

# **LAPORAN**

# **PRAKTIKUM**

# **SISTEM OPERASI**

**Disusun Oleh :**  
**Fitri Cahya Kusumawati**  
**[L200170110]**

**TAHUN AJARAN 2017/2018**  
**UNIVERSITAS MUHAMMADIYAH**  
**SURAKARTA**

## MODUL 1

1. Menggunakan fungsi DIR untuk mengecek apakah file tertentu terdapat di directory
2. Kemudian mengetik “setpath” untuk memunculkan folder LAB
3. Lalu mengetik “Notepad.asm” untuk memunculkan file yang terdapat pada folder LAB , akan tampil pada Notepad

Microsoft Windows [Version 10.0.14393]  
(c) 2016 Microsoft Corporation. All rights reserved.  
C:\Users\USER>cd C:/  
C:\>DIR  
Volume in drive C is 10 OS  
Volume Serial Number is B642-AA5B  
Directory of C:/  
16/07/2016 18.00 <DIR> CDR  
28/12/2017 07.09 <DIR> Games  
02/09/2017 11.41 <DIR> GTA San Andreas  
15/07/2016 18.52 7.918 history.js  
02/09/2017 11.03 <DIR> Intel  
12/08/2018 07.01 <DIR> KMPlayer  
15/09/2018 11.33 <DIR> OS  
16/07/2016 18.47 <DIR> PerfLogs  
13/03/2018 13.07 <DIR> Program Files  
22/05/2018 21.19 <DIR> Program Files (x86)  
13/12/2017 21.45 <DIR> Python27  
15/07/2016 18.47 5.640 rb\_config.js  
15/07/2016 18.42 <DIR> Users  
03/09/2018 20.25 <DIR> Windows  
15/07/2016 18.52 13.854 WPI\_Log.txt  
24/03/2018 11.55 <DIR> xampp  
3 File(s) 27.412 bytes  
13 Dir(s) 44.742.610.944 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

boot.asm - Notepad  
File Edit Format View Help  
; \*\*\*\*\*  
; LAB-1 : boot-strap loader - real mode  
; untuk memindahkan file OS dari floppy disk format DOS FAT12  
;\*\*\*\*\*  
;  
; atur mode kerja 16 bit (real-mode)  
[BITS 16]  
;  
; Menentukan lokasi awal dari program  
[ORG 0x0000]  
;  
; loncat ke label START  
jmp START  
;  
; Keterangan format floppy disk format FAT12  
OEM\_ID db "QUASI-OS"  
BytesPerSector dw 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  
NumHeads dw 0x0002  
HiddenSectors dd 0x00000000  
TotalSectorsLarge dd 0x00000000  
DriveNumber db 0x00  
Flags db 0x00  
Signature db 0x29  
VolumeID dd 0xFFFFFFFF  
VolumeLabel db "QUASI BOOT"  
SystemID db "FAT12 "

4. Ketik “Notepad Makefile” untuk membuat file di Notepad berisikan fungsi boot yang memunculkan sebuah fungsi untuk mengcopy file byte dari file satu ke file yang lain yaitu file floppya.img

13/12/2017 21.45 <DIR> Python27  
15/07/2016 18.47 5.640 rb\_config.js  
15/07/2016 18.42 <DIR> Users  
03/09/2018 20.25 <DIR> Windows  
15/07/2016 18.52 13.854 WPI\_Log.txt  
24/03/2018 11.55 <DIR> xampp  
3 File(s) 27.412 bytes  
13 Dir(s) 44.742.610.944 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

5. Ketik “del floppya.img” untuk menghapus file floppya.img dalam folder LAB1

```
C:\OS\LAB\LAB1>notepad Makefile
C:\OS\LAB\LAB1>dir
Volume in drive C is 10_OS
Volume Serial Number is B642-AA5B

Directory of C:\OS\LAB\LAB1

15/09/2018 11.33 <DIR> .
15/09/2018 11.33 <DIR> ..
11/09/2017 10.48 8.358 bochsout.txt
15/12/2008 16.17 1.628 bochsrc.bxrc
17/10/2016 14.36 14.339 boot.asm
17/10/2016 14.50 512 boot.bin
11/09/2017 10.37 512 boots.bin
16/09/2007 16.22 18.432 bximage.exe
11/09/2017 10.21 10.321.920 c.img
26/02/2007 20.50 342.016 dd.exe
15/12/2008 00.47 78 dosfp.bat
11/09/2017 10.46 1.474.560 floppya.img
14/12/2008 11.45 7.966 kernel.asm
15/12/2008 16.21 227 Makefile
15/12/2008 12.20 44 s.bat
31/01/2000 05.00 261.120 tdump.exe
           14 File(s) 12.451.712 bytes
           2 Dir(s) 44.828.516.352 bytes free

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

6. Lalu file floppya.img akan terhapus

7. Ketik “bximage” untuk membuat boot disk

8. Lalu ketik “fd” untuk menampilkan pilihan size image

```
C:\OS\LAB\LAB1>dir
Volume in drive C is 10_OS
Volume Serial Number is B642-AA5B

Directory of C:\OS\LAB\LAB1

15/09/2018 12.27 <DIR> .
15/09/2018 12.27 <DIR> ..
11/09/2017 10.48 8.358 bochsout.txt
15/12/2008 16.17 1.628 bochsrc.bxrc
17/10/2016 14.36 14.339 boot.asm
17/10/2016 14.50 512 boot.bin
11/09/2017 10.37 512 boots.bin
16/09/2007 16.22 18.432 bximage.exe
11/09/2017 10.21 10.321.920 c.img
26/02/2007 20.50 342.016 dd.exe
15/12/2008 00.47 78 dosfp.bat
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) 44.830.007.296 bytes free

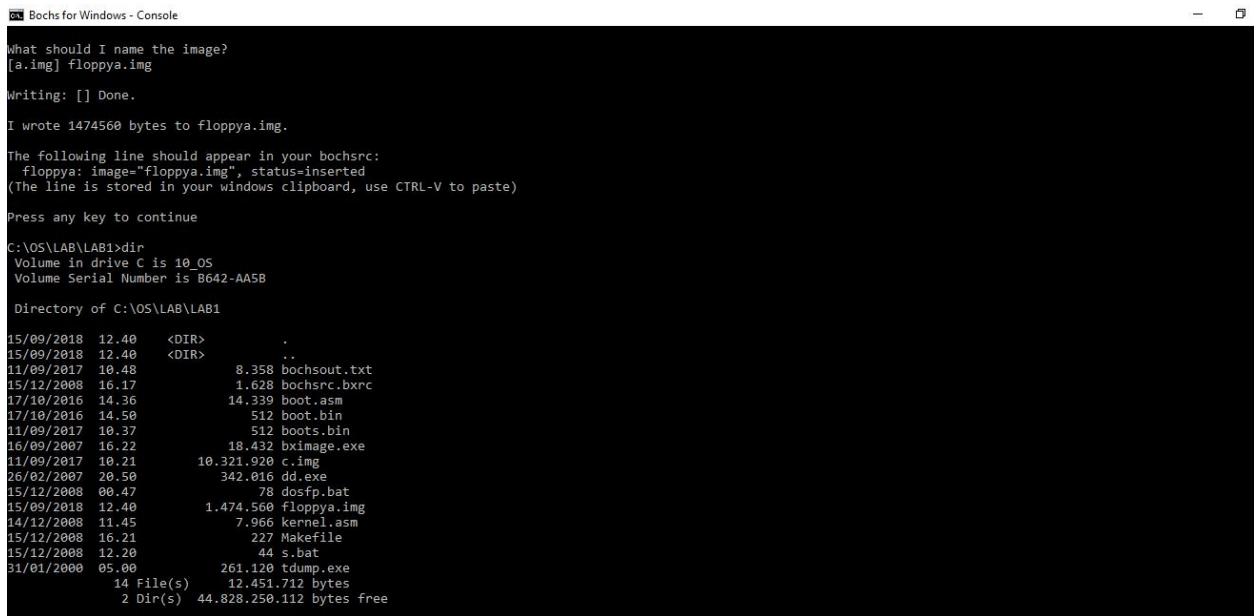
C:\OS\LAB\LAB1>bximage
=====
          bximage
          Disk Image Creation Tool for Bochs
$Id: bximage.c,v 1.32 2006/06/16 07:29:33 vruppert Exp $

=====
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]
```

9. Kemudian ketik "floppya.img" agar kembali masuk dalam folder LAB
10. Ketik "dir" agar mengetahui apakah file floppya.img sudah terdapat dalam file LAB atau belum



```

what should I name the image?
[a.img] floppya.img
Writing: [] Done.

I wrote 1474560 bytes to floppya.img.

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

Press any key to continue

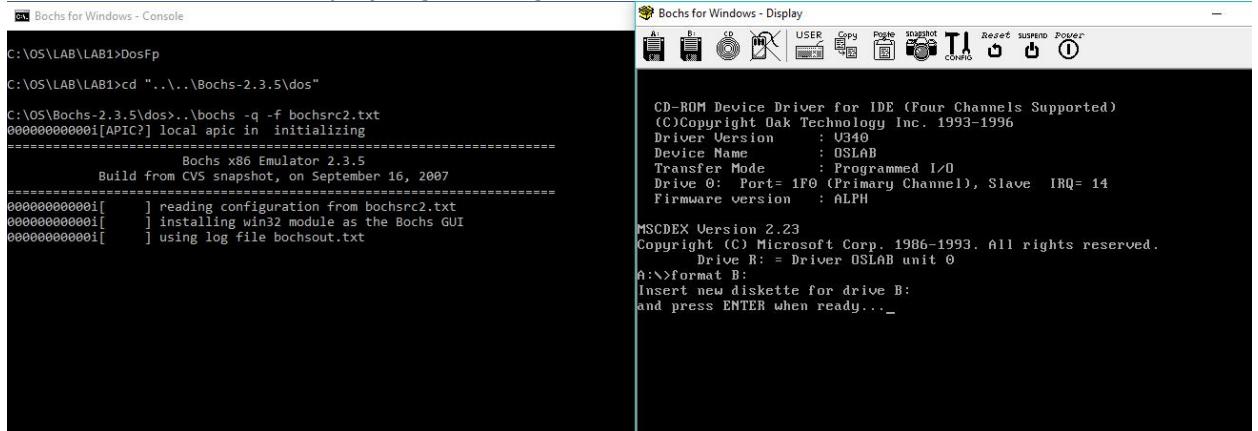
C:\OS\LAB\LAB1>dir
 Volume in drive C is 10_0S
 Volume Serial Number is B642-AA5B

 Directory of C:\OS\LAB\LAB1

15/09/2018 12.40    <DIR>      .
15/09/2018 12.40    <DIR>      ..
11/09/2017 10.48     8.358 bochsout.txt
15/12/2008 16.17     1.628 bochssrc.bxrc
17/10/2016 14.36     14.339 boot.asm
17/10/2016 14.50      512 boot.bin
11/09/2017 10.37      512 boots.bin
16/09/2007 16.22     18.432 bximage.exe
11/09/2017 10.21     10.321.920 c.img
26/02/2007 20.50     342.016 dd.exe
15/12/2008 00.47      78 dosfp.bat
15/09/2018 12.40     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)   44.828.250.112 bytes free

```

### 11. Lalu ketik "DosFp" yang berfungsi untuk bochs for windows



```

Bochs for Windows - Display

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

MSCDEX Version 2.23
Copyright (C) Microsoft Corp. 1986-1993. All rights reserved.
Drive B: = Driver USLAB unit 0
A:>>format B:
Insert new diskette for drive B:
and press ENTER when ready...-

```

12. Ketik "dd if=floppya.img of=boots.bin count=1" untuk menyalin byte data dari file "floppya.img" kedalam file boot.bin sebanyak 1 sektor
13. Ketik "debug boots.bin" untuk memindai data file boot.bin ke dalam memory kerja debug

```

C:\ Command Prompt
# In bx_win32_gui_c::exit(void)
=====
Bochs is exiting with the following message:
[NGUI ] POWER button turned off.
=====

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab1"
C:\OS\LAB\LAB1>dd if=floppya.img of=boots.bin count=1
rawrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\LAB1>dir
Volume in drive C is 10_05
Volume Serial Number is B642-AA5B

Directory of C:\OS\LAB\LAB1

15/09/2018 12.40  <DIR> .
15/09/2018 12.40  <DIR> ..
11/09/2017 10.48     8.358 bochsout.ttxt
15/12/2008 16.17     1.628 bochsrc.bxrc
17/10/2016 14.36    14.339 boot.asm
17/10/2016 14.50      512 boot.bin
15/09/2018 12.50      512 boots.bin
16/09/2007 16.22    18.432 bximage.exe
11/09/2017 16.21    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 12.40    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)  44.826.607.616 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>

C:\ OS\LAB\LAB1>Bochs for Windows - Console
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 .....

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

```

- Lalu ketik “s” untuk menampilkan windows boot for windows display yang sedang melakukan proses booting namun tidak berhasil karena tidak menemukan diskboot

```

C:\OS\LAB\LAB1>s
C:\OS\LAB\LAB1>..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
0000000000i [APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
0000000000i[ ] reading configuration from bochsrc.bxrc
0000000000i[ ] installing win32 module as the Bochs GUI
0000000000i[ ] using log file bochfout.txt

```

15. Ketik “DosFp” dan akan muncul bochs for windows-display lalu masukan perintah “format B:/S” lalu enter

```

C:\OS\LAB\LAB1>s
C:\OS\LAB\LAB1>..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
0000000000i [APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
0000000000i[ ] reading configuration from bochsrc.bxrc
0000000000i[ ] installing win32 module as the Bochs GUI
0000000000i[ ] using log file bochfout.txt
# In bx_win32_gui_c:_exit(void)!

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

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
0000000000i [APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
0000000000i[ ] reading configuration from bochsrc2.txt
0000000000i[ ] installing win32 module as the Bochs GUI
0000000000i[ ] using log file bochfout.txt

```

16. Lalu ketik “s” untuk menampilkan proses booting pada bochs for windows-Display  
Jika benar hasil terakhir akan sama di modul praktikum.

```

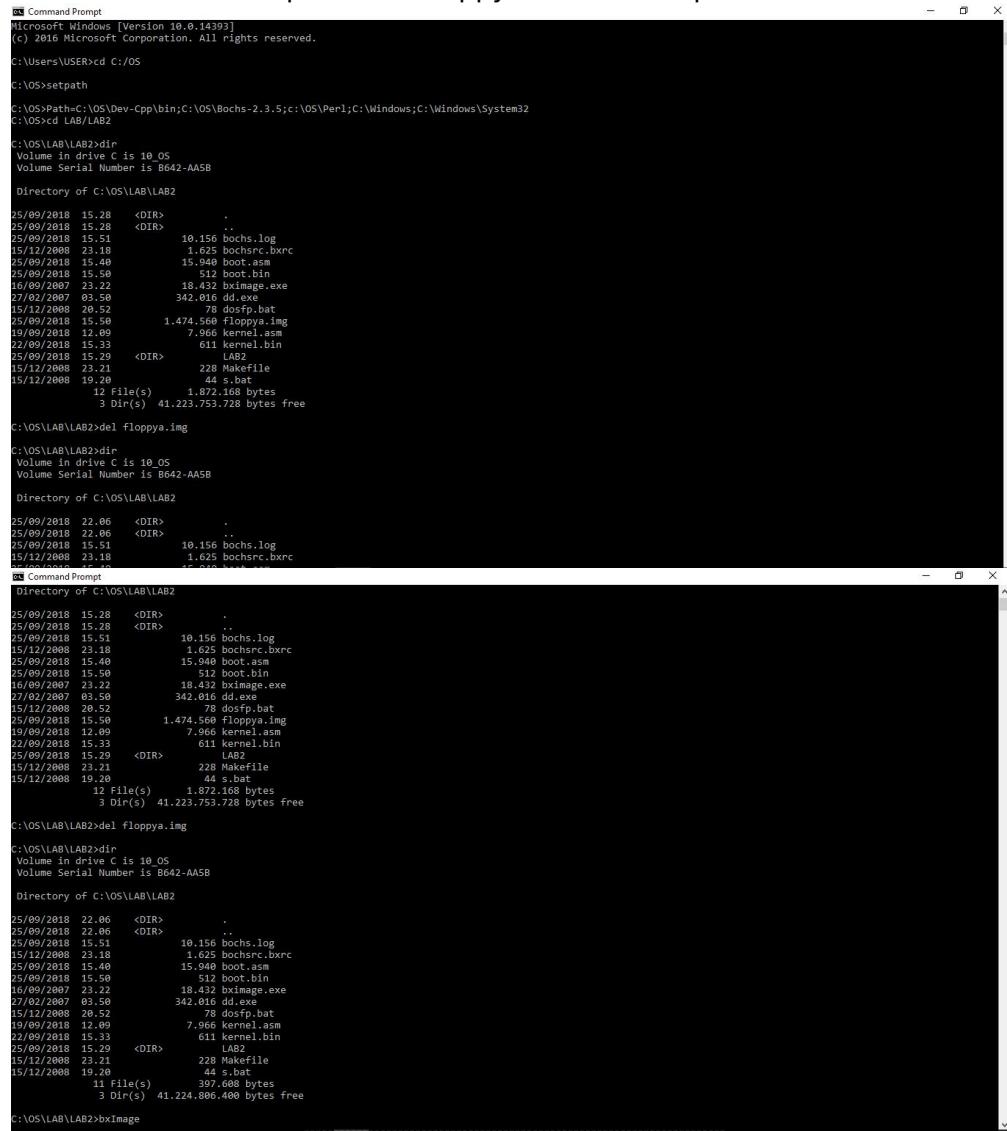
C:\OS\LAB\LAB1>DosFp
C:\OS\LAB\LAB1>cd "C:\os\lab\lab1"
C:\OS\LAB\LAB1>s
C:\OS\LAB\LAB1>..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
0000000000i [APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
0000000000i[ ] reading configuration from bochsrc.bxrc
0000000000i[ ] installing win32 module as the Bochs GUI
0000000000i[ ] using log file bochfout.txt
# In bx_win32_gui_c:_exit(void)!

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


```

## MODUL 2

1. Ketik "cd C:/OS" dan jalankan perintah "setpath", terakhir ketik "cd LAB/LAB2" dilanjutkan dengan perintah "dir"
2. Ketik "del floppya.img" untuk mengilangkan file floppya.img, lalu ketik "dir" untuk memastikan apakah file floppya sudah terhapus atau belum



```
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\USER>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 LAB2
C:\OS\LAB\LAB2>dir
Volume in drive C is 10_OS
Volume Serial Number is B642-AA5B

Directory of C:\OS\LAB\LAB2

25/09/2018 15:28 <DIR> .
25/09/2018 15:28 <DIR> ..
25/09/2018 15:51 10,156 bochs.log
15/12/2008 23:18 1,625 bochsrc.bxrc
25/09/2018 15:40 15,948 boot.asm
25/09/2018 15:50 512 boot.bin
16/09/2007 23:22 18,432 bximage.exe
25/09/2018 15:50 342,016 dd.exe
15/12/2008 20:52 78 dosfp.bat
25/09/2018 15:50 1,474,568 floppya.img
19/09/2018 12:00 7,966 kernel.asm
22/09/2018 15:33 611 kernel.bin
25/09/2018 15:29 <DIR> LAB2
15/12/2008 23:41 228 Makefile
15/12/2008 19:20 44 s.bat
12 File(s) 1,872,168 bytes
3 Dir(s) 41,223,753,728 bytes free

C:\OS\LAB\LAB2>del floppya.img
C:\OS\LAB\LAB2>dir
Volume in drive C is 10_OS
Volume Serial Number is B642-AA5B

Directory of C:\OS\LAB\LAB2

25/09/2018 22:06 <DIR> .
25/09/2018 22:06 <DIR> ..
25/09/2018 15:51 10,156 bochs.log
15/12/2008 23:18 1,625 bochsrc.bxrc
25/09/2018 15:40 15,948 boot.asm
25/09/2018 15:50 512 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
25/09/2018 15:50 1,474,568 floppya.img
19/09/2018 12:00 7,966 kernel.asm
22/09/2018 15:33 611 kernel.bin
25/09/2018 15:29 <DIR> LAB2
15/12/2008 23:21 228 Makefile
15/12/2008 19:20 44 s.bat
12 File(s) 1,872,168 bytes
3 Dir(s) 41,223,753,728 bytes free

C:\OS\LAB\LAB2>del floppya.img
C:\OS\LAB\LAB2>dir
Volume in drive C is 10_OS
Volume Serial Number is B642-AA5B

Directory of C:\OS\LAB\LAB2

25/09/2018 22:06 <DIR> .
25/09/2018 22:06 <DIR> ..
25/09/2018 15:51 10,156 bochs.log
15/12/2008 23:18 1,625 bochsrc.bxrc
25/09/2018 15:40 15,948 boot.asm
25/09/2018 15:50 512 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 12:00 7,966 kernel.asm
22/09/2018 15:33 611 kernel.bin
25/09/2018 15:29 <DIR> LAB2
15/12/2008 23:21 228 Makefile
15/12/2008 19:20 44 s.bat
11 File(s) 397,068 bytes
3 Dir(s) 41,224,806,400 bytes free

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

3. Ketik “bxImage” untuk menentukan file size

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

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

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

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

4. Ketik “dosfp” untuk memformat floppya.img dan mengisinya dengan sistem operasi DOS versi 7, dengan menge klik gambar floppy disk nomor dua dari kanan

```
C:\OS> Bochs for Windows - Console
$Id: bximage.c,v 1.32 2006/06/16 07:29:33 vruppert Exp $

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

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

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

Writing: [] Done.

I wrote 1474560 bytes to floppya.img.

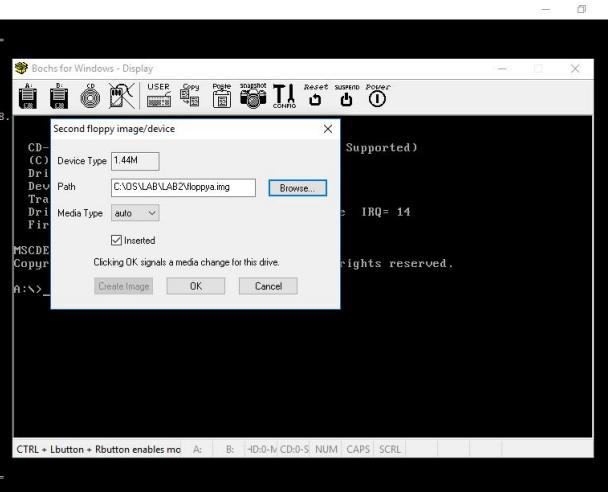
The following line should appear in your bochsrc:
  floppy: image="floppya.img", status=inserted
(The line is stored in your windows clipboard, use CTRL-V to paste)

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\dos>.\bochs -q -f bochsrc2.txt
0000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
0000000000i[    ] reading configuration from bochsrc2.txt
0000000000i[    ] installing win32 module as the Bochs GUI
0000000000i[    ] using log file bochsout.txt
# In bx_win32_gui_c::exit(void)
Bochs is exiting with the following message:
[NGUI ] POWER button turned off.
=====

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab2"

C:\OS\LAB\LAB2>5
C:\OS\LAB\LAB2>..\..\Bochs-2.3.5\bochs -q -f bochsrc.bxrc
0000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
0000000000i[    ] reading configuration from bochsrc.bxrc
0000000000i[    ] installing win32 module as the Bochs GUI
```



5. Ketik “S” untuk melakukan proses boot dengan disk boot yang berasal dari file floppya.img yang diletakan pada dirve A

```
I wrote 1474560 bytes to floppya.img.

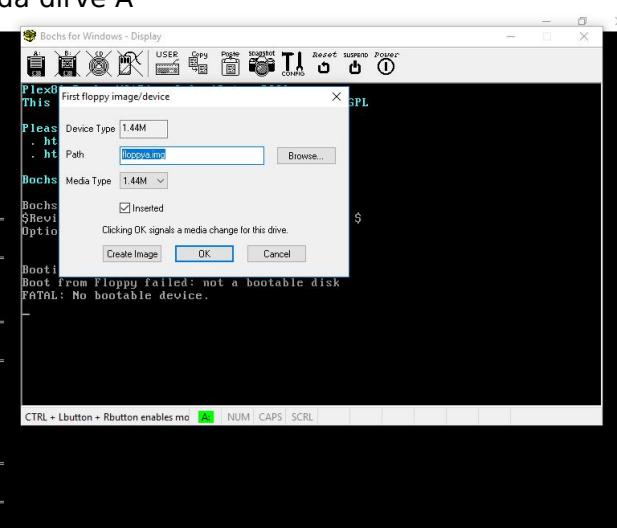
The following line should appear in your bochsrc:
  floppy: image="floppya.img", status=inserted
(The line is stored in your windows clipboard, use CTRL-V to paste)

Press any key to continue

C:\OS\LAB\LAB2>dosfp
C:\OS\LAB\LAB2>cd "..\..\Bochs-2.3.5\dos"
C:\OS\Bochs-2.3.5\dos>.\bochs -q -f bochsrc2.txt
0000000000i[    ] reading configuration from bochsrc2.txt
0000000000i[    ] installing win32 module as the Bochs GUI
0000000000i[    ] using log file bochsout.txt
# In bx_win32_gui_c::exit(void)
Bochs is exiting with the following message:
[NGUI ] POWER button turned off.
=====

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab2"

C:\OS\LAB\LAB2>5
C:\OS\LAB\LAB2>..\..\Bochs-2.3.5\bochs -q -f bochsrc.bxrc
0000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
0000000000i[    ] reading configuration from bochsrc.bxrc
0000000000i[    ] installing win32 module as the Bochs GUI
```



6. Kompilasi source code boot.asm dan memindah hasilnya ke bootsector floppya.img. pindah ke directory kerja LAB2 , lalu Ketik “make fp.disk”
7. Lalu ketik “S” untuk menjalankan booting

```

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab2"
C:\OS\LAB\LAB2>s

C:\OS\LAB\LAB2>...\\bochs -q -f bochsrc.bxrc
00000000000000000000000000000000[APIC?]
local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
00000000000000000000000000000000[ ] reading configuration from bochsrc.bxrc
00000000000000000000000000000000[ ] installing win32 module as the Bochs GUI
00000000000000000000000000000000[ ] using log file bochs.log
# In bx_win32_gui.c:exit(void)
=====
Bochs is exiting with the following message:
[NGUI ] POWER button turned off.
=====

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppya.img
rawrite dd for windows version 0.5.
Written by John Newdigin <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 -q -f bochsrc.bxrc
00000000000000000000000000000000[APIC?]
local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
00000000000000000000000000000000[ ] reading configuration from bochsrc.bxrc
00000000000000000000000000000000[ ] installing win32 module as the Bochs GUI
00000000000000000000000000000000[ ] using log file bochs.log

```

8. Lalu ketik “Notepad boot.asm”, cari loading kernel dan ganti dengan belajar membuat BOOTSTRAP-LOADER

```

C:\OS\LAB\LAB2>...\\bochs -q -f bochsrc.bxrc
00000000000000000000000000000000[APIC?]
local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
00000000000000000000000000000000[ ] reading configuration from bochsrc.bxrc
00000000000000000000000000000000[ ] installing win32 module as the Bochs GUI
00000000000000000000000000000000[ ] using log file bochs.log
# In bx_win32_gui.c:exit(void)

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

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin
dd if=boot.bin of=floppya.img
rawrite dd for windows version 0.5.
Written by John Newdigin <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 -q -f bochsrc.bxrc
00000000000000000000000000000000[APIC?]
local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
00000000000000000000000000000000[ ] reading configuration from bochsrc.bxrc
00000000000000000000000000000000[ ] installing win32 module as the Bochs GUI
00000000000000000000000000000000[ ] using log file bochs.log
# In bx_win32_gui.c:exit(void)

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

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

```

boot.asm - Notepad

Find what: Loading kernel

File Edit Format View Help

LAB-2 : boot-strap loader - real mode  
digunakan untuk memindahkan file OS/kernel  
dari floppy disk ke dalam RAM (memori kerja PC).

