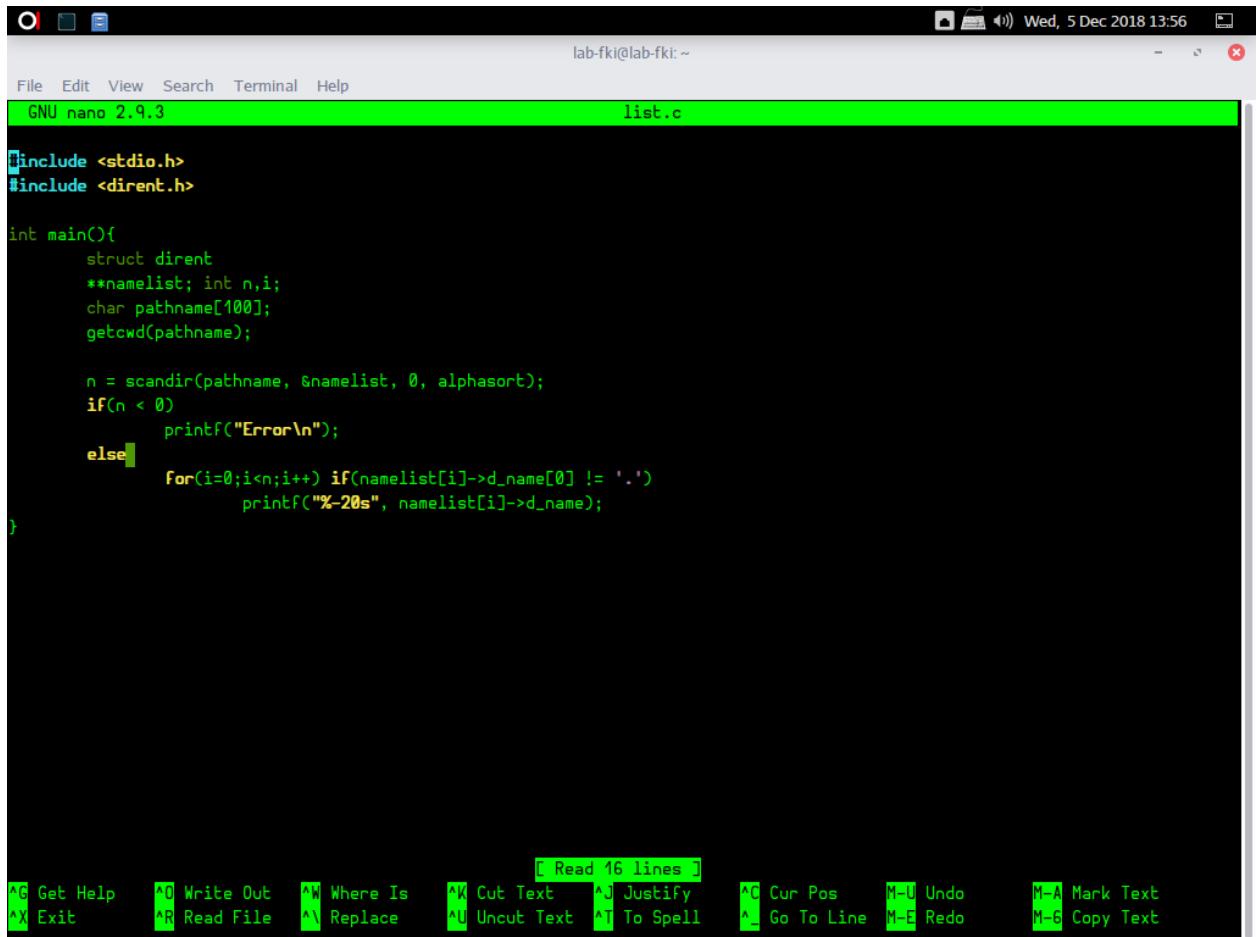
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line

```
lab-fki@lab-fki: ~
File Edit View Search Terminal Help
}

root@lab-fki:/home/lab-fki# nano fread.c
root@lab-fki:/home/lab-fki# nano fread.c
root@lab-fki:/home/lab-fki# nano fread.c
root@lab-fki:/home/lab-fki# gcc fread.c -o lala
root@lab-fki:/home/lab-fki# ./lala coba.txt
Isi dari file coba.txt adalah :
1111
root@lab-fki:/home/lab-fki# nano fread.c
root@lab-fki:/home/lab-fki# nano
root@lab-fki:/home/lab-fki# gcc fappend.c -o bye
fappend.c:6:1: warning: return type defaults to 'int' [-Wimplicit-int]
main(int argc, char *argv[]){
~~~
root@lab-fki:/home/lab-fki# nano fappend.c
root@lab-fki:/home/lab-fki# gcc fappend.c -o bye
root@lab-fki:/home/lab-fki# ./bye coba.txt
hahaha
root@lab-fki:/home/lab-fki# strings coba.txt
1111
hahaha
ahaha
root@lab-fki:/home/lab-fki#
```

MODUL 10

A. Simulasi perintah ls (list.c)



