

Modul Praktikum

SISTEM OPERASI



DisusunOleh :

Ir. Bana Handaga,M.T., PhD.

Aris Rakhmadi,S.T., M.Eng.

Jan Wantoro,S.T., M.Eng.

Program Studi Informatika

Fakultas Komunikasi Dan Informatika

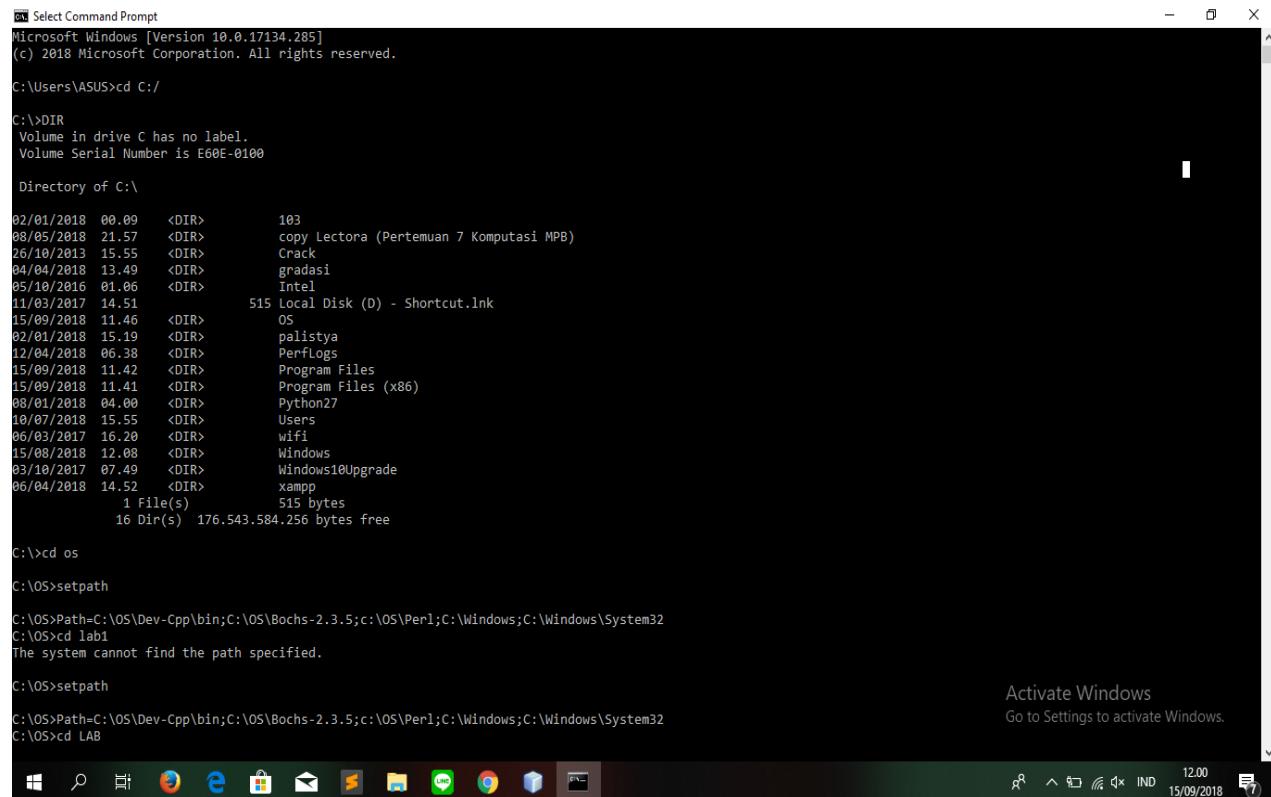
Universitas Muhammadiyah Surakarta

Nama : Sri HajiAti

NIM : L200170103

MODUL 1

1. dir berfungsi untuk memeriksa apakah file tertentu terdapat di direktori



```
cmd Select Command Prompt
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.
```

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

```

Command Prompt
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
15/09/2018 11.46 <DIR>          Local Disk (D) - Shortcut.lnk
02/01/2018 15.19 <DIR>          OS
12/04/2018 06.38 <DIR>          palistya
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
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 : 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 0x0200
SectorsPerCluster  db 0x01
ReservedSectors  dw 0x0001
TotalFATs    db 0x02
MaxRootEntries  dw 0x00E0
TotalSectorsSmall  dw 0x0040
MediaDescriptor  db 0xF0
SectorsPerFAT     dw 0x0009
SectorsPerTrack   dw 0x0012
```

3. lalu 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

```

Command Prompt
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
15/09/2018 11.46 <DIR>          Local Disk (D) - Shortcut.lnk
02/01/2018 15.19 <DIR>          OS
12/04/2018 06.38 <DIR>          palistya
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
C:\os\LAB>cd lab1
C:\os\LAB\LAB1>Notepad boot.asm
C:\os\LAB\LAB1>notepad Makefile
C:\os\LAB\LAB1>
```

Makefile - Notepad

```

File Edit Format View Help
#
# 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

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

4. lalu lanjut 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 28.58 342.016 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 16.20 44 s.bat
15/12/2008 12.20 261.120 tdump.exe
31/01/2000 05.00 12.451.712 bytes free
 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
```

The screenshot shows a Windows Command Prompt window titled "Select Command Prompt". The command `del floppya.img/p` is entered, followed by a confirmation "Y". The directory listing shows the file `floppya.img` has been deleted. The taskbar at the bottom includes icons for File Explorer, Task View, Start, Edge, Mail, Photos, OneDrive, File Explorer, Task View, Start, Edge, Mail, Photos, OneDrive, and Task View.

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

```
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 28.58 342.016 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] 
```

The screenshot shows a Windows Command Prompt window titled "Command Prompt - bximage". The command `bximage` is entered, followed by a question about creating a floppy disk image or a hard disk image. The response "hd" is typed. The taskbar at the bottom includes icons for File Explorer, Task View, Start, Edge, Mail, Photos, OneDrive, File Explorer, Task View, Start, Edge, Mail, Photos, OneDrive, and Task View.

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

```
C:\OS\LAB\LAB1>bximage
16/09/2007 16.22          18.432 bximage.exe
11/09/2017 18.21          10.321.920 c.img
26/02/2007 28.50          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) 176.396.612.928 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:
  floppy: 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.

12.28
15/09/2018

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

```
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 12.27 <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 18.37 512 boots.bin
16/09/2007 16.22 18.432 bximage.exe
11/09/2017 18.21 10.321.920 c.img
26/02/2007 28.50 342.016 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) 176.612.763.136 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
000000000001[ ] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochsout.txt

Bochs for Windows - Display
```

Activate Windows
Go to Settings to activate Windows.

12.34
15/09/2018

10. lalu 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.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\lab1"
C:\OS\LAB\LAB1>dd if=floppya.img of=boots.bin count=1
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

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

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.brc
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 floppy.img
14/12/2008 11.45 7.966 kernel.asm
15/12/2008 16.21 227 Makefile
15/12/2008 12.20 44 s.bat
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>
```

11. lalu ketik debug boots.bin maksut perintah ini adalah memindahi data file boots .bin kedalam memori kerja ‘debug’.

```
Command Prompt
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.

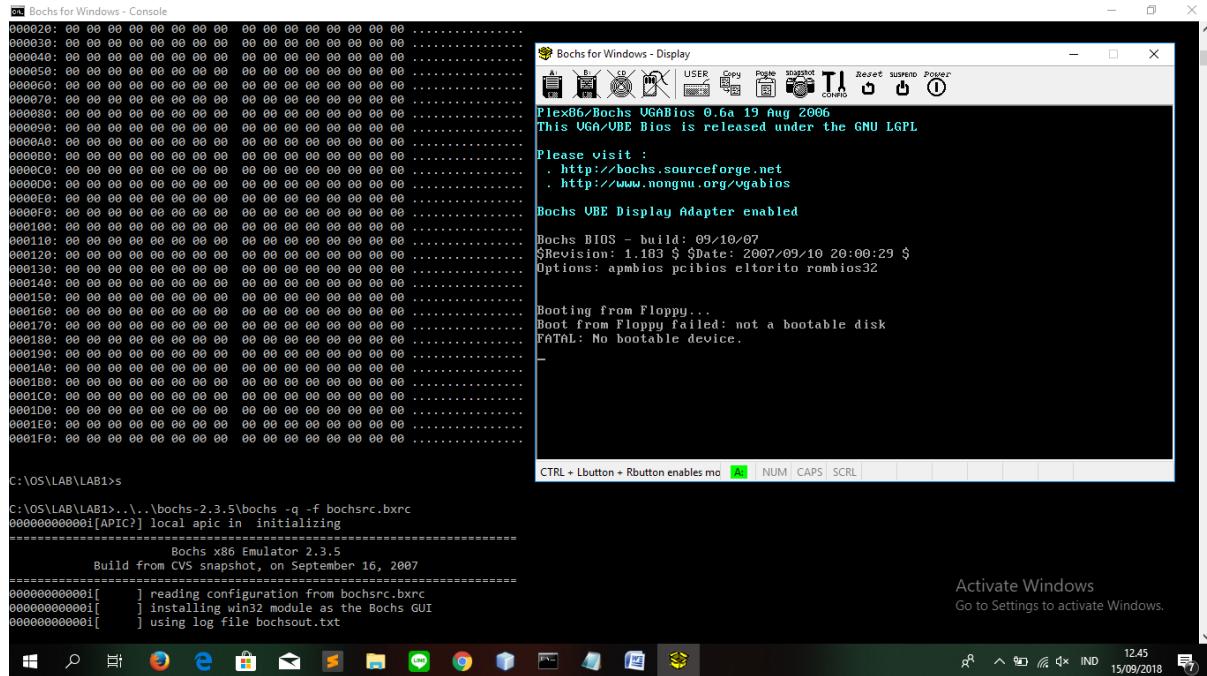
C:\OS\LAB\LAB1>tdump boots.bin
Turbo Dump Version 5.0.16.12 Copyright (c) 1988, 2000 Inprise Corporation
Display of File BOOTS.BIN

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 .....

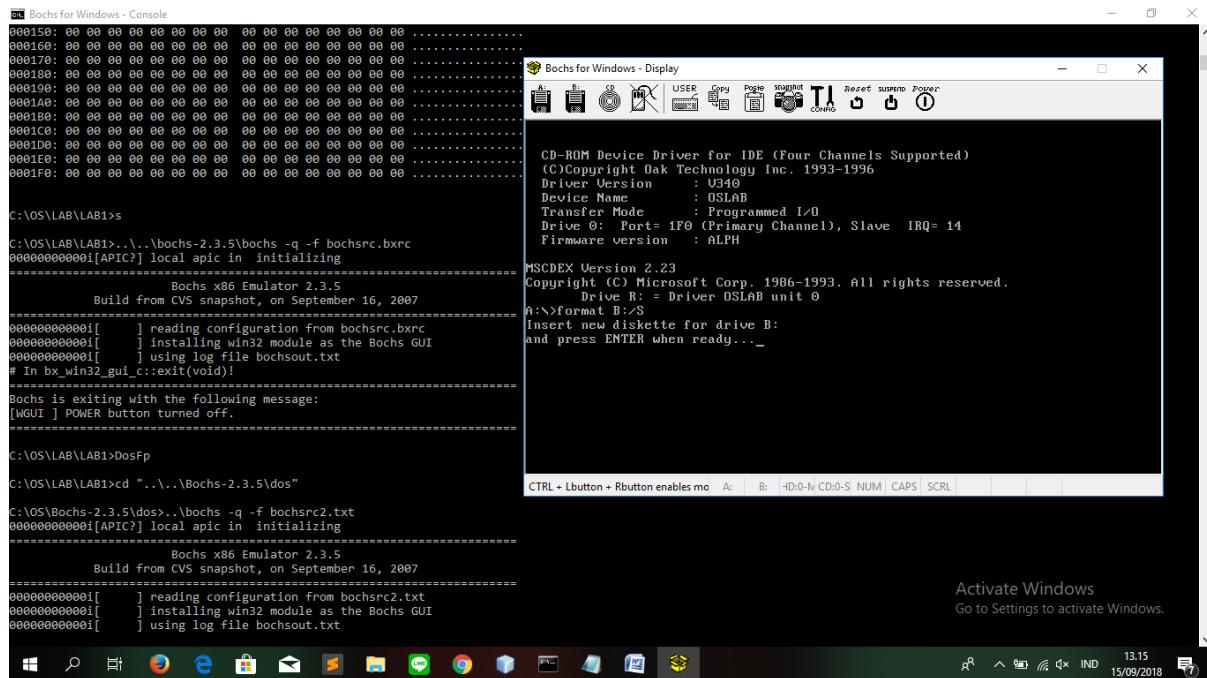
Activate Windows
Go to Settings to activate Windows.

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

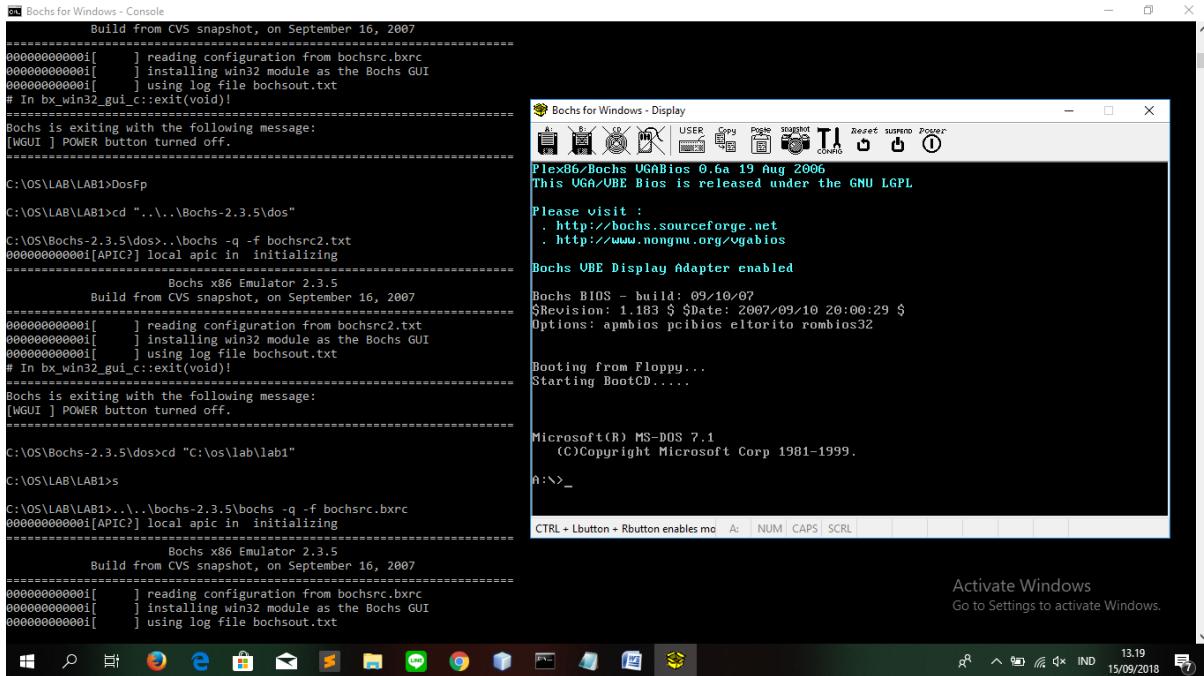
12. lalu ketik s untuk menampilkan windows bochs for windows – display yang sedang melakukan proses booting namun tidak berhasil karena tidak menemukan diskboot



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

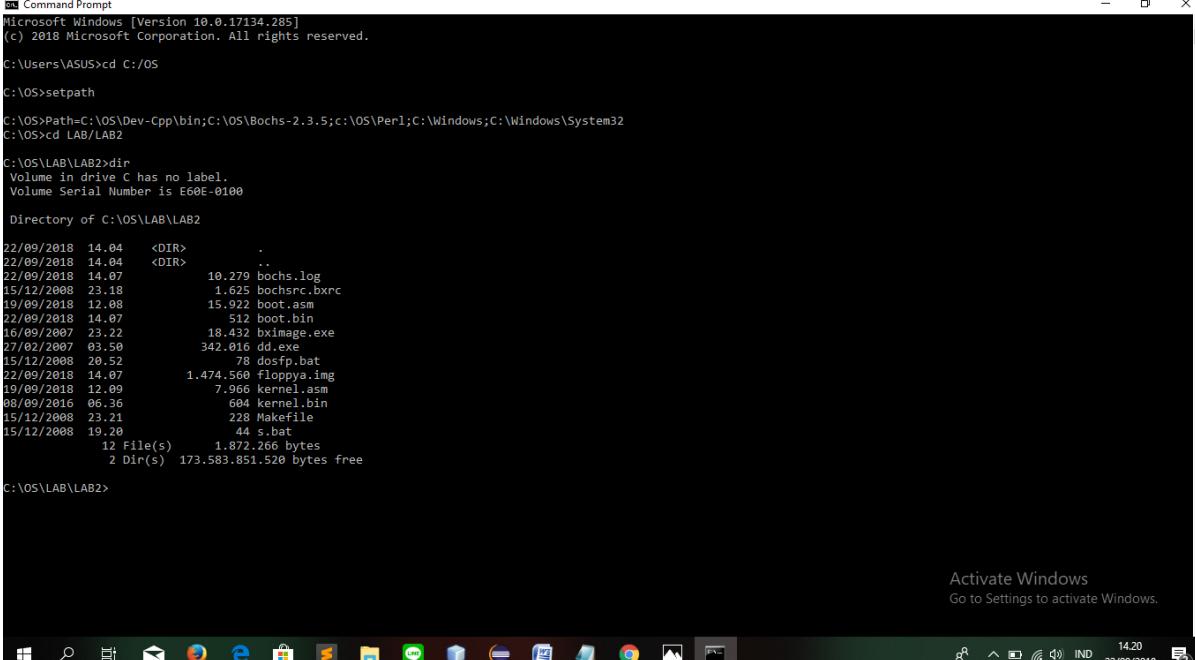


14. lalu ketik “ s” dan akan menampilkan proses booting pada bochs windows-display jika benar maka hasil terakhir akan sama seperti di buku Modul.



MODUL 2

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



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

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

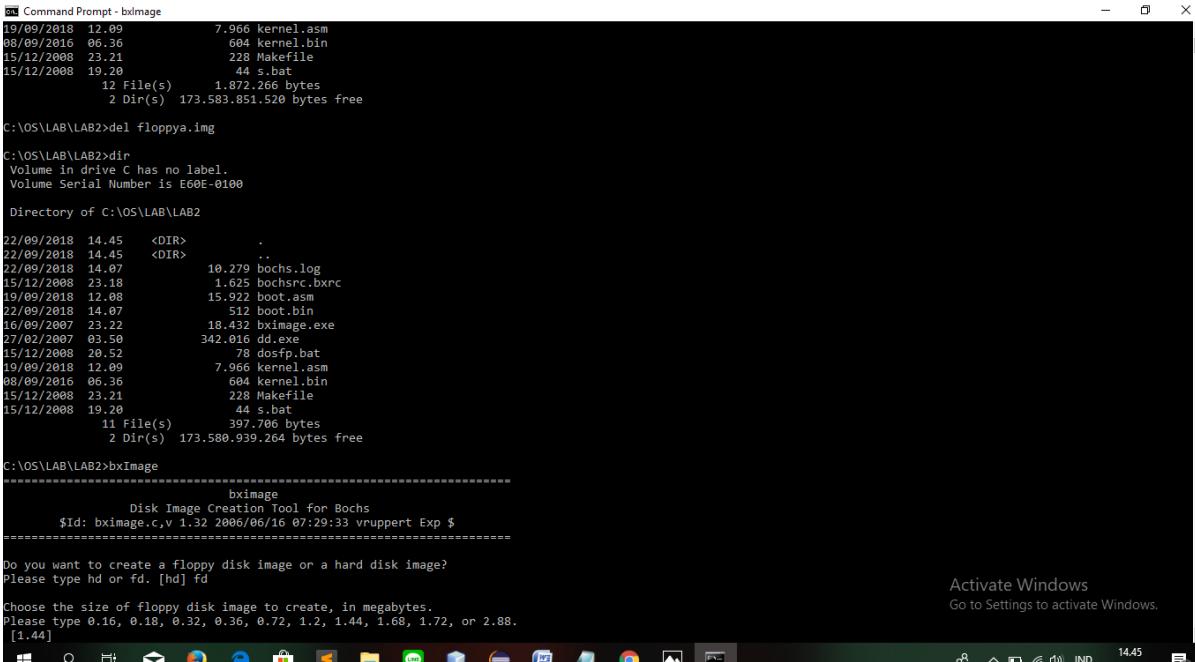
Directory of C:\OS\LAB\LAB2

22/09/2018 14.04 <DIR> .
22/09/2018 14.04 <DIR> ..
22/09/2018 14.07 10.279 bochs.log
15/12/2008 23.18 1.625 bochsrc.bxrc
19/09/2018 12.08 15.922 boot.asm
22/09/2018 14.07 512 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 14.07 1.474.560 floppya.img
19/09/2018 12.09 7.966 kernel.asm
08/09/2016 06.36 604 kernel.bin
15/12/2008 23.21 228 Makefile
15/12/2008 19.20 44 s.bat
12 File(s) 1.872.266 bytes
2 Dir(s) 173.583.851.520 bytes free

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

Activate Windows
Go to Settings to activate Windows.

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



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

C:\OS\LAB\LAB2>del floppya.img
C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\OS\LAB\LAB2

22/09/2018 12.09 7.966 kernel.asm
08/09/2016 06.36 604 kernel.bin
15/12/2008 23.21 228 Makefile
15/12/2008 19.20 44 s.bat
12 File(s) 1.872.266 bytes
2 Dir(s) 173.583.851.520 bytes free

C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is E60E-0100

Directory of C:\OS\LAB\LAB2

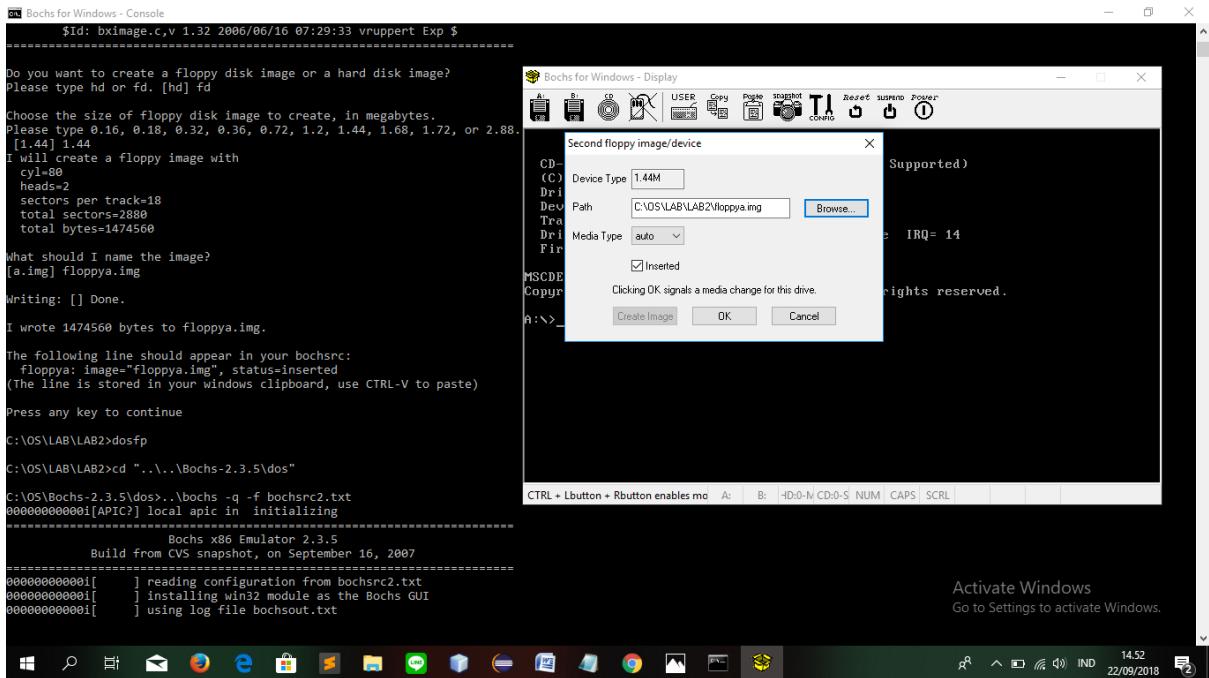
22/09/2018 14.45 <DIR> .
22/09/2018 14.45 <DIR> ..
22/09/2018 14.07 10.279 bochs.log
15/12/2008 23.18 1.625 bochsrc.bxrc
19/09/2018 12.08 15.922 boot.asm
22/09/2007 14.07 512 boot.bin
16/09/2007 23.22 18.432 bxImage.exe
27/02/2007 03.50 342.016 dd.exe
15/12/2008 20.52 78 dosfp.bat
19/09/2018 12.09 7.966 kernel.asm
08/09/2016 06.36 604 kernel.bin
15/12/2008 23.21 228 Makefile
15/12/2008 19.20 44 s.bat
11 File(s) 397.706 bytes
2 Dir(s) 173.580.939.264 bytes free

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

Do you want to create a floppy disk image or a hard disk image?
Please type hd or fd. [hd] fd
Choose the size of floppy disk image to create, in megabytes.
Please type 0.16, 0.18, 0.32, 0.36, 0.72, 1.2, 1.44, 1.68, 1.72, or 2.88.
[1.44]
```

Activate Windows
Go to Settings to activate Windows.