Mengalihpindah ke label START

jmp START

OEM\_ID db "MY -05"  
BytesPerSector dw 0x0200  
SectorsPerCluster db 0x01

Activate Windows  
Go to Settings to activate Windows.

9. Ketik "make kernel" untuk membuat file KERNEL.BIN, lalu jalankan perintah "dir"

```
Command Prompt
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.
=====

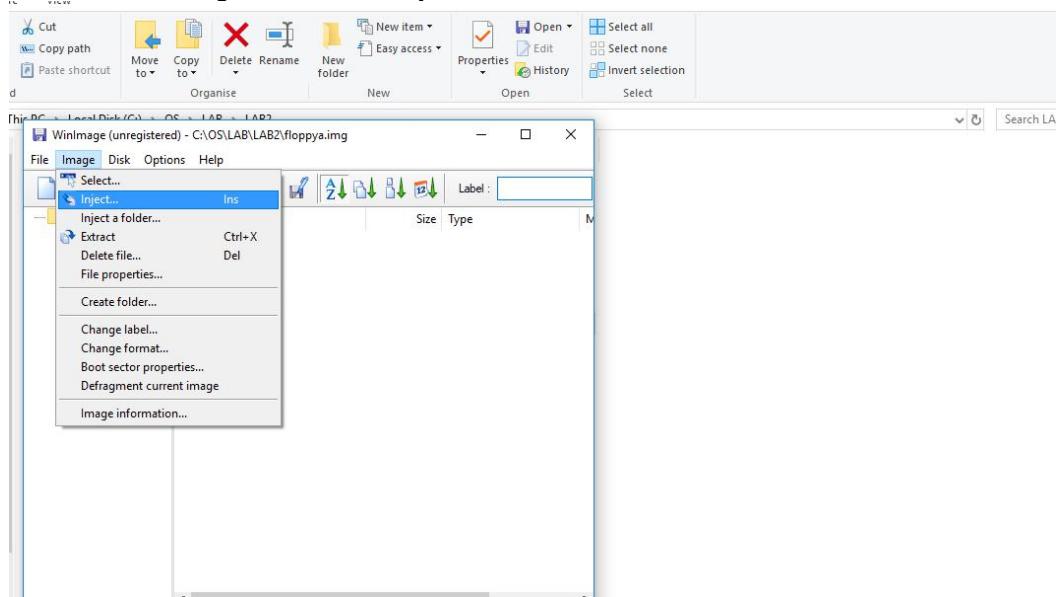
C:\OS\LAB\LAB2>make kernel
nasm kernel.asm -o kernel.bin -f bin

C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is E6E-E0100

Directory of C:\OS\LAB\LAB2

22/09/2018 14:50 <DIR> .
22/09/2018 14:50 <DIR> ..
22/09/2018 15:32 10,276 bochs.log
15/12/2008 23:18 1,625 bochsrc.bxrc
22/09/2018 15:25 15,922 boot.asm
22/09/2018 15:27 512 boot.bin
16/09/2007 23:22 18,432 bximage.exe
27/02/2007 03:50 342,016 dd.exe
15/12/2008 20:52 78 dosfp.bat
22/09/2018 15:27 1,474,568 floppya.img
19/09/2018 12:09 7,966 kernel.asm
22/09/2018 15:33 611 kernel.bin
15/12/2008 23:21 228 Makefile
15/12/2008 19:20 44 s.bat
12 File(s) 1,872,270 bytes
2 Dir(s) 173,572,395,008 bytes free
```

10. Memindahkan file "kernel.bin" kedalam file image "floppya.img", cari file floppya ayng terdapat pada directory C, lalu masukan kernel.bin pada window winImage klik menu inject cari kernel.bin lalu ok



## 11. Lalu ketik "S" untuk melihat booting

```

Bochs for Windows - Console
# In bx_win32_gui ::exit(void)
=====
Bochs is exiting with the following message:
[MGUI ] 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
15/09/2008 15:25 1.625 bochsrc.bxrc
22/09/2018 15:27 513 bochsrc.bin
16/09/2007 23:22 18.432 bximage.exe
27/02/2007 03:50 342.016 dd.exe
15/12/2008 20:52 78 dosfp.bat
22/09/2018 15:27 1.474.560 floppy.img
19/09/2018 12:09 7.066 kernel.asm
22/09/2018 15:38 611 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

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

```

## 12. Lalu modifikasi kernel.asm, lalu jalankan perintah "Notepad boot.asm", cari teks "Welcome to MY KERNEL", diganti dengan "Belajar membuat KERNEL", lalu save , kemudian ketik "S" untuk melihat booting

```

Bochs for Windows - Console
27/02/2008 03:58 342.016 dd.exe
22/09/2018 14:50 78 dosfp.bat
25/09/2018 16:38 1.474.560 floppy.img
19/09/2018 12:09 7.066 kernel.asm
25/09/2018 16:41 611 kernel.bin
15/12/2008 23:21 228 Makefile
15/12/2008 19:20 44 s.bat
12 File(s) 1.872.146 bytes
2 Dir(s) 171.509.050.912 bytes free

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_win32_gui ::exit(void)
=====
Bochs is exiting with the following message:
[MGUI ] POWER button turned off.

=====
C:\OS\LAB\LAB2>notepad kernel.asm
C:\OS\LAB\LAB2>make kernel
nasm kernel.asm -o kernel.bin -f bin

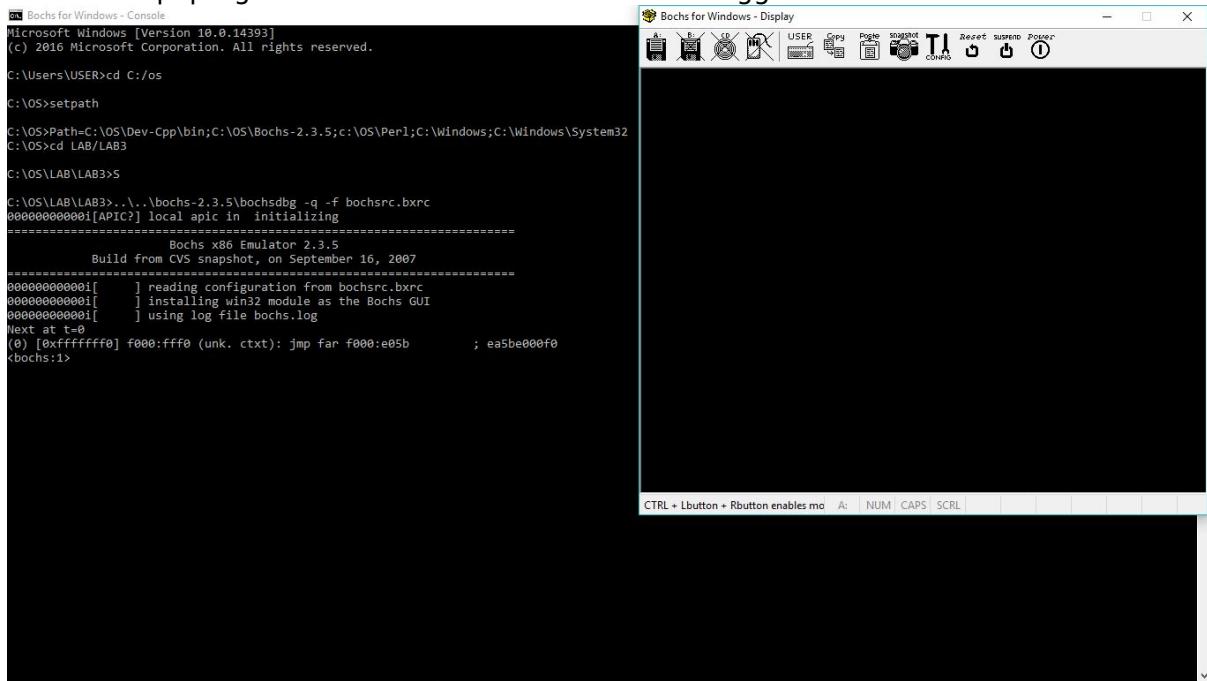
C:\OS\LAB\LAB2>

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

```

## MODUL 3

1. Ketik "S" layar akan gelap, tidak terjadi apapun , tidak terjadi kesalahan tetapi program dihentikan oleh "Bochs" menunggu masukan dari user

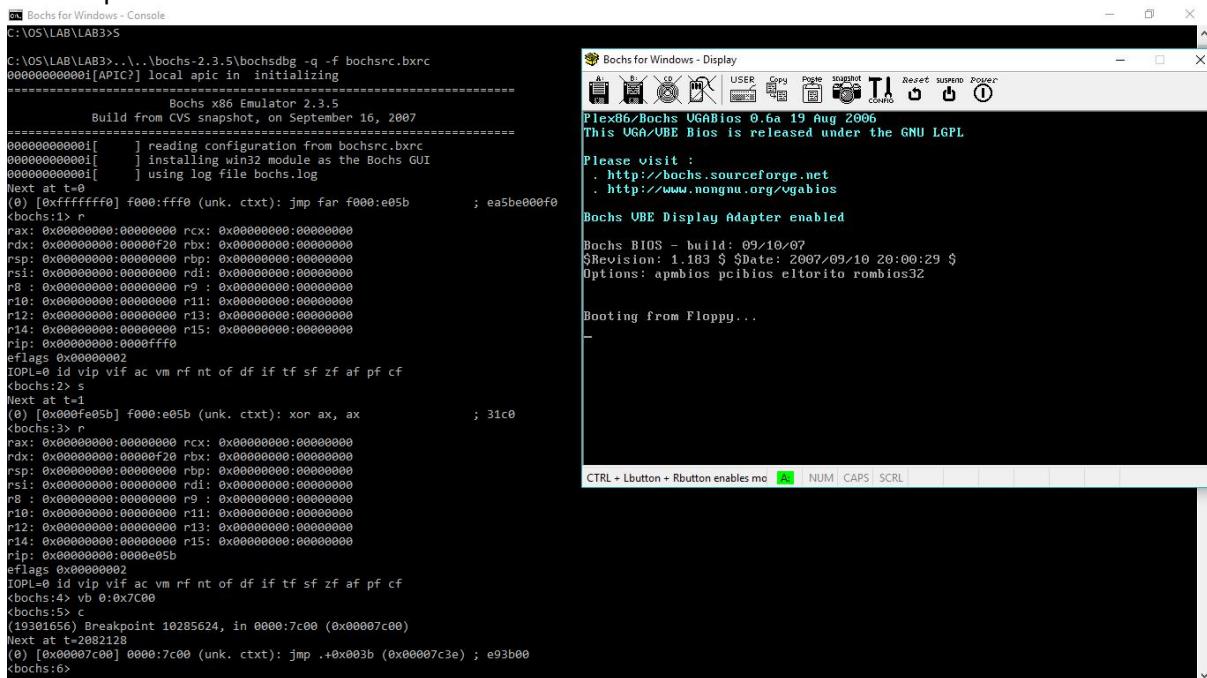


```
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\USER>cd C:/os
C:\OS>setpath
C:\OS>Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;c:\Windows;C:\Windows\System32
C:\OS>cd LAB/LAB3
C:\OS\LAB\LAB3>S

C:\OS\LAB\LAB3>..\..\\bochs-2.3.5\bochsrc -q -f bochsrc.bxrc
000000000001[APIC] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc.bxrc
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochs.log
Next at t=0
(e) [0xfffffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:>
```

2. Ketik "r" untuk melihat isi register CS dan IP
3. Lalu ketik "s", lalu "r"
4. Kemudian ketik "vb 0:0x7C00" perintah ini membuat titik pemberhentian (halte) pada alamat 0000:7C00
5. Lalu ketik "c" perintah ini meneruskan (Continue) prosesnya sampai ke titik pemberhentian



```
Plex86/Bochs VGA/Bios 0.6a 19 Aug 2006
This VGA/UVE Bios is released under the GNU GPL

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

Bochs UBE Display Adapter enabled

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

Booting from Floppy...
```

```
C:\OS\LAB\LAB3>S

C:\OS\LAB\LAB3>..\..\\bochs-2.3.5\bochsrc -q -f bochsrc.bxrc
000000000001[APIC] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc.bxrc
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochs.log
Next at t=0
(e) [0xfffffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:00000f20 rbx: 0x00000000:00000000
rsp: 0x00000000:00000000 rbp: 0x00000000:00000000
rsi: 0x00000000:00000000 rdi: 0x00000000:00000000
rb: 0x00000000:00000000 r9 : 0x00000000:00000000
r10: 0x00000000:00000000 r11: 0x00000000:00000000
r12: 0x00000000:00000000 r13: 0x00000000:00000000
r14: 0x00000000:00000000 r15: 0x00000000:00000000
rip: 0x0000fe005b
eflags: 0x00000002
IOPL=0 id vip vif ac vm rf nt df if tf sf zf af pf cf
<bochs:>2> s
Next at t=1
(e) [0x000fe005b] f000:e05b (unk. ctxt): xor ax, ax ; 31c0
<bochs:>3> 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
rb: 0x00000000:00000000 r9 : 0x00000000:00000000
r10: 0x00000000:00000000 r11: 0x00000000:00000000
r12: 0x00000000:00000000 r13: 0x00000000:00000000
r14: 0x00000000:00000000 r15: 0x00000000:00000000
rip: 0x0000fe005b
eflags: 0x00000002
IOPL=0 id vip vif ac vm rf nt df if tf sf zf af pf cf
<bochs:>4> vb 0:0x7C00
<bochs:>5> c
(19301656) Breakpoint 10285624, in 0000:7c00 (0x000007c00)
Next at t=2082128
(e) [0x000007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x000007c3e) ; e93b00
<bochs:>
```

6. Lalu ketik "s" sebanyak 10 kali dan bandingkan dengan teks yang terdapat pada boot.asm, jika terjadi ketidak cocokan maka hentikan dengan ketik "q"

The screenshot shows two windows. The top window is 'Bochs for Windows - Console' showing assembly code with registers and memory dump. The bottom window is 'boot - Notepad' showing assembly code for the BIOS boot process.

```

Bochs for Windows - Console
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:>4> vb 0x07C00
<bochs:>5> c
(19301656) Breakpoint 10285624, in 0000:7c00 (0x00007c00)
Next at t=2082128
(8) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x00007c3e) ; e93b00
<bochs:>6> s
Next at t=2082129
(8) [0x00007c3e] 0000:7c3e (unk. ctxt): cli ; fa
Next at t=2082130
(8) [0x00007c3f] 0000:7c3f (unk. ctxt): mov ax, 0x07c0 ; b8c007
<bochs:>8> s
Next at t=2082131
(8) [0x00007c42] 0000:7c42 (unk. ctxt): mov ds, ax ; 8ed8
<bochs:>9> s
Next at t=2082132
(8) [0x00007c44] 0000:7c44 (unk. ctxt): mov es, ax ; 8ec0
<bochs:>10> s
Next at t=2082133
(8) [0x00007c46] 0000:7c46 (unk. ctxt): mov fs, ax ; 8ee0
<bochs:>11> s
Next at t=2082134
(8) [0x00007c48] 0000:7c48 (unk. ctxt): mov gs, ax ; 8ee8
<bochs:>12> s
Next at t=2082135
(8) [0x00007c4a] 0000:7c4a (unk. ctxt): mov ax, 0x0000 ; b80000
<bochs:>13> s
Next at t=2082136
(8) [0x00007c4d] 0000:7c4d (unk. ctxt): mov ss, ax ; 8ed0
<bochs:>14> s
Next at t=2082137
(8) [0x00007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xffff ; bcffff
<bochs:>15> s
Next at t=2082138
(8) [0x00007c52] 0000:7c52 (unk. ctxt): sti ; fb
<bochs:>16>

Bochs for Windows - Console
ext at t=2082128
(8) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x00007c3e) ; e93b00
<bochs:>6> s
ext at t=2082129
(8) [0x00007c3e] 0000:7c3e (unk. ctxt): cli ; fa
<bochs:>7> s
ext at t=2082130
(8) [0x00007c3f] 0000:7c3f (unk. ctxt): mov ax, 0x07c0 ; b8c007
<bochs:>8> s
ext at t=2082131
(8) [0x00007c42] 0000:7c42 (unk. ctxt): mov ds, ax ; 8ed8
<bochs:>9> s
ext at t=2082132
(8) [0x00007c44] 0000:7c44 (unk. ctxt): mov es, ax ; 8ec0
<bochs:>10> s
ext at t=2082133
(8) [0x00007c46] 0000:7c46 (unk. ctxt): mov fs, ax ; 8ee0
<bochs:>11> s
ext at t=2082134
(8) [0x00007c48] 0000:7c48 (unk. ctxt): mov gs, ax ; 8ee8
<bochs:>12> s
ext at t=2082135
(8) [0x00007c4a] 0000:7c4a (unk. ctxt): mov ax, 0x0000 ; b80000
<bochs:>13> s
ext at t=2082136
(8) [0x00007c4d] 0000:7c4d (unk. ctxt): mov ss, ax ; 8ed0
<bochs:>14> s
ext at t=2082137
(8) [0x00007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xffff ; bcffff
<bochs:>15> s
ext at t=2082138
(8) [0x00007c52] 0000:7c52 (unk. ctxt): sti ; fb
<bochs:>16>

boot - Notepad
File Edit Format View Help
=====
;(3) Blok BOOT CODE
=====
START:
; Mengatur lokasi kode program pada alamat 7C00:0000, dan mengatur REGISTER SEGMENT
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 'msg'
    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 32 byte
    mul   WORD [MaxRootEntries] ; Total lokkasi direktori 32 x 224
    div   WORD [BytesPerSector] ; lokasi sektor yang digunakan untuk
    xchg  ax, cx ; Ukuran 'root direktori' = 1

; menghitung jumlah sektor yang digunakan untuk menyimpan FAT
; untuk mencari lokasi awal sektor ROOT DIREKTORI di simpan di register 'ax'
; hasil disimpan pada variabel 'datasector'
    mov   al, BYTE [TotalFATs] ; jumlah FAT (2 copy)
    mul   WORD [SectorsPerFAT] ; dikalikan dengan jumlah sektor ya

```

7. Kemudian ketik "q" untuk menghentikan 'debugging'
8. Lalu ketik "s" untuk memulai dari awal
9. Lalu ketik "vb 0x0100:0x0000" untuk menghentikan langkah saat pc mulai mengeksekusi instruksi dari program "kernel.bin"
10. kemudian ketik "c" untuk melanjutkan pekerjaan
11. lalu ketik "s" pada step pertama dan lakukan step berikutnya dengan menekan enter sebanyak 9x

```

Bochs for Windows - Console
<bochs:13> s
Next at t=2082136
(8) [0x00007c4d] 0000:7c4d (unk. ctxt): mov ss, ax ; 8ed0
<bochs:14> s
Next at t=2082137
(8) [0x00007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xffff ; bcffff
<bochs:15> s
Next at t=2082138
(8) [0x00007c52] 0000:7c52 (unk. ctxt): sti ; fb
<bochs:16> q
# In bx_wIn32_gui_c::exit(void)

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

C:\OS\LAB\LAB3>s
C:\OS\LAB\LAB3>..\bochs-2.3.5\bochsrcdbg -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
(8) [0xfffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:1> vb 0x0100:0x0000
<bochs:2> c
(13075736) Breakpoint 10285624, in 0100:0000 (0x00001000)
Next at t=2945813
(8) [0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100 ; b80001
<bochs:3> s
Next at t=2945814
(8) [0x00001003] 0100:0003 (unk. ctxt): mov ds, ax ; 8ed8
<bochs:4>
Next at t=2945815
(8) [0x00001005] 0100:0005 (unk. ctxt): mov es, ax ; 8ec0
<bochs:5>
Next at t=2945816
(8) [0x00001007] 0100:0007 (unk. ctxt): cli ; fa
<bochs:6>
Next at t=2945817
(8) [0x00001008] 0100:0008 (unk. ctxt): mov ss, ax ; 8ed0
<bochs:7>

```

## 12. kemudian bandingkan source-code yang terdapat di layar dengan yang terdapat pada program ‘kernel.asm’

```

Bochs for Windows - Console
(8) [0xfffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:1> vb 0x0100:0x0000
<bochs:2> c
(13075736) Breakpoint 10285624, in 0100:0000 (0x00001000)
ext at t=2945813
(8) [0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100 ; b80001
<bochs:3> s
ext at t=29458014
(8) [0x00001003] 0100:0003 (unk. ctxt): mov ds, ax ; 8ed8
<bochs:4>
ext at t=29458015
(8) [0x00001005] 0100:0005 (unk. ctxt): mov es, ax ; 8ec0
<bochs:5>
ext at t=29458016
(8) [0x00001007] 0100:0007 (unk. ctxt): cli ; fa
<bochs:6>
ext at t=29458017
(8) [0x00001008] 0100:0008 (unk. ctxt): mov ss, ax ; 8ed0
<bochs:7>
ext at t=29458018
(8) [0x0000100a] 0100:000a (unk. ctxt): mov sp, 0xffff ; bcffff
<bochs:8>
ext at t=29458019
(8) [0x0000100b] 0100:000d (unk. ctxt): sti ; fb
<bochs:9>
ext at t=29458020
(8) [0x0000100e] 0100:000e (unk. ctxt): push dx ; 52
<bochs:10>
ext at t=29458021
(8) [0x0000100f] 0100:000f (unk. ctxt): push es ; 06
<bochs:11>
ext at t=29458022
(8) [0x00001010] 0100:0010 (unk. ctxt): xor ax, ax ; 31c0
<bochs:12>
ext at t=29458023
(8) [0x00001012] 0100:0012 (unk. ctxt): mov es, ax ; 8ec0
<bochs:13>

=====
kernel - Notepad
File Edit Format View Help
=====
; Prototype SIMPLE KERNEL ver 0.01
; LAB-INFORMATIKA
=====
[org 0x000]
[bits 16]

[SEGMENT .text]

;START ##### ;Lokasi memori untuk menempatkan kernel
    mov ax, 0x0100 ;set interrupt OFF
    mov ds, ax ;atur stack segment
    mov sp, 0xFFFF ;atur stack pointer maksimum 64K
    sti ;set interrupt ON

    cli ;set interrupt OFF
    push dx ;atur stack segment
    xor ax, ax ;atur stack pointer maksimum 64K
    mov es, ax ;set interrupt ON
    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

    call _shell ; call the shell

    int 0x19 ; reboot
;END #####

```

## TUGAS

### 1. Tabel pemetaan memori pada PC

N o	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 antara mode kerja ‘Real-Mode’ dan mode kerja ‘Protect-Mode’ pada PC IBM Compatible

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.

Prosesor yang dirilis setelah 8085, semacam Intel 80286 juga dapat menjalankan instruksi 16-bit, tapi jauh lebih cepat dibandingkan 8085.

Dengan kata lain, Intel 80286 benar-benar kompatibel dengan prosesor Intel 8086 yang didesain sebelumnya. Sehingga prosesor Intel 80286 pun dapat menjalankan program-program 16-bit yang didesain untuk 8085 (IBM PC), dengan tentunya kecepatan yang jauh lebih tinggi.