```
GNU nano 2.9.3                                         list.c

#include <stdio.h>
#include <dirent.h>

int main(){
    struct dirent
        **namelist; int n,i;
    char pathname[100];
    getcwd(pathname);

    n = scandir(pathname, &namelist, 0, alphasort);
    if(n < 0)
        printf("Error\n");
    else
        for(i=0;i<n;i++)
            printf("%-20s", namelist[i]->d_name);
}
```

The screenshot shows a terminal window with a black background and white text. At the top, there's a title bar with icons for window control and a date/time stamp: "Wed, 5 Dec 2018 13:56". Below the title bar is a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The main area of the terminal shows a file named "list.c" being edited in the "nano" text editor. The code in the file is a C program that includes stdio.h and dirent.h, defines a main function, and uses scandir to list files in a directory with a width of 20 characters. At the bottom of the terminal window, there's a status bar with various keyboard shortcuts for nano, such as "Get Help", "Write Out", "Where Is", "Cut Text", "Justify", "Cur Pos", "Undo", "Exit", "Read File", "Replace", "Uncut Text", "To Spell", "Go To Line", "Redo", "Mark Text", and "Copy Text". A message "[Read 16 lines]" is also visible in the status bar.

The screenshot shows a terminal window with a black background and white text. At the top, there's a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The title bar indicates the session is "lab-fki@lab-fki: ~" and the date and time are "Wed, 5 Dec 2018 13:56". The terminal content is as follows:

```
root@lab-fki:/home/lab-fki# nano list.c
root@lab-fki:/home/lab-fki# gcc list.c -o list
list.c: In function 'main':
list.c:8:2: warning: implicit declaration of function 'getcwd'; did you mean 'getw'? [-Wimplicit-function-declaration]
  getcwd(pathname);
  ^
  getw
root@lab-fki:/home/lab-fki#
```

B. Simulasi perintah grep (mygrep.c)

GNU nano 2.9.3 mygrep.c

```
#include <stdio.h>
#include <string.h>
#include <stdlib.h>

int main(int argc, char *argv[]){
    FILE *fd;
    char str[100];
    char c;
    int i, flag, j, m, k;
    char temp[30];

    if(argc != 3){
        printf("Usage: gcc mygrep.c -o mygrep\n");
        printf("Usage: ./mygrep <search_text> <filename>\n");
        exit(-1);
    }

    fd = fopen(argv[2], "r");
    if(fd == NULL){
        printf("%s is not exist\n", argv[2]);
        exit(-1);
    }

    while(!feof(fd)){
        i=0;
        while(1){
            c = fgetc(fd);
            if(feof(fd)){
                str[i++] = '\0'; break;
                [ Read 48 lines ]
            }
        }
    }
}
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos ^U Undo
^X Exit ^R Read File ^L Replace ^U Uncut Text ^T To Spell ^L Go To Line ^E Redo
M-A Mark Text M-B Copy Text

The screenshot shows a terminal window with the following details:

- Top Bar:** Shows icons for file operations (New, Open, Save, Print, Find, Replace, Cut, Copy, Paste, Undo, Redo) and the date/time: "Wed, 5 Dec 2018 13:58".
- Header:** "lab-fki@lab-fki: ~"
- Menu Bar:** File, Edit, View, Search, Terminal, Help.
- Title Bar:** "GNU nano 2.9.3" and "mygrep.c".
- Code Area:** The main content is the C source code for "mygrep.c". It includes declarations for a character array `str` and integer variables `Fd`, `i`, and `k`. The code implements a search function that reads from a file specified by the second command-line argument. It then compares each line of the file against the search string specified by the first command-line argument. If a match is found, it prints the line followed by a newline character.
- Bottom Bar:** A series of keyboard shortcut keys for various functions like Get Help, Write Out, Where Is, Cut Text, Justify, Cur Pos, Undo, Mark Text, Exit, Read File, Replace, Uncut Text, To Spell, Go To Line, and Redo.

```
}
Fd = fopen(argv[2],"r");
if(Fd == NULL){
    printf("%s is not exist\n", argv[2]);
    exit(-1);
}

while(!feof(Fd)){
    i=0;
    while(1){
        c = fgetc(Fd);
        if(feof(Fd)){
            str[i++] = '\0'; break;
        }
        if(c == '\n'){
            str[i++] = '\0'; break;
        }
        str[i++] = c;
    }

    if(strlen(str) >= strlen(argv[1])){
        for(k=0;k<=strlen(str)-strlen(argv[1]);k++){
            for(m=0;m<strlen(argv[1]);m++)
                temp[m] = str[k+m];
            temp[m] = '\0';
            if(strcmp(temp,argv[1])==0){
                printf("%s\n",str);
                break;
            }
        }
    }
}
```

```
lab-fki@lab-fki: ~
File Edit View Search Terminal Help
getcwd(pathname);
^_____
getw
root@lab-fki:/home/lab-fki# ./list
Desktop Documents Downloads L200170050.sh L200170060
L200170172 Music Pictures Public a.out SALSA.txt
Templates UI.c Videos copy copy.c aini.txt
angieta.txt append copy dirlist dirlist.c create
del del.c dirlist exec
exec.c exec.c.save Fappend fcreate fia.c
fork Fread hardware.html inimodul9.txt iq
iqal iqal.c l200170018 l200170024 lati
han latihan.txt list list.c mothmeme.txt my
grep mygrep.c nano.save pipo.sh.save read
stat.c test.txt ui.c utari wait
wait.c wait.c.save waiting.c
root@lab-fki:/home/lab-fki#
root@lab-fki:/home/lab-fki# nano
root@lab-fki:/home/lab-fki# nano grep.c
root@lab-fki:/home/lab-fki# nano mygrep.c
root@lab-fki:/home/lab-fki# nano mygrep.c
root@lab-fki:/home/lab-fki# gcc mygrep.c -o fia
root@lab-fki:/home/lab-fki# ./mygrep 0 arifiaa.txt
l200170088
root@lab-fki:/home/lab-fki# ./mygrep a arifiaa.txt
nurul arifia safitri
root@lab-fki:/home/lab-fki#
```

C. Simulasi perintah cp (copy.c)

GNU nano 2.9.3 copy.c

```
#include <stdio.h>
#include <stdlib.h>
#include <fcntl.h>
#include <sys/stat.h>
#define SIZE 1024

int main(int argc, char *argv[]){
    int src, dst, nread;
    char buf[SIZE];
    if(argc != 3){
        printf("Usage: gcc copy.c -o copy\n");
        printf("Usage: ./copy <filename> <newFile> \n");
        exit(-1);
    }
    if((src = open(argv[1], O_RDONLY)) == -1){
        perror(argv[1]);
        exit(-1);
    }
    if((dst = creat(argv[2], 0644)) == -1){
        perror(argv[1]);
        exit(-1);
    }
    while((nread = read(src, buf, SIZE)) > 0){
        if(write(dst, buf, nread) == -1){
            printf("can't write \n");
            exit(-1);
        }
    }
    close(src);
}
```

[Read 31 lines]

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos ^U Undo
^X Exit ^R Read File ^L Replace ^U Uncut Text ^T To Spell ^L Go To Line ^E Redo
M-A Mark Text
M-B Copy Text

```
lab-fki@lab-fki: ~
File Edit View Search Terminal Help
[Function-declaration]
    close(src);
A.-----
    pclose
root@lab-fki:/home/lab-fki# ./
.a.be/      create      .face      .gnupg/      L200170172/ Pictures/    wait
.adanaxis/   del        Fappend   .gphoto/     latihan.txt Public/
a.out       Desktop/   Fcreate    iq          list        read
append      dirlist    fia        iqual       .local/     .scim/
.cache/     Documents/ Fork      1200170018/ .mozilla/ Templates/
.config/    Downloads/ Fread     1200170024/ Music/      utari/
copy       exec      .gconf/    L200170060/ mygrep     Videos/
root@lab-fki:/home/lab-fki# ./copy arifiaa.txt ARIFIA.txt
root@lab-fki:/home/lab-fki# dir
aini.txt    Desktop    fia.c      L200170060  New\ Document\ File.txt  utari
angietta.txt dirlist    fork      L200170172  Pictures           Videos
a.out       dirlist.c  Fread     latihan      pipo.sh.save  wait
append      Documents  hardware.html latihan.txt  Public            wait.c
arifiaa.txt Downloads  inimodul9.txt list       read               wait.c.save
ARIFIA.txt  exec      iq        list.c      SALSA.txt  waiting.c
copy       exec.c     iqual     mothmeme.txt stat.c
copy.c     exec.c.save iqual.c   Music      Templates
create     Fappend   1200170018 mygrep     test.txt
del       Fcreate   1200170024 mygrep.c   ui.c
del.c      fia       L200170050.sh nano.save  UI.c
root@lab-fki:/home/lab-fki#
```