3.lalu ketik floppya.img unntuk memanggilnya 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



```

$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=88
  heads=2
  sectors per track=18
  total sectors=2880
  total bytes=1474560

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

Writing: [] Done.

I wrote 1474560 bytes to floppya.img.

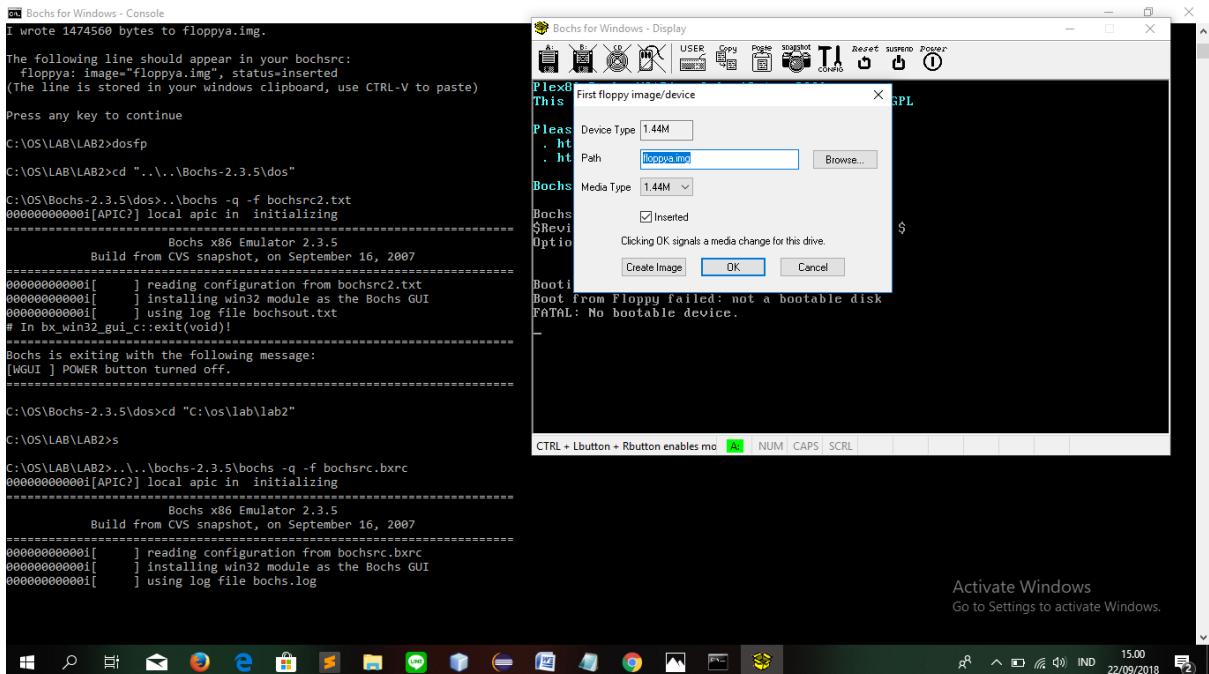
The following line should appear in your bochsrc:
floppya: image="floppya.img", status=inserted
(The line is stored in your windows clipboard, use CTRL-V to paste)

Press any key to continue
C:\OS\LAB\LAB2>dosfp

C:\OS\LAB\LAB2>cd ..\..\Bochs-2.3.5\dos
C:\OS\Bochs-2.3.5>..\bochs -q -f bochsrc2.txt
000000000001[APIC?] local apic in initializing
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
000000000001[ ] reading configuration from bochsrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochcout.txt

```

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”.



```

I wrote 1474560 bytes to floppya.img.

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

Press any key to continue
C:\OS\LAB\LAB2>dosfp

C:\OS\LAB\LAB2>cd ..\..\Bochs-2.3.5\dos
C:\OS\Bochs-2.3.5>..\bochs -q -f bochsrc2.txt
000000000001[APIC?] local apic in initializing
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
000000000001[ ] reading configuration from bochsrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochcout.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>cd "C:\os\lab\lab2"

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 boch.log

```

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 muncull pc simulator sesuai yang terdapat di modul/dibawah ini :

The screenshot shows two windows from the Bochs for Windows interface. The left window is the 'Bochs for Windows - Console' showing command-line output. The right window is the 'Bochs for Windows - Display' showing a graphical user interface with icons for file operations, a user icon, and a power button. The display window also shows a message about the Plex86 BIOS version 0.6a and instructions to press any key to reboot.

```

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=floppy.img
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\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
Bochs UBE Display Adapter enabled
Bochs BIOS - build: 09/16/07
$Revision: 1.183 $ $Date: 2007/09/10 20:00:29 $
Options: apmbios pcibios eltorito rombios32

Booting from Floppy...
Loading Kernel ver 0.01
.....
ERROR : Press Any Key to Reboot_

```

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.

The screenshot shows a 'Command Prompt' window on the left and a 'Notepad' window on the right. The Notepad window displays assembly code for a boot loader, specifically the 'boot.asm' file. A 'Find' dialog box is open over the Notepad window, with the search term 'Loading kernel' entered. The assembly code includes comments for booting from floppy disk and setting up the FAT12 file system.

```

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=floppy.img
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\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
Bochs UBE Display Adapter enabled
Bochs BIOS - build: 09/16/07
$Revision: 1.183 $ $Date: 2007/09/10 20:00:29 $
Options: apmbios pcibios eltorito rombios32

Booting from Floppy...
Loading Kernel ver 0.01
.....
ERROR : Press Any Key to Reboot_

```

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.

```

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_w32_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
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\LAB2>

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_w32_gui_c::exit(void)

Bochs is exiting with the following message:
[WGUI ] POWER button turned off.

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

```

8. dilanjutkan dengan mengetik “Make fp.disk” lalu Enter setelah itu ketik kembali “S” untuk menampilkan PC simulator dan akan muncul sesuai yang sdah kita sunting tadi. Jika kita salah menyunting maka hasil tidak akan sesuai. Di sini akan muncul tampilan “ Belajar membuat BOOTSTRAP-LOADER dan SRI HAJIATI L200170103”

```

Bochs for Windows - Console
1+0 records out

C:\OS\LAB\LAB2>

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_w32_gui_c::exit(void)

Bochs is exiting with the following message:
[WGUI ] POWER button turned off.

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

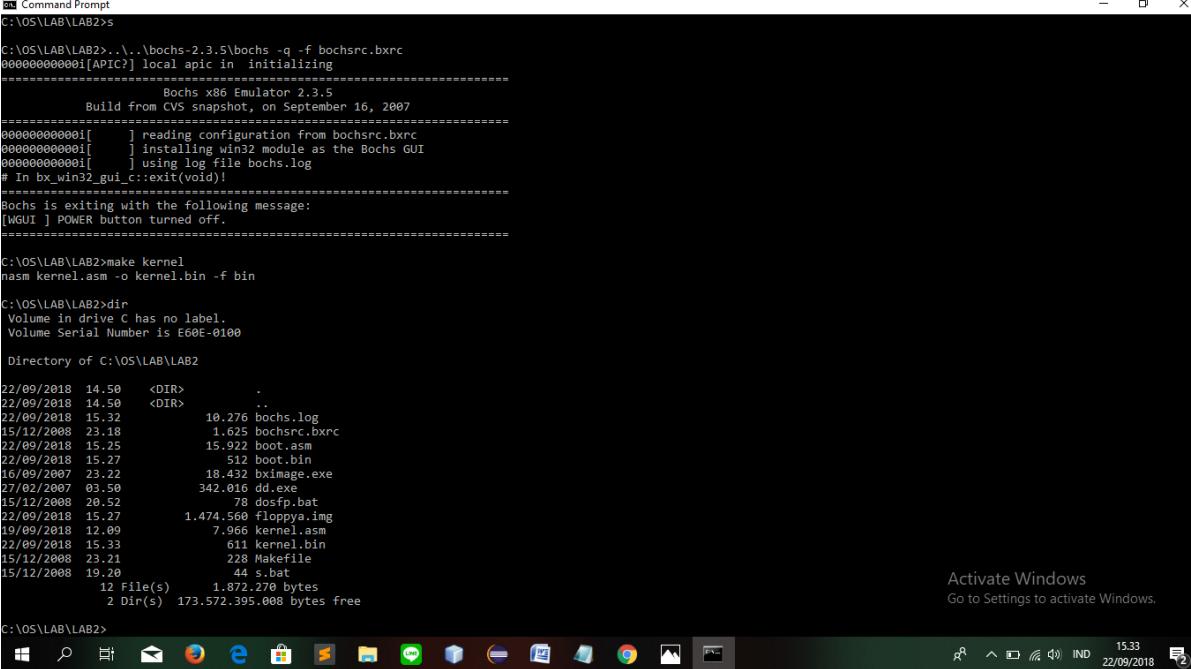
C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppya.img
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\LAB2>.\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

```

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”.



```

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 bochssrc.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 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 E60E-0100

Directory of C:\OS\LAB\LAB2

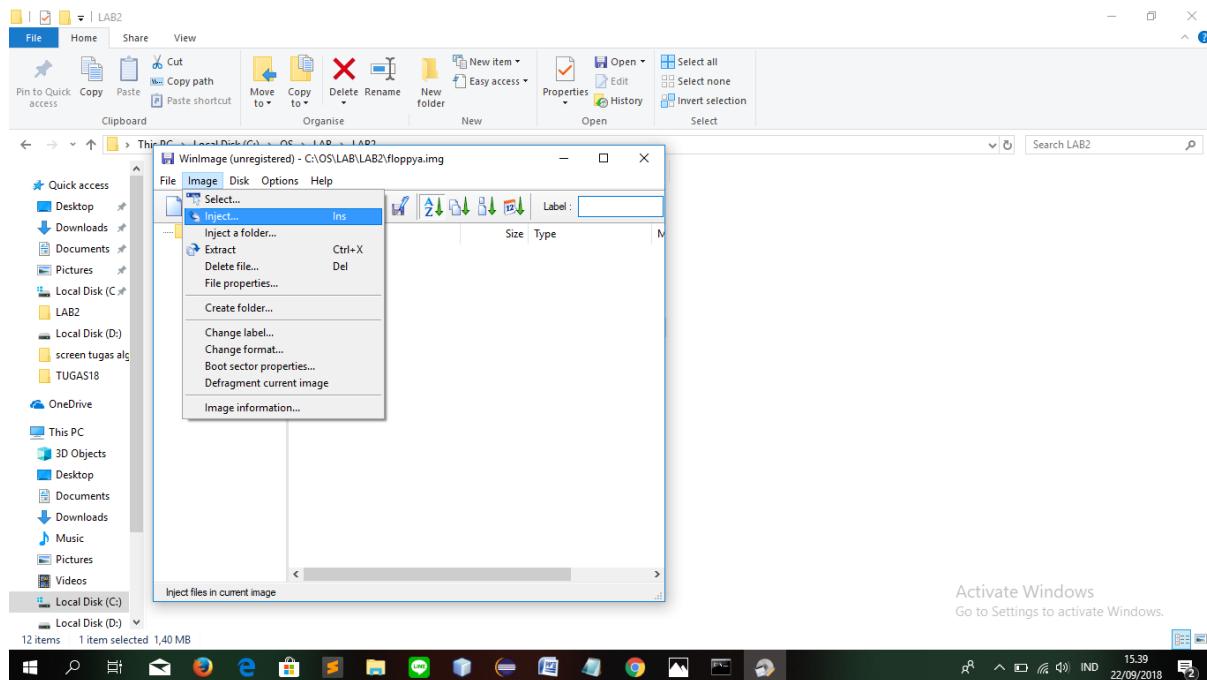
22/09/2018 14.50 <DIR> .
22/09/2018 14.50 <DIR> ..
22/09/2018 15.32 10.276 bochs.log
15/12/2008 23.18 1.625 bochsrc.bxrc
22/09/2018 15.25 15.922 boot.asm
22/09/2018 15.27 512 boot.bin
16/09/2007 23.22 18.432 bximage.exe
27/02/2007 03.58 342.016 dd.exe
15/12/2008 26.52 78 dosfp.bat
22/09/2018 15.27 1.474.560 floppya.img
19/09/2018 12.89 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) 173.572.395.008 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 muncul gambar dibawah ini:

```
# 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 E0E0-0100
```

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

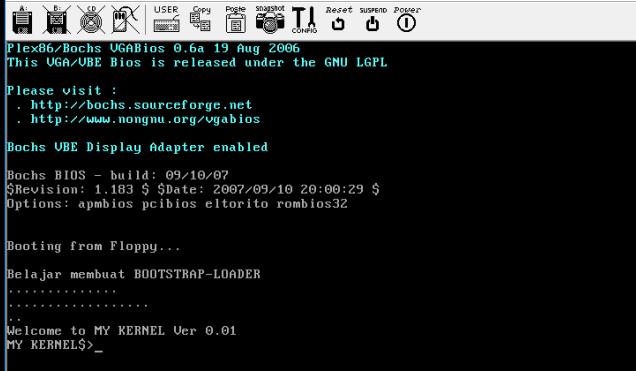
```
22/09/2018 14:50 <DIR> .  
22/09/2018 14:50 <DIR> ..  
22/09/2018 15:32 10.276 bochs.log  
15/12/2008 23:18 1.625 bochsrc.bxrc  
22/09/2018 15:25 15.922 boot.asm  
22/09/2018 15:27 512 boot.bin  
16/09/2007 23:22 18.432 bximage.exe  
22/09/2018 03:50 342.916 dd.exe  
15/12/2008 20:52 78 dosfp.bat  
22/09/2018 15:27 1.474.560 floppya.img  
19/09/2018 12:09 7.960 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) 1.872.278 bytes  
2 Dir(s) 173.572.395.008 bytes free
```

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

```
C:\OS\LAB\LAB2>..\bochs-2.3.5\bochs -q -f bochsrc.bxrc  
0000000000001[APIC? ] local apic in initializing
```

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

```
0000000000001[ ] reading configuration from bochsrc.bxrc  
0000000000001[ ] installing win32 module as the Bochs GUI  
0000000000001[ ] using log file bochs.log
```



The screenshot shows the Bochs for Windows interface. At the top, there's a toolbar with icons for power, reset, suspend, and other system functions. Below it is a status bar displaying "Bochs for Windows - Display", "Bochs UGA Bios 0.6a 19 Aug 2006", and "This UGA-VEBE Bios is released under the GNU GPL". The main window contains several sections of text related to the BIOS configuration and build details. On the right side, there's a keyboard overlay showing the current key state: "CTRL + Lbutton + Rbutton enables mo". At the bottom, a taskbar is visible with icons for various applications like File Explorer, Task Manager, and a browser.

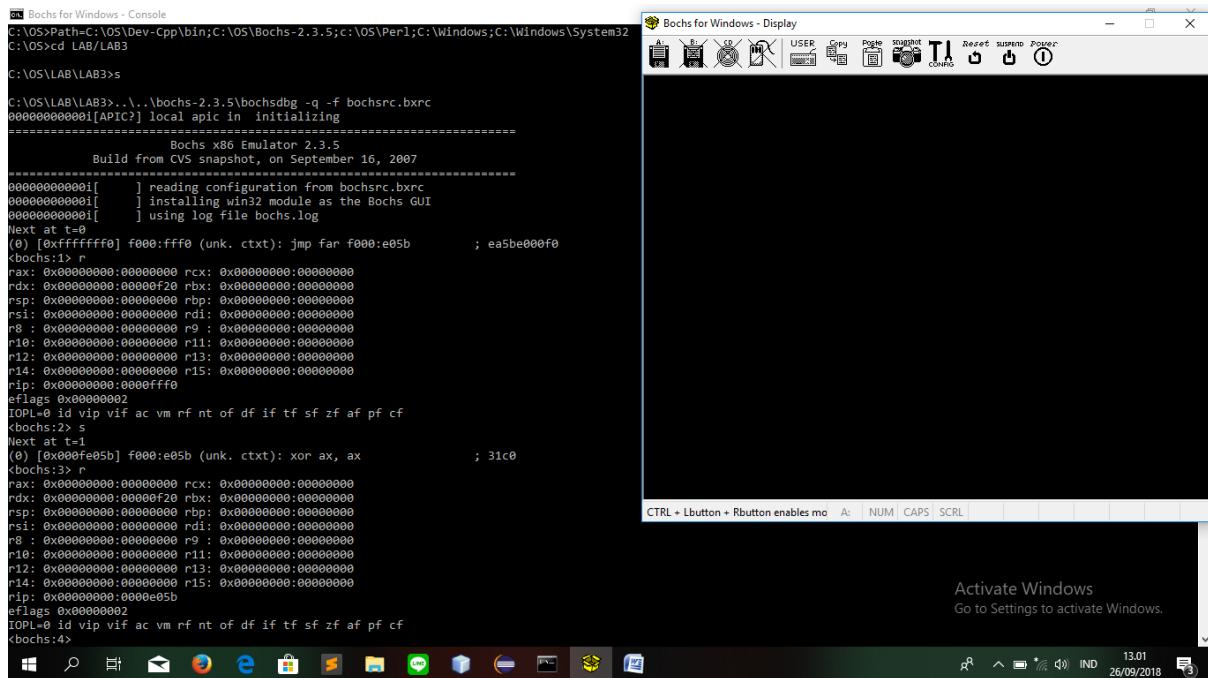
```
Activate Windows  
Go to Settings to activate Windows.  
15:46 22/09/2018
```

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.

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

MODUL 3

1. ketik cmd lanjutkan dengan cd od dan cd LAB/LAB3. Masukan perintah ‘s’ lalu enter lalu layar akan muncul pc simulator yang terlihat geap,tidak ada aktifitas, dan tidak terjadi kesalahan. Kondisi dibawah ini menjelaskan bahwa kondisi PC sedang pada mode “ Real Mode” yang sedang akan menjalankan program yg pertama kali(0). Yaitu program yg terdapat pada program “F00:FFF0” lokasi tersebut paling atas pada pc dan biasanya digunakan untuk menyimpan alamat ROM BIOS. Selanjutnya akan memanggil program yg terdapat pada BIOS . pertama kali yg dilakukan BIOS adalah loncat ke alamat yg lebih rendah yaitu alamat f000:e05b terlihat pada layar sebagai baris perintah jmp far f000:e05b. Kode ‘ea’ adalah kode untuk perintah ‘jmp far’ sedangkan data 8 byte berikutnya merupakan lokasi alamat . lokasi program yg akan dijalankan oleh PC pada mode kerja ‘Real-Mode’ adalah lokasi yg ditunjuk oleh kombinasi register CS:IP. Lalu sekarang ketik ‘r’ lalu enter. Selanjutnya ketik ‘s’ lalu enter. Lanjut ketik ‘r’ enter. Pada layar akan tampil teks dibawah ini.



The screenshot shows two windows. On the left is a terminal window titled 'Bochs for Windows - Console' displaying assembly code and register values. On the right is a graphical window titled 'Bochs for Windows - Display' showing a black screen. The terminal window contains the following text:

```
C:\>Path=C:\OS\Dev-Cpp\bin;c:\OS\Bochs-2.3.5;c:\OS\Perl;c:\Windows;c:\Windows\System32
C:\>cd LAB\LAB3
C:\OS\LAB\LAB3>s
C:\OS\LAB\LAB3>..\bochs-2.3.5\bochsrc -q -f bochsrc.bxrc
000000000001[APIC2] 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) [0xffffffff] f000:fff0 (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: 0x00000000:0000ffff
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
<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: 0x00000000:0000e05b r15: 0x00000000:00000000
rip: 0x00000000:00000002
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:>
```

The graphical window shows a black screen with a toolbar at the top and a status bar at the bottom. The status bar displays 'Activate Windows Go to Settings to activate Windows.' and the date '26/09/2018'.

2. jika jika memasukan perinta ‘s’ secara berulang initidak akan selesai dalam waktu satu hari. Ada cara yang lbih efektif yaitu masukan perintah ‘vb 0:0x7c00’ lalu enter . masud dari perintah ini adalah membuat titik pemberhentian (halte) pada alamat 0000:7c000. Lalu masukan perintah ‘c’ lalu enter . maksut perintah ini adalah teruskan (contine) prosesnya sampai pada pemberhentian. Jumlah clock dihitung sejak power on t=2090113. Sedangkan PC

simulator menampilkan Booting from floppy.

The screenshot shows the Bochs x86 Emulator 2.3.5 console window. The output text indicates the boot sequence:

```

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) [exfffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b ; ea5be00f0
<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: 0x00000000:0000ffff0
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=>
(0) [ex000fe05b] f000:e05b (unk. ctxt): xor ax, ax ; b1c0
<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: 0x00000000:0000e05b
eflags: 0x00000002
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:> vb 0:0x7C00
<bochs:> c
(10264512) Breakpoint 10285624, in 0000:7c00 (0x00007c00)
Next at t=2090113
(0) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x00007c3e) ; e93b00
<bochs:> d

```

The Bochs Display window shows the message "Booting from Floppy...".

4. sekarang PC sudah masuk tahap 'BOOTSTRAP-LOADER'. Pc ini sudah menghabiskan clock sebanyak 2090113. Jalan kan perintah 's' sebanyak 10 kali .

The screenshot shows the Bochs x86 Emulator 2.3.5 console window. The output text shows the bootstrap loader phase, with many 's' commands issued:

```

r10: 0x00000000:00000000 r11: 0x00000000:00000000
r12: 0x00000000:00000000 r13: 0x00000000:00000000
r14: 0x00000000:00000000 r15: 0x00000000:00000000
rip: 0x00000000:0000e05b
eflags: 0x00000002
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:> vb 0:0x7C00
<bochs:> c
(10264512) Breakpoint 10285624, in 0000:7c00 (0x00007c00)
Next at t=2090113
(0) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x00007c3e) ; e93b00
<bochs:> s
Next at t=2090114
(0) [ex00007c3e] 0000:7c3e (unk. ctxt): cli ; fa
<bochs:> s
Next at t=2090115
(0) [ex00007c3f] 0000:7c3f (unk. ctxt): mov ax, 0x07c0 ; b8c007
<bochs:> s
Next at t=2090116
(0) [ex00007c42] 0000:7c42 (unk. ctxt): mov ds, ax ; 8ed8
<bochs:> s
Next at t=2090117
(0) [ex00007c44] 0000:7c44 (unk. ctxt): mov es, ax ; 8ec0
<bochs:> s
Next at t=2090118
(0) [ex00007c46] 0000:7c46 (unk. ctxt): mov fs, ax ; 8ee0
<bochs:> s
Next at t=2090119
(0) [ex00007c48] 0000:7c48 (unk. ctxt): mov gs, ax ; 8ee8
<bochs:> s
Next at t=2090120
(0) [ex00007c4a] 0000:7c4a (unk. ctxt): mov ax, 0x0000 ; b80000
<bochs:> s
Next at t=2090121
(0) [ex00007c4d] 0000:7c4d (unk. ctxt): mov ss, ax ; 8ed0
<bochs:> s
Next at t=2090122
(0) [ex00007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xffff ; bcffff
<bochs:> s
Next at t=2090123
(0) [0x00007c52] 0000:7c52 (unk. ctxt): sti ; fb
<bochs:> d

```

The Bochs Display window shows the message "Booting from Floppy...".

5. lalu bandingkan hasilnya dengan program yg terdapat pada boot.asm. caranya bukalah file boot.asm lalu akan muncul pada notepad. Lalu bandingkanlah hasil dari 10 kali instruksi tadi dengan program boot.asm yg ada pada notepad. Jika hasilnya sama maka anda berhasil . jika tidak sama atau terjadi kesalahan anda dapat menghentikan proses ‘q’.