Dalam Real-mode, tidak ada proteksi ruang alamat memori, sehingga tidak dapat melakukan multi-tasking. Inilah sebabnya, mengapa program-program DOS bersifat single-tasking. Jika dalam modus real terdapat multi-tasking, maka kemungkinan besar antara dua program yang sedang berjalan, terjadi tabrakan (crash) antara satu dengan lainnya.

b) Protect-Mode

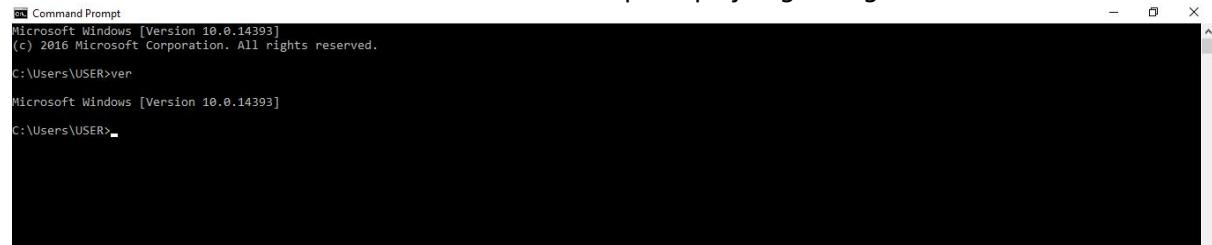
Modus terproteksi (protected mode) adalah sebuah modus di mana terdapat proteksi ruang alamat memori yang ditawarkan oleh mikroprosesor untuk digunakan oleh sistem operasi. Modus ini datang dengan mikroprosesor Intel 80286 atau yang lebih tinggi. Karena memiliki proteksi ruang alamat memori, maka dalam modus ini sistem operasi dapat melakukan multitasking.

Prosesor Intel 80286 memang dilengkapi kemampuan masuk ke dalam modus terproteksi, tapi tidak dapat keluar dari modus tersebut tanpa harus mengalami reset (warm boot atau cold boot). Kesalahan ini telah diperbaiki oleh Intel dengan merilis prosesor Intel 80386 yang dapat masuk ke dalam modus terproteksi dan keluar darinya tanpa harus melakukan reset. Inilah sebabnya mengapa Windows 95/Windows 98 dilengkapi dengan modus Restart in MS-DOS Mode, meski sebenarnya sistem operasi tersebut merupakan sistem operasi yang berjalan dalam modus terproteksi.

## **MODUL 4**

### **Percobaan pertama : Melihat versi MS-Dos (ver)**

1. Ketik “ver” untuk melihat versi command prompt yang kita gunakan



```
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

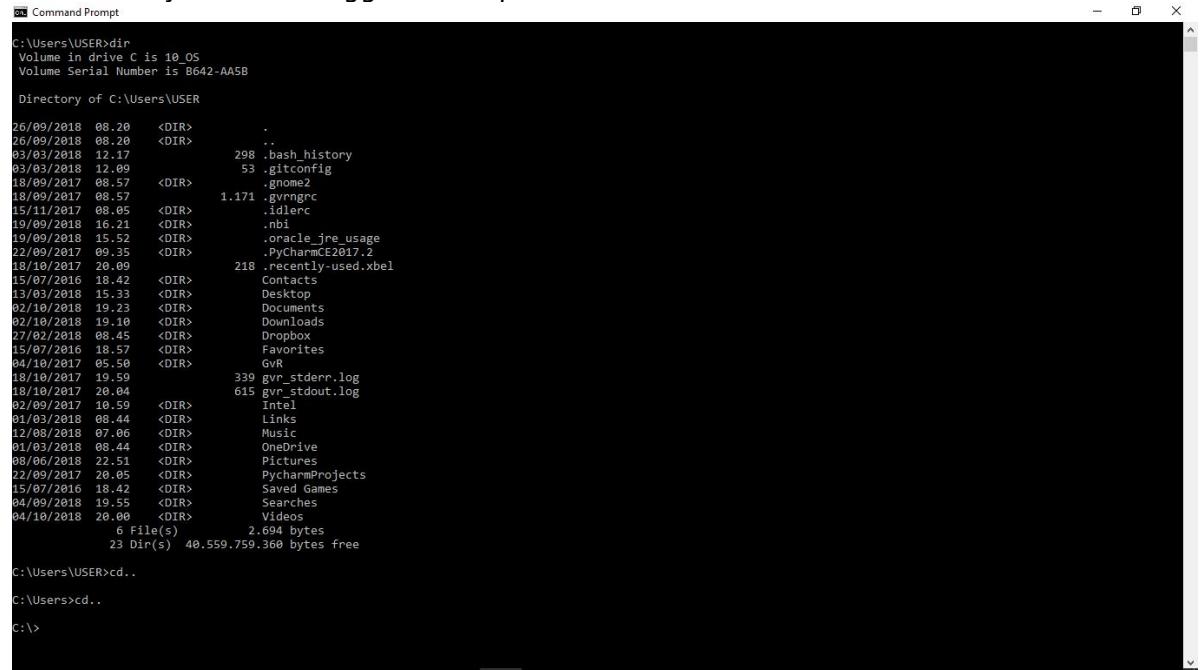
C:\Users\USER>ver

Microsoft Windows [Version 10.0.14393]

C:\Users\USER>
```

### **Percobaan kedua : Melihat, masuk, keluar dari directory dan keluar dari command prompt (dir, cd.., exit)**

1. Ketik “dir” untuk melihat isi dari directory pada komputer kita
2. Ketik “cd..” untuk keluar dari directory USER, dan ketik “cd..” untuk keluar dari directory Users sehingga masuk pada Drive C



```
C:\Users\USER>dir
Volume in drive C is 10 OS
Volume Serial Number is B642-AA5B

Directory of C:\Users\USER

26/09/2018 08.28 <DIR> .
26/09/2018 08.28 <DIR> ..
03/03/2018 17.17 298 .bash_history
03/03/2018 12.09 53 .gitconfig
18/09/2017 08.57 1.171 .gnome2
18/09/2017 08.57 15/11/2017 08.05 <DIR> .gvimrc
15/11/2017 08.05 <DIR> .idlenc
10/09/2018 16.21 <DIR> .nb1
10/09/2018 15.52 <DIR> .oracle_jre_usage
22/09/2017 09.35 <DIR> PyCharmCE2017.2
18/10/2017 20.09 218 recently-used.xbel
15/07/2016 18.42 <DIR> Contacts
13/03/2018 15.33 <DIR> Desktop
02/10/2018 19.23 <DIR> Documents
02/10/2018 19.10 <DIR> Downloads
27/02/2018 08.45 <DIR> Dropbox
15/07/2016 18.57 <DIR> Favorites
04/10/2017 05.58 <DIR> GvR
18/10/2017 19.59 339 gvr_stderr.log
18/10/2017 20.04 615 gvr_stdout.log
02/09/2017 10.59 <DIR> Intel
01/03/2018 08.44 <DIR> Links
12/08/2018 07.06 <DIR> Music
01/03/2018 08.44 <DIR> OneDrive
08/06/2018 22.51 <DIR> Pictures
22/09/2017 20.05 <DIR> PycharmProjects
15/07/2016 18.42 <DIR> Saved Games
04/09/2018 19.55 <DIR> Searches
04/10/2018 20.00 <DIR> Videos
               6 File(s) 2.694 bytes
               23 Dir(s) 40.559.759.360 bytes free

C:\Users\USER>cd..
C:\Users>cd..
C:\>
```

3. Ketik “dir” untuk melihat directory Drive C

```
cmd Command Prompt
C:\>dir
Volume in drive C is 10 OS
Volume Serial Number is B642-AA5B

Directory of C:\

16/07/2016 18.00 <DIR>      CDR
28/12/2017 07.09 <DIR>      Games
02/09/2017 11.41 <DIR>      GTA San Andreas
15/07/2016 18.52      7.918 history.js
02/09/2017 11.03 <DIR>      Intel
16/09/2018 14.12 <DIR>      KMplayer
04/10/2018 20.06 <DIR>      komputer
19/09/2018 15.08 <DIR>      netbeans
25/09/2018 12.26 <DIR>      OS
16/07/2016 18.47 <DIR>      PerfLogs
15/09/2018 14.42 <DIR>      Program Files
03/10/2018 12.44 <DIR>      Program Files (x86)
13/12/2017 21.45 <DIR>      Python27
15/07/2016 18.47      5.640 rb_config.js
15/07/2016 18.42 <DIR>      Users
03/09/2018 20.25 <DIR>      Windows
15/07/2016 18.52      13.854 WPT_Log.txt
24/03/2018 11.55 <DIR>      xampp
            3 File(s)       27.412 bytes
           15 Dir(s)  40.559.800.320 bytes free

C:\>
```

4. Ketik “cd windows” untuk masuk ke directory Windows

5. Ketik “dir/p” untuk melihat isi directory windows perhalaman

```
cmd Command Prompt - dir /p
C:\>cd windows
C:\Windows>dir/p
Volume in drive C is 10 OS
Volume Serial Number is B642-AA5B

Directory of C:\Windows

03/09/2018 20.25 <DIR>      .
03/09/2018 20.25 <DIR>      ..
16/07/2016 18.47 <DIR>      addins
02/09/2017 18.03 <DIR>      appcompat
16/07/2016 21.11 <DIR>      AppPatch
15/07/2016 19.11 <DIR>      AppReadiness
01/08/2018 10.27 <DIR>      assembly
16/07/2016 18.47 <DIR>      bcastdvr
16/07/2016 18.42      61.440 bfsvc.exe
16/07/2016 18.47 <DIR>      Boot
16/07/2016 18.47 <DIR>      Branding
13/09/2017 21.52 <DIR>      CbsTemp
15/07/2016 18.41 <DIR>      CSC
16/07/2016 18.47 <DIR>      Cursors
16/07/2016 17.51 <DIR>      debug
16/07/2016 18.47 <DIR>      diagnostics
16/07/2016 21.11 <DIR>      DigitalLocker
02/09/2017 11.50      9.971 DirectX.log
18/11/2017 10.22      27.010 DPINST.LOG
15/07/2016 18.35      1.947 DtcInstall.log
16/07/2016 21.11 <DIR>      en-US
16/07/2016 18.42      4.673.304 explorer.exe
03/09/2004 18.00      802.816 FeedingFrenzy.scr
16/07/2016 18.47 <DIR>      GameBarPresenceWriter
16/07/2016 18.47 <DIR>      Globalization
02/09/2017 11.06 <DIR>      Help
16/07/2016 18.42      975.366 HelpPane.exe
16/07/2016 18.42      18.432 hh.exe
16/07/2016 21.11 <DIR>      IME
15/07/2016 18.33 <DIR>      ImmersiveControlPanel
12/08/2018 06.16 <DIR>      INF
16/07/2016 18.47 <DIR>      InfusedApps
16/07/2016 18.47 <DIR>      InputMethod
16/07/2016 18.47 <DIR>      L2Schemas
27/05/2018 19.36 <DIR>      LiveKernelReports
17/11/2017 14.30 <DIR>      Logs
15/07/2016 18.31      1.344 lsasetup.log
```

6. Ketik “dir/w” untuk melihat isi dari directory windows secara mendatar

7. Ketik “exit” untuk keluar dari command prompt

```
C:\Windows>dir/w
Volume in drive C is 10 OS
Volume Serial Number is B642-AA5B

Directory of C:\Windows

[.] [..] [addons] [appcompat] [AppPatch] [AppReadiness] [assembly]
[bcastdvr] [bsvc.exe] [Boot] [Branding] [CbsTemp] [CSC] [Cursors]
[debug] [diagnostics] [DigitalLocker] [DirectX.log] DPINST.LOG DtcInstall.log [en-US]
explorer.exe FeedingFrenzy.scr [GameBarPresenceWriter] [Globalization] [Help] HelpPane.exe hh.exe
[IME] [ImmersiveControlPanel] [INF] [InfusedApps] [InputMethod] [L2schemas] [LiveKernelReports]
[Logs] lsasetup.log MEMORY.DMP mib.bin [Microsoft.NET] [Migration] [Minidump]
[MiracastView] [ModemLogs] notepad.exe [Offline Web Pages] [Panther] [Performance] PFR0.log
[PLA] [PolicyDefinitions] [Prefetch] [PrintDialog] Professional.xml [Provisioning] py.exe
[pshellext.amd64.dll] pyw.exe regedit.exe [Registration] [RemotePackages] [rescache] [Resources]
[SchCache] [schemas] [security] [ServiceProfiles] [servicing] [Setup] setupact.log
[setuperr.log] [ShellExperiences] [SKB] [SoftwareDistribution] [Speech] [Speech_OneCore]
[System] system.ini [System32] [SystemApps] [SystemResources] [SysWOW64] splwow64.exe
[Tasks] [Temp] [tracing] [twain_32] [twain_32.dll] [Vss] [TAPI]
[win.ini] WindowsUpdate.log winhlp32.exe [Winsxs] WLXPgSS.SCR [Web] write.exe

29 File(s) 290,398,677 bytes
69 Dir(s) 40,559,849,472 bytes free

C:\Windows>exit
```

### Percobaan ketiga : berubah nama file (ren, rename)

1. Buka windows explorer dan masuk ke Drive C, buat folder baru dengan nama "files". Kemudian masuk ke folder file lalu klik kanan daerah yang kosong – new – microsoft word document. Beri nama "file1"
2. Ketik "cd.." untuk keluar dari directory USER, dan ketik "cd.." untuk keluar dari directory Users
3. Ketik "cd files" untuk masuk ke directory files. Ketik dir untuk melihat isi directory files

```
C:\Windows>dir
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\USER>cd..
C:\Users>cd..
C:\>cd files

C:\files>dir
Volume in drive C is 10 OS
Volume Serial Number is B642-AA5B

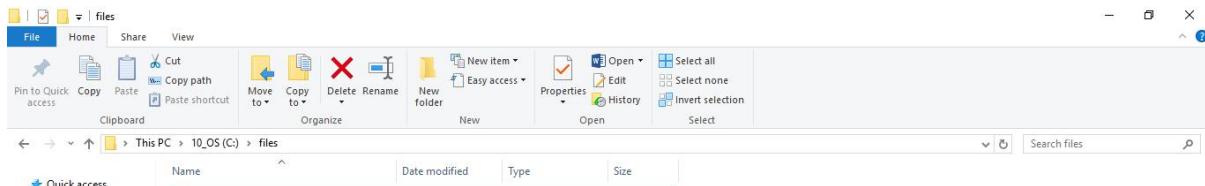
Directory of C:\files

04/10/2018 21.11 <DIR> .
04/10/2018 21.11 <DIR> ..
04/10/2018 21.11 0 file1.docx
1 File(s) 0 bytes
2 Dir(s) 40,560,218,112 bytes free

C:\files>
```

4. Ketik "ren file1.docx file.docx" untuk mengubah nama file

```
C:\Windows>ren file1.docx file.docx
C:\files>
```



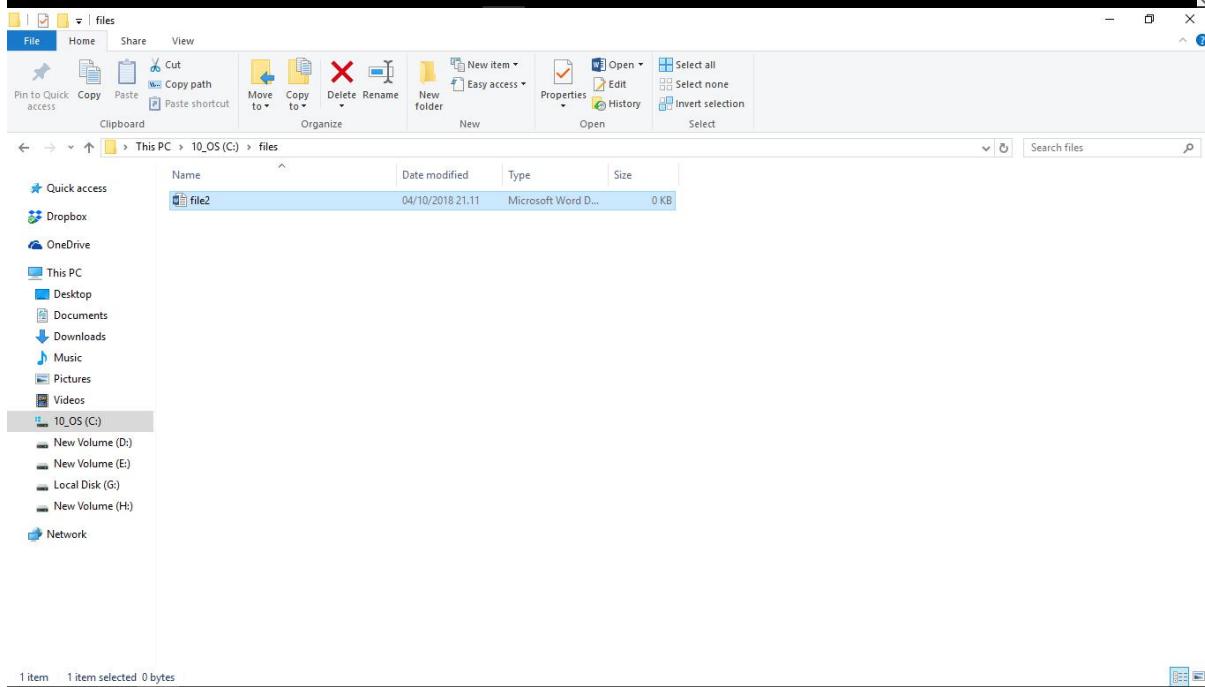
5. Ketik "rename file.docx file2.docx" untuk mengubah nama file
6. Ketik "dir" untuk melihat directory files kemudian lihat perubahan file.docx menjadi file2.docx

```
C:\files>rename file.docx file2.docx
C:\files>dir
Volume in drive C is 10 OS
Volume Serial Number is B642-AA5B

Directory of C:\files

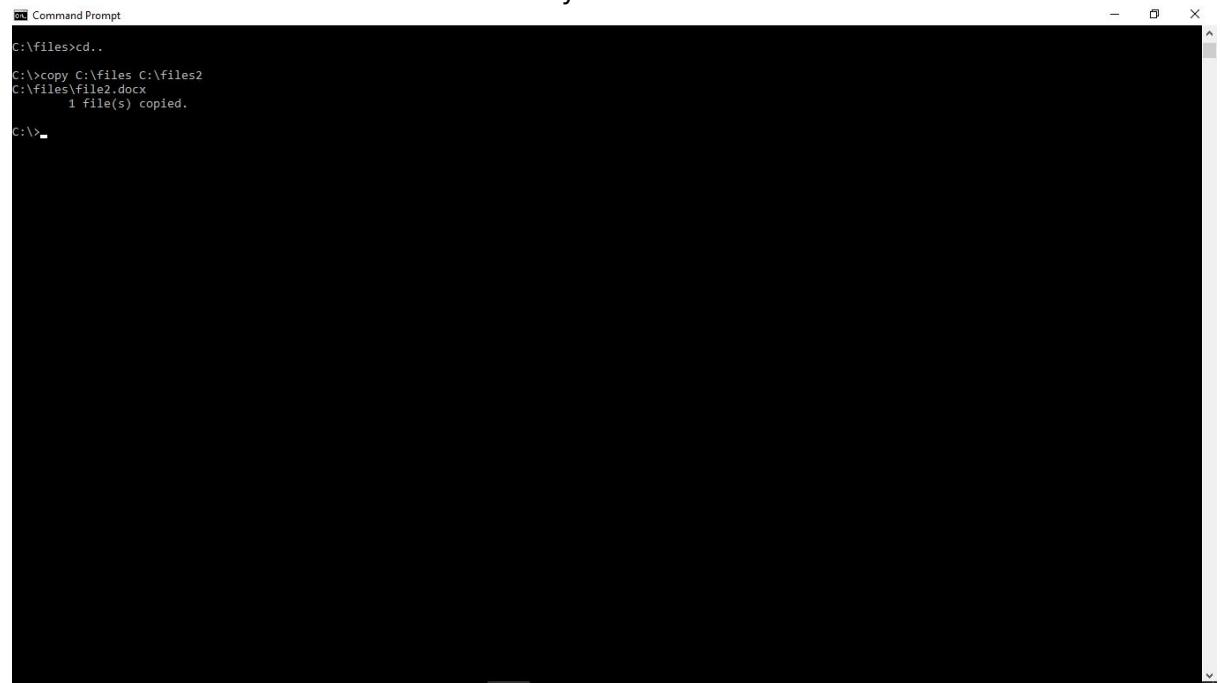
04/10/2018 21:13    <DIR>      .
04/10/2018 21:13    <DIR>      ..
04/10/2018 21:11          0 file2.docx
                           1 File(s)   0 bytes
                           2 Dir(s)  40,560,058,368 bytes free

C:\files>
```



## Percobaan keempat : copy file dan menghapus file (copy, del, xcopy)

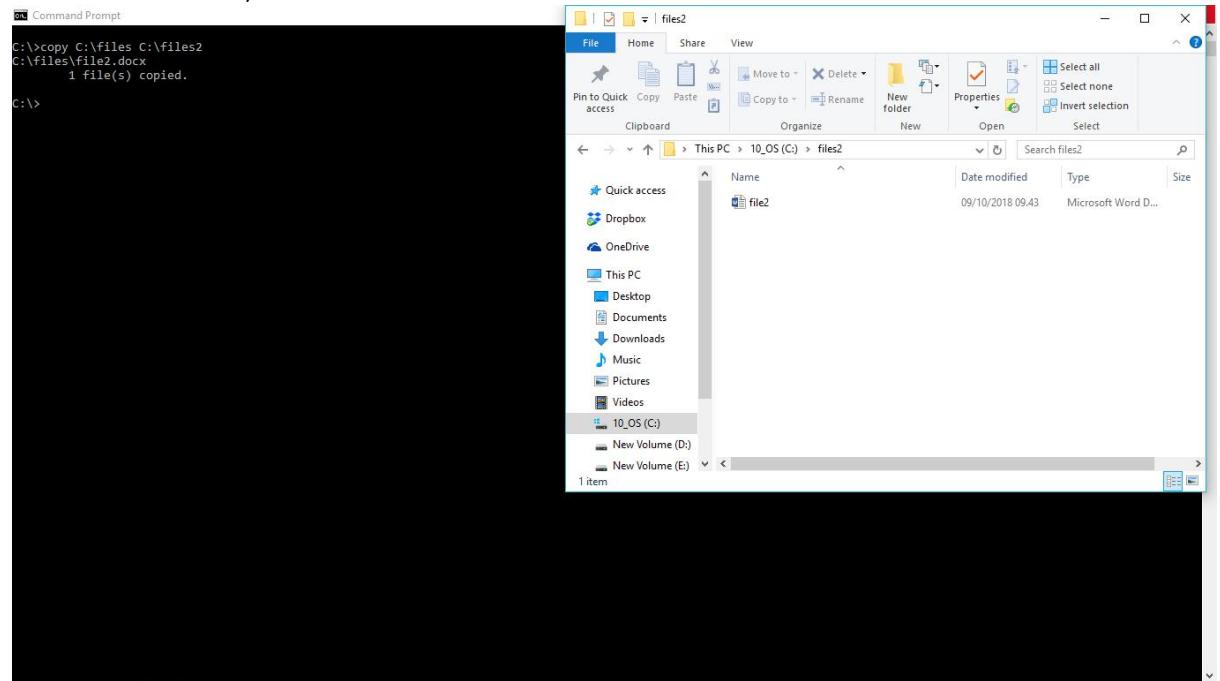
1. Ketik "cd.." untuk keluar dari directory files



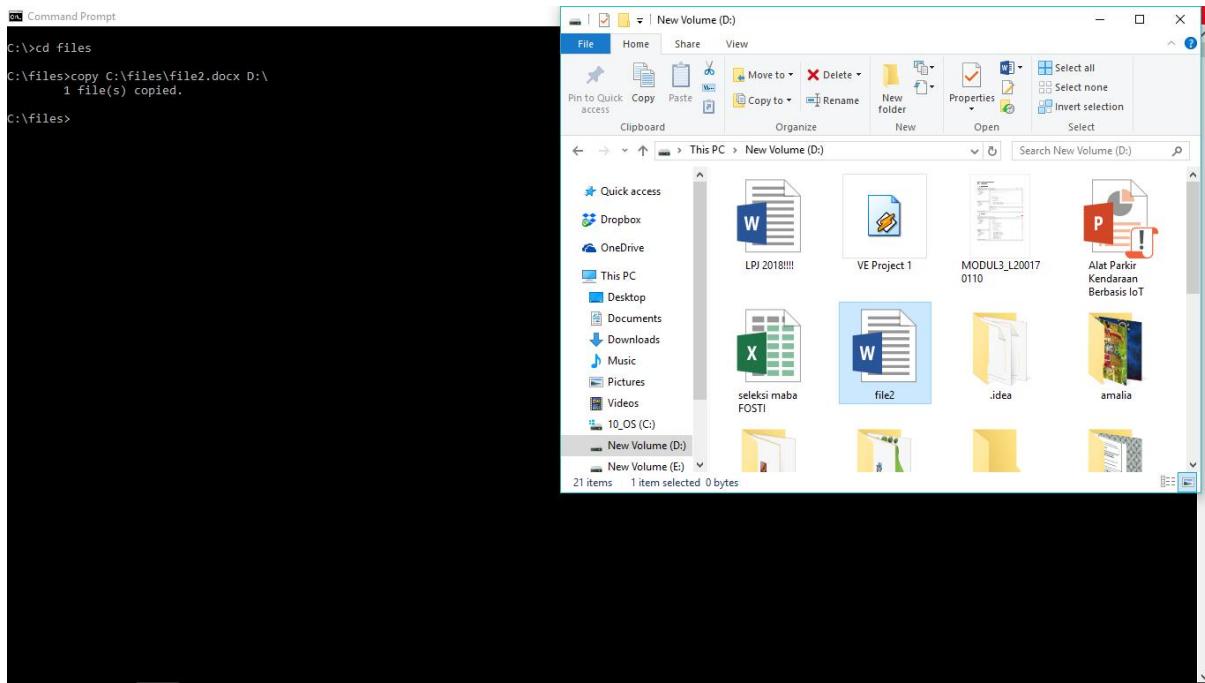
```
Command Prompt
C:\files>cd..
C:\>copy C:\files C:\files2
C:\files\file2.docx
    1 file(s) copied.

C:\>
```