D. Simulasi perintah rm (del.c)

GNU nano 2.9.3 del.c

```
#include <stdio.h>
#include <stdlib.h>
#include <fcntl.h>

int main(int argc, char *argv[]){
    int fd;
    if(argc != 2){
        printf("Usage: gcc del.c -o del\n");
        printf("Usage: ./del filename\n");
        exit(-1);
    }
    fd = open(argv[1], O_RDONLY);
    if(fd != -1){
        close(fd);
        unlink(argv[1]);
    } else
        perror(argv[1]);
}
```

[Read 18 lines]

AG Get Help A0 Write Out AW Where Is AK Cut Text AJ Justify AC Cur Pos M-U Undo
AX Exit AR Read File A^ Replace AU Uncut Text A! To Spell A_ Go To Line M-E Redo M-A Mark Text
M-B Copy Text

lab-fki@lab-fki: ~

```
File Edit View Search Terminal Help
```

```
del      fcreate    1200170024  mygrep.c      ui.c
del.c    Fia        L200170050.sh  nano.save    UI.c
root@lab-fki:/home/lab-fki# nano del.c
root@lab-fki:/home/lab-fki# gcc del.c -o del
del.c: In function 'main':
del.c:14:3: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
    close(fd);
    ^
pclose
del.c:15:3: warning: implicit declaration of function 'unlink'; did you mean 'unix'? [-Wimplicit-function-declaration]
    unlink(argv[1]);
    ^
unix
root@lab-fki:/home/lab-fki# dir
aini.txt   Desktop    fia.c       L200170060  New\ Document\ File.txt  utari
angieta.txt  dirlist   fork       L200170172  Pictures                Videos
a.out      dirlist.c  fread      latihan     pipo.sh.save           wait
append     Documents   hardware.html latihan.txt Public          wait.c
arifiaa.txt Downloads  inimodul9.txt list       read           wait.c.save
ARIFIA.txt  exec      iq        list.c      SALSA.txt           waiting.c
copy       exec.c     iqual     mothmeme.txt stat.c
copy.c     exec.c.save iqual.c   Music       Templates
create    Fappend    1200170018  mygrep    test.txt
```

```
lab-fki@lab-fki: ~
File Edit View Search Terminal Help
unix
root@lab-fki:/home/lab-fki# dir
aini.txt Desktop fia.c L200170060 New\ Document\ File.txt utari
angieta.txt dirlist Fork L200170172 Pictures Videos
a.out dirlist.c fread latihan pipo.sh.save wait
append Documents hardware.html latihan.txt Public wait.c
arifiaa.txt Downloads inimodul9.txt list read wait.c.save
ARIFIA.txt exec iq list.c SALSA.txt waiting.c
copy exec.c iqual mothmeme.txt stat.c
copy.c exec.c.save iqual.c Music Templates
create Fappend l200170018 mygrep test.txt
del Fcreate l200170024 mygrep.c ui.c
del.c fia L200170050.sh nano.save UI.c
root@lab-fki:/home/lab-fki# ./del ARIFIA.txt
root@lab-fki:/home/lab-fki# dir
aini.txt Desktop fia 1200170024 mygrep Templates
angieta.txt dirlist Fia.c L200170050.sh mygrep.c test.txt
a.out dirlist.c Fork L200170060 nano.save ui.c
append Documents fread L200170172 New\ Document\ File.txt UI.c
arifiaa.txt Downloads hardware.html latihan Pictures utari
copy exec inimodul9.txt latihan.txt pipo.sh.save Videos
copy.c exec.c iqual list Public wait
create exec.c.save iqual list.c read wait.c
del Fappend iqual.c mothmeme.txt SALSA.txt wait.c.save
del.c Fcreate l200170018 Music stat.c waiting.c
root@lab-fki:/home/lab-fki#
```