```

[Bochs for Windows - Console]
<bochs:4> id vip vif ac vm rf nt of df lf tf sf zf af pf cf
<bochs:5> c
(10264512) Breakpoint 10285624, in 0000:7c00 (0x00007c00)
Next at t=2090113
(0) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x00007c3e) ; e93b00
<bochs:6> s
Next at t=2090114
(0) [0x00007c3e] 0000:7c3e (unk. ctxt): cli ; fa
<bochs:7> s
Next at t=2090115
(0) [0x00007c3f] 0000:7c3f (unk. ctxt): mov ax, 0x07c0 ; b8c007
<bochs:8> s
Next at t=2090116
(0) [0x00007c42] 0000:7c42 (unk. ctxt): mov ds, ax ; 8ed8
<bochs:9> s
Next at t=2090117
(0) [0x00007c44] 0000:7c44 (unk. ctxt): mov es, ax ; 8ec0
<bochs:10> s
Next at t=2090118
(0) [0x00007c46] 0000:7c46 (unk. ctxt): mov fs, ax ; 8ee0
<bochs:11> s
Next at t=2090119
(0) [0x00007c48] 0000:7c48 (unk. ctxt): mov gs, ax ; 8ee8
<bochs:12> s
Next at t=2090120
(0) [0x00007c4a] 0000:7c4a (unk. ctxt): mov ax, 0x0000 ; b80000
<bochs:13> s
Next at t=2090121
(0) [0x00007c4d] 0000:7c4d (unk. ctxt): mov ss, ax ; 8ed0
<bochs:14> s
Next at t=2090122
(0) [0x00007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xffff ; bcffff
<bochs:15> s
Next at t=2090123
(0) [0x00007c52] 0000:7c52 (unk. ctxt): sti ; fb
<bochs:16>

```

```

[boot.asm - Notepad]
File Edit Format View Help
=====
START:
; Mengatur lokasi kode program pada alamat 7C00:0000, dan mengatur REGISTER S
    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 dalam
    call DisplayMessage

LOAD_ROOT:
; menghitung ukuran 'root directory' dan menyimpannya dalam register 'cx'
    xor  cx,cx
    xor  dx,dx
    mov  ax,0x0020 ; Ukuran satu nama direktori sepanjang
    mul  WORD [MaxRootEntries] ; Total lokasi direktori 32
    div   WORD [BytesPerSector] ; lokasi sektor yang digunakan
    xchg ax,cx ; Ukuran 'root direktori'

; menghitung jumlah sektor yang digunakan untuk menyimpan FAT
; untuk mencari lokasi awal sektor ROOT DIREKTORI di simpan di register 'ax'

```

6. ketik perintah ‘s’ lalu enter. Lalu selanjutnya ketik perintah ‘c’ enter. Jika langkah anda benar darsesuai dengan petunjuk diatas maka layar ‘debugging’ akan menampilkan tampilan dibawah ini

```

[Bochs for Windows - Console]
Next at t=2090120
(0) [0x00007c4a] 0000:7c4a (unk. ctxt): mov ax, 0x0000 ; b80000
<bochs:13> s
Next at t=2090121
(0) [0x00007c4d] 0000:7c4d (unk. ctxt): mov ss, ax ; 8ed0
<bochs:14> s
Next at t=2090122
(0) [0x00007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xffff ; bcffff
<bochs:15> s
Next at t=2090123
(0) [0x00007c52] 0000:7c52 (unk. ctxt): sti ; fb
<bochs:16> q
# In bx_w32_gui_c::exit(void)

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

C:\OS\LAB\LAB3>
C:\OS\LAB\LAB3>..\bochs-2.3.5\bochsdbg -q -f bochsrc.bxrc
000000000001[APIC?]
=====
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) [fffffffff0] f000:fff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:1> vb 0x0100:0x0000
<bochs:2> c
(10264512) Breakpoint 10285624, in 0100:0000 (0x00001000)
Next at t=2945013
(0) [0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100 ; b80001
<bochs:3>

```

7. selanjutnya ketik ‘s’ , langkah selanjutnya dapat dilakukan langsung menekan tombol enter sebanyak 10X perhatikan dan lihat hasil perubahannya. Bandingkan dengan code program kernel.asm. cara nya sama seperti membandingkan dengan boot.asm. yaitu buka pada notepad. Jika anda benar maka source-code akan sama. Langkah langkah diatas adalah merupakan salah satu cara yang banyak digunakan para pengembang perangkat lunak, termasuk pengembangan sistem operasi.

```
[0xfffffff] f000:ffff0 (unk. ctxt): jmp far f000:e05b ; ea5be00f0
ns:1> vb 0x0100:0x0000
ns:2> c
64512) Breakpoint 10285624, in 0100:0000 (0x00001000)
at t=2945013
[0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100 ; b80001
ns:3> s
at t=2945014
[0x00001003] 0100:0003 (unk. ctxt): mov ds, ax ; 8ed8
ns:4>
at t=2945015
[0x00001005] 0100:0005 (unk. ctxt): mov es, ax ; 8ec0
ns:5>
at t=2945016
[0x00001007] 0100:0007 (unk. ctxt): cli ; fa
ns:6>
at t=2945017
[0x00001008] 0100:0008 (unk. ctxt): mov ss, ax ; 8ed0
ns:7>
at t=2945018
[0x0000100a] 0100:000a (unk. ctxt): mov sp, 0xffff ; bcffff
ns:8>
at t=2945019
[0x0000100d] 0100:000d (unk. ctxt): sti ; fb
ns:9>
at t=2945020
[0x0000100e] 0100:000e (unk. ctxt): push dx ; 52
ns:10>
at t=2945021
[0x0000100f] 0100:000f (unk. ctxt): push es ; 06
ns:11>
at t=2945022
[0x00001010] 0100:0010 (unk. ctxt): xor ax, ax ; 31c0
ns:12>

; Prototype SIMPLE KERNEL ver 0.01
; LAB-INFORMATIKA
=====
[org 0x0000]
[bits 16]

[SEGMENT .text]

;START ##### mov ax, 0x0100 ;Lokasi memori untuk menempatkan kernel
mov ax, 0x0100
mov ds, ax
mov es, ax

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

Activate Windows
Go to Settings to activate Windows.

Local Disk (D): 8 items 1 item selected 7,77 KB
Windows Start Internet Explorer File Run Task View Start Mail Taskbar 13:34 26/09/2018
```

TUGAS:

1. Tabel pemetaan memori pada PC

No.	Blok Memori	Alokasi Pemakaian
1	F 0 0 0 0	ROM BIOS, Diagnostic, BASIC
2	E 0 0 0 0	ROM program
3	D 0 0 0 0	ROM program
4	C 0 0 0 0	Perluasan BIOS untuk hardisk XT
5	B 0 0 0 0	Monokrom Monitor
6	A 0 0 0 0	Monitor EGA, VGS, dll
7	9 0 0 0 0	Daerah kerja pemakai s/d 640 KB
8	8 0 0 0 0	Daerah kerja pemakai s/d 576 KB
9	7 0 0 0 0	Daerah kerja pemakai s/d 512 KB
10	6 0 0 0 0	Daerah kerja pemakai s/d 448 KB
11	5 0 0 0 0	Daerah kerja pemakai s/d 384 KB
12	4 0 0 0 0	Daerah kerja pemakai s/d 320 KB
13	3 0 0 0 0	Daerah kerja pemakai s/d 256 KB
14	2 0 0 0 0	Daerah kerja pemakai s/d 192 KB
15	1 0 0 0 0	Daerah kerja pemakai s/d 128 KB
16	0 0 0 0 0	Daerah kerja pemakai s/d 64 KB

2. Perbedaan mode kerja “Real Mode” dan “Protected Mode”

- a) **Real Mode:** Real-Mode adalah sebuah modus di mana prosesor Intel x86 berjalan seolah-olah dirinya adalah sebuah prosesor Intel 8085 atau Intel 8088, meski ia merupakan prosesor Intel 80286 atau lebih tinggi. Karenanya, modus ini juga disebut sebagai modus 8086 (8086 Mode). Dalam modus ini, prosesor hanya dapat mengeksekusi instruksi 16-bit saja dengan menggunakan register internal yang berukuran 16-bit, serta hanya dapat mengakses hanya 1024 KB dari memori karena hanya menggunakan 20-bit jalur bus alamat. Semua program DOS berjalan pada modus ini.
- b) **Protected Mode:** Modus terproteksi (protected mode) adalah sebuah modus di mana terdapat proteksi ruang alamat memori yang ditawarkan oleh mikroprosesor untuk digunakan oleh sistem operasi. Modus ini datang dengan mikroprosesor Intel 80286 atau yang lebih tinggi. Karena memiliki proteksi ruang alamat memori, maka dalam modus ini sistem operasi dapat melakukan multitasking.

MODUL 4

Percobaan pertama dan Kedua

1. ketik "ver"

2.ketik dir

```
cd 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> 30 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
R A ^ E D IND 10.04 07/10/2018
```

3.ketik cd

4.ketik dir

```
cd 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> 30 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
R A ^ E D IND 10.09 07/10/2018
```

5.ketik cd windows

6.ketik dir/p

```
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>
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> .ghome2
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
```

7.ketik dir/w

```
Windows PowerShell
PS C:\Users\ASUS> dir
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 E00E-0100

Directory of C:\Users\ASUS

[.]                  [..]          [.eclipse]          [.gnome2]          [.gvngrc]          [.idlerc]          [.LINE]
[.nbi]                [.oracle_jre_usage]  [.p2]          [.PyCharmCE2017.2]  [.QtWebEngineProcess]  [.recently-used.xbel]  [.tooling]
[.VirtualBox]          [.3D Objects]       C             cd                  [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 E00E-0100

Directory of C:\Users\ASUS

26/09/2018 17:01 <DIR>  .
Activate Windows
Go to Settings to activate Windows.
```

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  .gvngrc
11/11/2017  11.18  <DIR>      .idlerc
06/07/2018  22.49  <DIR>      .LINE
15/09/2018  13.26  <DIR>      .mbl
15/09/2018  18.53  <DIR>      .oracle_jre_usage
25/09/2018  17.48  <DIR>      .p2
14/09/2017  26.56  <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  14.48  <DIR>      3D Objects
16/07/2018  15.56  <DIR>      AppData
01/01/2018  23.18  0    C
15/09/2018  11.51  0    cd
18/08/2018  14.48  <DIR>      Contacts
01/01/2018  23.06  0    d
18/08/2018  14.48  <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  14.48  <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
Activate Windows
Go to Settings to activate Windows.
07/10/2018  14.40  <DIR>      MicrosoftEdgeBackups
01/12/2017  14.06  <DIR>      Music
08/08/2018  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[0b1a3e78-841e-11e8-8f05-b8aea81f2312].TM.b1f
10/07/2018  15.55  524.288  NTUSER.DAT[0b1a3e78-841e-11e8-8f05-b8aea81f2312].TMContainer000000000000000000000001.regtrans-ms
10/07/2018  15.55  524.288  NTUSER.DAT[0b1a3e78-841e-11e8-8f05-b8aea81f2312].TMContainer000000000000000000000002.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)      171.196.080.128 bytes free

```

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 kursosr ke daerah yg kosong,klik kanan-new-microsoft word document lalu ganti dengan nama file1

2.ketik ver

4.cd C:/

5.ketik dir

6. cd files

7.dir

8.ketik cd files dan ketik dir

9.ketik ren file1.docx file.docx

10.ketik rename file.docx file2.docx

11. ketik dir untuk mengecek apakah nama file1 sudah berubah menjadi file2

```
na Command Prompt
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
          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>
```

Percobaan keempat

12. ketik cd..

13.buat folder baru pada drive C yg bernama files2

14.ketik copy C:\files C:\files2

15.ketik cd files

16.ketik copy c:\files\file2.docx d:\

17. ketik D:\

18. 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-B0DC

 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
09/16/2018 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
```

19. ketik C:

20.cd..

21.ketik del files lalu yes

22. ketik perintah cd C:/Users

23. ketik perintah cd ASUS

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

```
cmd 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\GvRng.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 CS5.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
Windows Taskbar icons
Activate Windows
Go to Settings to activate Windows.
10:36
09/10/2018
```

25. ketik perintah d:

26. ketik perintah dir

27. ketik perintah cd baru

28. ketik perintah dir

```
cmd 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>      APIKA
21/09/2018 22.20 <DIR>      ATI
08/10/2018 22.40 <DIR>      backgrouunds ppt
09/10/2018 18.24 <DIR>      baru
09/10/2018 18.13 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
26/03/2018 17.13 <DIR>      My Music
17/07/2018 22.30 <DIR>      Nasid 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
16/07/2018 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
Windows Taskbar icons
Activate Windows
Go to Settings to activate Windows.
10:37
09/10/2018
```

```
File Command Prompt
06/16/2018 16:40 <DIR>     iphone
02/01/2018 13:40 <DIR>     kegiatan1
05/18/2018 22:34 <DIR>     kunjungan
06/04/2018 09:35           515 Local Disk (C) - Shortcut.lnk
14/09/2018 20:37 <DIR>     mbD
19/03/2018 17:13 <DIR>     My Music
17/07/2018 22:20 <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

09/18/2018 10:24 <DIR>     .
09/18/2018 10:24 <DIR>     ..
18/04/2018 10:18           1,223 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           1,916 GVKing.lnk
13/12/2017 01:52           584 halaman.html
06/07/2017 17:14           1,959 HSPA Modem.lnk
14/09/2017 21:06           2,682 IDLE (Python 3.6 32-bit).lnk
04/06/2018 13:50           1,978 Internet Download Manager.lnk
07/07/2018 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           2,799 Microsoft Office Word 2007.lnk
27/09/2017 15:09           1,714 Notepad++.lnk
05/16/2018 01:14           1,186 PhotoScape.lnk
05/16/2018 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.

Windows Taskbar icons
```

Percobaan kelima

29. ketik perintah c:

30. ketik perintah cd C:/

31.. ketik perintah md baru

32 . ketik perintah dir

```
Command Prompt
D:\baru\xc:
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
09/10/2018  09.31    <DIR>          baru
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    <DIR>          $15 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
17/04/2018  06.38    <DIR>          PerrLogs
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)   170.342.952.960 bytes free

C:\>rmdir baru
```

33. ketik perintah rd baru

34. ketik perintah dir

```
cmd 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>         xampp
      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

Activate Windows
Go to Settings to activate Windows.

09.36
09/10/2018
```

35. ketik perintah rmdir baru1

36. ketik perintah dir

37. ketik perintah md \komputer

```
cmd Command Prompt
C:\>rmdir baru1
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  18.23    <DIR>          files
09/10/2018  18.26    <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

Directory of C:\

Activate Windows
Go to Settings to activate Windows.

10.28
09/10/2018
```

38.dir

```
cmd Command Prompt
17/09/2018 13.38 <DIR> Windows
27/09/2018 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

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 18.23 <DIR> files
09/10/2018 18.28 <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 <DIR> 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> PerlLogs
26/09/2018 17.01 <DIR> Program Files
15/09/2018 11.41 <DIR> Program Files (x86)
09/01/2018 04.00 <DIR> Python27
27/09/2018 13.54 <DIR> src
16/07/2018 15.55 <DIR> Users
06/03/2017 16.28 <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) 170.341.269.504 bytes free

C:\>
```

Activate Windows
Go to Settings to activate Windows.

39. md \files\film

40. cd files

41.dir

42.exit

```
cmd 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 18.23 <DIR> files
09/10/2018 18.28 <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 <DIR> 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> PerlLogs
26/09/2018 17.01 <DIR> Program Files
15/09/2018 11.41 <DIR> Program Files (x86)
09/01/2018 04.00 <DIR> Python27
27/09/2018 13.54 <DIR> src
16/07/2018 15.55 <DIR> Users
06/03/2017 16.28 <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) 170.341.269.504 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

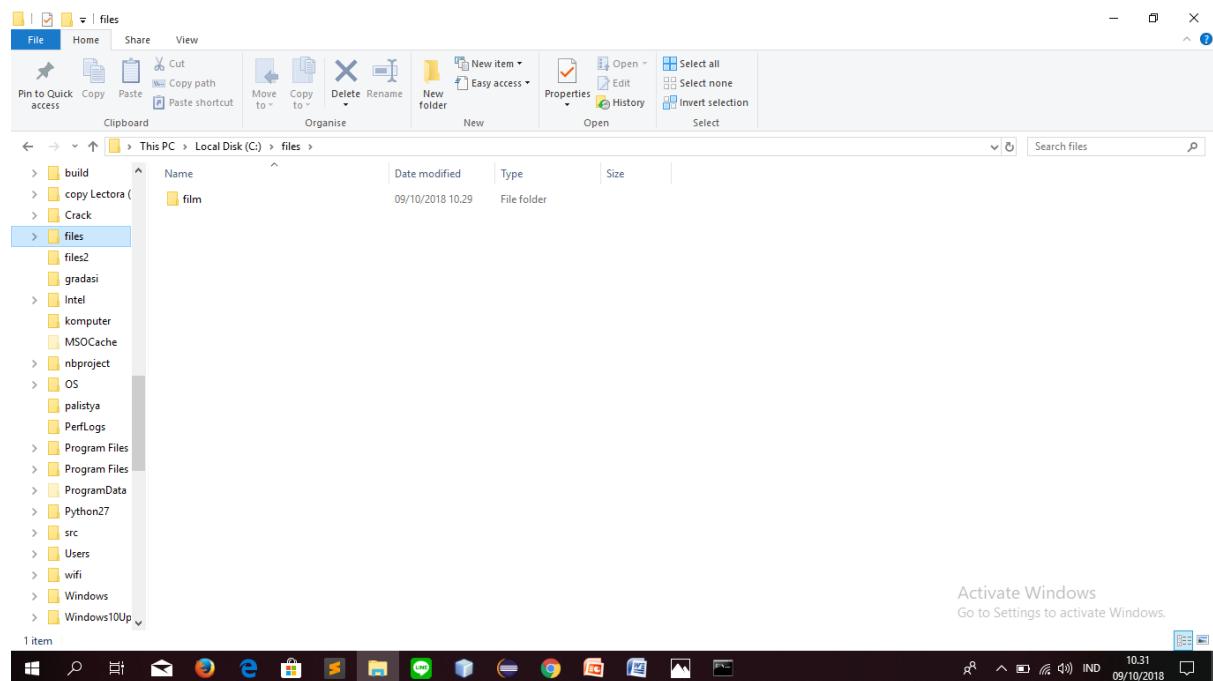
Directory of C:\files

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

C:\files>exit
```

Activate Windows
Go to Settings to activate Windows.

Hasil dibawah ini :



Percobaan ke enam:

- 43.ulangi langkah 1 dan 5
44. masuk ke C:\files\film arah kan kurSOR klik kanan-new-mc word buat pindah docx
45. arahkan kurSOR pada daerah kosong lalu klik kanan-ne-mc word buat pindah.txt
- 46.ketik perintah move c:\files\film\pindah.docx c:\files2
47. ketik perintah move c:\files\film\pindah.txt c:\files2
- 48.ketik perintah cd files2
- 49.dir
50. cd..
51. tree c:\files
52. tree c:\windows

```
cmd 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:\>xtree c:\files
Folder PATH listing
Volume serial number is E60E-0100
C:\FILES
└───film