2. Buka windows explorer kemudian masuk ke Drive C. Buat folder baru klik kanan - new - folder, beri nama "files2"



3. Ketik "cd files" untuk masuk ke directory files
4. Ketik "copy C:\files\file2.docx D:\" untuk mengcopy file2.docx ke drive D



5. Ketik "D:" untuk pindah ke drive D, kemudian ketik "dir"

```
C:\files>d:
D:\>dir
Volume in drive D is New Volume
Volume Serial Number is 6886-AAA7

Directory of D:\

28/11/2017 18.14 <DIR> .idea
04/11/2017 08.05 137.556 Alat Parkir Kendaraan Berbasis IoT.pptm
27/05/2018 15.48 <DIR> amalia
30/05/2018 12.56 <DIR> application
13/03/2018 15.33 <DIR> baru
27/05/2018 15.48 <DIR> FD Cahya
22/11/2017 17.06 <DIR> FILE INFORMATIKA
09/10/2018 09.43 0 file2.docx
27/09/2018 17.41 <DIR> FOSTI
28/09/2018 19.28 <DIR> Games
28/09/2018 19.33 <DIR> GTA San Andreas
26/09/2018 06.59 <DIR> IPA 3
02/10/2018 09.58 <DIR> KESEK OPREC
24/07/2018 19.17 2.342.909 LPJ 2018!!!!.docx
04/10/2018 20.55 <DIR> MATKUL
26/09/2018 22.43 357.934 MODUL3_L200170110.pdf
09/10/2018 21.34 <DIR> multimedia
09/05/2018 21.15 <DIR> New folder
02/10/2018 19.15 14.976 seleksi maba FOSTI.xlsx
12/08/2018 06.05 <DIR> TOKO46
28/12/2017 21.22 1.436.103 VE Project 1.wve
6 File(s) 4.289.478 bytes
15 Dir(s) 379.668.258.816 bytes free

D:\>
```

6. Ketik "c:" untuk masuk ke directory awal
7. Ketik "cd.." untuk kembali ke drive c
8. Ketik "del files" untuk menghapus file yang terdapat pada directory files, kemudian tekan yes
9. Ketik "cd Users" untuk masuk ke folder Users
10. Ketik "cd USER" untuk masuk ke folder USER
11. Ketik "xcopy dekstop D:baru\ /s/e" untuk mengcopy isi file kemudian membuat folder baru dan meletakkan isi copyan ke folder baru yang terdapat pada directory files ke drive d. Kemudian tekan a

```
D:\>xc:  
C:\files>cd..  
C:\>del files  
C:\files\*, Are you sure (Y/N)? Y  
C:\>cd users  
C:\Users>cd USER  
C:\Users\USER>xcopy desktop D:baru\ /s/e  
Overwrite D:\baru\Continue aimp Installation.lnk (Yes/No/All)? Y  
desktop\Continue aimp Installation.lnk  
Overwrite D:\baru\CorelDRAW X7 17.3.lnk (Yes/No/All)? Y  
desktop\CorelDRAW X7 17.3.lnk  
Overwrite D:\baru\Dropbox.lnk (Yes/No/All)? a  
desktop\Dropbox.lnk  
desktop\Euro Truck Simulator 2.lnk  
desktop\Format Factory.lnk  
desktop\GreenFoot.lnk  
desktop\GTA San Andreas.lnk  
desktop\GvRng.lnk  
desktop\Internet Download Manager.lnk  
desktop\JetBrains PyCharm Community Edition 2017.2.3.lnk  
desktop\XMPlayer.lnk  
desktop\Wero Express.lnk  
desktop\PhotoScape.lnk  
desktop\Photoshop CS4.lnk  
desktop\Windows Defender.lnk  
desktop\Word 2016.lnk  
desktop\sketch_nov18b\sketch_nov18b.ino  
17 File(s) copied  
C:\Users\USER>
```

12. Ketik “d:” untuk masuk ke drive d

13. Ketik “dir” untuk melihat isi directory

```
C:\Users\USER>d:  
D:\>dir  
Volume in drive D is New Volume  
Volume Serial Number is 6886-AAA7  
Directory of D:\  
20/11/2017 18.14 <DIR> .idea  
04/11/2017 08.05 137.556 Ala Parkir Kendaraan Berbasis IoT.pptm  
27/05/2018 15.48 <DIR> amalia  
30/05/2018 12.56 <DIR> aplication  
13/03/2018 15.33 <DIR> baru  
27/05/2018 15.48 <DIR> FD Cahya  
22/11/2017 17.06 <DIR> FILE INFORMATIKA  
04/10/2018 19.45 0 file2.docx  
27/09/2018 17.41 <DIR> FOSTI  
28/09/2018 19.28 <DIR> Games  
28/09/2018 19.33 <DIR> GTA San Andreas  
26/09/2018 06.59 <DIR> IPA 3  
02/10/2018 09.58 <DIR> KESEK OPREC  
24/07/2018 19.17 2.342.909 LPJ 2018!!!!.docx  
04/10/2018 20.55 <DIR> MATKUL  
26/09/2018 22.43 357.934 MODUL3_L200170110.pdf  
08/05/2018 21.15 <DIR> New folder  
02/10/2018 10.15 14.976 seleksi maba FOSTI.xlsx  
12/08/2018 06.05 <DIR> TOKO46  
28/12/2017 21.22 1.436.103 VE Project 1.wve  
6 File(s) 4.289.478 bytes  
14 Dir(s) 379.669.725.184 bytes free  
D:\>
```

14. Ketik “cd baru”

15. Ketik “dir” untuk melihat isi directory baru

```

cmd Command Prompt
D:\>cd baru
D:\baru>dir
Volume in drive D is New Volume
Volume Serial Number is 6886-AAA7

Directory of D:\baru

13/03/2018 15.33 <DIR> .
13/03/2018 15.33 <DIR> ..
13/03/2018 13.01 1.536 Continue aimp Installation.lnk
16/07/2016 18.01 1.464 CorelDRAW X7 17.3.lnk
02/11/2017 15.22 1.388 Dropbox.lnk
28/12/2017 07.25 944 Euro Truck Simulator 2.lnk
15/07/2016 18.50 1.275 Format Factory.lnk
13/03/2018 15.33 2.007 Greenfoot.lnk
02/09/2017 11.50 2.007 GTA San Andreas.lnk
13/09/2017 08.57 1.025 GyRng.lnk
15/07/2016 19.04 1.082 Internet Download Manager.lnk
22/09/2017 09.35 861 JetBrains PyCharm Community Edition 2017.2.3.lnk
15/07/2016 18.57 643 KMPlayer.lnk
15/07/2016 19.02 1.996 Nero Express.lnk
15/07/2016 18.51 1.104 PhotoScape.lnk
15/07/2016 18.52 1.238 Photoshop CS4.lnk
18/11/2017 13.43 sketch_nov18b
15/07/2016 18.57 1.058 Windows Defender.lnk
05/09/2017 18.35 2.498 Word 2016.lnk
16 File(s) 20.716 bytes
3 Dir(s) 379.669.725.184 bytes free

D:\baru>_

```

### Percobaan kelima : Membuat dan menghapus directory (md, rd, mkdir, rmdir)

1. Ketik “c:” untuk kembali ke folder awal
2. Ketik “cd..” untuk keluar dari USER, ketik “cd..” untuk keluar dari Users dan berada pada drive c
3. Ketik “md baru” untuk membuat directory/folder yng bernama “baru”
4. Ketik “dir” untuk melihat isi directory c

```

cmd Command Prompt
D:\baru>c:
C:\Users\USER>cd..
C:\Users>cd..
C:\>md baru
C:\>dir
Volume in drive C is 10 OS
Volume Serial Number is B642-AA5B

Directory of C:\

04/10/2018 21.22 <DIR> baru
16/07/2016 18.00 <DIR> CDR
04/10/2018 21.18 <DIR> files
04/10/2018 21.15 <DIR> files2
28/12/2017 07.09 <DIR> Games
02/09/2017 11.41 <DIR> GTA San Andreas
15/07/2016 18.52 7.918 history.js
02/09/2017 11.03 <DIR> Intel
16/09/2018 14.12 <DIR> KMPlayer
04/10/2018 20.06 <DIR> komputer
19/09/2018 15.08 <DIR> netbeans
25/09/2018 12.26 <DIR> OS
16/07/2016 18.47 <DIR> Perflogs
15/09/2018 14.42 <DIR> Program Files
03/10/2018 12.44 <DIR> Program Files (x86)
13/12/2017 21.45 <DIR> Python27
15/07/2016 18.47 5.649 rb_config.js
15/07/2016 18.42 <DIR> Users
03/09/2018 20.25 <DIR> Windows
15/07/2016 18.52 13.854 WPI_Log.txt
24/03/2018 11.55 <DIR> xampp
    3 File(s) 27.412 bytes
18 Dir(s) 40.558.215.168 bytes free

C:\>_

```

5. Ketik “rd baru” untuk menghapus directory baru
6. Ketik “dir” untuk melihat directory c

```
Command Prompt
C:\>rd baru
C:\>dir
Volume in drive C is 10 OS
Volume Serial Number is B642-AA5B

Directory of C:\

16/07/2016 18.00 <DIR>          CDR
04/10/2018 21.18 <DIR>          files
04/10/2018 21.15 <DIR>          files2
28/12/2017 07.09 <DIR>          Games
02/09/2017 11.41 <DIR>          GTA San Andreas
15/07/2016 18.52    7.918 history.js
02/09/2017 11.03 <DIR>          Intel
16/09/2018 14.12 <DIR>          KMplayer
04/10/2018 20.06 <DIR>          komputer
19/09/2018 15.08 <DIR>          netbeans
25/09/2018 12.26 <DIR>          OS
16/07/2016 18.47 <DIR>          Perflogs
15/09/2018 14.42 <DIR>          Program Files
03/10/2018 12.44 <DIR>          Program Files (x86)
13/12/2017 21.45 <DIR>          Python27
15/07/2016 18.47      5.648 rb_config.js
15/07/2016 18.42 <DIR>          Users
03/09/2018 20.25 <DIR>          Windows
15/07/2016 18.52    13.854 WPI_Log.txt
24/03/2018 11.55 <DIR>         xampp
            3 File(s)   27.412 bytes
           17 Dir(s)  40.558.321.664 bytes free

C:\>
```

7. Ketik “mkdir baru1” untuk membuat directory/folder yang bernama “baru1”

8. Ketik “dir” untuk melihat isi dari c

```
Command Prompt
C:\>mkdir baru1
C:\>dir
Volume in drive C is 10 OS
Volume Serial Number is B642-AA5B

Directory of C:\

04/10/2018 21.23 <DIR>          baru1
16/07/2016 18.00 <DIR>          CDR
04/10/2018 21.18 <DIR>          files
04/10/2018 21.15 <DIR>          files2
28/12/2017 07.09 <DIR>          Games
02/09/2017 11.41 <DIR>          GTA San Andreas
15/07/2016 18.52    7.918 history.js
02/09/2017 11.03 <DIR>          Intel
16/09/2018 14.12 <DIR>          KMplayer
04/10/2018 20.06 <DIR>          komputer
19/09/2018 15.08 <DIR>          netbeans
25/09/2018 12.26 <DIR>          OS
16/07/2016 18.47 <DIR>          Perflogs
15/09/2018 14.42 <DIR>          Program Files
03/10/2018 12.44 <DIR>          Program Files (x86)
13/12/2017 21.45 <DIR>          Python27
15/07/2016 18.47      5.648 rb_config.js
15/07/2016 18.42 <DIR>          Users
03/09/2018 20.25 <DIR>          Windows
15/07/2016 18.52    13.854 WPI_Log.txt
24/03/2018 11.55 <DIR>         xampp
            3 File(s)   27.412 bytes
           18 Dir(s)  40.558.280.704 bytes free

C:\>
```

9. Ketik “rmdir baru1” untuk melihat isi directory c, lalu ketik “dir”

```
Command Prompt
C:\>rmdir baru1
C:\>dir
Volume in drive C is 10 OS
Volume Serial Number is B642-AA5B

Directory of C:\

16/07/2016 18.00 <DIR>      CDR
08/10/2018 21.05 <DIR>      files
08/10/2018 21.16 <DIR>      files2
28/12/2017 07.09 <DIR>      Games
02/09/2017 11.41 <DIR>      GTA San Andreas
15/07/2016 18.52    7.918 history.js
02/09/2017 11.03 <DIR>      Intel
16/09/2018 14.12 <DIR>      KMplayer
19/09/2018 15.08 <DIR>      netbeans
25/09/2018 12.26 <DIR>      OS
16/07/2016 18.47 <DIR>      PerfLogs
15/09/2018 14.42 <DIR>      Program Files
03/10/2018 12.44 <DIR>      Program Files (x86)
13/12/2017 21.45 <DIR>      Python27
15/07/2016 18.47    5.640 rb_config.js
15/07/2016 18.42 <DIR>      Users
03/09/2018 20.25 <DIR>      Windows
15/07/2016 18.52    13.854 WPI_Log.txt
24/03/2018 11.55 <DIR>     xampp
            3 File(s)   27.412 bytes
           16 Dir(s)  40.785.309.696 bytes free

C:\>
```

10. Ketik “md \komputer” untuk membuat folder bernama “komputer”, lalu ketik “dir” untuk melihat

```
Command Prompt
C:\>md \komputer
C:\>dir
Volume in drive C is 10 OS
Volume Serial Number is B642-AA5B

Directory of C:\

16/07/2016 18.00 <DIR>      CDR
08/10/2018 21.05 <DIR>      files
08/10/2018 21.16 <DIR>      files2
28/12/2017 07.09 <DIR>      Games
02/09/2017 11.41 <DIR>      GTA San Andreas
15/07/2016 18.52    7.918 history.js
02/09/2017 11.03 <DIR>      Intel
16/09/2018 14.12 <DIR>      KMplayer
08/10/2018 21.31 <DIR>      komputer
19/09/2018 15.08 <DIR>      netbeans
25/09/2018 12.26 <DIR>      OS
16/07/2016 18.47 <DIR>      PerfLogs
15/09/2018 14.42 <DIR>      Program Files
03/10/2018 12.44 <DIR>      Program Files (x86)
13/12/2017 21.45 <DIR>      Python27
15/07/2016 18.47    5.640 rb_config.js
15/07/2016 18.42 <DIR>      Users
03/09/2018 20.25 <DIR>      Windows
15/07/2016 18.52    13.854 WPI_Log.txt
24/03/2018 11.55 <DIR>     xampp
            3 File(s)   27.412 bytes
           17 Dir(s)  40.785.309.696 bytes free

C:\>
```

11. Ketik “md \files\film” untuk membuat folder bernama film didalam folder files



```
C:\>md \files\film
C:\>cd files
C:\files>dir
Volume in drive C is 10_OS
Volume Serial Number is B642-AA58

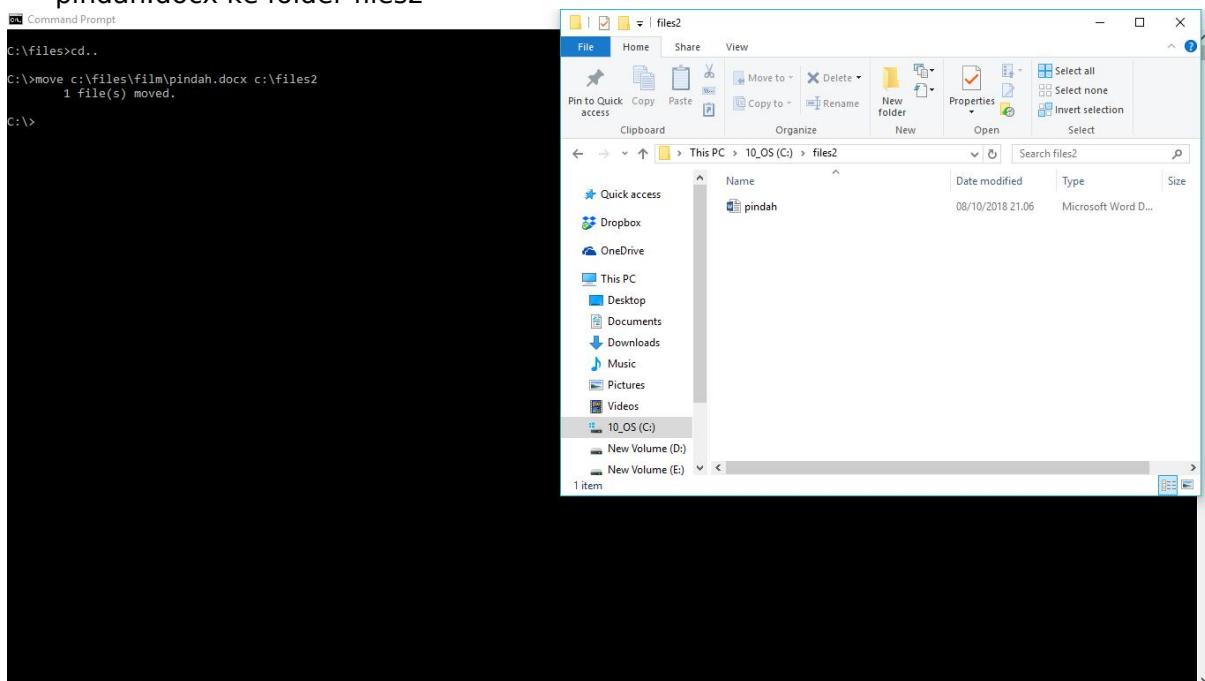
Directory of C:\files

08/10/2018 21:32 <DIR> .
08/10/2018 21:32 <DIR> ..
08/10/2018 21:32 <DIR> film
      0 File(s)    0 bytes
      3 Dir(s) 40.785.096.704 bytes free

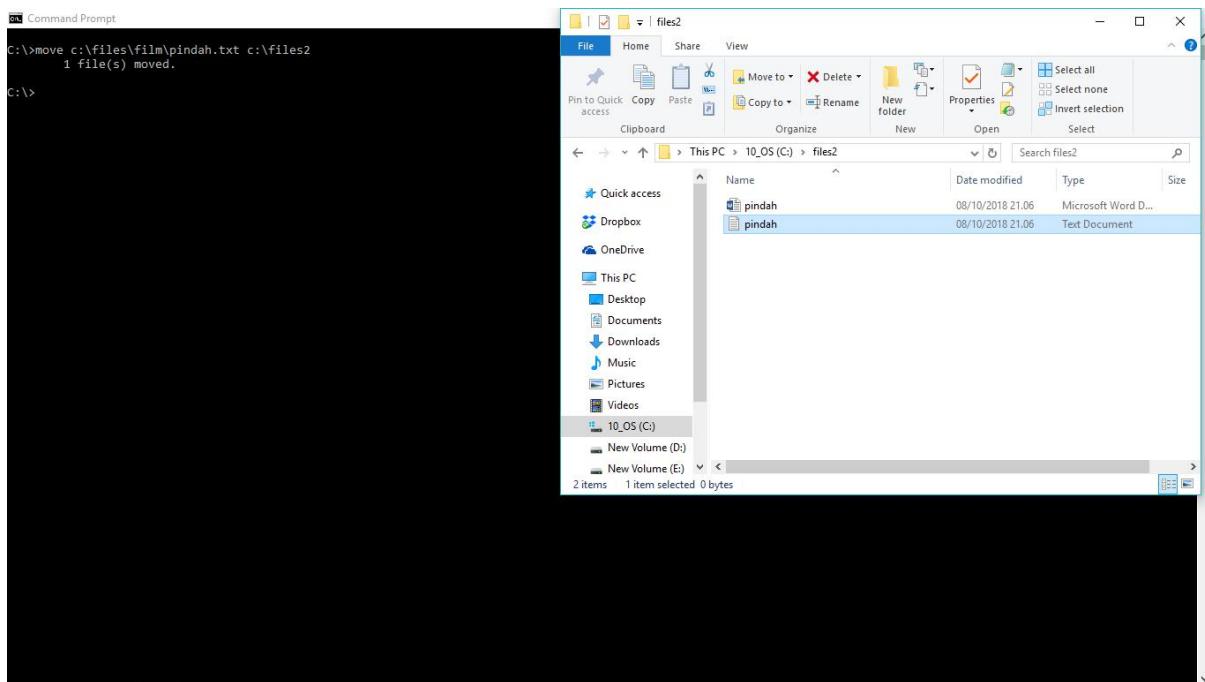
C:\files>
```

#### Percobaan keenam : Memindahkan file dan menampilkan isi folder secara terstruktur (move, tree)

1. Ketik “cd..” untuk berada di drive c
2. Buka windows explorer kemudian masuk ke c:\files\film. Lalu klik kanan – new – microsoft word document. Beri nama “pindah.docx”
3. Klik kanan – new – text document. Beri nama dengan “pindah.txt”
4. Ketik “move c:\files\film\pindah.docx c:\files2” untuk memindah file pindah.docx ke folder files2