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

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 kursor ke daerah yang kosong kemudian klik kanan-new folder,beri nama dengan music.mp3
3. buat lah folder baru dengan mengarahkan kursor ke daerah yang kosong kemudian klik kanan-new folder beri nama gambar.jpg
4. buat lah folder baru dengan mengarahkan kursor ke daerah yang kosong kemudian klik kanan-new folder beri nama document.docx
5. buat lah folder baru dengan mengarahkan kursor 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:

```
Command Prompt
Microsoft Windows [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

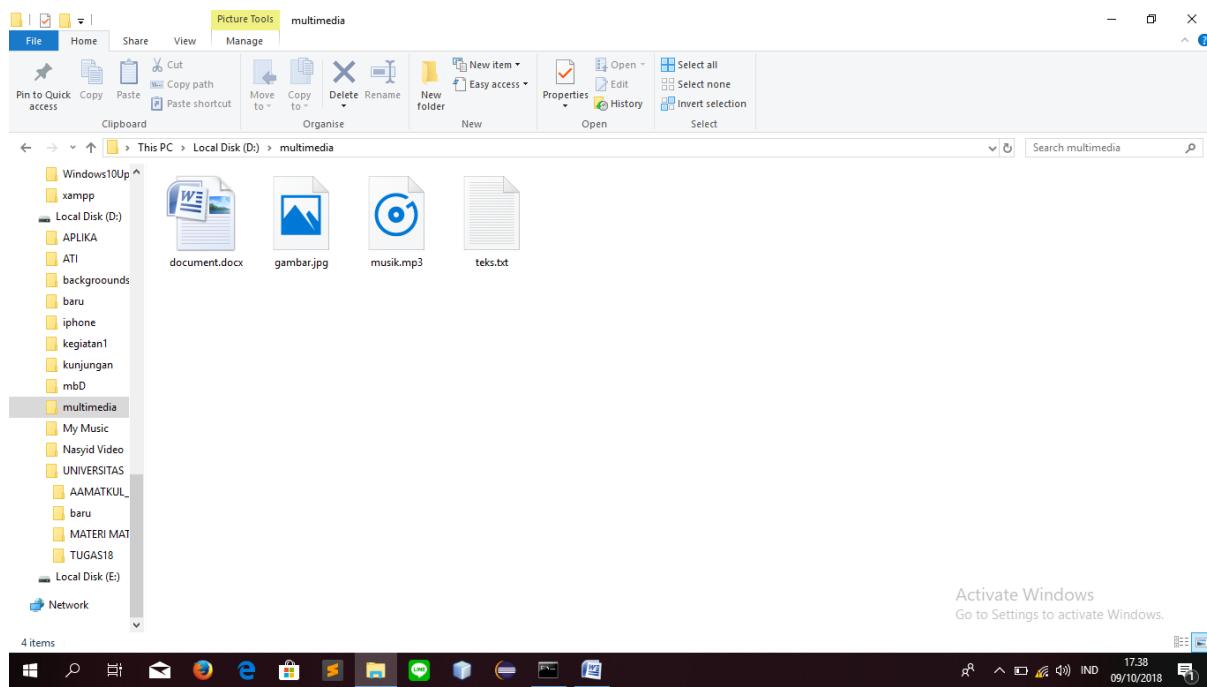
Directory of C:\masuk

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.

17:38 09/10/2018



MODUL 5

1. DistroLinux

I. CentOS

CentOS adalah sistem operasi bebas yang didasarkan pada Red Hat Enterprise Linux(RHEL).CentOS singkatan dari Community ENTerprise Operating System (Sistem Operasi Perusahaanbuatan Komunitas/Masyarakat).

II. Ubuntu

Ubuntu adalah salah satu distribusi Linux yang berbasiskan pada Debian. Proyek Ubuntu disponsori oleh Canonical Ltd (perusahaan milik Mark Shuttleworth). Nama Ubuntu diambil dari nama sebuah konsep ideologi di Afrika Selatan. “Ubuntu” berasal dari bahasa kuno Afrika, yang berarti “rasa perikemanusian terhadap sesama manusia”.

III. Debian

Debian adalah sistem operasi berbasis kernel Linux. Debian adalah ‘kernel independent’, yaitu sistem operasi Debiandikembangkan murni tanpa mendasarkan pada sistem operasi yang telah ada.

IV. Slackware

Slackware merupakan sistem operasi yang dibuat oleh Patrick Volkerding dari SlackwareLinux, Inc. Slackware merupakan salah satu distro awal, dan merupakan yang tertua yang masih dikelola. Tujuan utama Slackware adalah stabilitas dan kemudahan desain, serta menjadi distribusiLinux yang paling mirip Unix.

V. RedHat

Red hat dikembangkan oleh perusahaan Red Hat Inc, 2003 diganti menjadi Red Hat Enterprise Linux khusus untuk lingkungan perusahaan. Red Hat pertama kali memperkenalkan penggunaan sistem RPM Package Manager.

2. Perintah Dasar:

- ✓ Head : menampilkan beberapa baris awal pada fileteks
- ✓ Nano : mengedit isi dari suatu fileteks
- ✓ Wc : menghitung jumlah baris, kata atau karakter dari sebuah fileteks
- ✓ Man : menampilkan dokumentasi (manual pages) dari sebuah perintah
- ✓ Useradd : membuat user
- ✓ Chgrp : merubah kepemilikan direktori/kelompok file
- ✓ Chmod : menambah dan mengurangi ijin pemakai untuk mengakses file/direktori
- ✓ Chown : merubah userID
- ✓ Fg : mengembalikan suatu proses yang dihentikan sementara agar berjalan kembali di foreground
- ✓ Find : mencari letak file
- ✓ Gzip : software kompresi zip versi GNU
- ✓ Halt : memberitahu kernel supaya mematikan sistem
- ✓ Hostname : menampilkan host/domain

- ✓ Less : perintahmore
- ✓ Login : masuk ke sistem dengan memasukan login ID
- ✓ Logout : keluar dari sistem
- ✓ Man : menampilkan teks/manualpage
- ✓ Mesg : memberikan ijin user untuk menampilkan pesan di layar terminal
- ✓ More : mempaging hal
- ✓ Pwd : menampilkan di direktori
- ✓ Shutdown : mematikan sistem
- ✓ Su : login sementara sebagai user lain
- ✓ Talk : percakapan melalui terminal

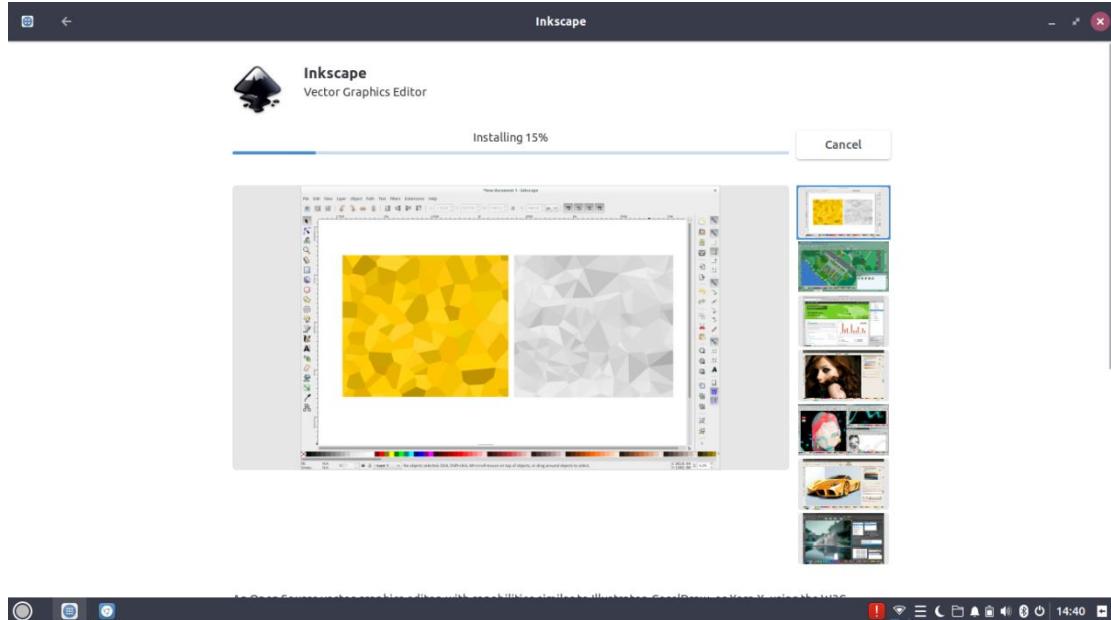
3. init0 : untuk maintenance, diagnostic hardware, booting init1 : single user mode, tambah patches, backup
init2 : multiuser mode
init3 : memperluas multiuser mode init4 : alternatif multiuser
init5 : shutdown
init6 : menghentikan OS kemudian reboot dan kembali ke init default yang ada di etc / inittab
4. perintah “Quota” : perangkat administrasi sistem untuk membatasi dan memantau pemakaian suatu partisi oleh user atau group

MODUL 6

INSTAL APLIKASI DI LINUX

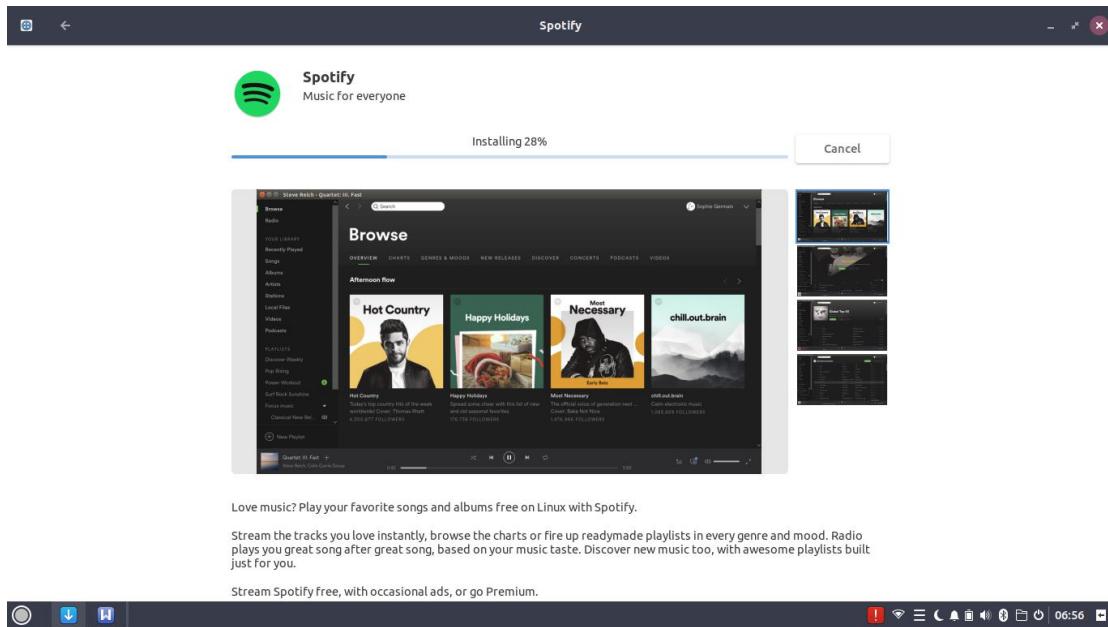
1. INKSCAPE

Berfungsi untuk membuat suatu desain seperti logo, gambar vektor, teks vektor, kartun, atau lukisan kompleks.



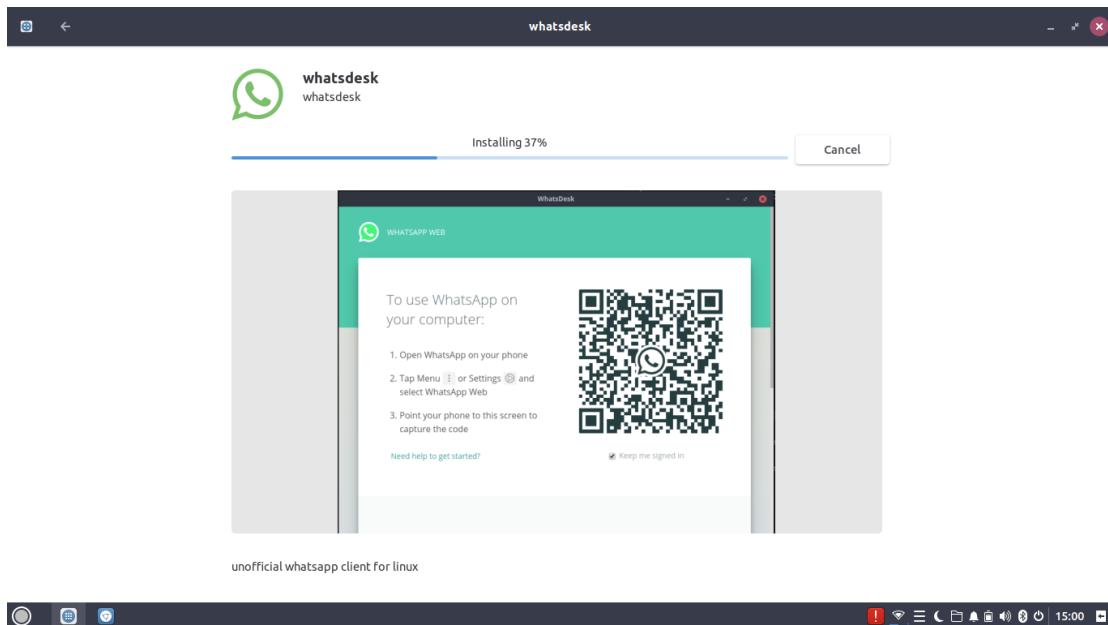
2. SPOTIFY

Berfungsi untuk memutar musik tanpa membayar, tetapi juga bisa memilih untuk mengupdate ke Spotify premium.



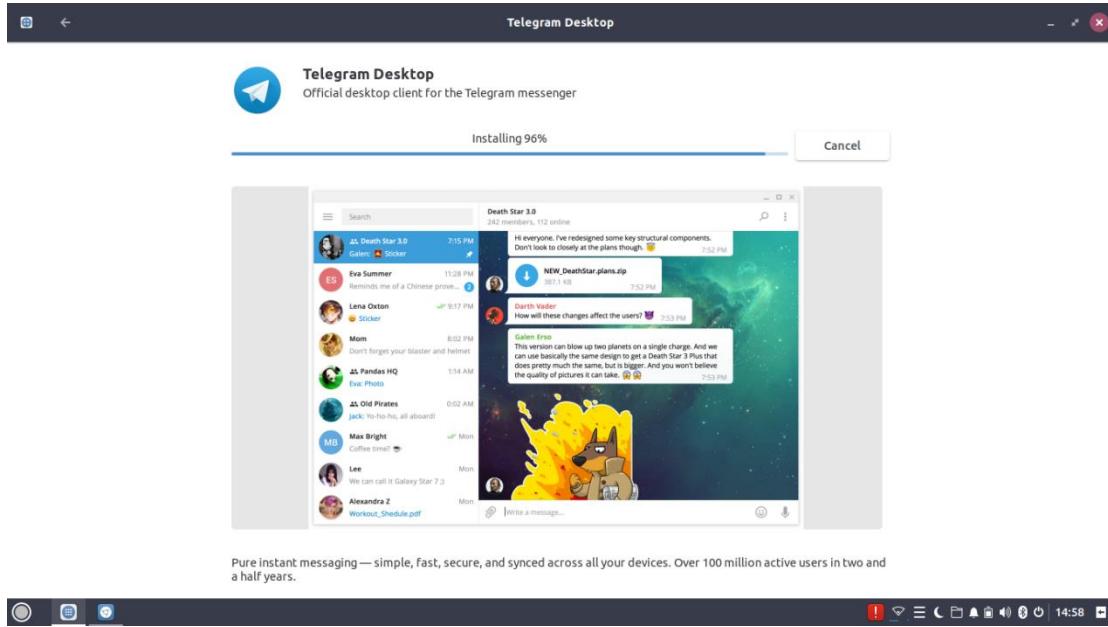
3. WHATSDESK

Berfungsi untuk mengirim pesan atau bertukar informasi baik berupa gambar, video, audio, ataupun dokumen.



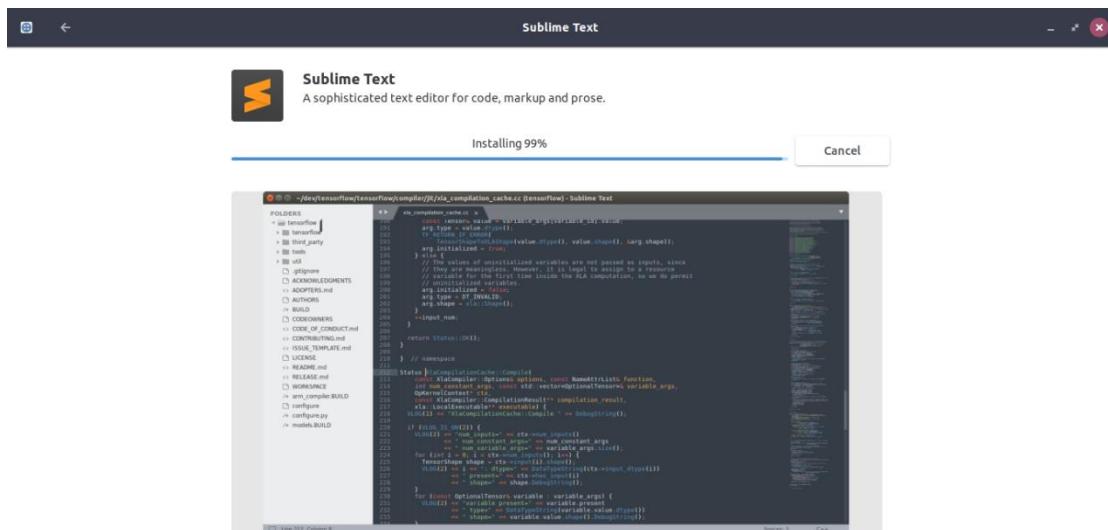
4. TELEGRAM

Berfungsi untuk mengirimkan pesan, dan bertukar file, baik itu gambar, video, audio dan juga dokumen.



5. SUBLIME TEKS

Berfungsi untuk teks editor untuk berbagai bahasa pemrograman.

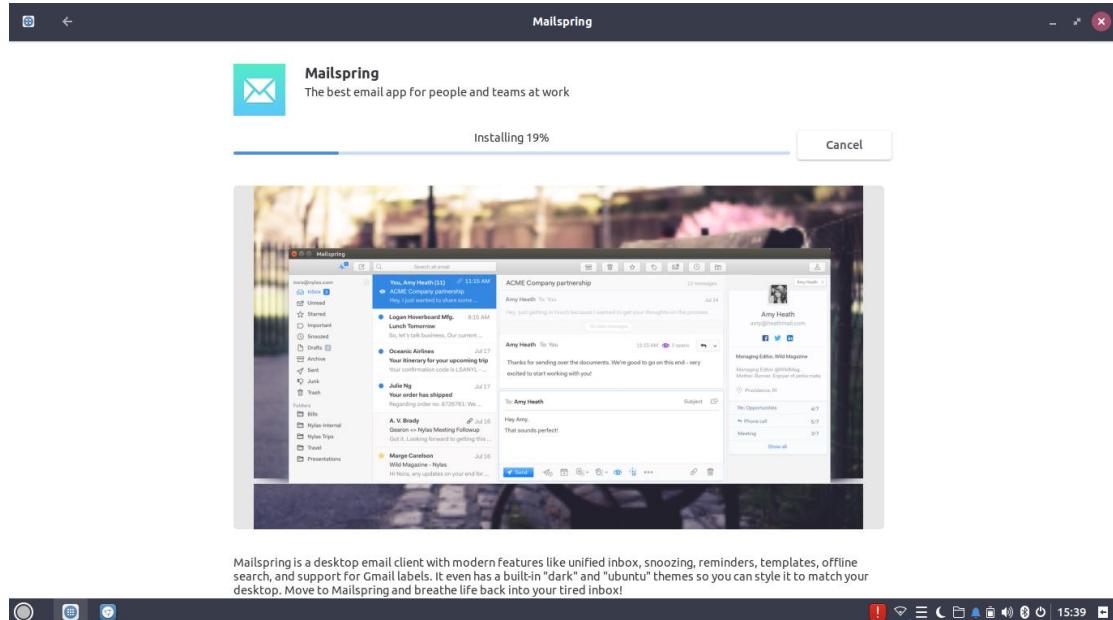


A sophisticated text editor for code, markup and prose.



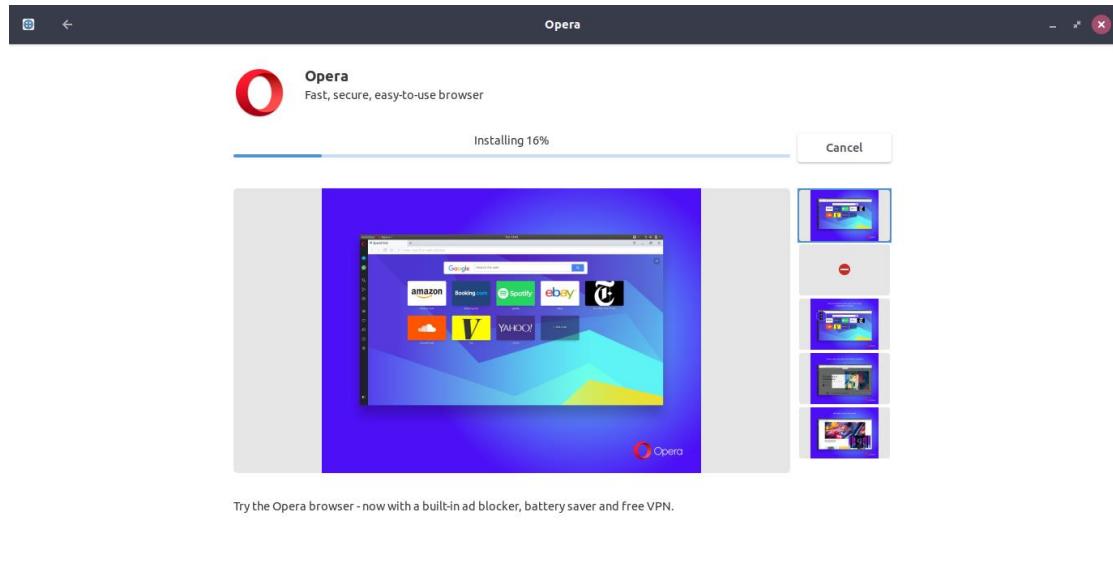
6. MAILSPRING

Berfungsi untuk mengirim dan bertukar file baik berupa gambar maupun dokumen



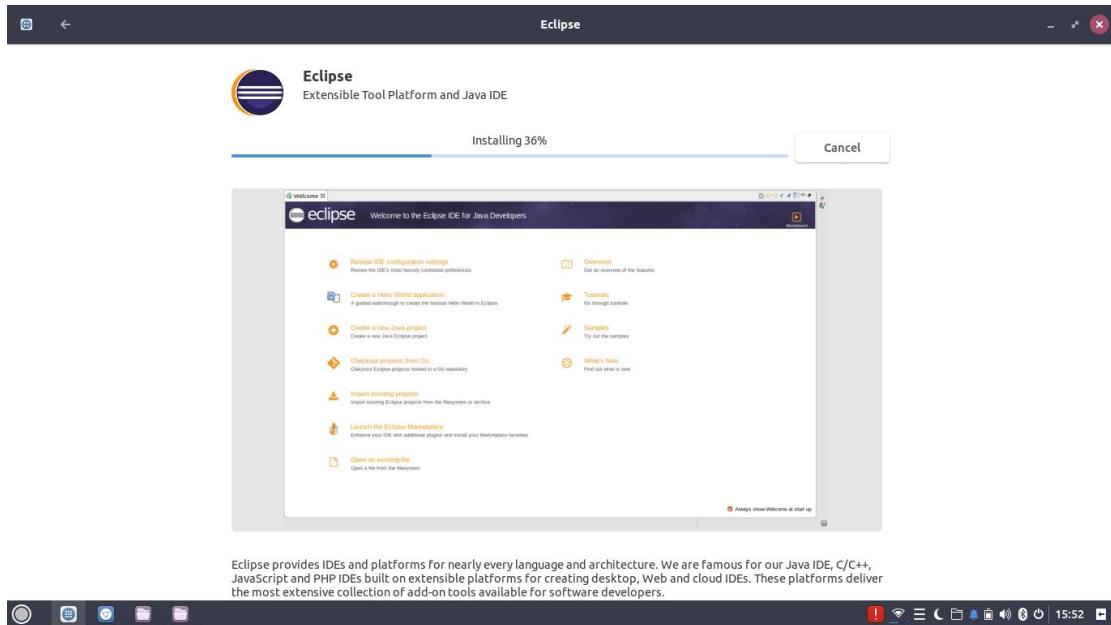
7. OPERA

Berfungsi untuk mencari berbagai informasi di internet



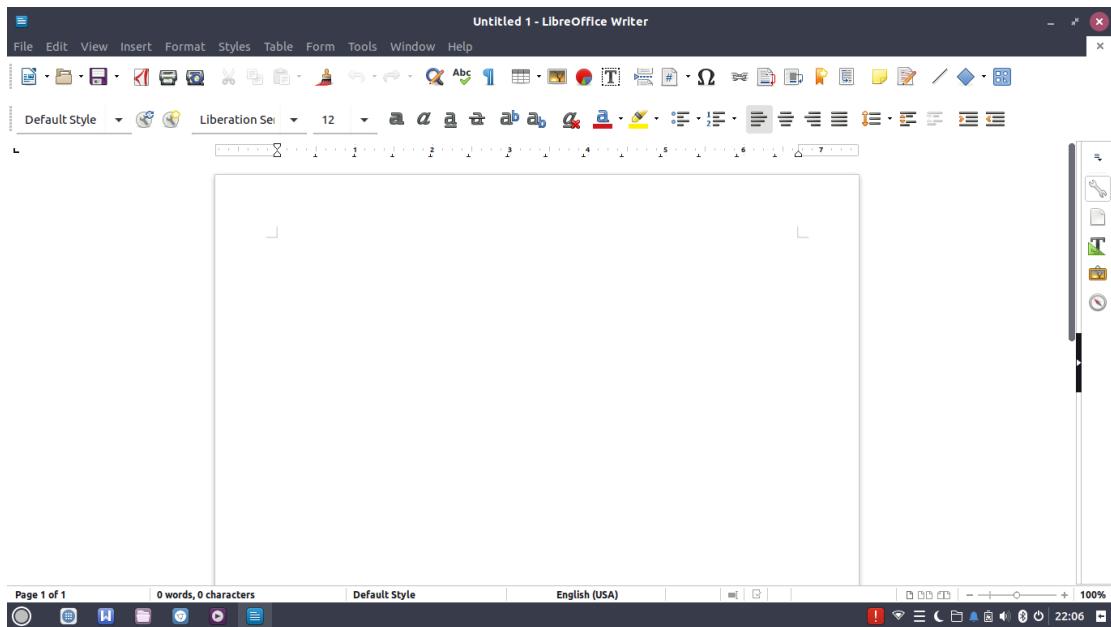
8. ECLIPSE

Berfungsi untuk teks editor menggunakan bahasa pemrograman java



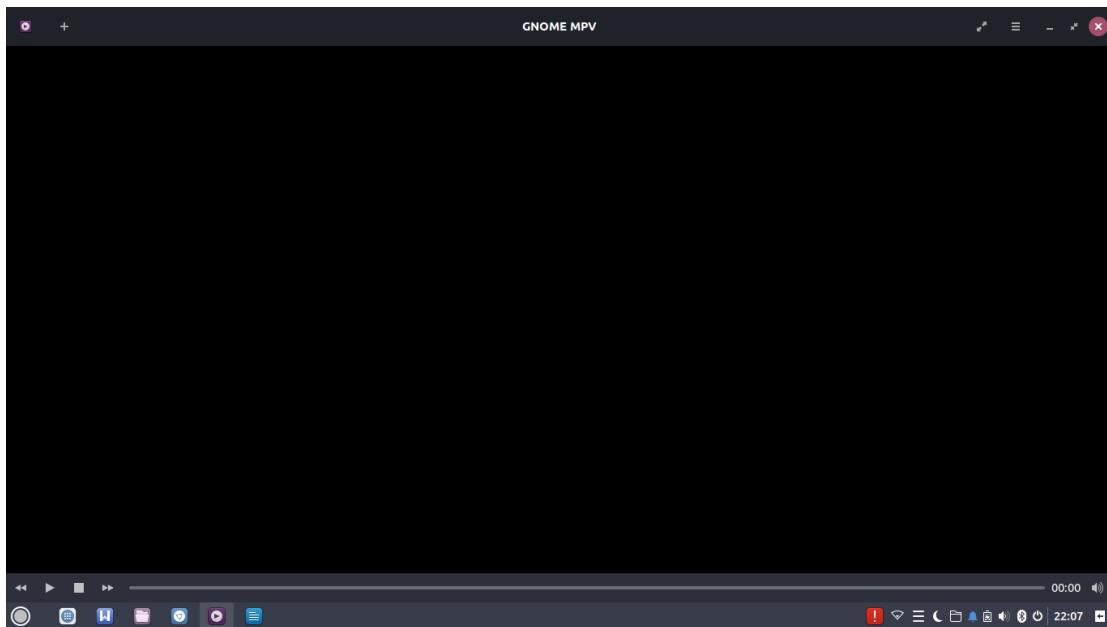
9. LIBREOFFICE WRITE

Berfungsi untuk teks editor menulis suatu dokumen



10. GNOME MPV

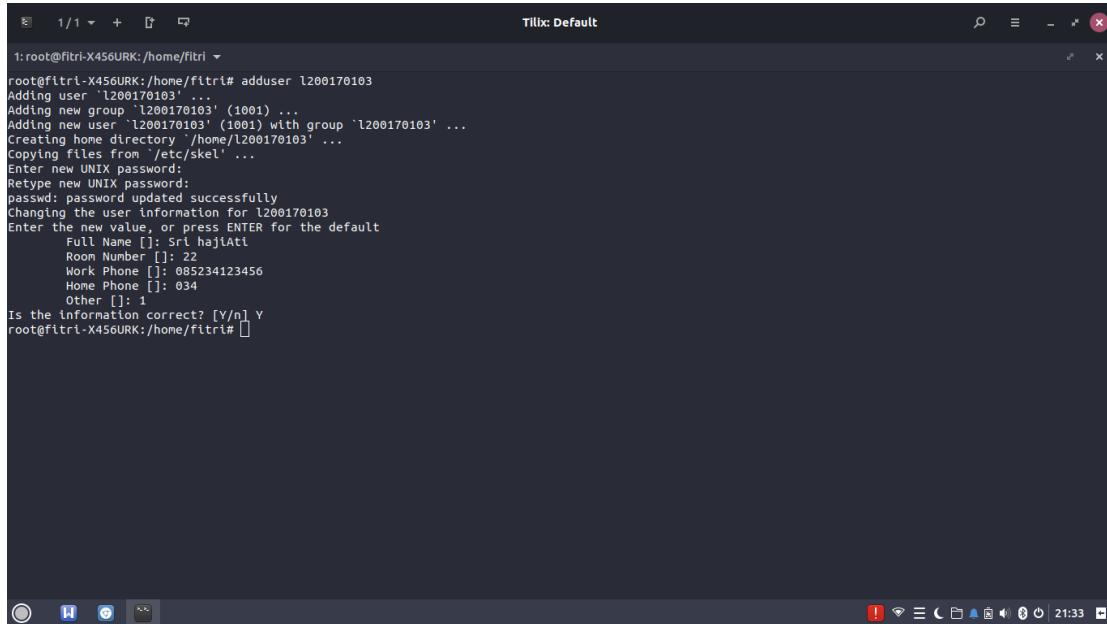
Berfungsi untuk menampilkan video yang akan di putar



MODUL 7

PRAKTIKUM 1

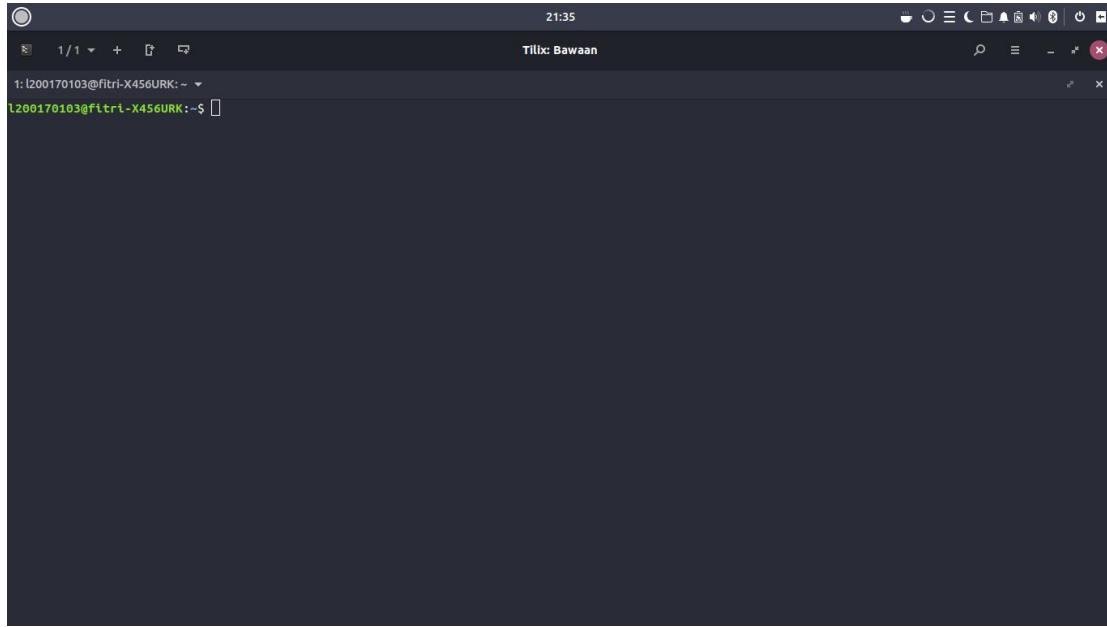
Membuat user dan passwoard baru dengan nama NIM masing-masing mahasiswa. Kita juga disuruh memasukan data seperti yang ada pada gambar dibawah ini. Jika sudah kita bisa log out dan cek user dan password yang sudah kita buat tadi.



```
1:root@fitri-X456URK:/home/fitri ~
root@fitri-X456URK:/home/fitri# adduser l200170103
Adding user 'l200170103' ...
Adding new group 'l200170103' (1001) ...
Adding new user 'l200170103' (1001) with group 'l200170103' ...
Creating home directory '/home/l200170103' ...
Copying files from '/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for l200170103
Enter the new value, or press ENTER for the default
    Full Name []: Sri hajiAti
    Room Number []: 22
    Work Phone []: 085234123456
    Home Phone []: 034
    Other []: 1
Is the information correct? [Y/n], Y
root@fitri-X456URK:/home/fitri#
```

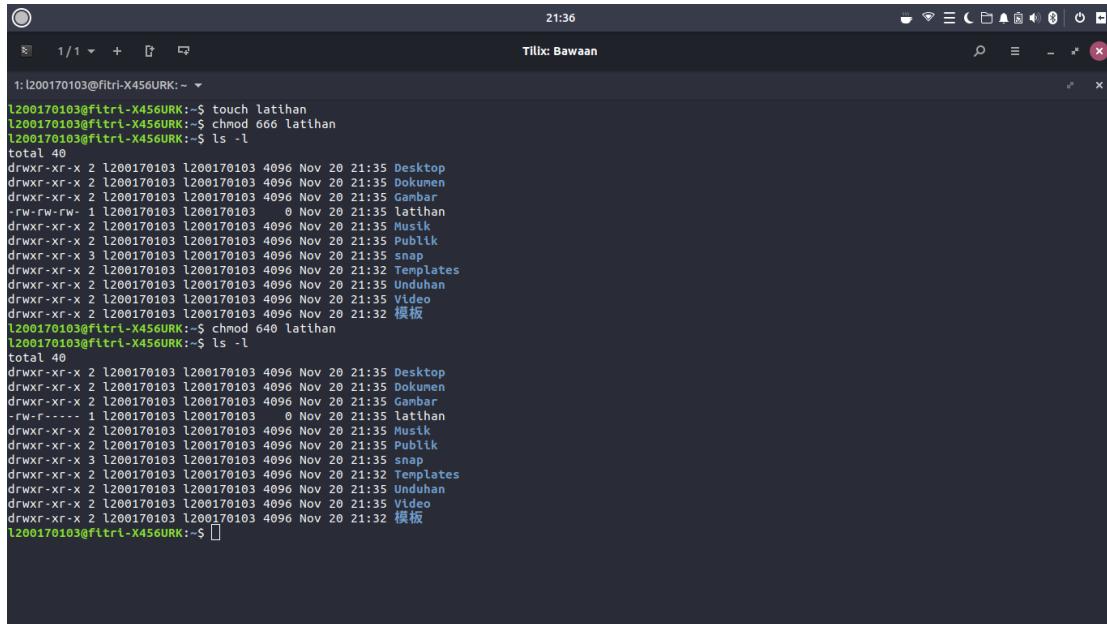
PRAKTIKUM 2

Buat file latihan



```
1: l200170103@fitri-X456URK:~ ~
```

Lalu jalan kan printah yang ada pada modul. Perintah chmod 666 latihan dan akan menampilkan hasil rw-rw-rw .karena bilangan r menyimpan nilai 4 dan bilangan w menyimpan nilai 2. $4+2 = 6$ maka hasil akan seperti itu.

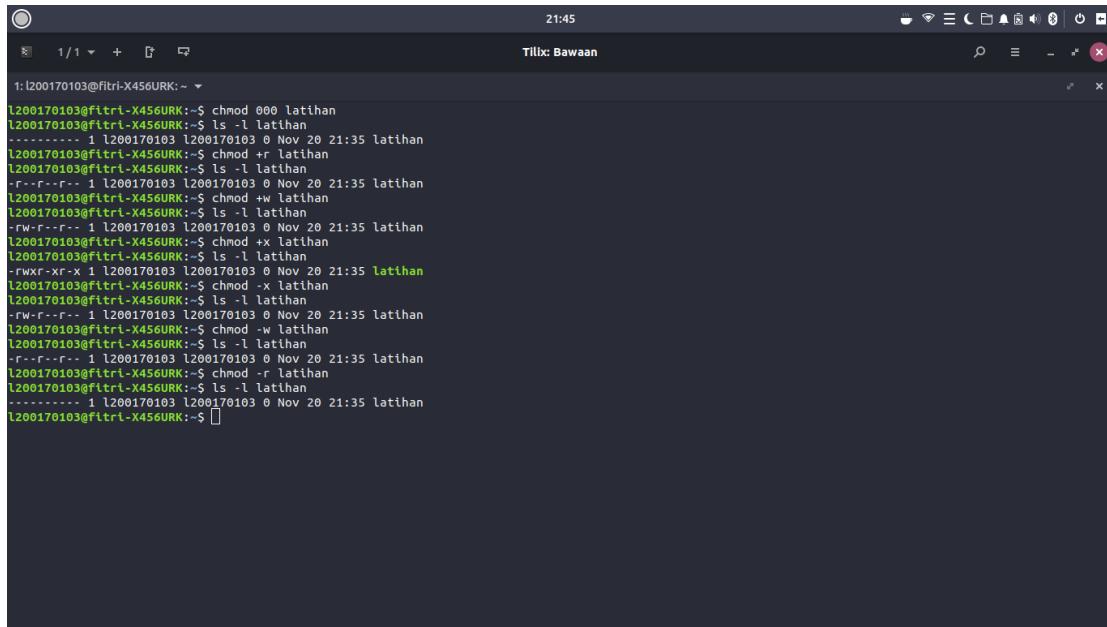


```
1: l200170103@fitri-X456URK:~ ~
```

```
l200170103@fitri-X456URK:~ $ touch latihan
l200170103@fitri-X456URK:~ $ chmod 666 latihan
l200170103@fitri-X456URK:~ $ ls -l
total 40
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Desktop
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Dokumen
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Gambar
-rw-rw-rw- 1 l200170103 l200170103 0 Nov 20 21:35 latihan
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Musik
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Publik
drwxr-xr-x 3 l200170103 l200170103 4096 Nov 20 21:35 snap
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:32 Templates
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Unduhan
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Video
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:32 模板
l200170103@fitri-X456URK:~ $ chmod 640 Latihan
l200170103@fitri-X456URK:~ $ ls -l
total 40
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Desktop
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Dokumen
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Gambar
-rw-r----- 1 l200170103 l200170103 0 Nov 20 21:35 latihan
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Musik
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Publik
drwxr-xr-x 3 l200170103 l200170103 4096 Nov 20 21:35 snap
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:32 Templates
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Unduhan
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:35 Video
drwxr-xr-x 2 l200170103 l200170103 4096 Nov 20 21:32 模板
l200170103@fitri-X456URK:~ $
```


PRAKTIKUM 3

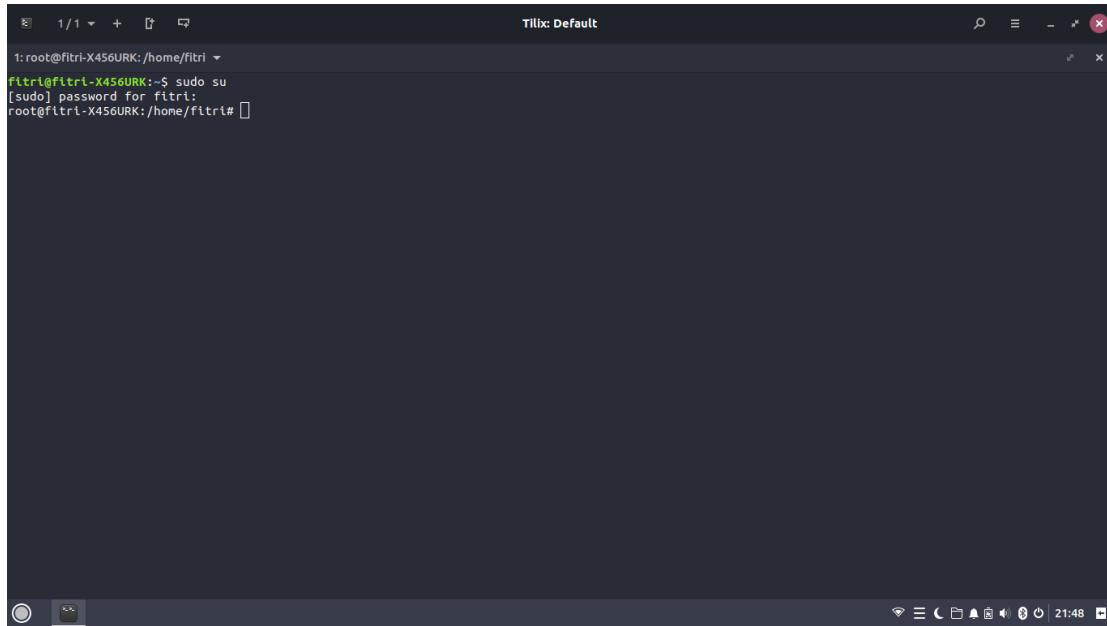
Kita menambahkan hak akses sesuai dengan yang ada di modul



```
1:l200170103@fitri-X456URK:~ ->
l200170103@fitri-X456URK:~$ chmod 000 latihan
l200170103@fitri-X456URK:~$ ls -l latihan
----- 1 l200170103 l200170103 0 Nov 20 21:35 latihan
l200170103@fitri-X456URK:~$ chmod +r latihan
l200170103@fitri-X456URK:~$ ls -l latihan
-r--r--r-- 1 l200170103 l200170103 0 Nov 20 21:35 latihan
l200170103@fitri-X456URK:~$ chmod +w latihan
l200170103@fitri-X456URK:~$ ls -l latihan
-rw-r--r-- 1 l200170103 l200170103 0 Nov 20 21:35 latihan
l200170103@fitri-X456URK:~$ chmod +x latihan
l200170103@fitri-X456URK:~$ ls -l latihan
-rwxr-xr-x 1 l200170103 l200170103 0 Nov 20 21:35 latihan
l200170103@fitri-X456URK:~$ chmod -x latihan
l200170103@fitri-X456URK:~$ ls -l latihan
-rw-r--r-- 1 l200170103 l200170103 0 Nov 20 21:35 latihan
l200170103@fitri-X456URK:~$ chmod -w latihan
l200170103@fitri-X456URK:~$ ls -l latihan
-r--r--r-- 1 l200170103 l200170103 0 Nov 20 21:35 latihan
l200170103@fitri-X456URK:~$ chmod -r latihan
l200170103@fitri-X456URK:~$ ls -l latihan
----- 1 l200170103 l200170103 0 Nov 20 21:35 latihan
l200170103@fitri-X456URK:~$ 
```

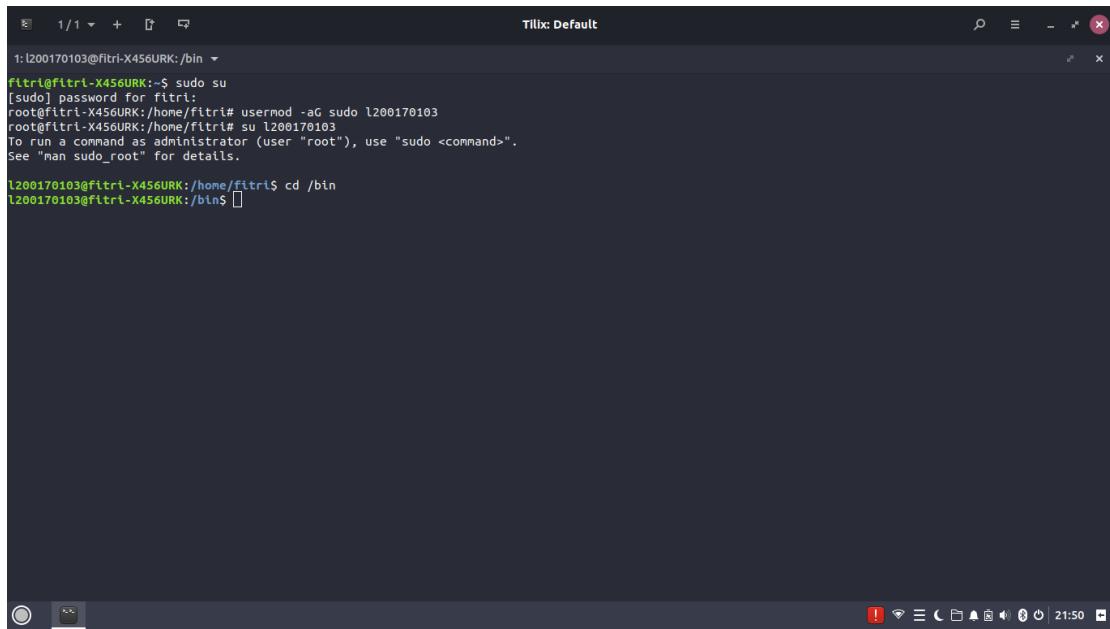
PRAKTIKUM 4

Pertama ketik sodo su



```
1:root@fitri-X456URK:/home/fitri ->
fitri@fitri-X456URK:~$ sudo su
[sudo] password for fitri:
root@fitri-X456URK:~# 
```

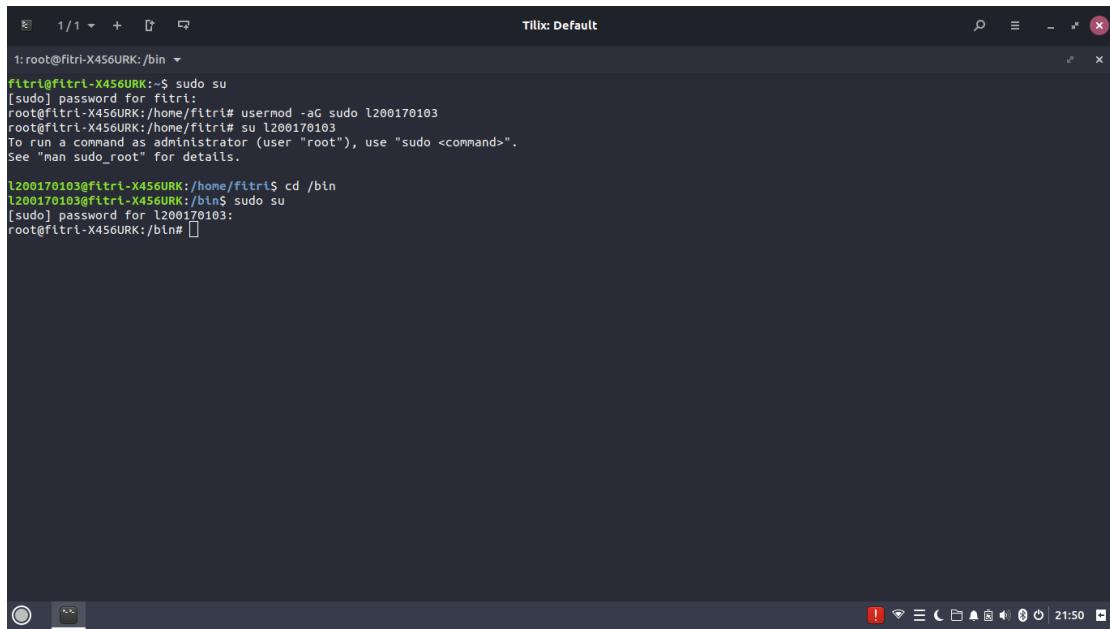
Lalu masuk ke direktori /bin



```
1: l200170103@fitri-X456URK:~/bin ~
fitri@fitri-X456URK:~$ sudo su
[sudo] password for fitri:
root@fitri-X456URK:~/home/fitri# usermod -aG sudo l200170103
root@fitri-X456URK:~/home/fitri# su l200170103
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

l200170103@fitri-X456URK:~/home/fitri$ cd /bin
l200170103@fitri-X456URK:~/bin$
```

Masukan passwoard lalu kita sudah ada pada directori bin



```
1: root@fitri-X456URK:~/bin ~
fitri@fitri-X456URK:~$ sudo su
[sudo] password for fitri:
root@fitri-X456URK:~/home/fitri# usermod -aG sudo l200170103
root@fitri-X456URK:~/home/fitri# su l200170103
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

l200170103@fitri-X456URK:~/home/fitri$ cd /bin
l200170103@fitri-X456URK:~/bin$ sudo su
[sudo] password for l200170103:
root@fitri-X456URK:~/bin$
```

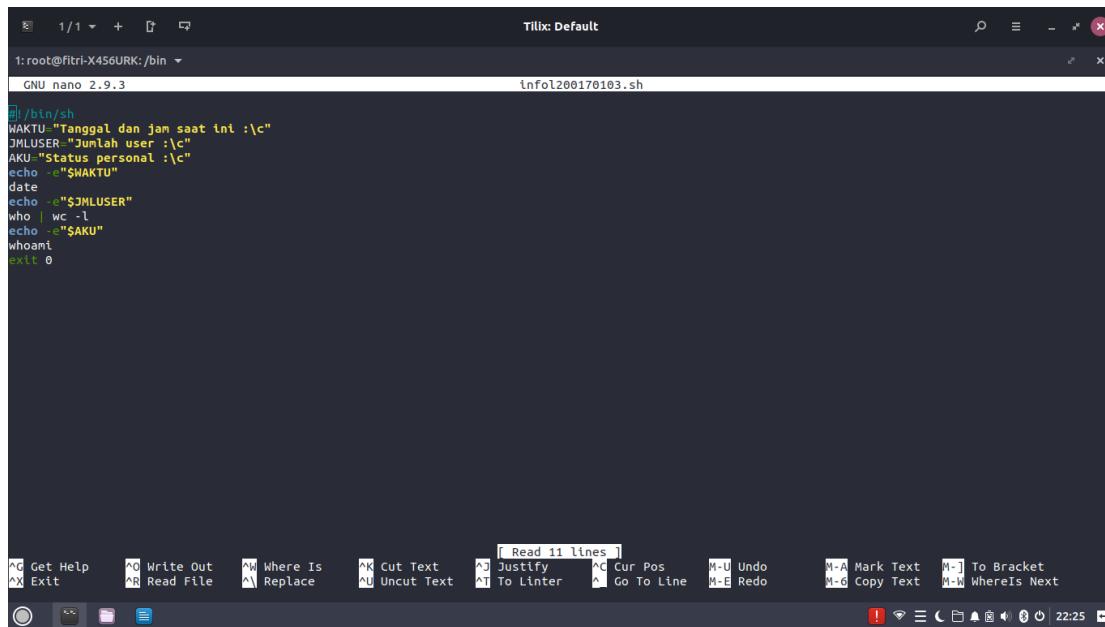
Lalu ketik nano L200170103.sh