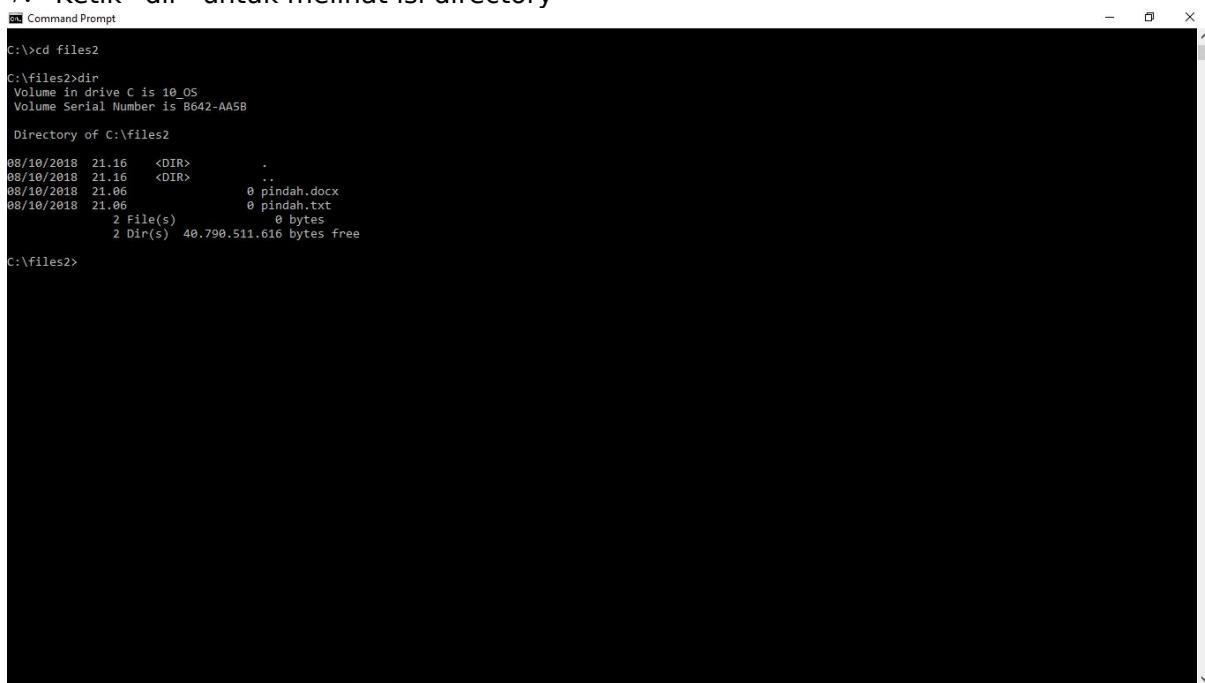


5. Ketik “move c:\files\film\pindah.txt c:\files2” untuk memindah file pindah.txt ke folder files2

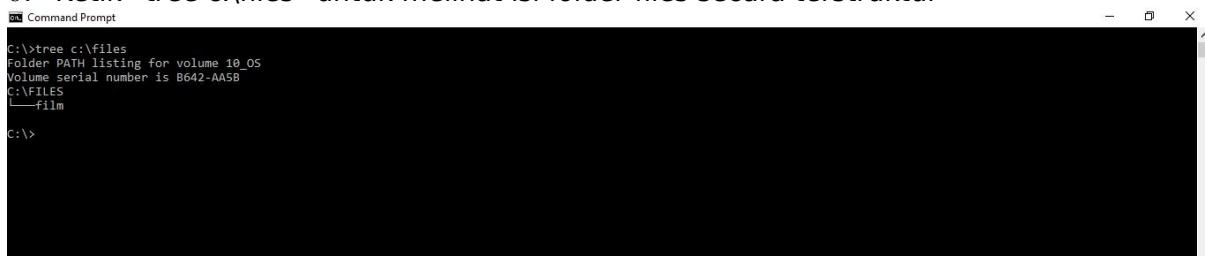


6. Ketik “cd files2” untuk masuk ke directory files2

7. Ketik “dir” untuk melihat isi directory



8. Ketik “tree c:\files” untuk melihat isi folder files secara terstruktur



9. Ketik “tree c:\windows ” untuk melihat seluruh isi folder windows secara terstruktur

```

Select Command Prompt
msll_system.xml_b77a5c561934e089_4.0.14305.0_none_31a00fd83d917e0e
msll_system_b77a5c561934e089_4.0.14305.0_none_8a8fb5b25036c7c1
msll_taskscheduler.resources_31bf3856ad364e35_10.0.14393.0_en-us_f35ef7d4f8f478ca
msll_taskscheduler_31bf3856ad364e35_10.0.14393.0_none_e652edcf9dac06af
msll_automationclientsideproviders_31bf3856ad364e35_4.0.14305.0_none_727e7f1d86b08caf
msll_automationclient_31bf3856ad364e35_4.0.14305.0_none_33f7ccaa272dc5e
msll_automationtypes_31bf3856ad364e35_4.0.14305.0_none_4bfbd2765a381816
msll_vmconnect_resources_31bf3856ad364e35_10.0.14393.0_en-us_24045eca437b74b
msll_vmconnect6.2.resources_31bf3856ad364e35_10.0.14393.0_en-us_55fd81ab268076d5
msll_windows_help.runtime_31bf3856ad364e35_10.0.14393.0_en-us_89eefc83915a54ac
msll_windows_help.Temp_31bf3856ad364e35_4.0.14305.0_none_dba5dfff361f943
msll_windowsbase_31bf3856ad364e35_4.0.14305.0_none_6518753d3a8425e4
msll_windowsformintegration_31bf3856ad364e35_4.0.14305.0_none_5a76a556d38c0074
msll_wsatconfig_31bf3856ad364e35_10.0.14393.0_none_bfdeab5757b0b9a5
msll_wsatconfig_31bf3856ad364e35_4.0.14305.0_none_bdd940abbfe2a7
msll_xamlbuildtask_31bf3856ad364e35_4.0.14305.0_none_f346d3823fc76971
msll_xsdbuildtask_31bf3856ad364e35_4.0.14305.0_none_e1d6b65ea6ba4014
Temp
|---InFlight
|---PendingDeletes
|---PendingRenames
wow64_adobe-flash-for-windows_31bf3856ad364e35_10.0.14393.0_none_6368f9d3b4a2fa2b
wow64_bth-cpl.resources_31bf3856ad364e35_10.0.14393.0_en-us_f5abd59fd5ac506
wow64_bth-user.resources_31bf3856ad364e35_10.0.14393.0_en-us_9e838c9fc400f6e2
wow64_desktop_shell-gettingstarted.resources_31bf3856ad364e35_10.0.14393.0_en-us_742faf5124ecc9d5
wow64_desktop_shell-gettingstarted3_31bf3856ad364e35_10.0.14393.0_none_36c11195d3c1440e
wow64_eventviewersettings_31bf3856ad364e35_10.0.14393.0_none_2cc0edd44ec68a64
wow64_hid-dll.resources_31bf3856ad364e35_10.0.14393.0_en-us_4fa57c3b88665d51a
wow64_microsoft_antimalware-scan-interface_31bf3856ad364e35_10.0.14393.0_none_8e7d6fc722275eb9
wow64_microsoft-client-li._ing-platform-client_31bf3856ad364e35_10.0.14393.0_none_412aeae30fee37c60
wow64_microsoft-client-li._rm-client.resources_31bf3856ad364e35_10.0.14393.0_en-us_80dbe1de5a74995b
wow64_microsoft-etw-ese.resources_31bf3856ad364e35_10.0.14393.0_en-us_2c1beec12a906ff77
wow64_microsoft-etw-ese_31bf3856ad364e35_10.0.14393.0_none_0723e86bd16f9f98e
wow64_microsoft-foundatio_.ostics-errordetails_31bf3856ad364e35_10.0.14393.0_none_40e724f93e7eca8f
wow64_microsoft-gaming_ga._rnat-presencewriter_31bf3856ad364e35_10.0.14393.0_none_39ef41c3ceacc34
wow64_microsoft-hyper-v-winsocprovider_31bf3856ad364e35_10.0.14393.0_none_0f6436cf6543bfs50
wow64_microsoft-onecore-a._sourcepolicy-client_31bf3856ad364e35_10.0.14393.0_none_3294c5b8ebbb57919
wow64_microsoft-onecore-bluethooth-userapis_31bf3856ad364e35_10.0.14393.0_none_a37e3a0a0b28b083
wow64_microsoft-onecore-c._dexperiencehost-api_31bf3856ad364e35_10.0.14393.0_none_f6f8b7285bbf556a
wow64_microsoft-onecore-c._experiencehost-user_31bf3856ad364e35_10.0.14393.0_none_f4cb8e689d30360b
wow64_microsoft-onecore-c._ilicity-authorization_31bf3856ad364e35_10.0.14393.0_none_52d3da9ede81029c
wow64_microsoft-onecore-c._messaging.resources_31bf3856ad364e35_10.0.14393.0_en-us_5b05265e308c470
wow64_microsoft-onecore-cdp-winrt.resources_31bf3856ad364e35_10.0.14393.0_en-us_e9a7da274666d90b
wow64_microsoft-onecore-cdp-winrt_31bf3856ad364e35_10.0.14393.0_none_9b75e1a53e6a6668

```

Tugas

```

C:\files>cd..
C:>d:
D:>md \multimedia
D:\>dir
Volume in drive D is New Volume
Volume Serial Number is 6886-AAA7

Directory of D:\

29/11/2017 18.14 <DIR> .idea
04/11/2017 08.05 137.556 Alat Parkir Kendaraan Berbasis IoT.pptm
27/05/2018 15.48 <DIR> amalia
30/05/2018 12.56 <DIR> application
13/05/2018 15.33 <DIR> baru
27/05/2018 15.48 <DIR> FD Cahya
22/11/2017 17.06 <DIR> FILE INFORMATIKA
04/10/2018 19.45 0 file2.docx
27/09/2018 17.41 <DIR> FOSTI
28/09/2018 19.28 <DIR> Games
28/09/2018 19.33 <DIR> GTA San Andreas
26/09/2018 06.59 <DIR> IPA 3
02/10/2018 09.58 <DIR> KESEK OPREC
24/07/2018 19.17 2.342.909 LPJ 2018!!!!.docx
04/10/2018 20.55 <DIR> MATKUL
26/09/2018 22.43 357.934 MODUL3_L200170110.pdf
08/10/2018 21.34 <DIR> multimedia
08/05/2018 21.15 <DIR> New folder
02/10/2018 10.15 14.976 seleksi maba FOSTI.xlsx
12/08/2018 06.05 <DIR> TOKO46
28/12/2017 21.22 1.436.103 Y Project 1.wwe
       6 File(s) 4.289.478 bytes
      15 Dir(s) 379.668.758.528 bytes free

D:>_

```

## **MODUL 5**

### **1. Distro Linux**

#### **a) 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".

#### **b) CentOS**

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

#### **c) Debian**

Debian adalah sistem operasi berbasis kernel Linux. Debian adalah 'kernel independen', yaitu sistem operasi Debian dikembangkan murni tanpa mendasarkan pada sistem operasi yang telah ada.

#### **d) 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 distribusi Linux yang paling mirip Unix.

#### **e) Red Hat**

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 file teks
- Nano : mengedit isi dari suatu file teks
- Wc : menghitung jumlah baris, kata atau karakter dari sebuah file teks
- 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 user ID
- Fg : mengembalikan suatu proses yang dihentikan sementara agar berjalan kembali di foreground
- Find : mencari letak file

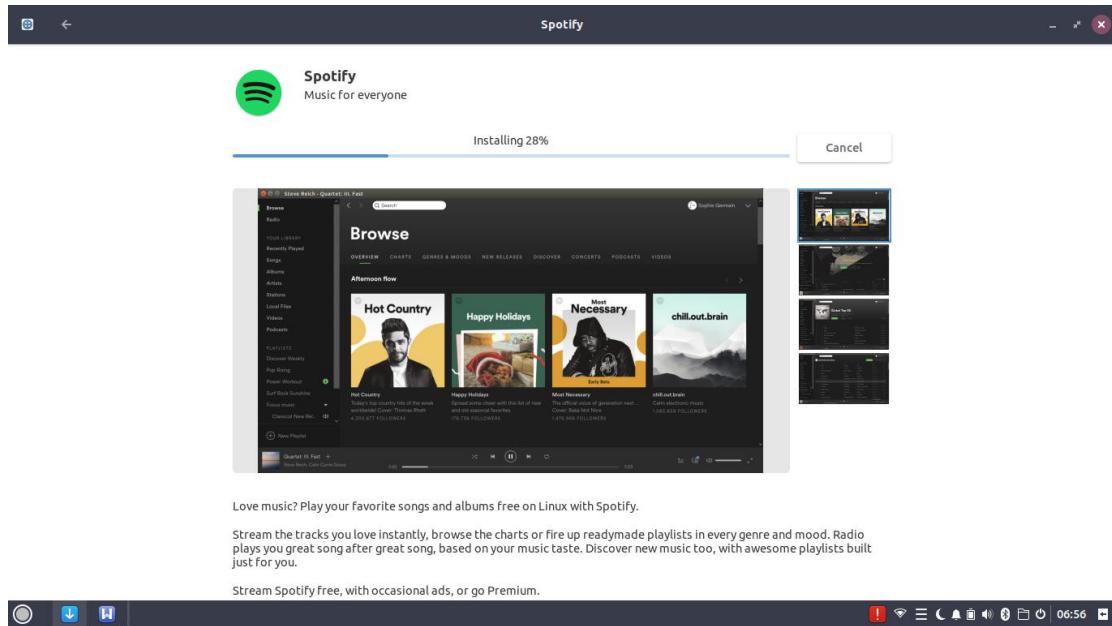
- Gzip : software kompresi zip versi GNU
  - Halt : memberitahu kernel supaya mematikan sistem
  - Hostname : menampilkan host/domain
  - Less : perintah more
  - Login : masuk ke sistem dengan memasukan login ID
  - Logout : keluar dari sistem
  - Man : menampilkan teks/manual page
  - Mesg : memberikan ijin user untuk menampilkan pesan dilayar terminal
  - More : mempaging hal
  - Pwd : menampilkan di direktori
  - Shutdown : mematikan sistem
  - Su : login sementara sebagai user lain
  - Talk : percakapan melalui terminal
3. init 0 : untuk maintenance, diagnostic hardware, booting  
init 1 : single user mode, tambah patches, backup  
init 2 : multiuser mode  
init 3 : memperluas multiuser mode  
init 4 : alternative multiuser  
init 5 : shutdown  
init 6 : 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

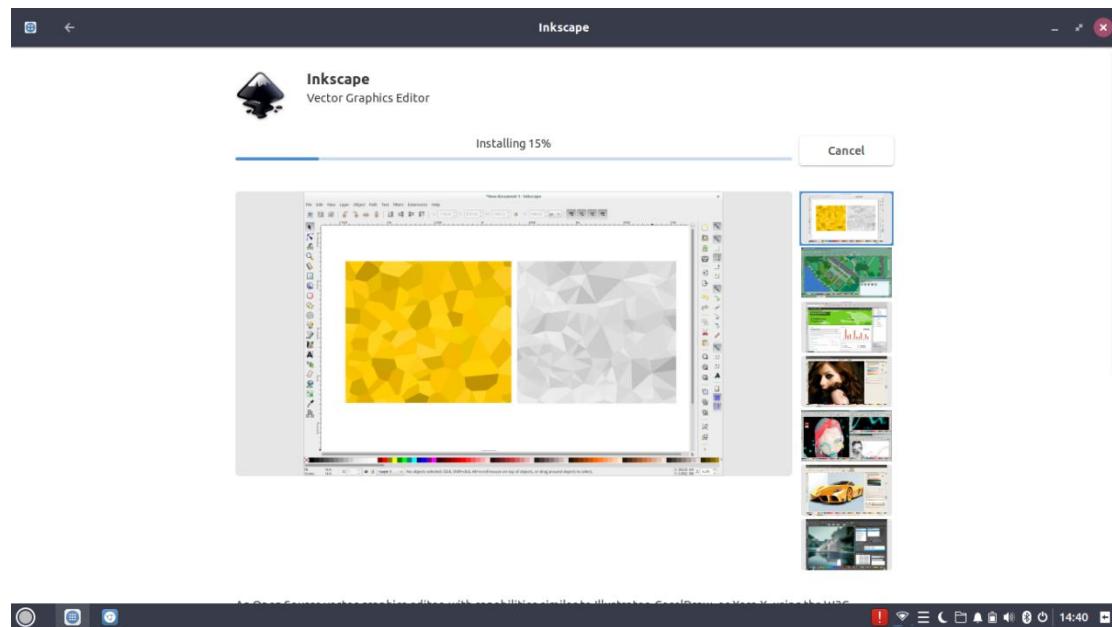
#### 1. SPOTIFY

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



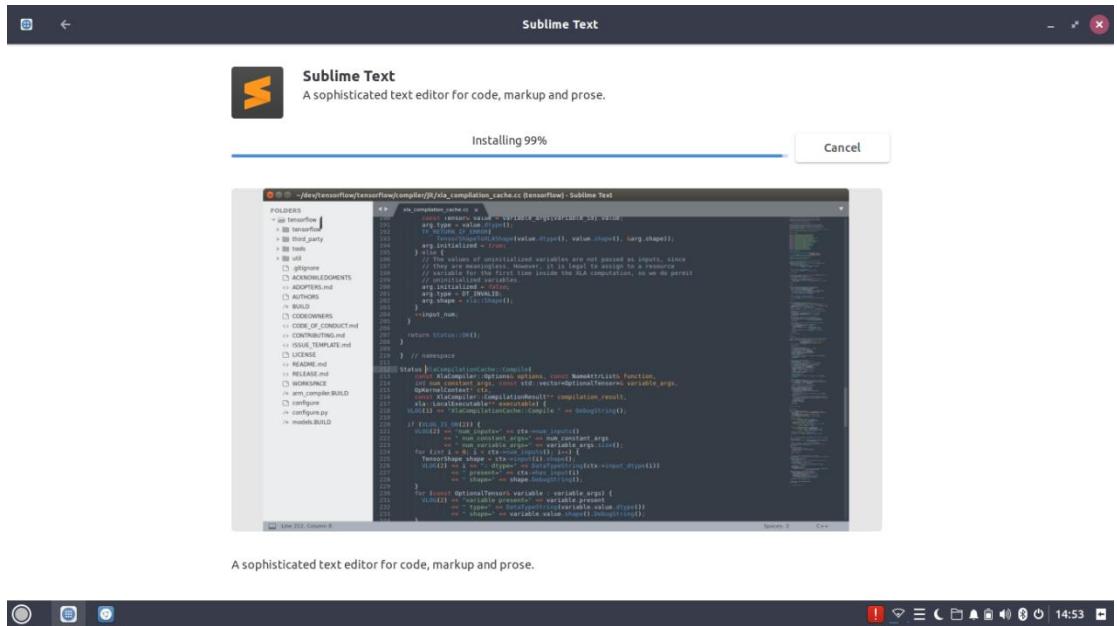
#### 2. INKSCAPE

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



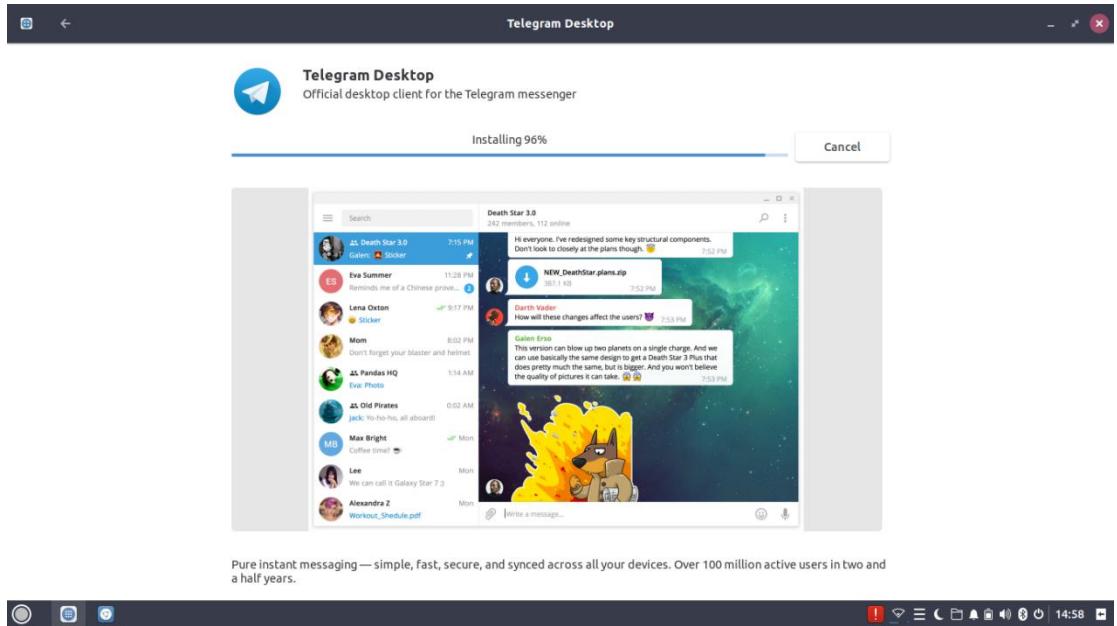
#### 3. SUBLIME TEKS

Berfungsi untuk teks editor untuk berbagai bahasa pemrograman.



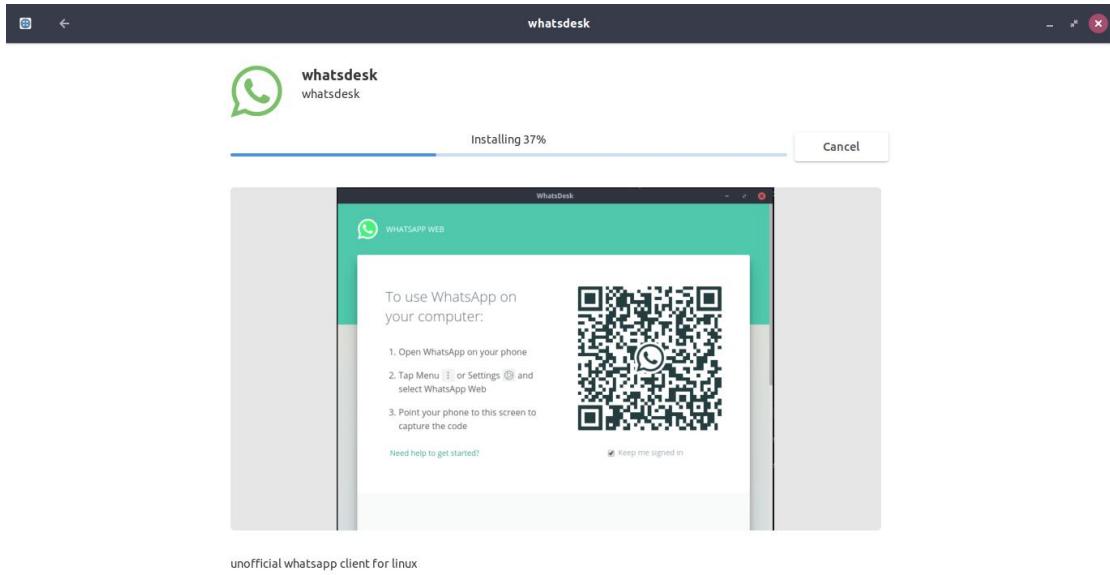
#### 4. TELEGRAM

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



## 5. WHATSDESK

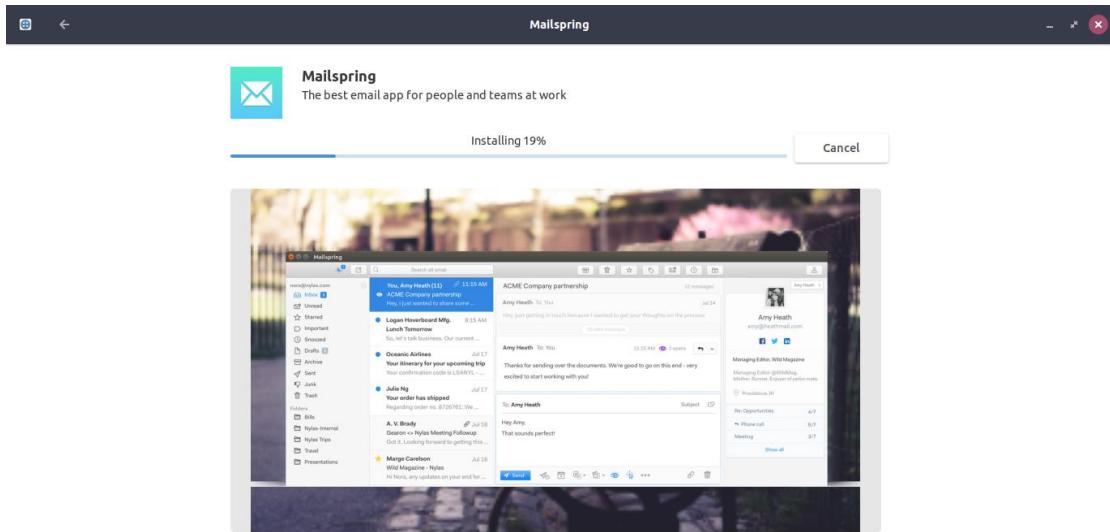
Berfungsi untuk mengirim pesan atau bertukar informasi baik berupa gambar, video, audio, ataupun dokumen.



unofficial whatsapp client for linux

## 6. MAILSPRING

Berfungsi untuk mengirim dan bertukar file baik berupa gambar maupun dokumen

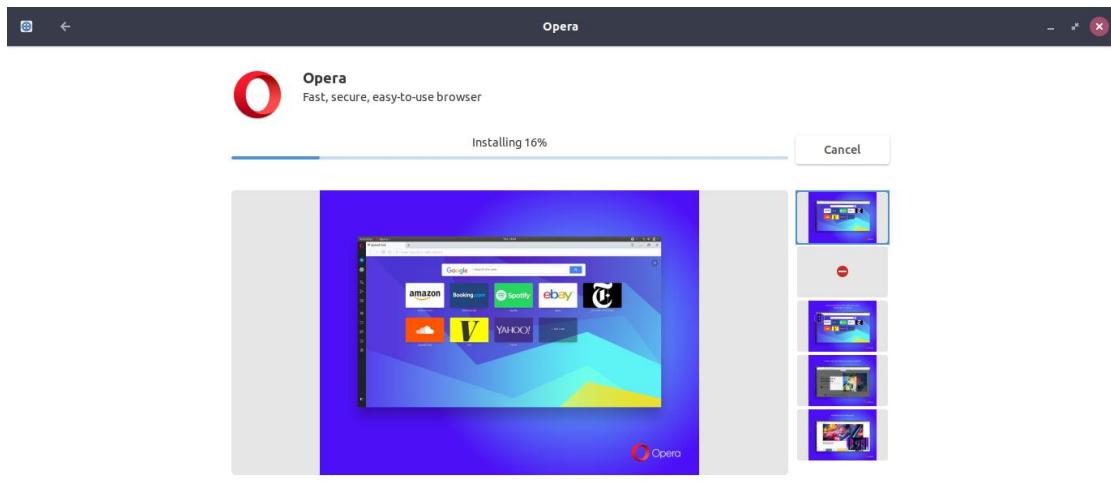


Mailspring is a desktop email client with modern features like unified inbox, snoozing, reminders, templates, offline search, and support for Gmail labels. It even has a built-in "dark" and "ubuntu" themes so you can style it to match your desktop. Move to Mailspring and breathe life back into your tired inbox!



## 7. OPERA

Berfungsi untuk mencari berbagai informasi di internet



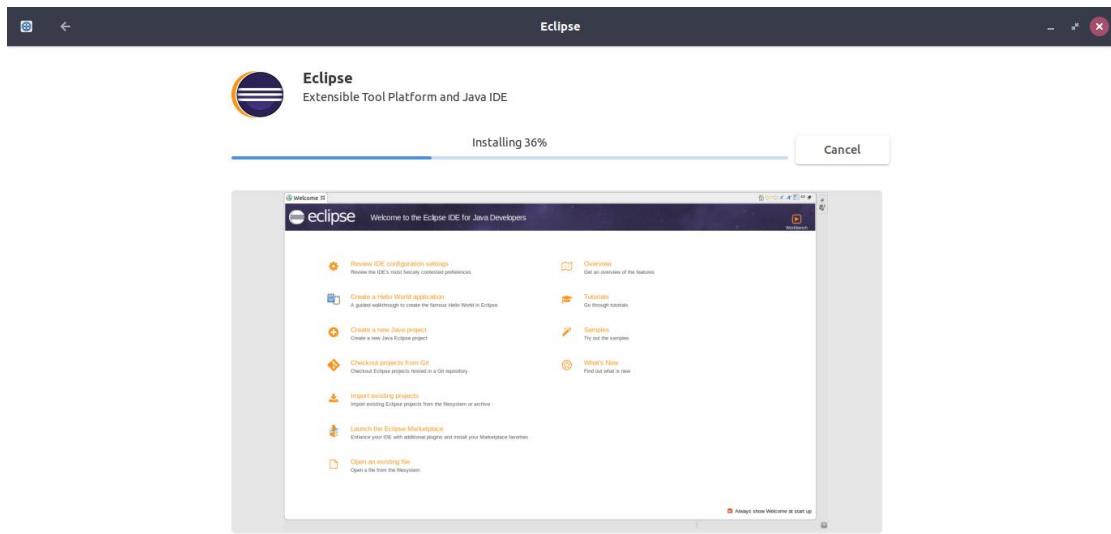
Try the Opera browser - now with a built-in ad blocker, battery saver and free VPN.