```
1:root@fitri-X456URK:/bin ~
fitri@fitri-X456URK:~$ sudo su
[sudo] password for fitri:
root@fitri-X456URK:/home/fitri# usermod -aG sudo l200170103
root@fitri-X456URK:/home/fitri# su l200170103
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

l200170103@fitri-X456URK:/home/fitri$ cd /bin
l200170103@fitri-X456URK:/bin$ sudo su
[sudo] password for l200170103:
root@fitri-X456URK:/bin# nano infol200170103.sh
```

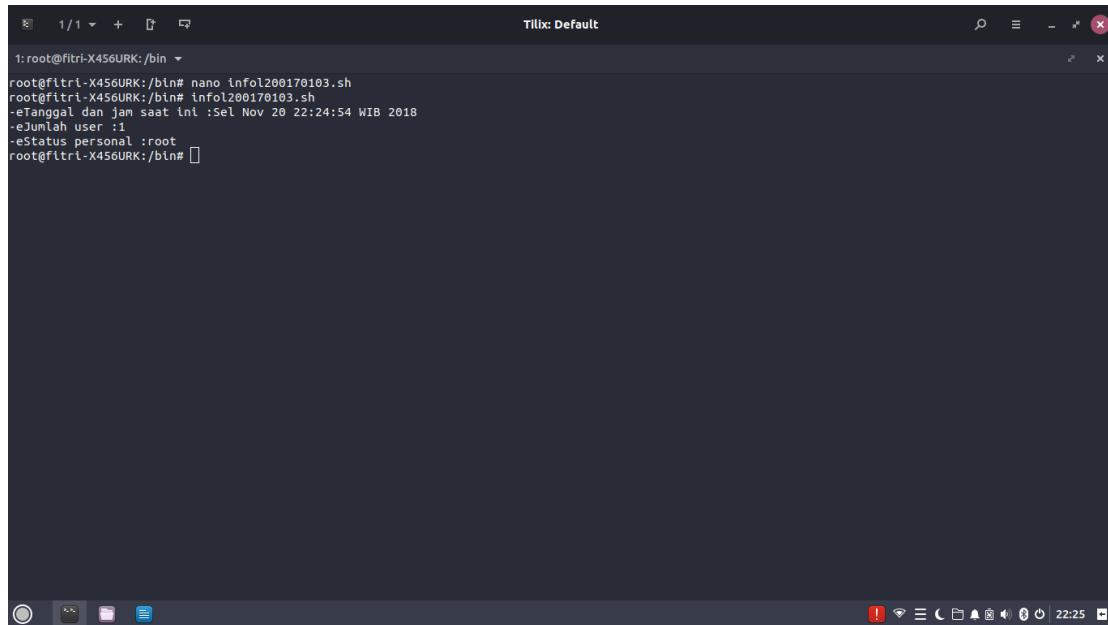
Akan muncul tampilan seperti dibawah ini lalu ketik perintah yang ada pada modul. Simpan dan keluar dengan menekan ESC



```
1:root@fitri-X456URK:/bin ~
GNU nano 2.9.3
infol200170103.sh

#!/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 "$AKU"
whoami
exit 0
```

Lalu ketik perintah nano infol200170103.sh lalu infol200170103.sh dan akan muncul tampilan seperti dibawah ini.



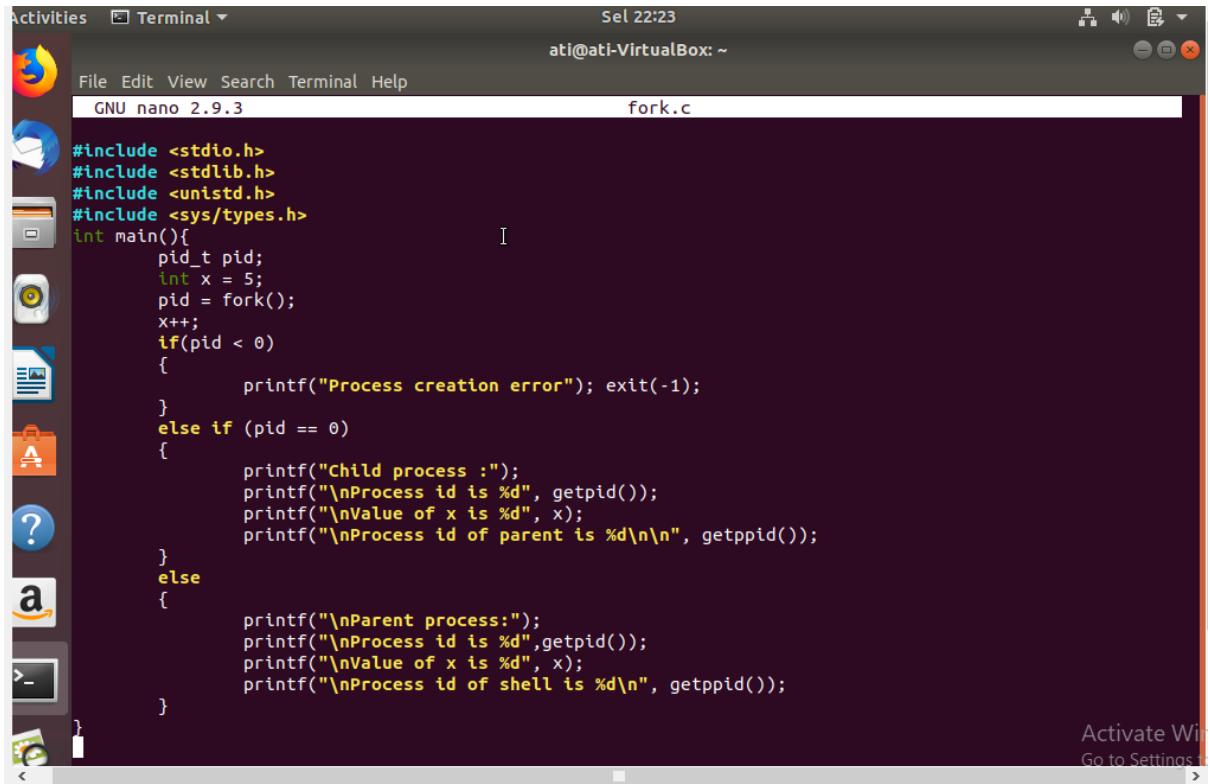
```
1 / 1 + 🔍 ×
Tilix: Default
root@fitri-X456URK:/bin#
root@fitri-X456URK:/bin# nano infol200170103.sh
root@fitri-X456URK:/bin# infol200170103.sh
-etanggal dan jam saat ini :Sel Nov 20 22:24:54 WIB 2018
-eJumlah user :1
-eStatus personal :root
root@fitri-X456URK:/bin#
```

MODUL 8

1.fork.c

Kode Program

Untuk Masuk keDalam pengetikan Code Fork maka kita masuk dengan Cara nano fork.c



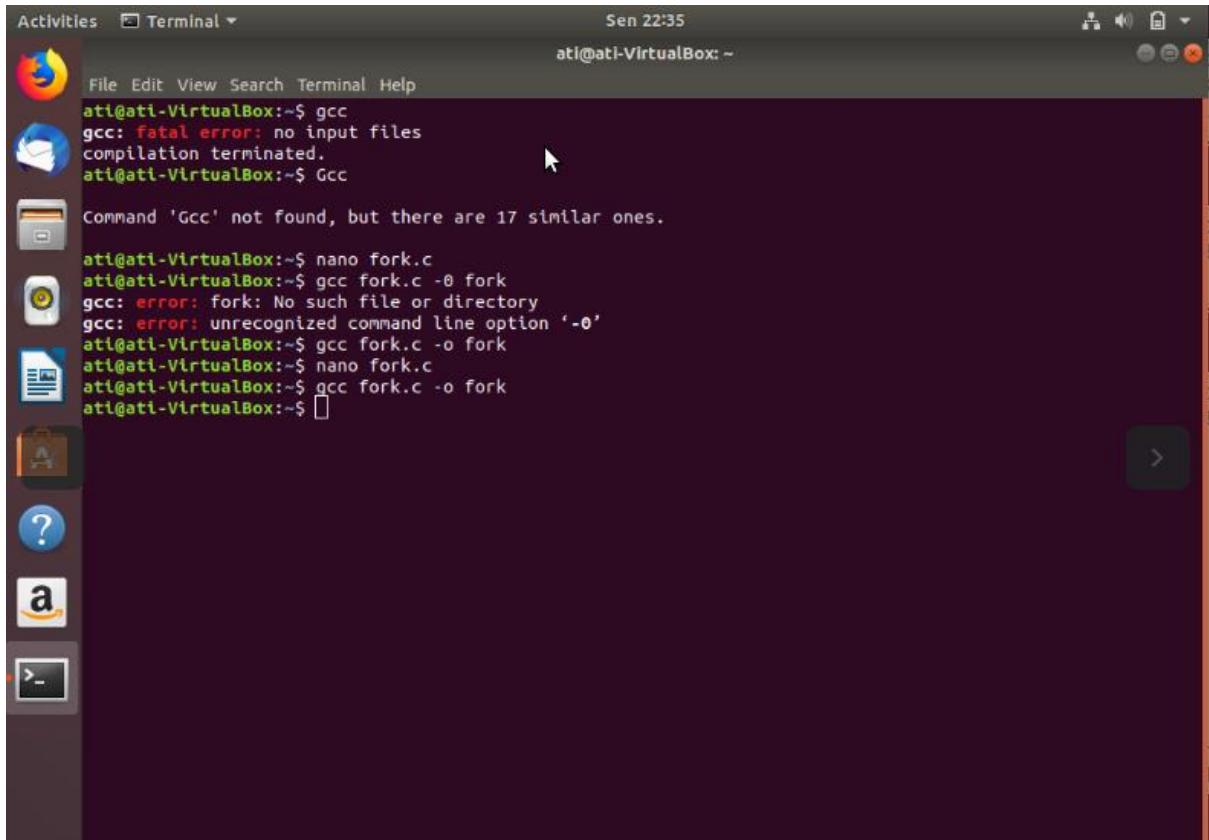
The screenshot shows a terminal window titled "fork.c" with the following C code:

```
#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());
    }
}
```

The terminal window is part of a desktop environment with a dock containing various icons.

Untuk keluar dari program ketik Ctrl X lalu pilih Yes Dan tekan enter.

Mengecek kode program fork.c ada yang salah tidak menggunakan gcc fork.c –o fork. Jika benar maka akan muncul seperti gambar dibawah ini



The screenshot shows a terminal window titled "Terminal" with the command line "ati@ati-VirtualBox:~\$". The user attempts to compile a C program named "fork.c" using the command "gcc fork.c -o fork". The terminal displays the following error message:

```
gcc: fatal error: no input files
compilation terminated.
ati@ati-VirtualBox:~$ Gcc
Command 'Gcc' not found, but there are 17 similar ones.

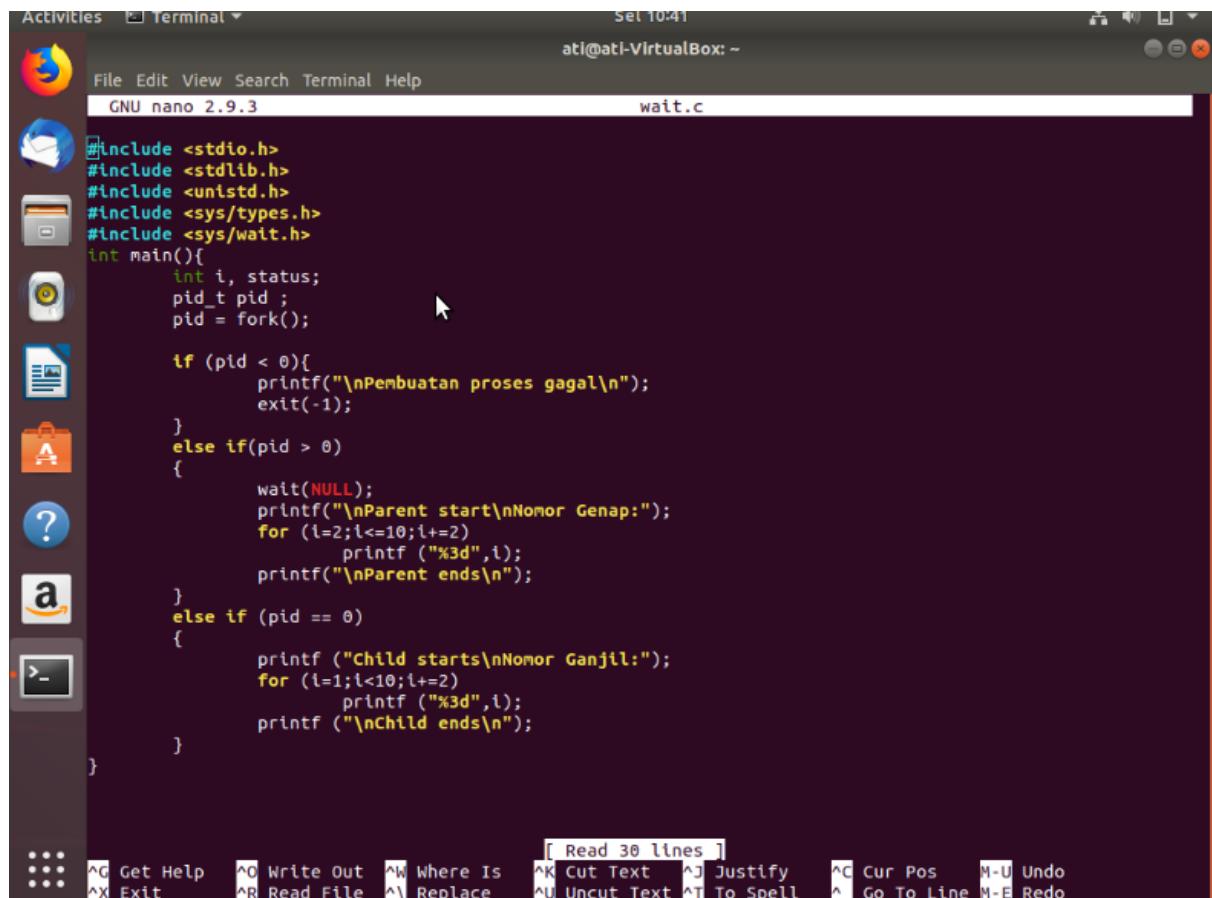
ati@ati-VirtualBox:~$ nano fork.c
ati@ati-VirtualBox:~$ gcc fork.c -o fork
gcc: error: fork: No such file or directory
gcc: error: unrecognized command line option '-o'
ati@ati-VirtualBox:~$ gcc fork.c -o fork
ati@ati-VirtualBox:~$ nano fork.c
ati@ati-VirtualBox:~$ gcc fork.c -o fork
ati@ati-VirtualBox:~$
```

The terminal window is part of the Unity desktop environment, as indicated by the activity bar on the left and the window title bar.

2. wait.c

Kode Program

Untuk masuk kedalam wait.c ketik nano wait.c maka akan muncul tampilan dibawah ini



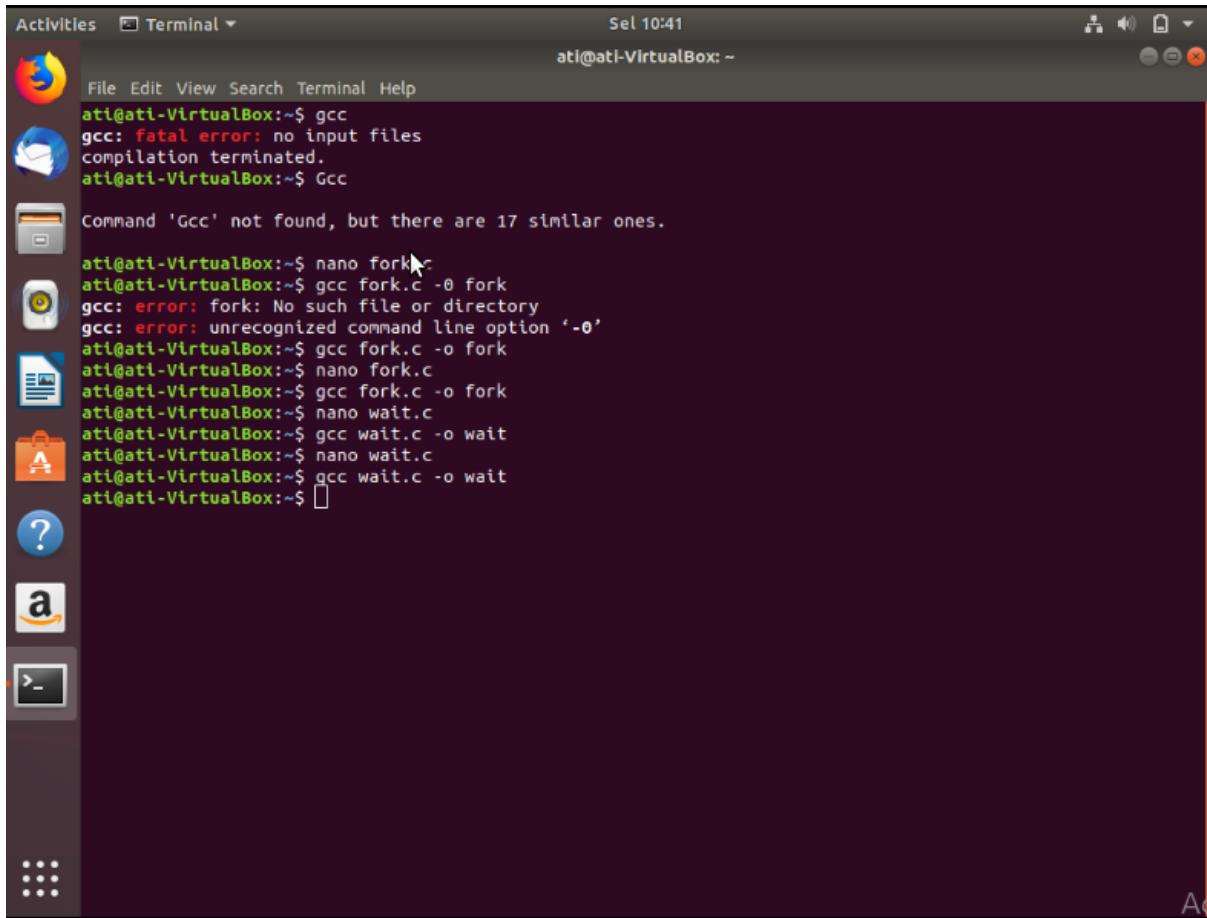
The screenshot shows a terminal window titled "Activities Terminal" with the command "ati@ati-VirtualBox: ~". The file being edited is "wait.c". The code in the terminal is:

```
#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 start\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");
    }
}
```

The terminal window includes a menu bar with File, Edit, View, Search, Terminal, Help, and a status bar at the bottom with various keyboard shortcuts.

Cara Mengecek program wait dengan gcc wait.c –o wait. jika benar maka akan muncul seperti gambar di bawah



The screenshot shows a terminal window titled "Terminal" with the command line "ati@ati-VirtualBox:~\$". The user attempts to compile a C program named "wait.c" using the command "gcc wait.c -o wait". The terminal displays the following error message:

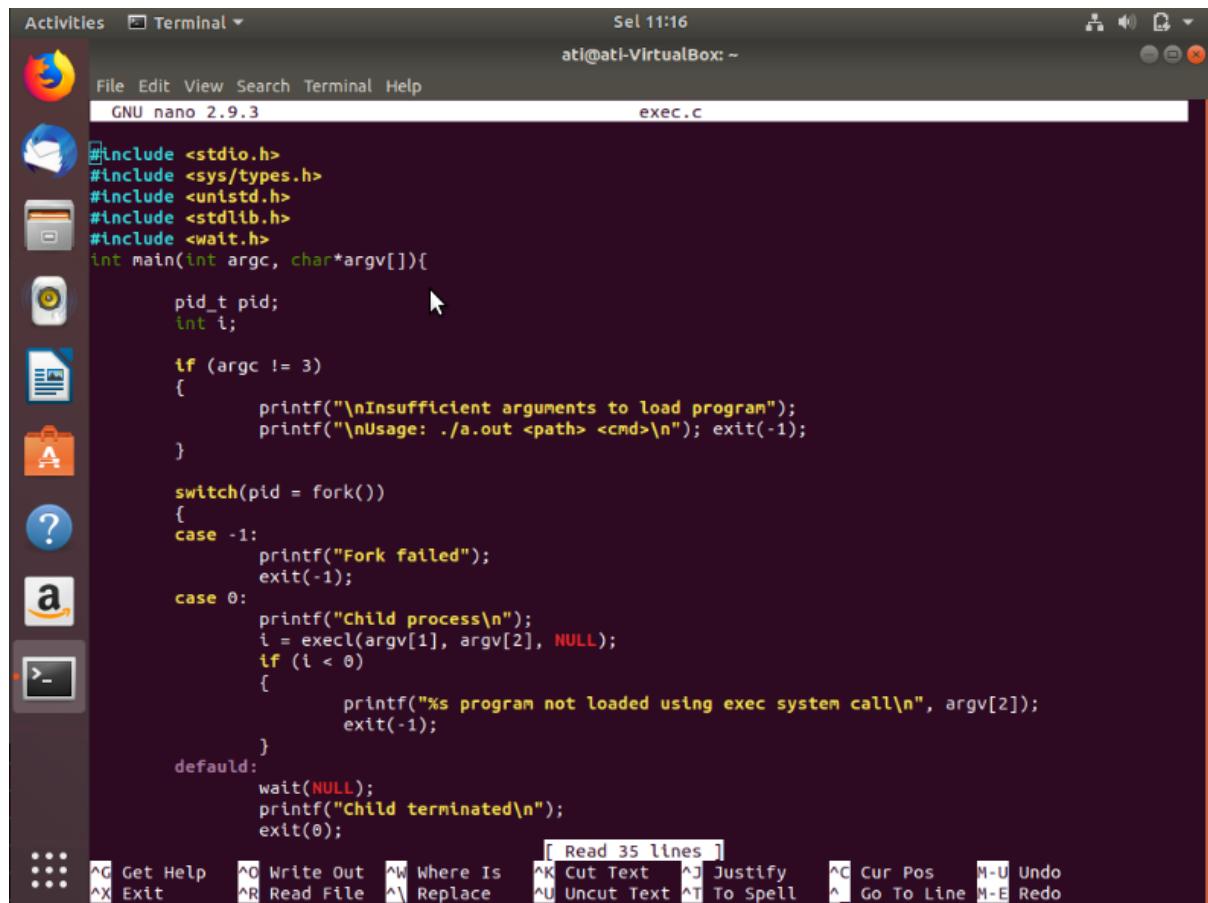
```
ati@ati-VirtualBox:~$ gcc
gcc: fatal error: no input files
compilation terminated.
ati@ati-VirtualBox:~$ Gcc
Command 'Gcc' not found, but there are 17 similar ones.