### Details



## 8. ECLIPSE

Berfungsi untuk teks editor menggunakan bahasa pemrograman java

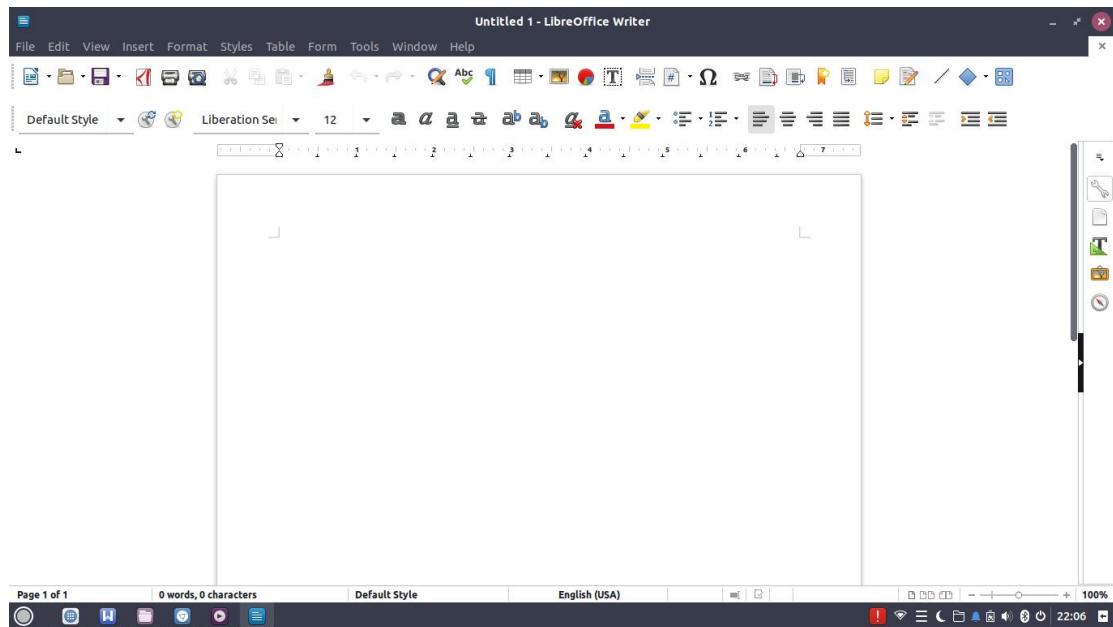


Eclipse provides IDEs and platforms for nearly every language and architecture. We are famous for our Java IDE, C/C++, JavaScript and PHP IDEs built on extensible platforms for creating desktop, Web and cloud IDEs. These platforms deliver the most extensive collection of add-on tools available for software developers.



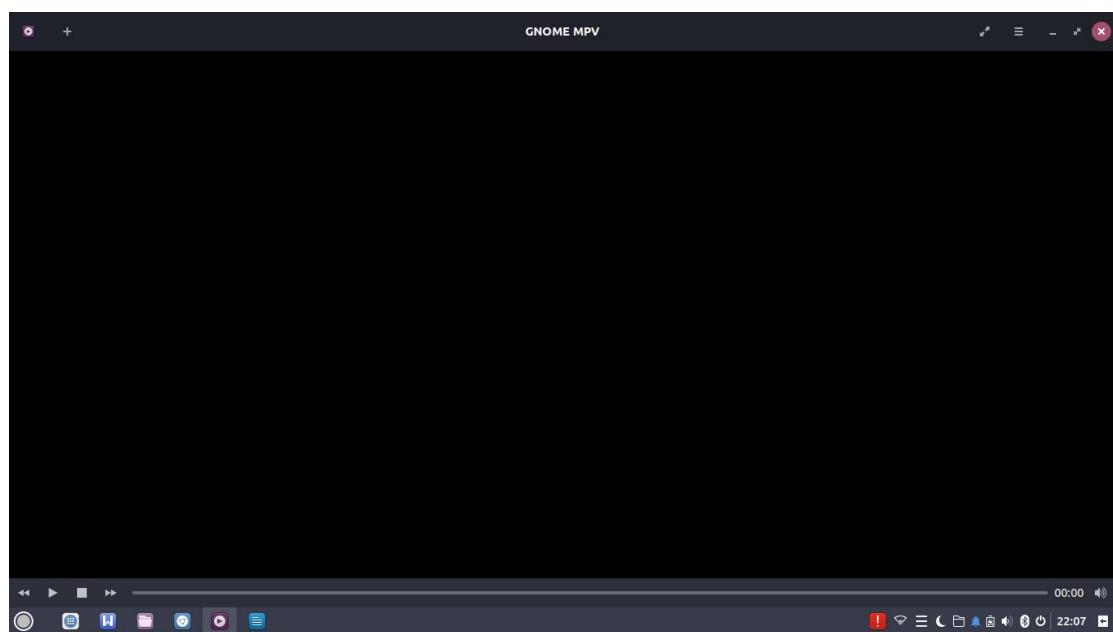
## 9. LIBREOFFICE WRITE

Berfungsi untuk teks editor menulis suatu dokumen



## 10. GNOME MPV

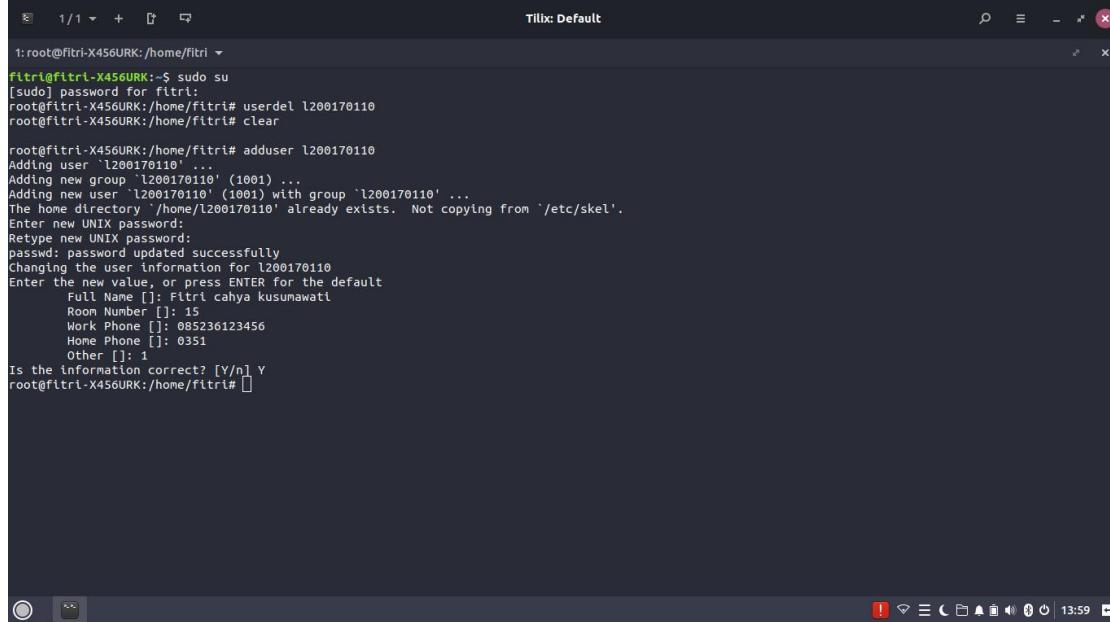
Berfungsi untuk menampilkan video yang akan di putar



## MODUL 7

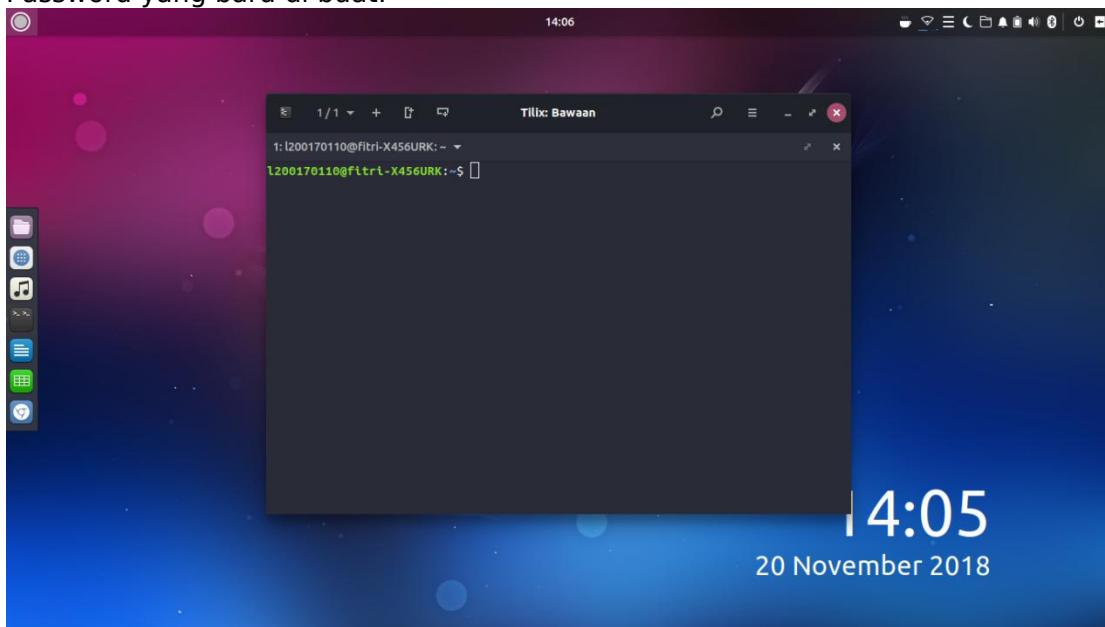
### PRAKTIKUM 1

1. Membuat user baru dengan perintah “adduser l200170110”
2. Masukan password dan memasukan data diri



```
1:root@fitri-X456URK:/home/fitri ~  
fitri@fitri-X456URK:~$ sudo su  
[sudo] password for fitri:  
root@fitri-X456URK:/home/fitri# userdel l200170110  
root@fitri-X456URK:/home/fitri# clear  
  
root@fitri-X456URK:/home/fitri# adduser l200170110  
Adding user `l200170110' ...  
Adding new group `l200170110' (1001)  
The home directory `/home/l200170110' already exists. Not copying from `/etc/skel'.  
Enter new UNIX password:  
Retype new UNIX password:  
passwd: password updated successfully  
Changing the user information for l200170110  
Enter the new value, or press ENTER for the default  
  Full Name []: Fitri cahya kusumawati  
  Room Number []: 15  
  Work Phone []: 085236123456  
  Home Phone []: 0351  
  Other []: 1  
Is the Information correct? [Y/n] Y  
root@fitri-X456URK:/home/fitri#
```

3. Keluar dari terminal dan kemudian log Out
4. Lalu masuk ke jendela login, dan cobalah untuk masuk menggunakan user dan Password yang baru di buat.



## PRAKTIKUM 2

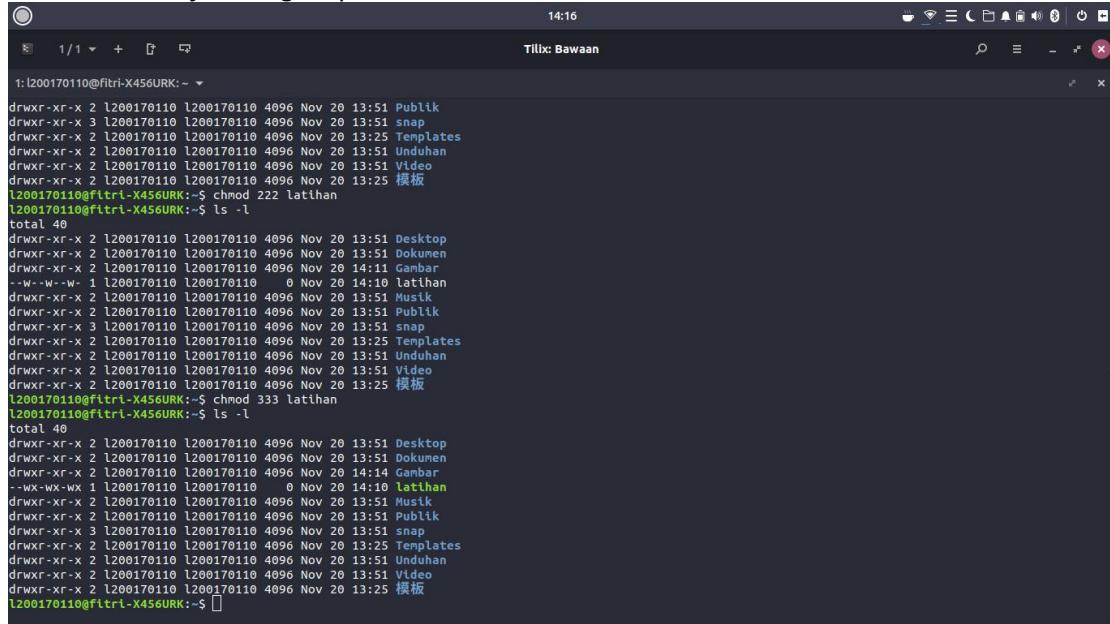
1. Membuat file latihan dengan perintah “touch latihan”
2. Ketik “chmod 666 latihan”
3. Lihat hasilnya dengan perintah “ls -l”
4. Ketik perintah “chmod 640 latihan”
5. Lihat hasinya dengan perintah “ls -l”

```
1: l200170110@ftrli-X456URK:~ 
l200170110@ftrli-X456URK:~$ touch latihan
l200170110@ftrli-X456URK:~$ chmod 666 latihan
l200170110@ftrli-X456URK:~$ ls -l
total 40
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Desktop
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Dokumen
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 14:06 Gambar
-rw-rw-rw- 1 l200170110 l200170110 0 Nov 20 14:10 latihan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Musik
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Publik
drwxr-xr-x 3 l200170110 l200170110 4096 Nov 20 13:51 snap
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 Templates
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Unduhan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Video
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 模板
l200170110@ftrli-X456URK:~$ chmod 640 latihan
l200170110@ftrli-X456URK:~$ ls -l
total 40
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Desktop
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Dokumen
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 14:06 Gambar
-rw-r----- 1 l200170110 l200170110 0 Nov 20 14:10 latihan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Musik
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Publik
drwxr-xr-x 3 l200170110 l200170110 4096 Nov 20 13:51 snap
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 Templates
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Unduhan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Video
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 模板
l200170110@ftrli-X456URK:~$
```

6. Ketik perintah “chmod 111 latihan”
7. Lihat hasilnya dengan perintah “ls -l”

```
1: l200170110@ftrli-X456URK:~ 
l200170110@ftrli-X456URK:~$ chmod 640 latihan
l200170110@ftrli-X456URK:~$ ls -l
total 40
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Desktop
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Dokumen
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 14:06 Gambar
-rw-r----- 1 l200170110 l200170110 0 Nov 20 14:10 latihan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Musik
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Publik
drwxr-xr-x 3 l200170110 l200170110 4096 Nov 20 13:51 snap
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 Templates
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Unduhan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Video
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 模板
l200170110@ftrli-X456URK:~$ chmod 111 latihan
l200170110@ftrli-X456URK:~$ ls -l
total 40
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Desktop
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Dokumen
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 14:11 Gambar
--x--x--x 1 l200170110 l200170110 0 Nov 20 14:10 latihan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Musik
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Publik
drwxr-xr-x 3 l200170110 l200170110 4096 Nov 20 13:51 snap
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 Templates
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Unduhan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Video
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 模板
l200170110@ftrli-X456URK:~$ chmod 222 latihan
l200170110@ftrli-X456URK:~$ ls -l
total 40
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Desktop
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Dokumen
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 14:11 Gambar
--w--w--w- 1 l200170110 l200170110 0 Nov 20 14:10 latihan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Musik
```

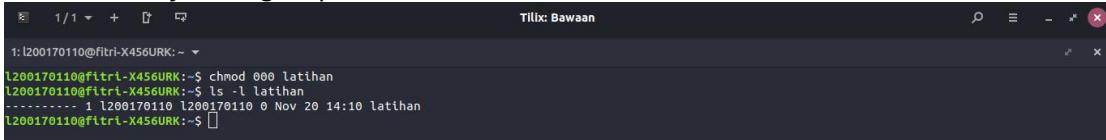
8. Ketik perintah “chmod 222 latihan”
9. Lihat hasilnya dengan perintah “ls -l”
10. Ketik perintah “chmod 333 latihan”
11. Lihat hasilnya dengan perintah “ls -l”



```
1:l200170110@fitri-X456URK:~ 
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Publik
drwxr-xr-x 3 l200170110 l200170110 4096 Nov 20 13:51 snap
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 Templates
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Unduhan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Video
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 模板
l200170110@fitri-X456URK:~$ chmod 222 latihan
l200170110@fitri-X456URK:~$ ls -l
total 40
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Desktop
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Dokumen
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 14:11 Gambar
--w--w--w- 1 l200170110 l200170110 0 Nov 20 14:10 latihan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Musik
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 snap
drwxr-xr-x 3 l200170110 l200170110 4096 Nov 20 13:51 Templates
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Unduhan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Video
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 模板
l200170110@fitri-X456URK:~$ chmod 333 latihan
l200170110@fitri-X456URK:~$ ls -l
total 40
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Desktop
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Dokumen
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 14:14 Gambar
--wx-wx-wx- 1 l200170110 l200170110 0 Nov 20 14:10 latihan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Musik
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Publik
drwxr-xr-x 3 l200170110 l200170110 4096 Nov 20 13:51 snap
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 Templates
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Unduhan
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:51 Video
drwxr-xr-x 2 l200170110 l200170110 4096 Nov 20 13:25 模板
l200170110@fitri-X456URK:~$ 
```

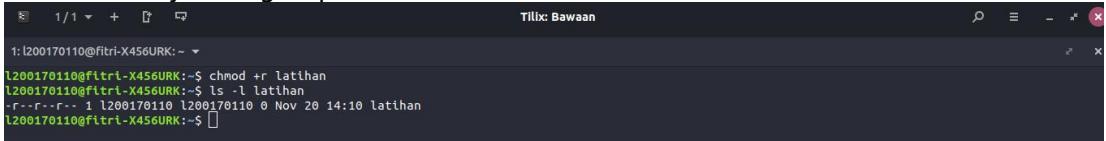
### PRAKTIKUM 3

1. Ketik perintah “chmod 000 latihan” (tidak memberikan hak akses)
2. Lihat hasilnya dengan perintah “ls -l latihan”



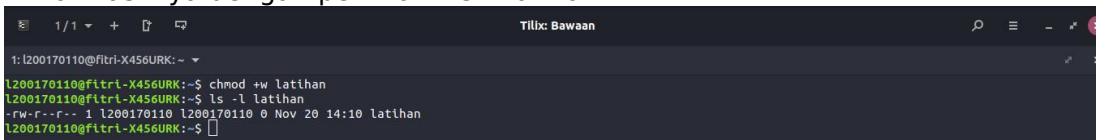
```
1: l200170110@fitri-X456URK: ~  
l200170110@fitri-X456URK:~$ chmod 000 latihan  
l200170110@fitri-X456URK:~$ ls -l latihan  
l200170110@fitri-X456URK:~$
```

3. Ketik perintah “chmod +r latihan”(menambah hak akses read)
4. Lihat hasilnya dengan perintah “ls -l latihan”



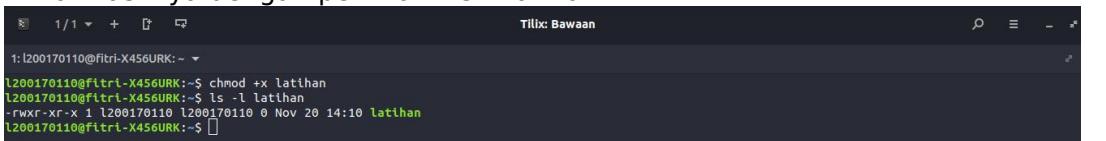
```
1: l200170110@fitri-X456URK: ~  
l200170110@fitri-X456URK:~$ chmod +r latihan  
l200170110@fitri-X456URK:~$ ls -l latihan  
l200170110@fitri-X456URK:~$
```

5. Ketik perintah “chmod +w latihan”(menambah hak akses write)
6. Lihat hasilnya dengan perintah “ls -l latihan”



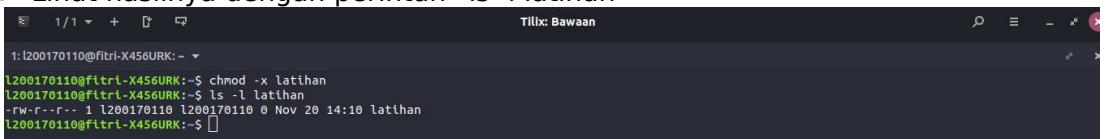
```
1: l200170110@fitri-X456URK: ~  
l200170110@fitri-X456URK:~$ chmod +w latihan  
l200170110@fitri-X456URK:~$ ls -l latihan  
l200170110@fitri-X456URK:~$
```

7. Ketik perintah “chmod +x latihan”(menambah hak akses execute)
8. Lihat hasilnya dengan perintah “ls -l latihan”



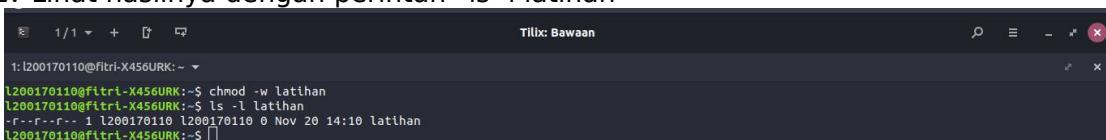
```
1: l200170110@fitri-X456URK: ~  
l200170110@fitri-X456URK:~$ chmod +x latihan  
l200170110@fitri-X456URK:~$ ls -l latihan  
l200170110@fitri-X456URK:~$
```

9. Ketik perintah “chmod -x latihan”(menghilangkan hak akses execute)
10. Lihat hasilnya dengan perintah “ls -l latihan”



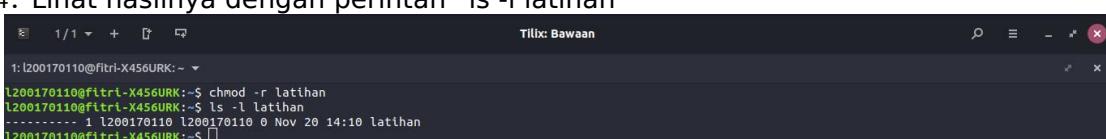
```
1: l200170110@fitri-X456URK: ~  
l200170110@fitri-X456URK:~$ chmod -x latihan  
l200170110@fitri-X456URK:~$ ls -l latihan  
l200170110@fitri-X456URK:~$
```

11. Ketik perintah “chmod -w latihan”(menghilangkan hak akses write)
12. Lihat hasilnya dengan perintah “ls -l latihan”



```
1: l200170110@fitri-X456URK: ~  
l200170110@fitri-X456URK:~$ chmod -w latihan  
l200170110@fitri-X456URK:~$ ls -l latihan  
l200170110@fitri-X456URK:~$
```

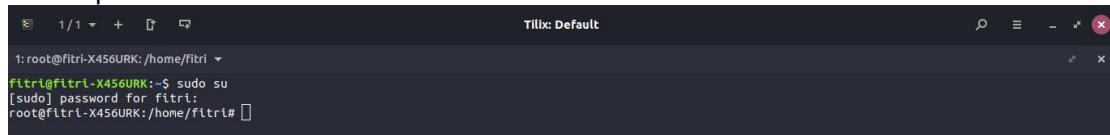
13. Ketik perintah “chmod -r latihan”(menghilangkan hak akses read)
14. Lihat hasilnya dengan perintah “ls -l latihan”



```
1: l200170110@fitri-X456URK: ~  
l200170110@fitri-X456URK:~$ chmod -r latihan  
l200170110@fitri-X456URK:~$ ls -l latihan  
l200170110@fitri-X456URK:~$
```

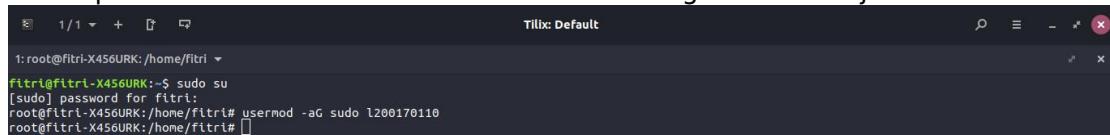
## PRAKTIKUM 4

1. Ketik perintah “sudo su” untuk masuk ke root



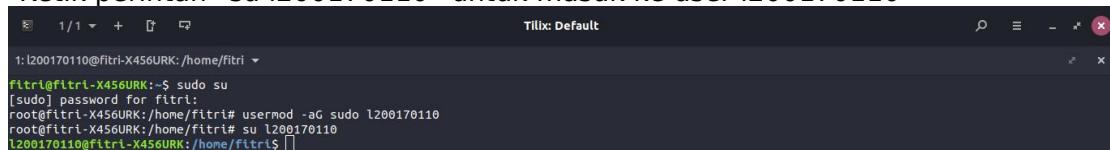
```
1:root@fitri-X456URK:/home/fitri ~  
fitri@fitri-X456URK:~$ sudo su  
[sudo] password for fitri:  
root@fitri-X456URK:/home/fitri#
```