ati@ati-VirtualBox:~$ nano fork.c
ati@ati-VirtualBox:~$ gcc fork.c -o fork
gcc: error: fork: No such file or directory
gcc: error: unrecognized command line option '-o'
ati@ati-VirtualBox:~$ gcc fork.c -o fork
ati@ati-VirtualBox:~$ nano fork.c
ati@ati-VirtualBox:~$ gcc fork.c -o fork
ati@ati-VirtualBox:~$ nano wait.c
ati@ati-VirtualBox:~$ gcc wait.c -o wait
ati@ati-VirtualBox:~$ nano wait.c
ati@ati-VirtualBox:~$ gcc wait.c -o wait
ati@ati-VirtualBox:~$
```

3.exec.c

Kode Program

Untuk masuk kedalam exec.c ketik nano exec.c maka akan muncul tampilan dibawah ini



The screenshot shows a terminal window titled "Terminal" with the command "exec.c" running. The window title bar also displays "Sel 11:16" and "ati@ati-VirtualBox: ~". The terminal window contains the following C code:

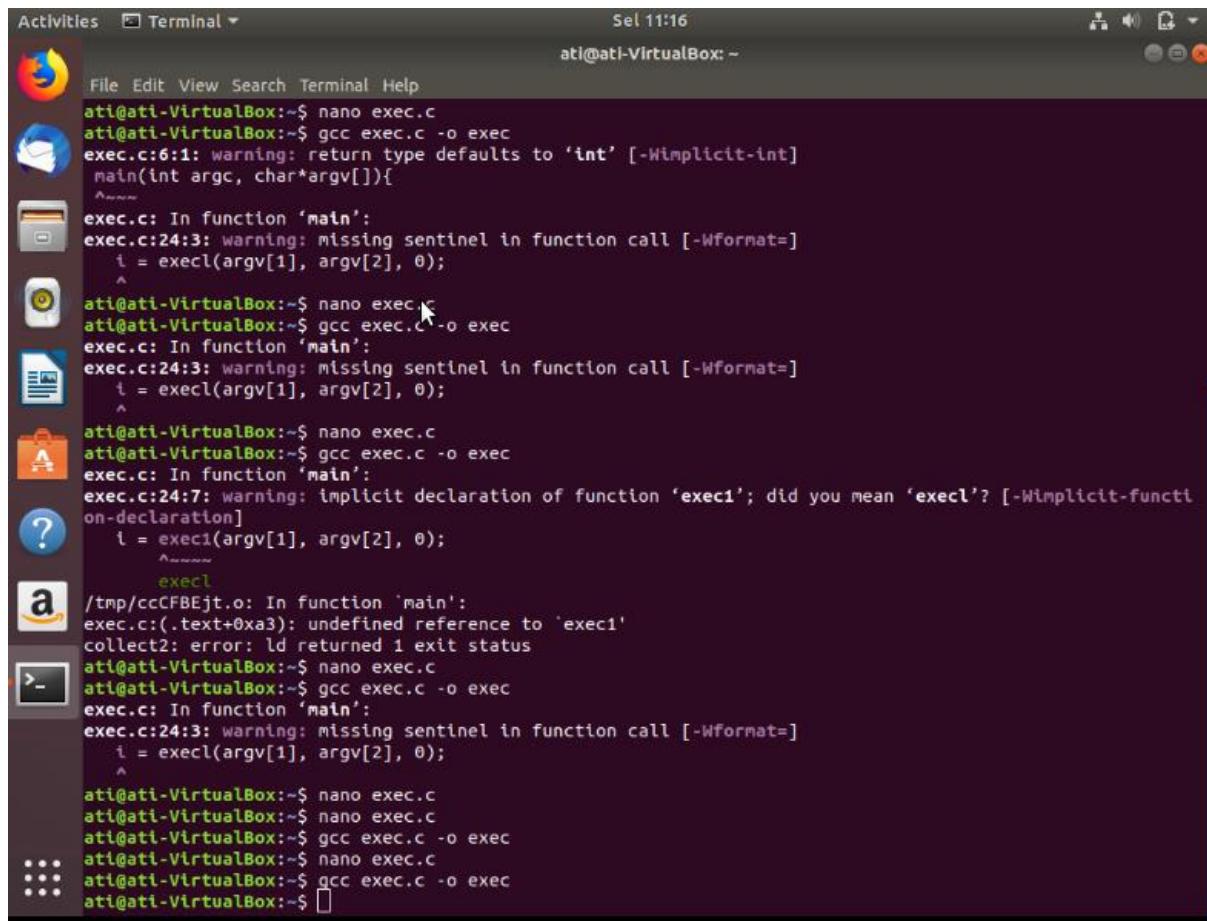
```
#include <stdio.h>
#include <sys/types.h>
#include <unistd.h>
#include <stdlib.h>
#include <wait.h>
int main(int argc, char*argv[]){
    pid_t pid;
    int i;

    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\n");
        i = exec(argv[1], argv[2], NULL);
        if (i < 0)
        {
            printf("%s program not loaded using exec system call\n", argv[2]);
            exit(-1);
        }
    default:
        wait(NULL);
        printf("Child terminated\n");
        exit(0);
    }
}
```

The terminal window has a dark theme and includes standard nano editor key bindings at the bottom.

Mengecek kode program exec.c ada yang salah tidak menggunakan gcc exec.c -o exec. Jika benar maka akan muncul tampilan dibawah ini



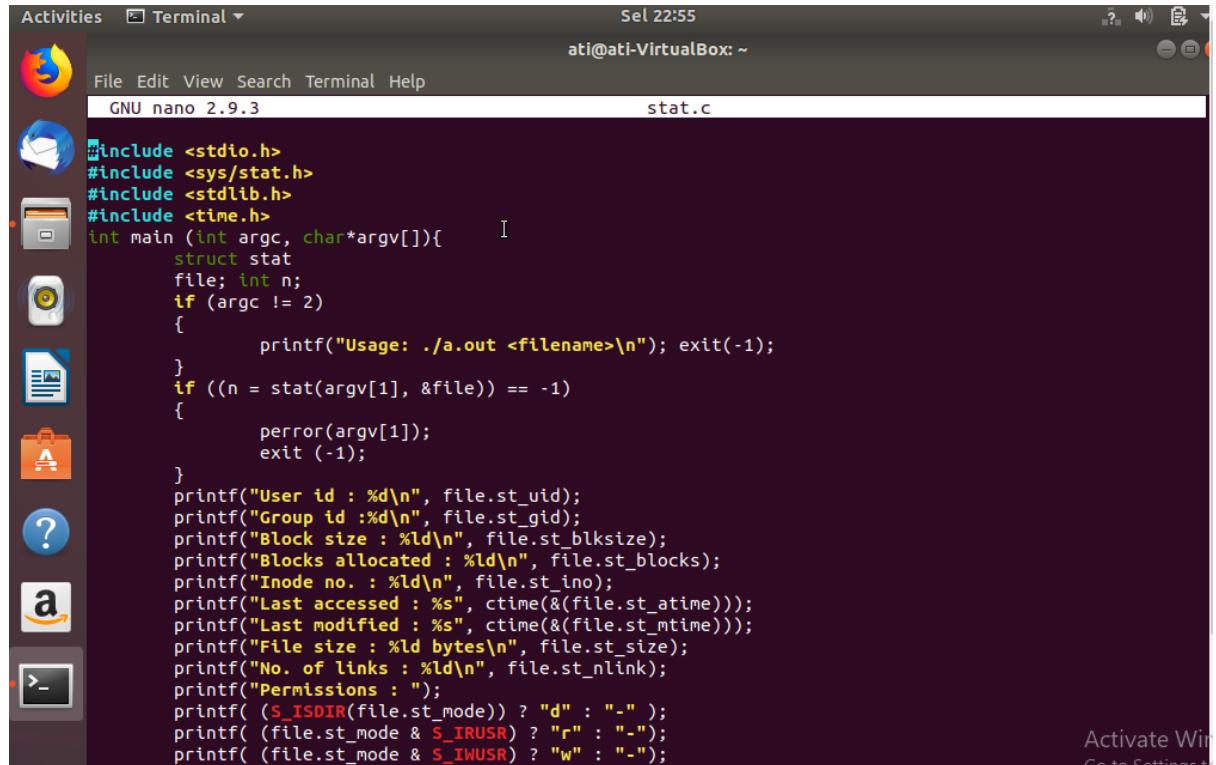
The screenshot shows a terminal window titled "Terminal" with the command line "ati@ati-VirtualBox: ~". The terminal displays the following sequence of commands and their output:

```
ati@ati-VirtualBox:~$ nano exec.c
ati@ati-VirtualBox:~$ gcc exec.c -o exec
exec.c:6:1: warning: return type defaults to 'int' [-Wimplicit-int]
main(int argc, char*argv[]){
^~~~~
exec.c: In function 'main':
exec.c:24:3: warning: missing sentinel in function call [-Wformat=]
    i = execl(argv[1], argv[2], 0);
    ^
ati@ati-VirtualBox:~$ nano exec.c
ati@ati-VirtualBox:~$ gcc exec.c -o exec
exec.c: In function 'main':
exec.c:24:3: warning: missing sentinel in function call [-Wformat=]
    i = execl(argv[1], argv[2], 0);
    ^
ati@ati-VirtualBox:~$ nano exec.c
ati@ati-VirtualBox:~$ gcc exec.c -o exec
exec.c: In function 'main':
exec.c:24:7: warning: implicit declaration of function 'exec1'; did you mean 'execl'? [-Wimplicit-function-declaration]
    l = exec1(argv[1], argv[2], 0);
    ^~~~~_
exec1
/tmp/ccCFBEjt.o: In function 'main':
exec.c:(.text+0xa3): undefined reference to 'exec1'
collect2: error: ld returned 1 exit status
ati@ati-VirtualBox:~$ nano exec.c
ati@ati-VirtualBox:~$ gcc exec.c -o exec
exec.c: In function 'main':
exec.c:24:3: warning: missing sentinel in function call [-Wformat=]
    i = execl(argv[1], argv[2], 0);
    ^
ati@ati-VirtualBox:~$ nano exec.c
ati@ati-VirtualBox:~$ gcc exec.c -o exec
ati@ati-VirtualBox:~$ nano exec.c
ati@ati-VirtualBox:~$ gcc exec.c -o exec
ati@ati-VirtualBox:~$ nano exec.c
ati@ati-VirtualBox:~$ gcc exec.c -o exec
ati@ati-VirtualBox:~$
```

4. stat.c

Kode Program

Untuk masuk kedalam stat.c ketik nano statt.c maka akan muncul tampilan dibawah ini



The screenshot shows a terminal window titled "stat.c" running in a "Terminal" application. The window title bar also displays "Sel 22:55" and "ati@ati-VirtualBox: ~". The terminal content is the following C code:

```
#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 : %ld\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("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 : %ld\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");
}

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos M-U Undo Activate Win
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^ Go To Line M-E Redo Go to Settings.t

```

Mengecek kode program stat.c ada yang salah tidak menggunakan gcc stat.c –o stat

```

ati@ati-VirtualBox:~$ nano stat.c
ati@ati-VirtualBox:~$ gcc stat.c -o stat
stat.c:5:2: warning: return type defaults to 'int' [-Wimplicit-int]
 main (int argc, char*argv[]){
 ^~~~

stat.c: In function 'main':
stat.c:19:24: warning: format '%d' expects argument of type 'int', but argument 2 has type '__blksize_t
 [aka long int]' [-Wformat=]
     printf("Block size : %d\n", file.st_blksize);
          ~^           ~~I~~
          %ld

stat.c:20:30: warning: format '%d' expects argument of type 'int', but argument 2 has type '__blkcnt_t {
 aka long int}' [-Wformat=]
     printf("Blocks allocated : %d\n", file.st_blocks);
          ~^           ~~I~~
          %ld

stat.c:21:23: warning: format '%d' expects argument of type 'int', but argument 2 has type '__ino_t {aka
 long unsigned int}' [-Wformat=]
     printf("Inode no. : %d\n", file.st_ino);
          ~^           ~~I~~
          %ld

stat.c:24:23: warning: format '%d' expects argument of type 'int', but argument 2 has type '__off_t {aka
 long int}' [-Wformat=]
     printf("File size : %d bytes\n", file.st_size);
          ~^           ~~I~~
          %ld

stat.c:25:26: warning: format '%d' expects argument of type 'int', but argument 2 has type '__nlink_t {a
 ka long unsigned int}' [-Wformat=]
     printf("No. of links : %d\n", file.st_nlink);
          ~^           ~~I~~
          %ld
ati@ati-VirtualBox:~$ nano stat.c
ati@ati-VirtualBox:~$ nano stat.c
ati@ati-VirtualBox:~$ gcc stat.c -o stat
ati@ati-VirtualBox:~$ 

```

Activate Win
Go to Settings.t

5.Kode Program dirlist.c

A screenshot of an Ubuntu desktop environment. In the top right corner, there's a system tray with icons for battery, signal strength, and volume. The title bar of the terminal window says "Activities Terminal" and "Sel 23:05". The terminal window itself has a dark background and shows the following code:

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

The terminal window also displays the command "dirlist.c" at the bottom right.

Mengecek kode program dirlist.c ada yang salah tidak menggunakan gcc dirlist.c -o dirlist

A screenshot of an Ubuntu desktop environment. The terminal window shows the following output:

```
printf(" Block size : %u\n", file.st_blksize),
      ~^          ~~~~~~  

      %ld
stat.c:20:30: warning: format '%d' expects argument of type 'int', but argument 2 has type '__blkcnt_t {aka long int}' [-Wformat=]
    printf("Blocks allocated : %d\n", file.st_blocks);
      ~^          ~~~~~~  

      %ld
stat.c:21:23: warning: format '%d' expects argument of type 'int', but argument 2 has type '__ino_t {aka long unsigned int}' [-Wformat=]
    printf("Inode no. : %d\n", file.st_ino);
      ~^          ~~~~  

      %ld
stat.c:24:23: warning: format '%d' expects argument of type 'int', but argument 2 has type '__off_t {aka long int}' [-Wformat=]
    printf("File size : %d bytes\n", file.st_size);
      ~^          ~~~~~~  

      %ld
stat.c:25:26: warning: format '%d' expects argument of type 'int', but argument 2 has type '__nlink_t {aka long unsigned int}' [-Wformat=]
    printf("No. of links : %d\n", file.st_nlink);
      ~^          ~~~~~~  

      %ld
ati@ati-VirtualBox:~$ nano stat.c
ati@ati-VirtualBox:~$ nano stat.c
ati@ati-VirtualBox:~$ gcc stat.c -o stat
ati@ati-VirtualBox:~$ nano stat.c
ati@ati-VirtualBox:~$ nano dirlist.c
ati@ati-VirtualBox:~$ nano dirlist.c
ati@ati-VirtualBox:~$ gcc dirlist.c -o dirlist
dirlist.c:4:1: warning: return type defaults to 'int' [-Wimplicit-int]
 main (int argc, char *argv[])
 ^~~~
ati@ati-VirtualBox:~$ nano dirlist.c
ati@ati-VirtualBox:~$ gcc dirlist.c -o dirlist
ati@ati-VirtualBox:~$
```

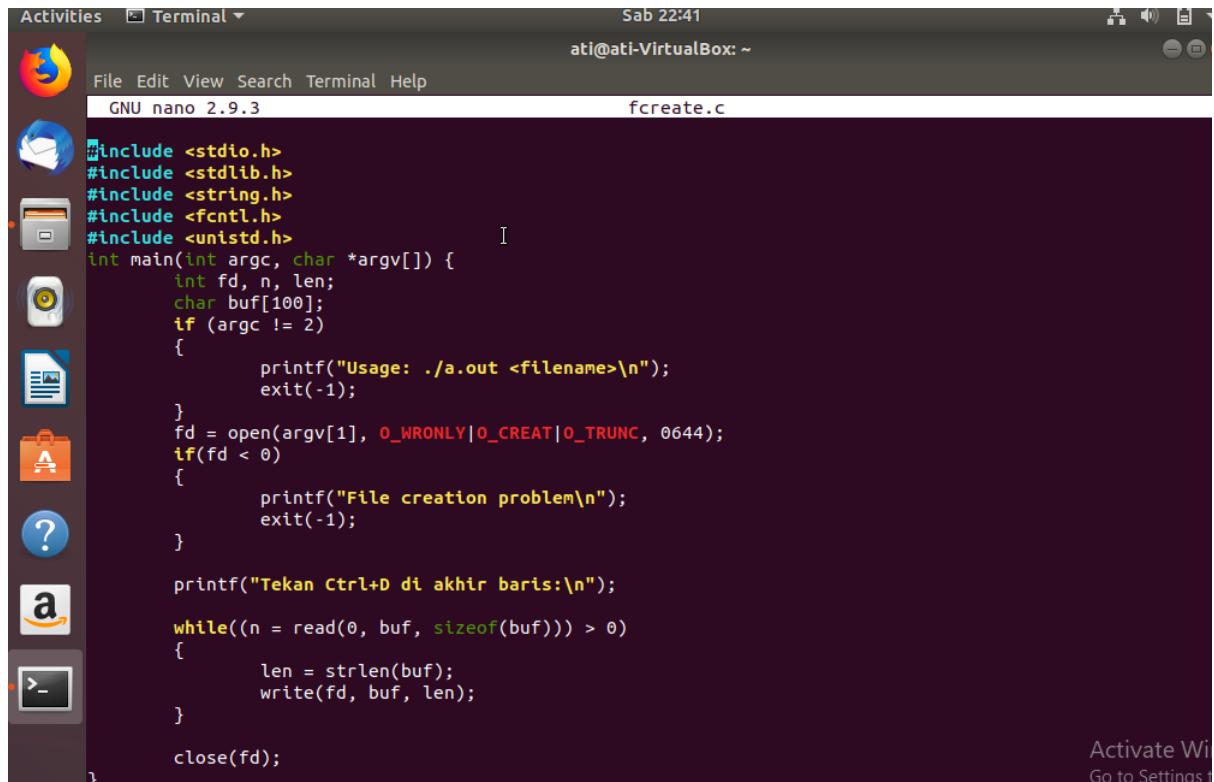
The terminal window also displays the command "dirlist.c" at the bottom right.

MODUL 9

1. fcreat.c

Codenya

Untuk masuk kedalam fcreate.c ketik nano fcreate.c maka akan muncul tampilan dibawah ini



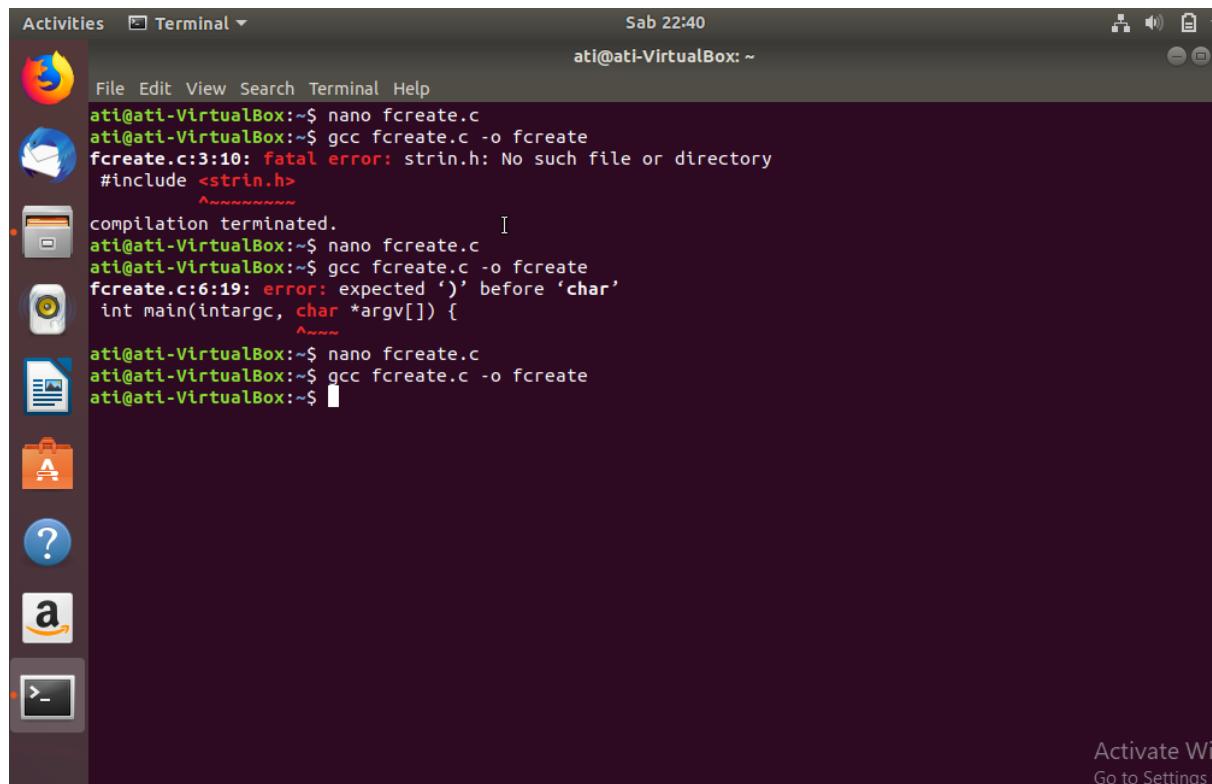
The screenshot shows a terminal window titled "fcreate.c" running in a "Terminal" application. The window title bar also displays "Activities" and the date/time "Sab 22:41". The terminal content is as follows:

```
File Edit View Search Terminal Help
GNU nano 2.9.3
fcreate.c

#include <stdio.h>
#include <stdlib.h>
#include <string.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_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);
```

The terminal window has a dark background and light-colored text. The code is written in C, demonstrating how to open a file for writing, check for errors, and read from standard input to write to the file.

Cara Mengecek kesalahan



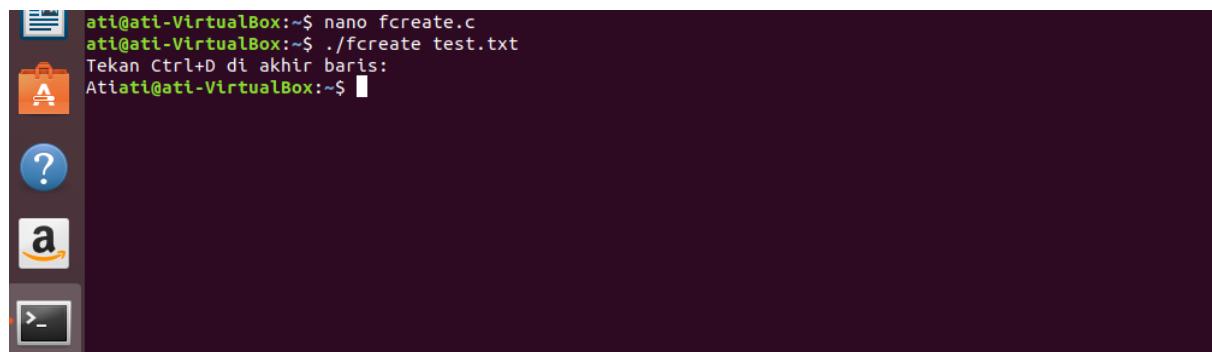
A screenshot of a Linux desktop environment. On the left is a dock with icons for a browser, file manager, help, Amazon, and a terminal. The terminal window is open and shows the following command-line session:

```
File Edit View Search Terminal Help
ati@ati-VirtualBox:~$ nano fcreate.c
ati@ati-VirtualBox:~$ gcc fcreate.c -o fcreate
fcreate.c:3:10: fatal error: strin.h: No such file or directory
 #include <strin.h>
           ^
compilation terminated.                         I
ati@ati-VirtualBox:~$ nano fcreate.c
ati@ati-VirtualBox:~$ gcc fcreate.c -o fcreate
fcreate.c:6:19: error: expected ')' before 'char'
 int main(int argc, char *argv[]) {
                   ^
ati@ati-VirtualBox:~$ nano fcreate.c
ati@ati-VirtualBox:~$ gcc fcreate.c -o fcreate
ati@ati-VirtualBox:~$
```

The terminal window has a dark background with light-colored text. The status bar at the top shows "Sab 22:40" and the user "ati@ati-VirtualBox: ~". The status bar at the bottom shows "Activate Wi" and "Go to Settings".

Ketik ./fcreat test.txt

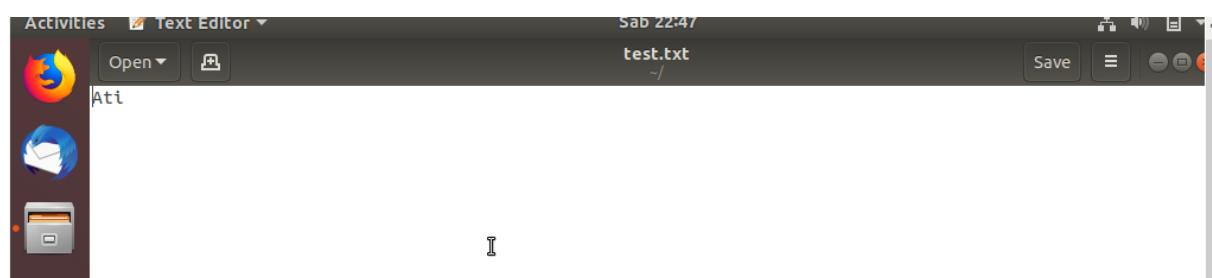
Untuk menulis file baru lalu cek pada document anda jika benar maka akan ada nama file yang anda buat tadi. Yaitu file nya bernama Ati. Hasil seperti gambar dibawah ini.



A screenshot of a Linux desktop environment. On the left is a dock with icons for a browser, file manager, help, Amazon, and a terminal. The terminal window is open and shows the following command-line session:

```
ati@ati-VirtualBox:~$ nano fcreate.c
ati@ati-VirtualBox:~$ ./fcreate test.txt
Tekan Ctrl+D di akhir baris:
Ati@ati-VirtualBox:~$
```

The terminal window has a dark background with light-colored text. The status bar at the top shows "Tekan Ctrl+D di akhir baris:" and the user "Ati@ati-VirtualBox:~\$".



A screenshot of a Linux desktop environment. On the left is a dock with icons for a browser, file manager, help, Amazon, and a terminal. A "Text Editor" window is open, showing a single line of text: "Ati". The window title is "Text Editor" and the file name is "test.txt". The status bar at the top shows "Sab 22:47" and the file path "test.txt ~". The status bar at the bottom shows "Save" and other window controls.

2.fread.c

Code

Activities Terminal Sab 22:57
ati@ati-VirtualBox: ~

The screenshot shows a standard Ubuntu desktop environment. On the left is a dock with various icons: Dash, Home, Applications, System Settings, Help, and a terminal icon. The terminal window is open to a file named 'fread.c' containing the following C code:

```
#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);
    }
    printf("Isi dari file %s adalah : \n", argv[1]);
    while(read(fd, buf, sizeof(buf)) > 0)
        printf("%s", buf);
    close(fd);
}
```

Activate W

Cara mengecek Kesalahan

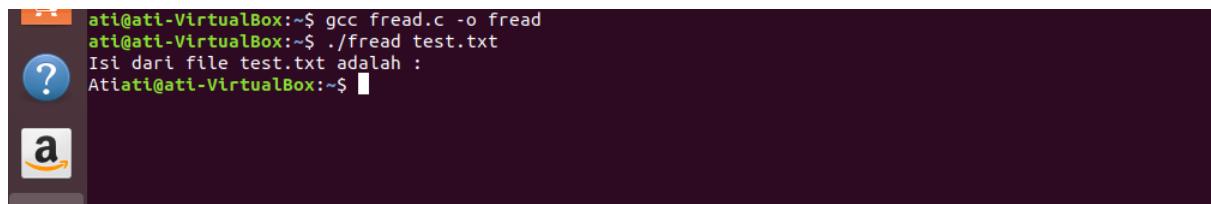
Activities Terminal Sab 22:54
ati@ati-VirtualBox: ~

The screenshot shows a terminal window with the following session:

```
ati@ati-VirtualBox:~$ nano fcreate.c
ati@ati-VirtualBox:~$ gcc fcreate.c -o fcreate
fcreate.c:3:10: fatal error: strin.h: No such file or directory
 #include <strin.h>
           ^
compilation terminated.
ati@ati-VirtualBox:~$ nano fcreate.c
ati@ati-VirtualBox:~$ gcc fcreate.c -o fcreate
fcreate.c:6:19: error: expected ')' before 'char'
 int main(int argc, char *argv[])
               ^
ati@ati-VirtualBox:~$ nano fcreate.c
ati@ati-VirtualBox:~$ gcc fcreate.c -o fcreate
ati@ati-VirtualBox:~$ nano fcreate.c
ati@ati-VirtualBox:~$ ./fcreate test.txt
Tekan Ctrl+D di akhir baris:
Atiati@ati-VirtualBox:~$ nano fread.c
ati@ati-VirtualBox:~$ gcc fread.c -o fread
ati@ati-VirtualBox:~$
```

Activate W

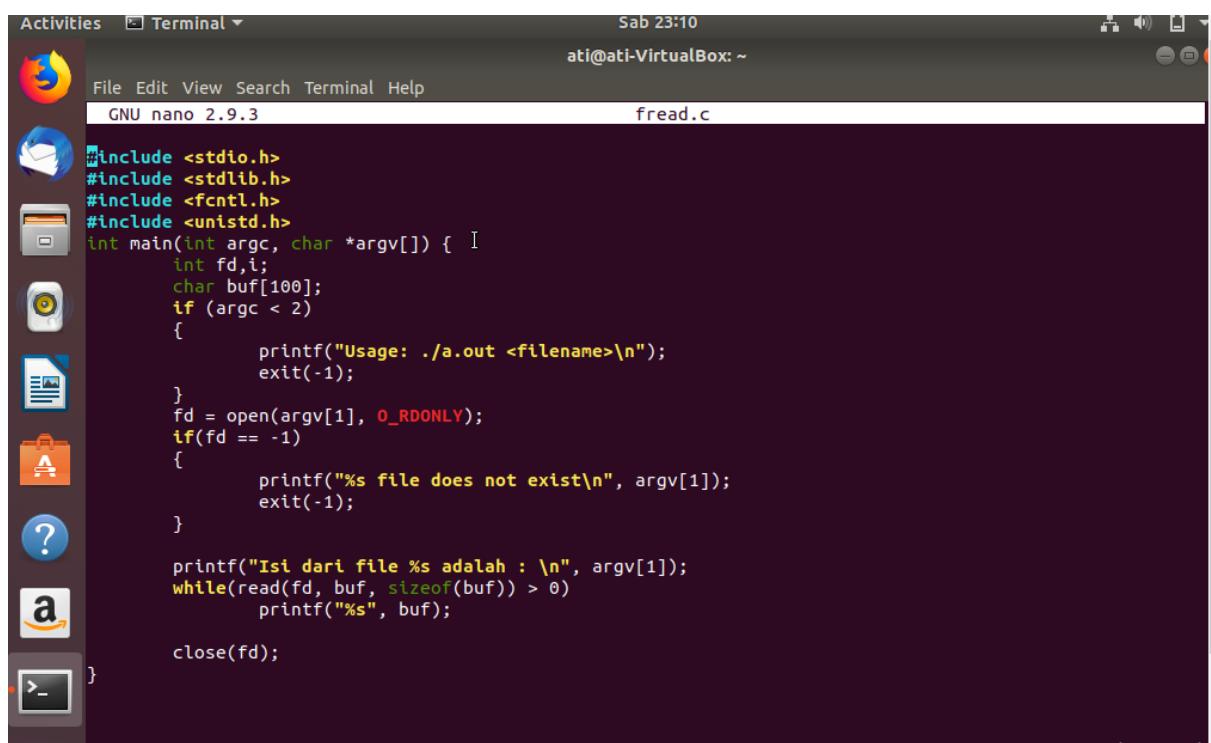
Ketik ./fcreadtest.txt. fungsinya untuk membaca file



```
ati@ati-VirtualBox:~$ gcc fread.c -o fread
ati@ati-VirtualBox:~$ ./fread test.txt
Isi dari file test.txt adalah :
Atiati@ati-VirtualBox:~$
```

3.fappen.c

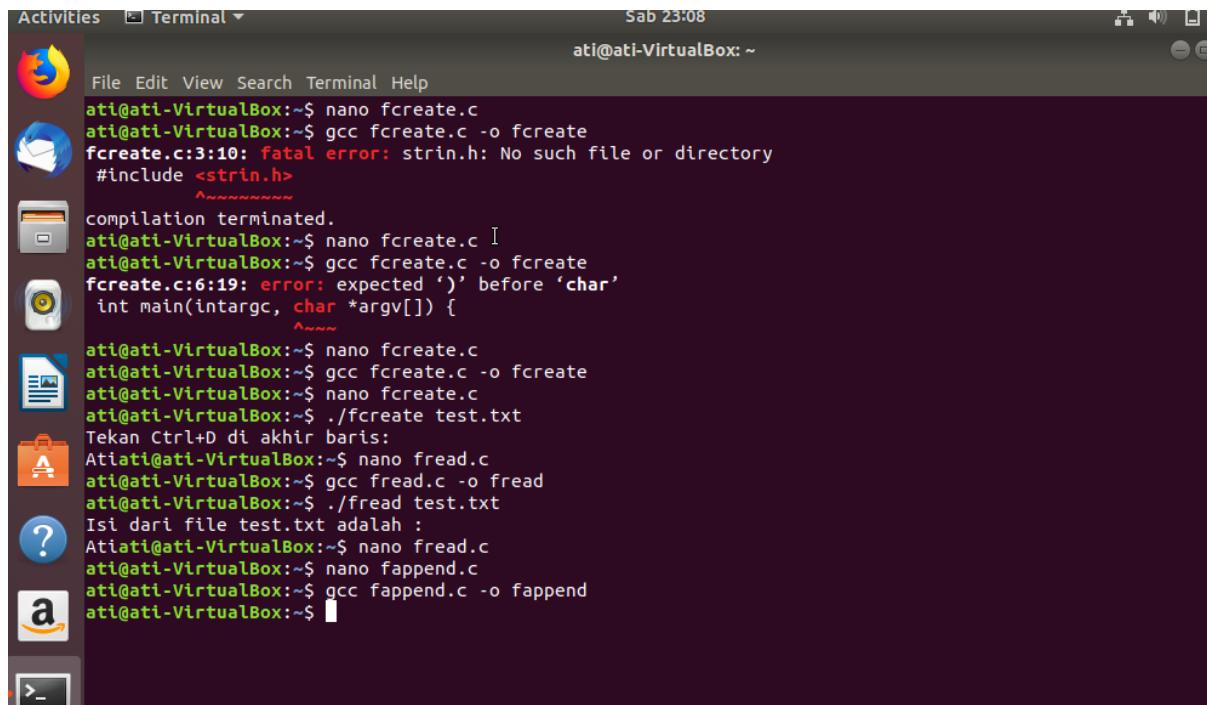
Code



```
Activities Terminal Sab 23:10
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);
    }
    printf("Isi dari file %s adalah : \n", argv[1]);
    while(read(fd, buf, sizeof(buf)) > 0)
        printf("%s", buf);
    close(fd);
}
```

Cara mengecek kesalahan

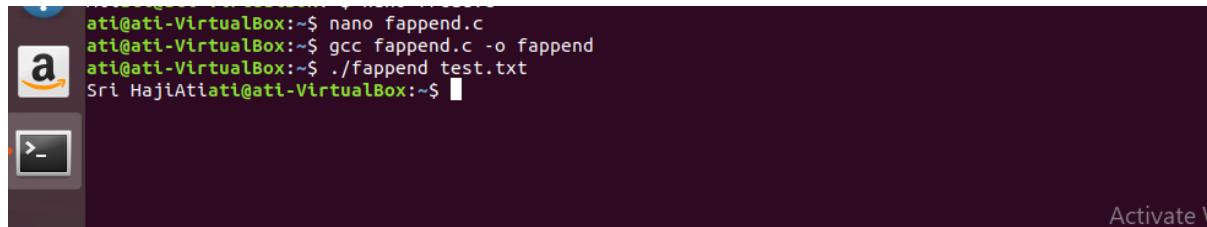


A screenshot of a Linux desktop environment showing a terminal window titled "Terminal". The terminal window has a dark background and contains the following text:

```
Sab 23:08  
ati@ati-VirtualBox: ~  
  
File Edit View Search Terminal Help  
ati@ati-VirtualBox:~$ nano fcreate.c  
ati@ati-VirtualBox:~$ gcc fcreate.c -o fcreate  
fcreate.c:3:10: fatal error: strin.h: No such file or directory  
#include <strin.h>  
^~~~~~  
compilation terminated.  
ati@ati-VirtualBox:~$ nano fcreate.c  
ati@ati-VirtualBox:~$ gcc fcreate.c -o fcreate  
fcreate.c:6:19: error: expected ')' before 'char'  
int main(int argc, char *argv[]) {  
    ^~~~  
ati@ati-VirtualBox:~$ nano fcreate.c  
ati@ati-VirtualBox:~$ gcc fcreate.c -o fcreate  
ati@ati-VirtualBox:~$ nano fcreate.c  
ati@ati-VirtualBox:~$ ./fcreate test.txt  
Tekan Ctrl+D di akhir baris:  
Atiati@ati-VirtualBox:~$ nano fread.c  
ati@ati-VirtualBox:~$ gcc fread.c -o fread  
ati@ati-VirtualBox:~$ ./fread test.txt  
Isi dari file test.txt adalah :  
Atiati@ati-VirtualBox:~$ nano fread.c  
ati@ati-VirtualBox:~$ nano fappend.c  
ati@ati-VirtualBox:~$ gcc fappend.c -o fappend  
ati@ati-VirtualBox:~$
```

Ketik ./fappen test.txt.

disini kita bisa menambah isi file.disini saya menambahkan “Sri HajiAti” lalu tekan Ctrl+D maka hasil akan muncul seperti gambar dibawah ini



A screenshot of a Linux desktop environment showing a terminal window titled "Terminal". The terminal window has a dark background and contains the following text:

```
ati@ati-VirtualBox:~$ nano fappend.c  
ati@ati-VirtualBox:~$ gcc fappend.c -o fappend  
ati@ati-VirtualBox:~$ ./fappend test.txt  
Sri HajiAtiati@ati-VirtualBox:~$
```

MODUL 10

1.Code Program list.c

A screenshot of a Linux desktop environment. At the top is a dark grey header bar with the text "Activities Terminal" and "Min 01:11". Below it is a terminal window titled "GNU nano 2.9.3" with the command "list.c" running. The code in "list.c" is as follows:

```
#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++)
            if(namelist[i]->d_name[0] != '.')
                printf("%-20s", namelist[i]->d_name);
}
```

The desktop interface includes a dock on the left with icons for a browser, file manager, terminal, and system settings. A vertical dock on the right shows "Activate" and "Go to Settings".

Gcc list.c -o list untuk Mengecek kesalahan pada code list.c

A screenshot of a Linux desktop environment. At the top is a dark grey header bar with the text "Activities Terminal" and "Min 01:13". Below it is a terminal window titled "atি@ati-VirtualBox:~\$". The user runs "gcc list.c -o list" and receives the following warning:

```
list.c: In function 'main':
list.c:7:2: warning: implicit declaration of function 'getcwd'; did you mean 'getw'? [-Wimplicit-function-declaration]
    getcwd(pathname);           ^
    ^~~~~~
    getw
atি@ati-VirtualBox:~$
```

The desktop interface includes a dock on the left with icons for a browser, file manager, terminal, and system settings. A vertical dock on the right shows "Activate" and "Go to Settings".

At the bottom of the screen, a file list is displayed:

```
Desktop      Documents      Downloads      Music      Pictures      Publ
ic          Templates      Tio.txt       Videos      dirlist      copy
copy.c      del           del.c        exec.c     fappend    fappend.c
examples.desktop  exec        fork         fork.c    mygrep     fread
fcreate     fcreate.c    list.c      list.c.save   wait      mygr
fread.c    stat          stat.c     test.txt    mygrep     wait.c
ep.c
```

2. Code Program mygrep.c



mygrep.c

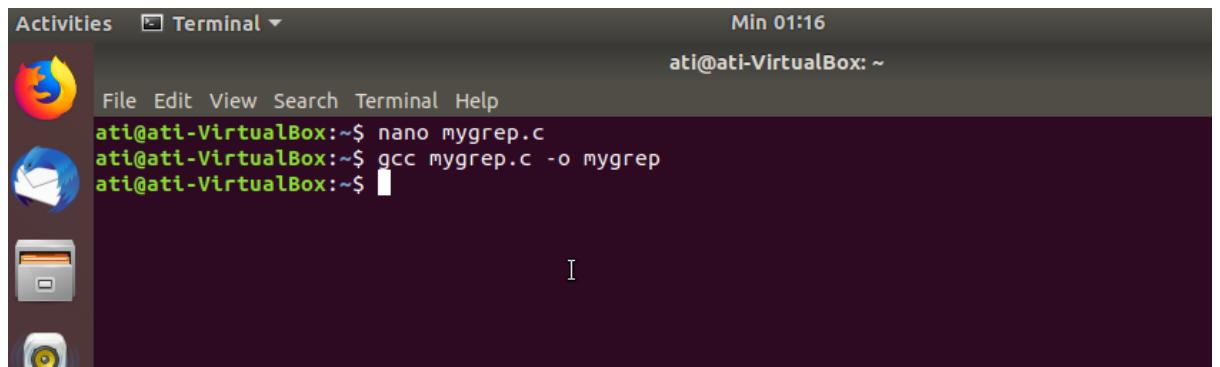
```
include <stdio.h>
#include <string.h>
#include <stdlib.h>
int main(int argc,char *argv[])
{
    FILE *fd;
    char str[100];
    char c;
    int i, flag, j, m, k;
    char temp[30];

    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 55 lines ]
            }
        }
    }
}
```

Gcc mygrep.c -o list untuk Mengecek kesalahan pada code mygrep



Activities Terminal ▾ Min 01:16
ati@ati-VirtualBox: ~

```
File Edit View Search Terminal Help
ati@ati-VirtualBox:~$ nano mygrep.c
ati@ati-VirtualBox:~$ gcc mygrep.c -o mygrep
ati@ati-VirtualBox:~$
```

3.Code Program Copy

Untuk menyalin file yang kita inginkan



The screenshot shows a terminal window titled "copy.c" with the following C code:

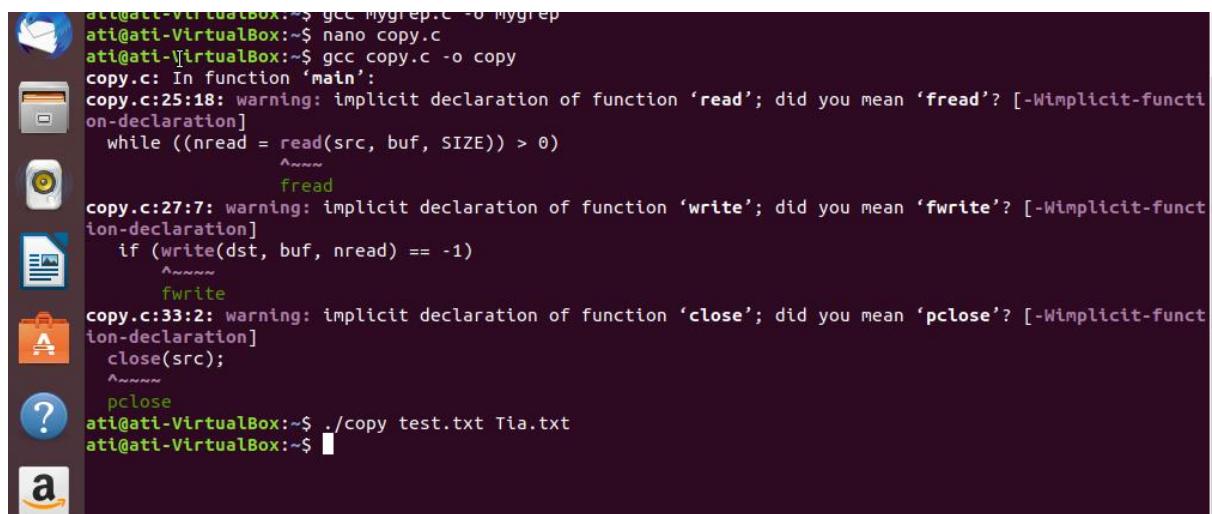
```
GNU nano 2.9.3
copy.c

#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 -o copy\n");
        printf("Usage: ./copy <filename> <namefile> \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 35 lines ]
```

At the bottom right of the terminal window, there are two buttons: "Activate W" and "Go to Settings".

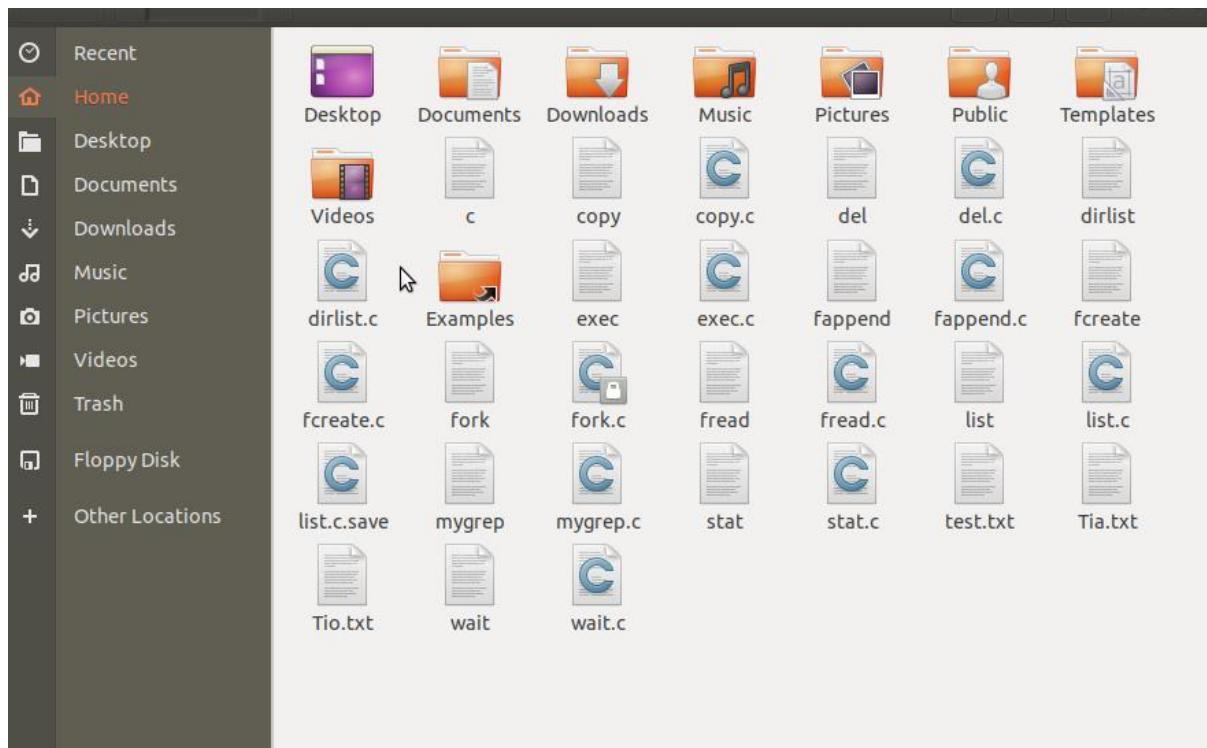
Disini saya ingin meng copy file Tia pada file Tia.txt



The screenshot shows a terminal window with the following command history:

```
ati@ati-VirtualBox:~$ gcc mygrep.c -o mygrep
ati@ati-VirtualBox:~$ nano copy.c
ati@ati-VirtualBox:~$ gcc copy.c -o copy
copy.c: In function 'main':
copy.c:25:18: warning: implicit declaration of function 'read'; did you mean 'fread'? [-Wimplicit-function-declaration]
    while ((nread = read(src, buf, SIZE)) > 0)
                  ^
copy.c:27:7: warning: implicit declaration of function 'write'; did you mean 'fwrite'? [-Wimplicit-function-declaration]
        if (write(dst, buf, nread) == -1)
                  ^
copy.c:33:2: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
        close(src);
                  ^
pclose
ati@ati-VirtualBox:~$ ./copy test.txt Tia.txt
ati@ati-VirtualBox:~$
```

Maka file Tia akan tersalin pada File document

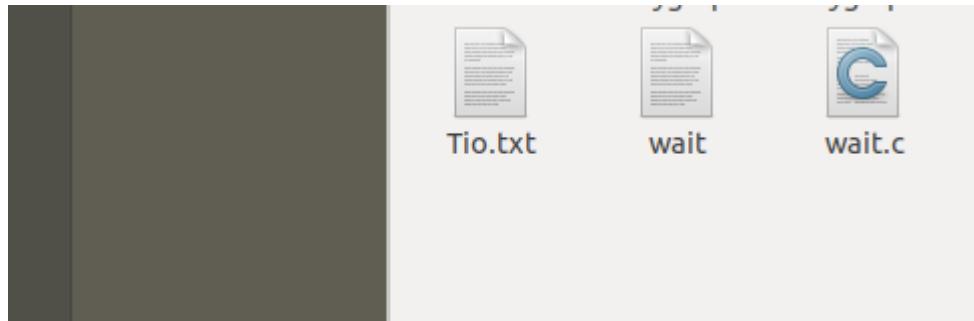


4. Code Del.c

Berfungsi untuk menghapus file yang kita inginkan

```
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]);
}
```

Disini saya ingin Menghapus File Tio.txt yang sudah saya buat sebelumnya.



Caranya adalah:

```
Activities Terminal Min 01:24
ati@ati-VirtualBox: ~
File Edit View Search Terminal Help
ati@ati-VirtualBox:~$ nano del.c
ati@ati-VirtualBox:~$ gcc del.c -o del
del.c: In function 'main':
del.c:16:3: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
    close(fd);
    ^~~~~
pclose
del.c:17:3: warning: implicit declaration of function 'unlink'; did you mean 'unix'? [-Wimplicit-function-declaration]
    unlink(argv[1]);
    ^~~~~
unix
ati@ati-VirtualBox:~$ ./del Tio.txt
ati@ati-VirtualBox:~$
```

A screenshot of a terminal window titled 'Terminal'. The window shows a command-line session. The user first creates a C source file 'del.c' using 'nano', then compiles it with 'gcc' to produce an executable 'del'. The terminal then runs the executable 'del' with the argument 'Tio.txt'. The output shows the file 'Tio.txt' was successfully deleted.

File Tia akan Terhapus setelah melaksanakan perintah diatas