2. Ketik perintah “usermod -aG sudo l200170110” agar user menjadi sudo



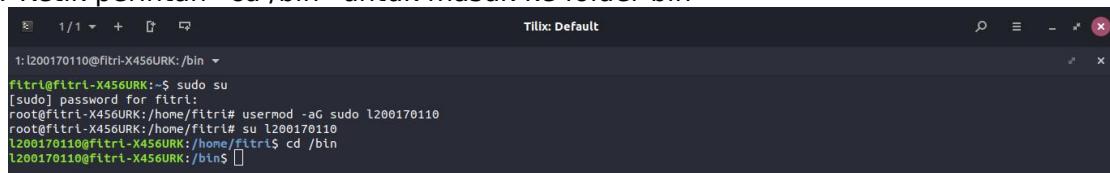
```
1:root@fitri-X456URK:/home/fitri ~  
fitri@fitri-X456URK:~$ sudo su  
[sudo] password for fitri:  
root@fitri-X456URK:/home/fitri# usermod -aG sudo l200170110  
root@fitri-X456URK:/home/fitri#
```

3. Ketik perintah “su l200170110” untuk masuk ke user l200170110



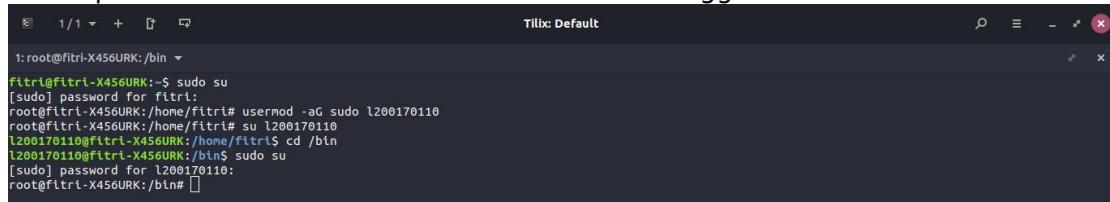
```
1:l200170110@fitri-X456URK:/home/fitri ~  
l200170110@fitri-X456URK:~$ sudo su  
[sudo] password for fitri:  
root@fitri-X456URK:/home/fitri# usermod -aG sudo l200170110  
root@fitri-X456URK:/home/fitri# su l200170110  
l200170110@fitri-X456URK:/home/fitri$
```

4. Ketik perintah “cd /bin” untuk masuk ke folder bin



```
1:l200170110@fitri-X456URK:/bin ~  
l200170110@fitri-X456URK:~$ sudo su  
[sudo] password for fitri:  
root@fitri-X456URK:/home/fitri# usermod -aG sudo l200170110  
root@fitri-X456URK:/home/fitri# su l200170110  
l200170110@fitri-X456URK:/home/fitri$ cd /bin  
l200170110@fitri-X456URK:/bin$
```

5. Ketik perintah “sudo su” untuk masuk ke root menggunakan user baru

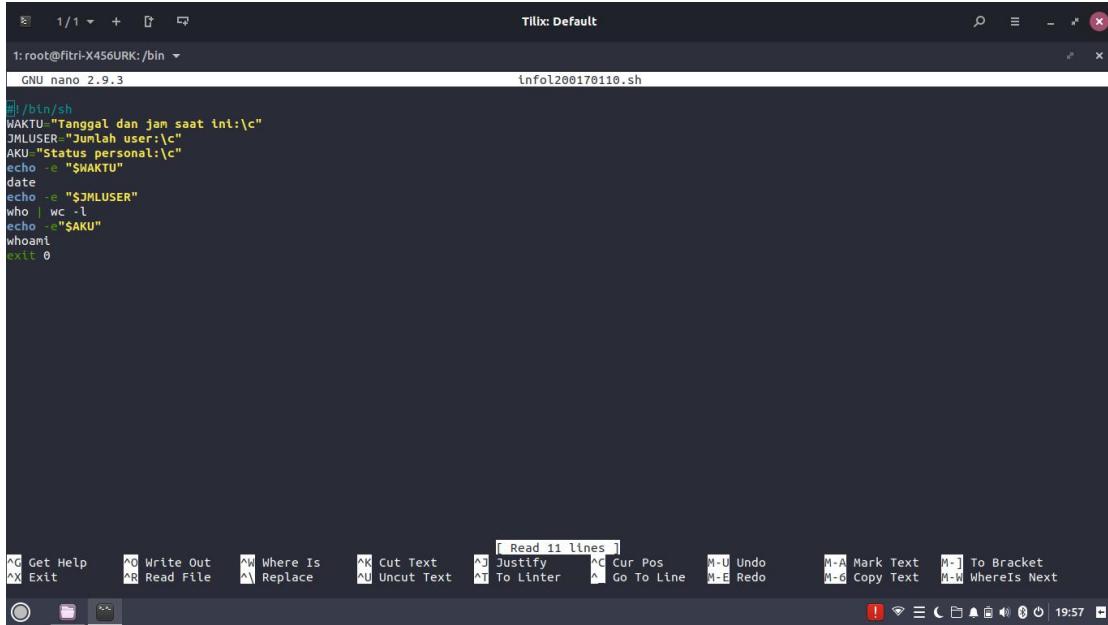


```
1:root@fitri-X456URK:/bin ~  
l200170110@fitri-X456URK:~$ sudo su  
[sudo] password for fitri:  
root@fitri-X456URK:/home/fitri# usermod -aG sudo l200170110  
root@fitri-X456URK:/home/fitri# su l200170110  
l200170110@fitri-X456URK:/home/fitri$ cd /bin  
l200170110@fitri-X456URK:/bin$ sudo su  
[sudo] password for l200170110:  
root@fitri-X456URK:/bin$
```

6. Ketik perintah “nano infol200170110.sh” untuk membuat file dengan info.sh

7. Kemudian ketik perintah seperti berikut :

```
#!/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
```



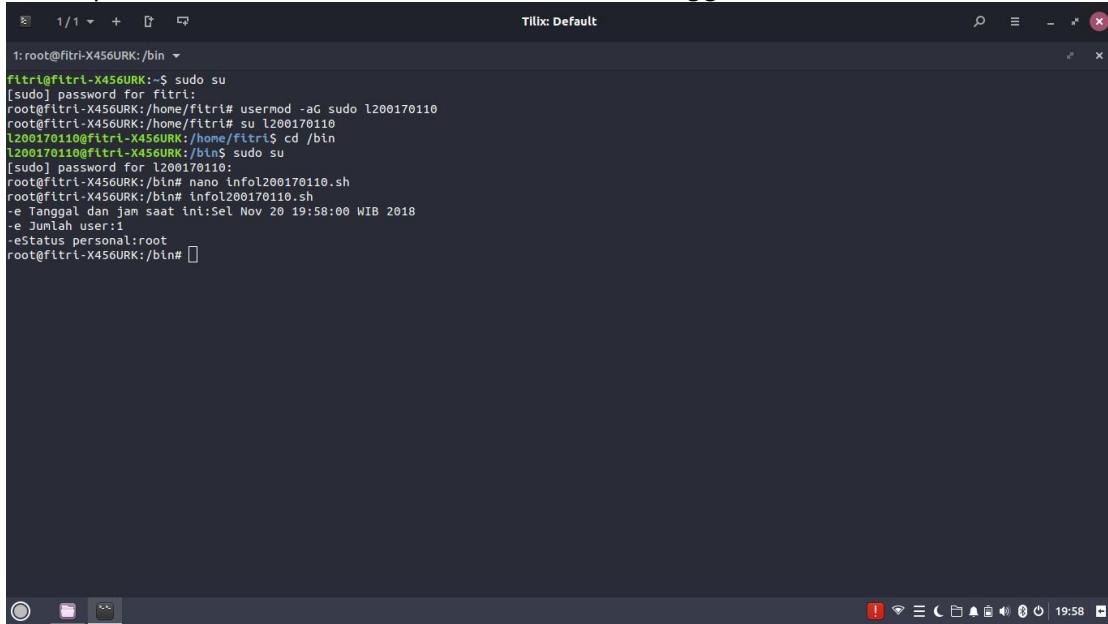
The screenshot shows a terminal window titled "Tilix: Default". The command prompt is "1:root@fitri-X456URK:/bin <". Below it, the file "infol200170110.sh" is being edited with the GNU nano 2.9.3 text editor. The script contains the following code:

```
#!/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
```

The terminal window includes standard Linux keyboard shortcuts at the bottom, such as Ctrl+H for Get Help, Ctrl+O for Write Out, and so on. The status bar at the bottom right shows the time as 19:57.

8. Lalu simpan dengan cara ctrl +x

9. Ketik perintah “infol200170110.sh” untuk memanggil file



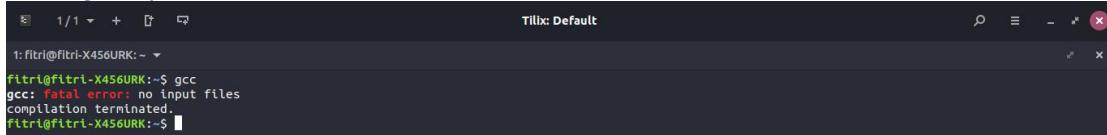
The screenshot shows a terminal window titled "Tilix: Default". The command prompt is "1:root@fitri-X456URK:/bin <". The user has run the command "sudo nano infol200170110.sh" to edit the script. After saving and exiting nano, they run the command "infol200170110.sh" to execute it. The output of the script is displayed:

```
fitri@fitri-X456URK:~$ sudo su
[sudo] password for fitri:
root@fitri-X456URK:/home/fitri# usermod -aG sudo l200170110
root@fitri-X456URK:/home/fitri# su l200170110
l200170110@fitri-X456URK:/home/fitri$ cd /bin
l200170110@fitri-X456URK:/bin$ sudo su
[sudo] password for l200170110:
root@fitri-X456URK:/bin# nano infol200170110.sh
root@fitri-X456URK:/bin# infol200170110.sh
-e Tanggal dan jam saat ini:Sel Nov 20 19:58:00 WIB 2018
-e Jumlah user:1
-e Status personal:root
root@fitri-X456URK:/bin#
```

The terminal window includes standard Linux keyboard shortcuts at the bottom, such as Ctrl+H for Get Help, Ctrl+O for Write Out, and so on. The status bar at the bottom right shows the time as 19:58.

## MODUL 8

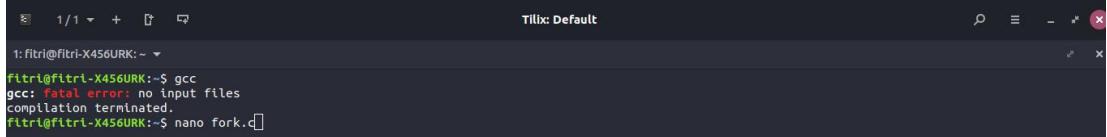
### A. Ketik “gcc” pada terminal linux



```
1: fitri@fitri-X456URK:~ ~
fitri@fitri-X456URK:~$ gcc
gcc: fatal error: no input files
compilation terminated.
fitri@fitri-X456URK:~$
```

### B. Fork.c

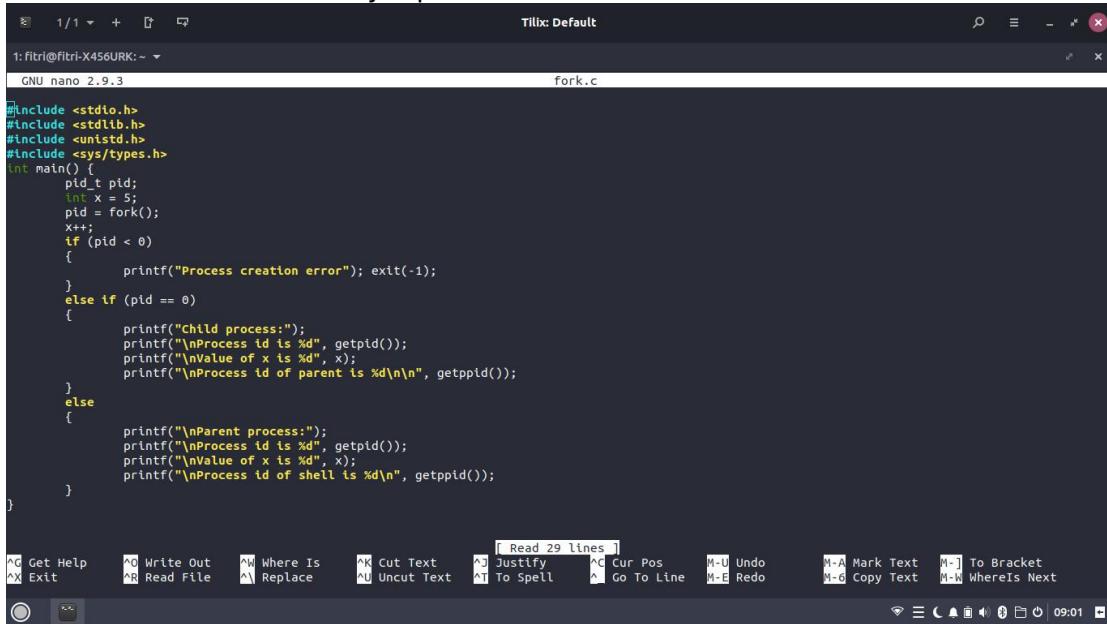
#### 1. Ketik perintah “nano fork.c” untuk membuat file bernama fork



```
1: fitri@fitri-X456URK:~ ~
fitri@fitri-X456URK:~$ gcc
gcc: fatal error: no input files
compilation terminated.
fitri@fitri-X456URK:~$ nano fork.c
```

#### 2. Lalu ketik perintah yang terdapat pada modul

#### 3. Tekan ctrl+x untuk menyimpan file, lalu ketik “Y”, lalu enter



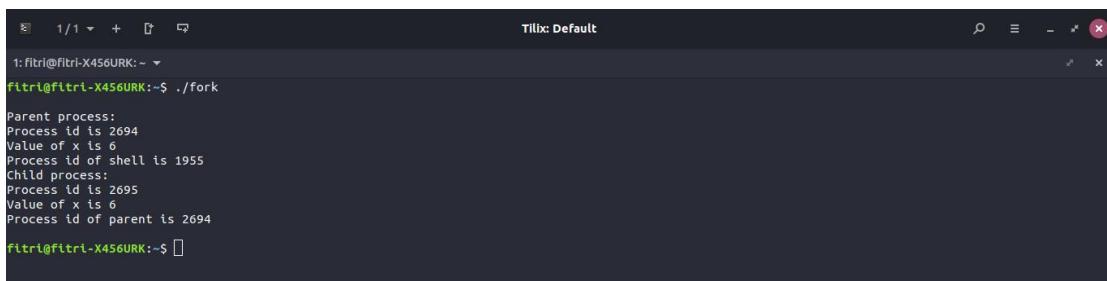
```
GNU nano 2.9.3 fork.c

#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
int main() {
    pid_t pid;
    int x = 5;
    pid = fork();
    x++;
    if (pid < 0)
    {
        printf("Process creation error"); exit(-1);
    }
    else if (pid == 0)
    {
        printf("\nChild 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());
    }
}
```

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

#### 4. Ketik “gcc fork.c -o fork” untuk mengecek apakah codingan sudah benar atau belum.

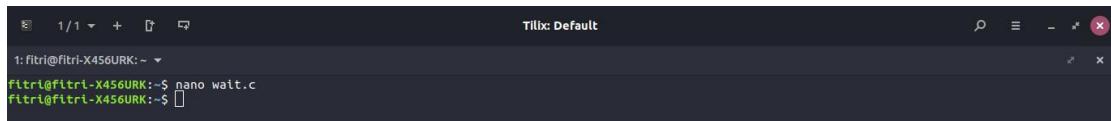
#### 5. Ketik “./fork” untuk menampilkan outputnya



```
1: fitri@fitri-X456URK:~ ~
fitri@fitri-X456URK:~$ ./fork
Parent process:
Process id is 2694
Value of x is 6
Process id of shell is 1955
Child process:
Process id is 2695
Value of x is 6
Process id of parent is 2694
fitri@fitri-X456URK:~$
```

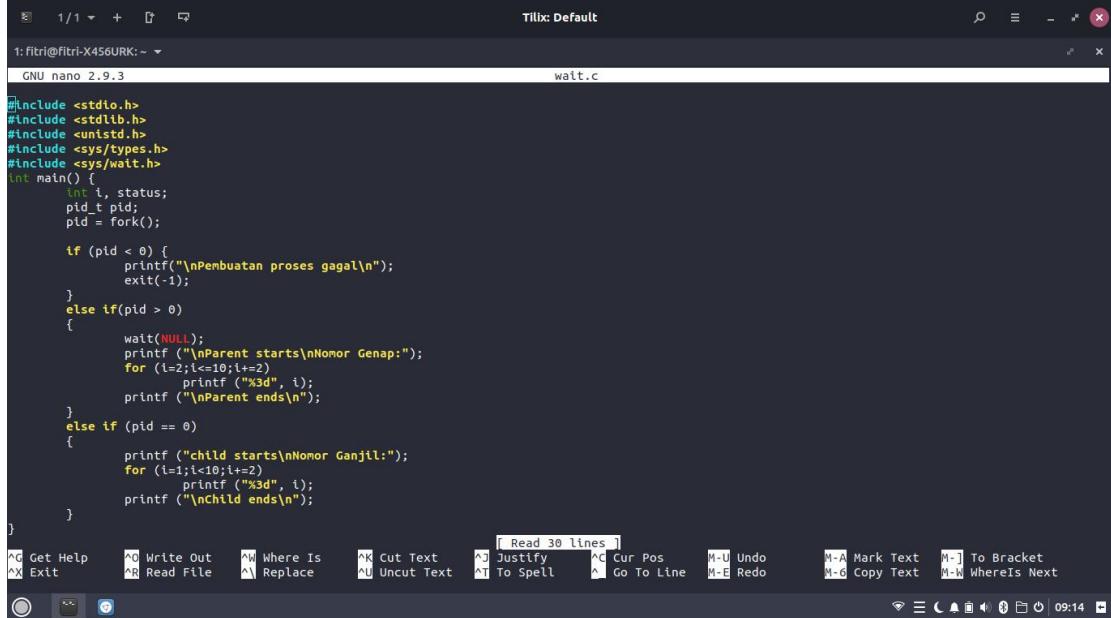
### C. Wait.c

#### 1. Ketik perintah “nano wait.c” untuk membuat file bernama wait



```
1: filtri@filtri-X456URK:~ $ nano wait.c
```

2. Lalu ketik perintah yang terdapat pada modul
3. Tekan **ctrl+x** untuk menyimpan file, lalu ketik "Y", lalu enter



```
1: filtri@filtri-X456URK:~ $ nano 2.9.3 watt.c
```

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/wait.h>
int main() {
    int i, status;
    pid_t pid;
    pid = fork();

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

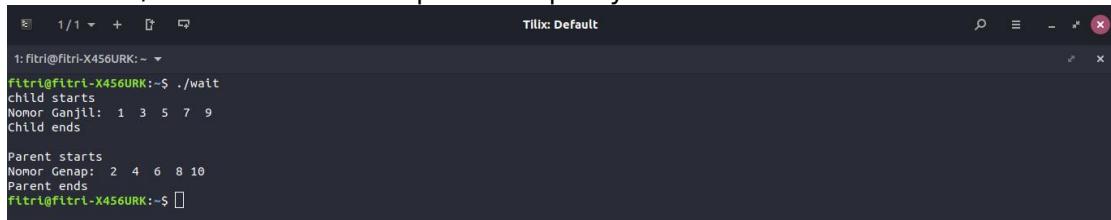
GNU nano 2.9.3

File: watt.c [Read 38 lines]

Keyboard Shortcuts:

- Get Help
- Write Out
- Where Is
- Cut Text
- Justify
- Cur Pos
- Undo
- Mark Text
- To Bracket
- Exit
- Read File
- Replace
- Uncut Text
- To Spell
- Go To Line
- Redo
- Copy Text
- WhereIs Next

4. Ketik "gcc wait.c -o wait" untuk mengecek apakah codingan sudah benar atau belum.
5. Ketik "./wait" untuk menampilkan outputnya



```
1: filtri@filtri-X456URK:~ $ ./wait
```

```
child starts
Nomor Ganjil:  1 3 5 7 9
Child ends

Parent starts
Nomor Genap: 2 4 6 8 10
Parent ends
```

## D. Exec.c

- Ketik perintah “nano exec.c” untuk membuat file bernama exec

```
1: filtr@filtr-X456URK: ~
filtr@filtr-X456URK: $ nano exec.c
filtr@filtr-X456URK: $ gcc exec.c -o exec
filtr@filtr-X456URK: $
```

- Lalu ketik perintah yang terdapat pada modul

- Tekan ctrl+x untuk menyimpan file, lalu ketik “Y”, lalu enter

```
#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:
    }
}
Get Help      ^O Write Out      ^W Where Is      ^K Cut Text      ^J Justify      ^C Cur Pos      M-U Undo
^X Exit       ^R Read File     ^I Replace      ^U Uncut Text   ^T To Spell      ^G Go To Line   M-E Redo
M-A Mark Text M-B Copy Text M-W WhereIs Next
[ Read 35 lines ]
Tilix: Default
1: filtr@filtr-X456URK: ~
GNU nano 2.9.3          exec.c
^G Get Help      ^O Write Out      ^W Where Is      ^K Cut Text      ^J Justify      ^C Cur Pos      M-U Undo
^X Exit       ^R Read File     ^I Replace      ^U Uncut Text   ^T To Spell      ^G Go To Line   M-E Redo
M-A Mark Text M-B Copy Text M-W WhereIs Next
[ Read 35 lines ]
Tilix: Default
1: filtr@filtr-X456URK: ~
GNU nano 2.9.3          exec.c
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);
}
```

- Ketik “gcc exec.c -o exec” untuk mengecek apakah codingan sudah benar atau belum.

- Ketik “./exec” untuk menampilkan outputnya

```
1: filtr@filtr-X456URK: ~
filtr@filtr-X456URK: $ nano exec.c
filtr@filtr-X456URK: $ gcc exec.c -o exec
filtr@filtr-X456URK: $ ./exec
Insufficient arguments to load program
Usage: ./a.out <path> <cmd>
filtr@filtr-X456URK: $
```

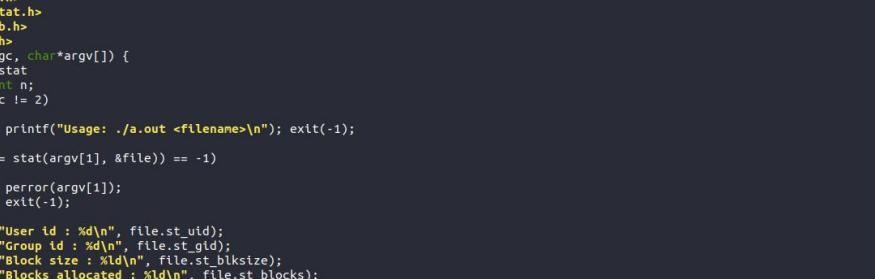
E. Stat.c

1. Ketik perintah “nano stat.c” untuk membuat file bernama stat

```
1 / 1 + 🔍 ⌂ Tiltx: Default  
1: filtr@filtr-X456URK:~ ▾  
filtr@filtr-X456URK:~$ nano stat.c  
filtr@filtr-X456URK:~$
```

2. Lalu ketik perintah yang terdapat pada modul

3. Tekan **ctrl+x** untuk menyimpan file, lalu ketik “Y”, lalu enter



```
#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 modifier : %s", ctime(&(file.st_mtime)));
    printf("File size : %lu bytes\n", file.st_size);
    printf("No. of links : %d\n", file.st_nlink);
    printf("Permissions : ");
    printf("%s_ISDIR(file.st_mode) ? "d" : "-");
    printf((file.st_mode & S_IRUSR) ? "r" : "-");
    printf((file.st_mode & S_IWUSR) ? "w" : "-");
    printf((file.st_mode & S_IXUSR) ? "x" : "-");
}

[ Read 44 lines ]
```

```
GNU nano 2.9.3                                     stat.c

}

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 modifier : %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( (_ISDIR(file.st_mode)) ? "d" : "-");
printf( (file.st_mode & _IRUSR) ? "r" : "-");
printf( (file.st_mode & _IMUSR) ? "w" : "-");
printf( (file.st_mode & _IXUSR) ? "x" : "-");
printf( (file.st_mode & _IRGRP) ? "r" : "-");
printf( (file.st_mode & _IMGRP) ? "w" : "-");
printf( (file.st_mode & _IXGRP) ? "x" : "-");
printf( (file.st_mode & _IROTH) ? "r" : "-");
printf( (file.st_mode & _IOTH) ? "w" : "-");
printf( (file.st_mode & _IXOTH) ? "x" : "-");
printf("\n");
if(file.st_mode & _IFREG)
    printf("File type : Regular\n");
if(file.st_mode & _IFDIR)
    printf("File type : Directory\n");
}


```

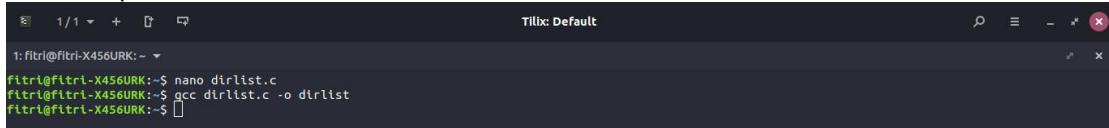
4. Ketik “gcc stat.c -o stat” untuk mengecek apakah codingan sudah benar atau belum

5. Ketik “./stat” untuk menampilkan outputnya

```
filtri@filtri-X456URK:~ $ nano stat.c
filtri@filtri-X456URK:~ $ gcc stat.c -o stat
Filtri@filtri-X456URK:~ $ ./stat
Usage: ./a.out <filename>
filtri@filtri-X456URK:~ $
```

## F. Dirlist.c

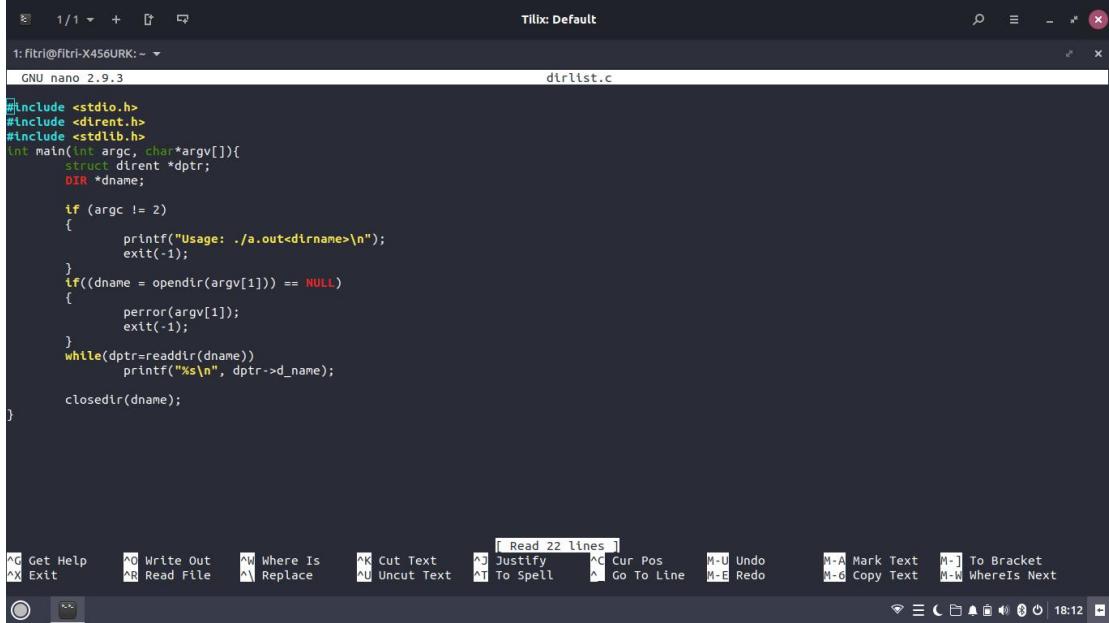
1. Ketik perintah “nano dirlist.c” untuk membuat file bernama dirlist



```
1: filtri@filtri-X456URK: ~
filtri@filtri-X456URK: $ nano dirlist.c
filtri@filtri-X456URK: $ gcc dirlist.c -o dirlist
filtri@filtri-X456URK: ~$
```

2. Lalu ketik perintah yang terdapat pada modul

3. Tekan **ctrl+x** untuk menyimpan file, lalu ketik “Y”, lalu enter

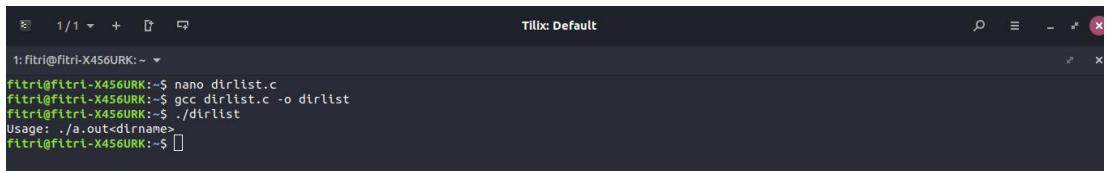


```
1: filtri@filtri-X456URK: ~
GNU nano 2.9.3
dirlist.c

#include <stdio.h>
#include <dirent.h>
#include <stdlib.h>
int main(int argc, char*argv[]){
    struct dirent *ptr;
    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(ptr=readdir(dname))
        printf("%s\n", ptr->d_name);
    closedir(dname);
}
```

4. Ketik “gcc dirlist.c -o dirlist” untuk mengecek apakah codingan sudah benar atau belum.

5. Ketik “./dirlist” untuk menampilkan outputnya

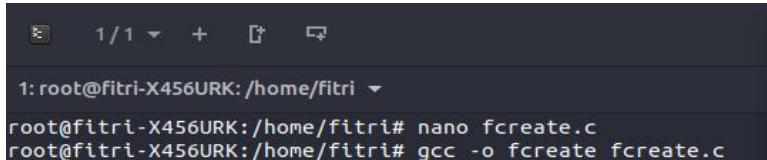


```
1: filtri@filtri-X456URK: ~
filtri@filtri-X456URK: $ nano dirlist.c
filtri@filtri-X456URK: $ gcc dirlist.c -o dirlist
filtri@filtri-X456URK: $ ./dirlist
Usage: ./a.out<dirname>
filtri@filtri-X456URK: ~$
```

## MODUL 9

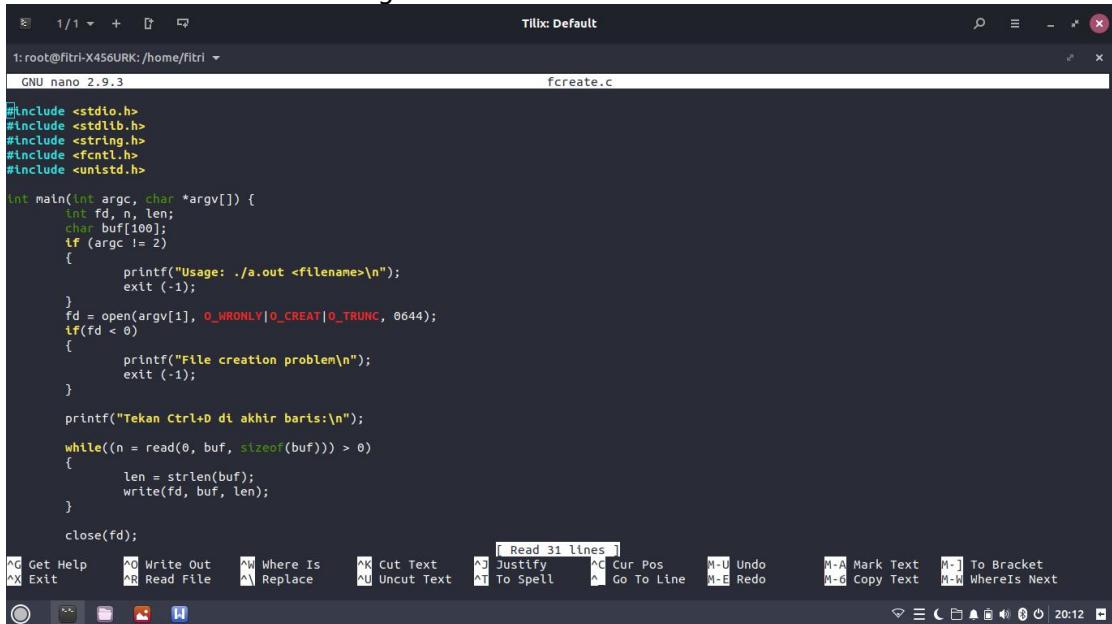
### 1. fcreate.c

- Ketik “nano fcreate.c ” untuk membuat codingan di teks editor nano, dengan nama fcreate.c
- Ketik “gcc -o fcreate fcreate.c” untuk melihat apakah ada codingan yang error atau tidak



```
1: root@fitri-X456URK:/home/fitri ~
root@fitri-X456URK:/home/fitri# nano fcreate.c
root@fitri-X456URK:/home/fitri# gcc -o fcreate fcreate.c
```

- Dibawah ini adalah codingan di dalam fcreate.c



```
1: root@fitri-X456URK:/home/fitri ~
GNU nano 2.9.3                               fcreate.c

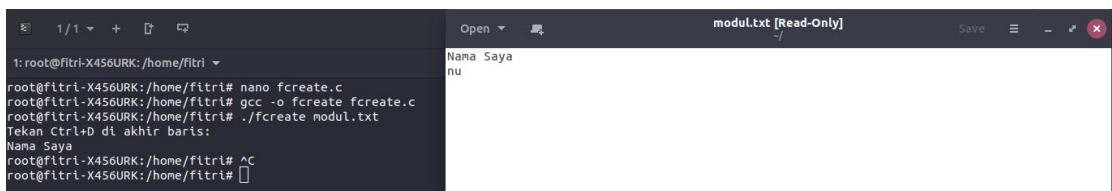
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <fcntl.h>
#include <unistd.h>

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);
}

Get Help      A0 Write Out      M-W Where Is      M-C Cut Text      M-J Justify      M-C Cur Pos      M-U Undo      M-A Mark Text      M-B To Bracket
Pw Ext      A-R Read File      M-W Replace      M-U Uncut Text      M-T To Spell      M-G Go To Line      M-E Redo      M-C Copy Text      M-W Whereis Next

```

- Lalu ketik “./fcreate modul.txt” untuk membuat file bernama modul.txt
- Ketik apapun untuk mengisi file modul.txt, lalu enter, ctrl +D, lalu ctrl+C



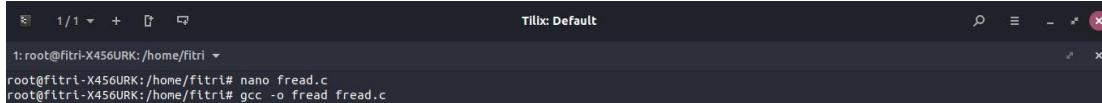
```
1: root@fitri-X456URK:/home/fitri ~
root@fitri-X456URK:/home/fitri# nano fcreate.c
root@fitri-X456URK:/home/fitri# gcc -o fcreate fcreate.c
root@fitri-X456URK:/home/fitri# ./fcreate modul.txt
Tekan Ctrl+D di akhir baris:
Nama Saya
nu

modul.txt [Read-Only]
```

### 2. fread.c

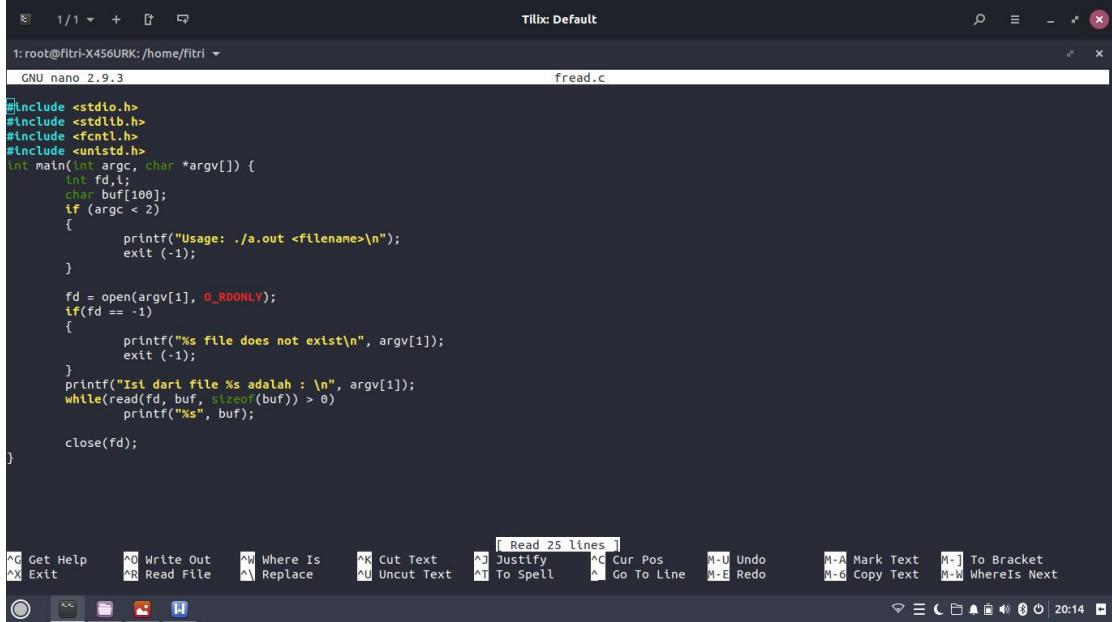
a. Ketik “nano fread.c” untuk membuat codingan di teks editor nano, bernama fread.c

b. Ketik “gcc -o fread fread.c” untuk melihat codingan apakah ada error atau tidak



```
1:root@fitri-X456URK:/home/fitri
root@fitri-X456URK:/home/fitri# nano fread.c
root@fitri-X456URK:/home/fitri# gcc -o fread fread.c
```

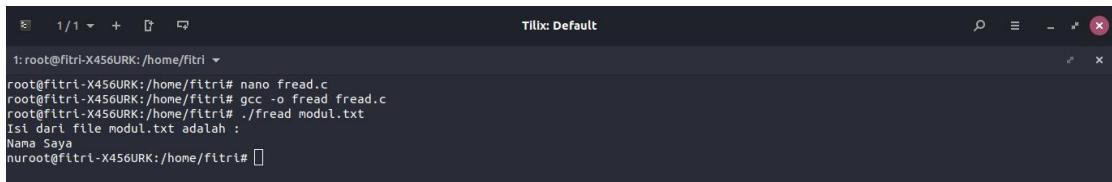
c. Dibawah ini adalah codingan dari fread.c



```
1:root@fitri-X456URK:/home/fitri
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);
}
```

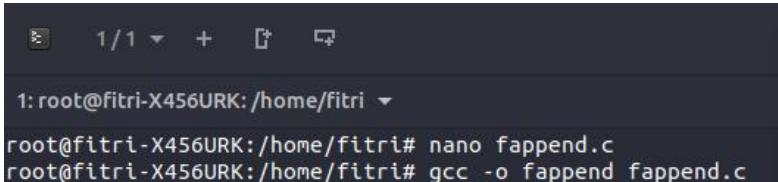
d. Ketik “./fread modul.txt” untuk membaca isi dari file modul.txt



```
1:root@fitri-X456URK:/home/fitri
root@fitri-X456URK:/home/fitri# nano fread.c
root@fitri-X456URK:/home/fitri# gcc -o fread fread.c
root@fitri-X456URK:/home/fitri# ./fread modul.txt
Isi dari file modul.txt adalah :
Nama Saya
nuroot@fitri-X456URK:/home/fitri#
```

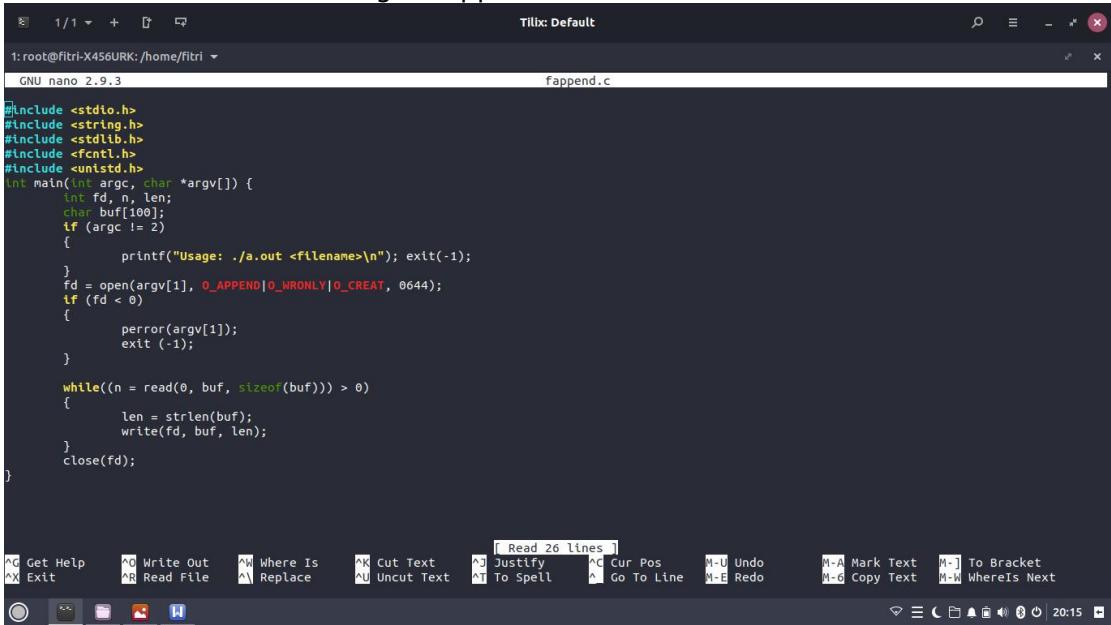
### 3. fappend.c

- Ketik “nano fappend.c” untuk membuat codingan di teks editor nano, dengan nama fappend.c
- Ketik “gcc -o fappend fappend.c” untuk melihat apakah codingan ada yang error atau tidak



```
1: root@fitri-X456URK:/home/fitri ~
root@fitri-X456URK:/home/fitri# nano fappend.c
root@fitri-X456URK:/home/fitri# gcc -o fappend fappend.c
```

- Dibawah ini adalah codingan fappend.c



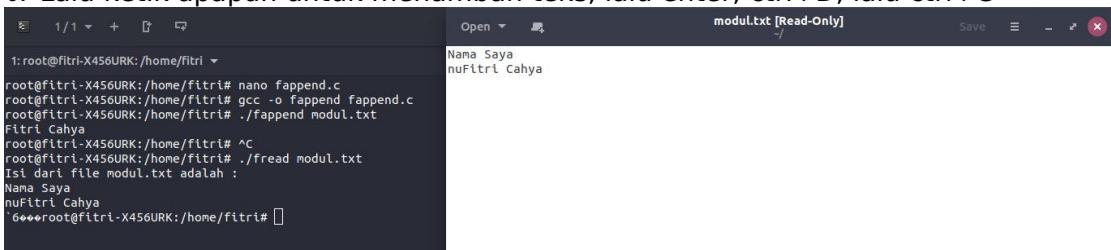
```
GNU nano 2.9.3                                     fappend.c

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

Below the code are various nano editor keyboard shortcuts:

- Get Help, Write Out, Where Is, Cut Text, Justify, Cur Pos, Undo, Mark Text, To Bracket
- Exit, Read File, Replace, Uncut Text, To Spell, Go To Line, Redo, Copy Text, WhereIs Next

- Ketik “./fappend.c modul.txt” untuk menambah teks di dalam file modul.txt
- Lalu ketik apapun untuk menambah teks, lalu enter, ctrl+D, lalu ctrl+C



```
1: root@fitri-X456URK:/home/fitri ~
root@fitri-X456URK:/home/fitri# nano fappend.c
root@fitri-X456URK:/home/fitri# gcc -o fappend fappend.c
root@fitri-X456URK:/home/fitri# ./fappend modul.txt
Fitri Cahya
root@fitri-X456URK:/home/fitri# ^C
root@fitri-X456URK:/home/fitri# ./fread modul.txt
Isi dari file modul.txt adalah :
Nama Saya
nuFitri Cahya
^C
root@fitri-X456URK:/home/fitri#
```

The nano editor window shows the contents of modul.txt:

```
Nama Saya
nuFitri Cahya
```

MODUL 10

## 1. list.c

a. Ketik “nano list.c” untuk membuat file bernama list.c

```
1:root@friti-X456URK:/home/friti ~
GNU nano 2.9.3
list.c

#include <stdio.h>
#include <dirent.h>
int main() {
    struct dirent
        **namelist; int n,i;
    char pathname[100];
    getcwd(pathname);

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

[ Read 15 lines ]
^G Get Help      ^Q Write Out     ^W Where Is      ^X Cut Text      ^J Justify      ^C Cur Pos      M-U Undo      M-A Mark Text      M-T To Bracket
^R Read File     ^L Replace      ^U Uncut Text     ^I To Spell      ^A Go To Line     M-E Redo       M-C Copy Text      M-W WhereIs Next
^O Exit
```

b. Ketik "gcc -o list list.c" untuk mengecek apakah codingan sudah benar atau belum

c. Ketik "ls" untuk melihat outputnya

## 2. mygrep.c

a. Ketik “nano mygrep.c” untuk membuat file bernama mygrep.c

1 / 1 + 🔍

Tilix: Default

1:root@fitri-X456URK: /home/fitri

GNU nano 2.9.3 mygrep.c

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

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

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

    while(!feof(fd))
    {
        i = 0;
        while(i)
        {
            c = fgetc(fd);
            if(c == '\n')
                str[i++] = '\0';
            if(c == '\r')
                str[i++] = '\0';
            str[i++] = c;
        }
        if(strlen(str) >= strlen(argv[1]))
        for(k=0; k<=strlen(argv[1]); k++)
        {
            for(m=0; m<strlen(argv[1]); m++)
                temp[m] = str[k+m];
        }
    }
}
```

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

1 / 1 + 🔍

Tilix: Default

1:root@fitri-X456URK: /home/fitri

GNU nano 2.9.3 mygrep.c

```
}
```

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

while(!feof(fd))
{
 i = 0;
 while(i)
 {
 c = fgetc(fd);
 if(feof(fd))
 {
 str[i++] = '\0'; break;
 }
 if(c == '\n')
 {
 str[i++] = '\0'; break;
 }
 str[i++] = c;
 }
 if(strlen(str) >= strlen(argv[1]))
 for(k=0; k<=strlen(argv[1]); k++)
 {
 for(m=0; m<strlen(argv[1]); m++)
 temp[m] = str[k+m];
 }
}

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

1 / 1 + 🔍

Tilix: Default

1:root@fitri-X456URK: /home/fitri

GNU nano 2.9.3 mygrep.c

```
}
```

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

while(!feof(fd))
{
 i = 0;
 while(i)
 {
 c = fgetc(fd);
 if(feof(fd))
 {
 str[i++] = '\0'; break;
 }
 if(c == '\n')
 {
 str[i++] = '\0'; break;
 }
 str[i++] = c;
 }
 if(strlen(str) >= strlen(argv[1]))
 for(k=0; k<=strlen(argv[1]); k++)
 {
 for(m=0; m<strlen(argv[1]); m++)
 temp[m] = str[k+m];
 }
}

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

```
1 / 1 + ⌂ ⌂  Tilix: Default
1:root@fitri-X456URK: /home/tilix ~
GNU nano 2.9.3
mygrep.c

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

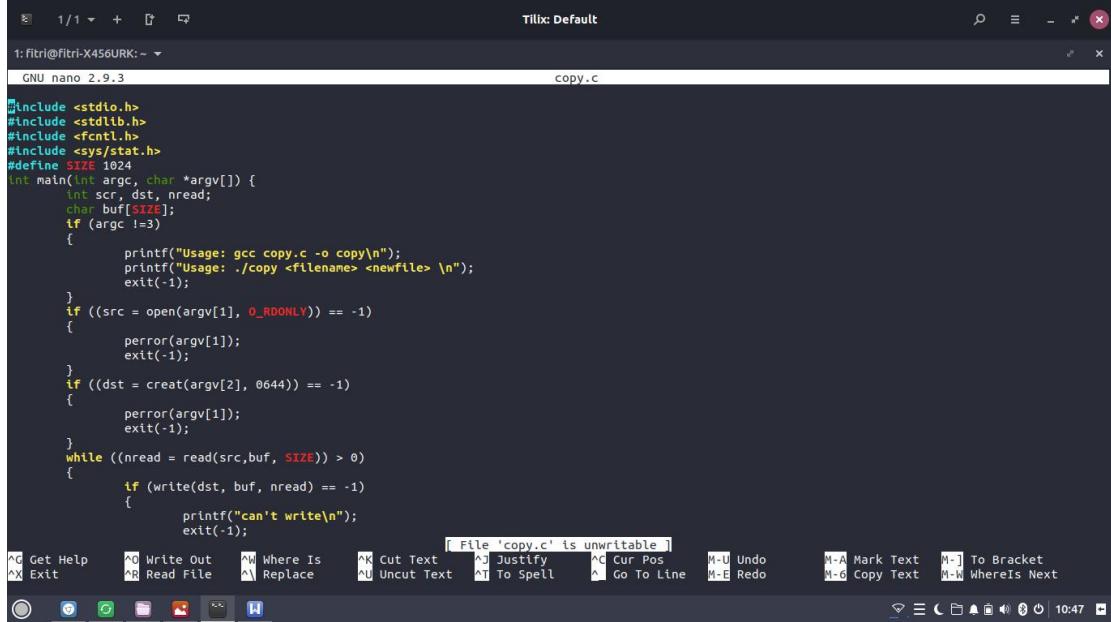
Get Help   Write Out   Where Is   Cut Text   Justify   Cur Pos   Undo   Mark Text   To Bracket
Exit   Read File   Replace   Uncut Text   To Spell   Go To Line   Redo   Copy Text   WhereIs Next
```

b. Ketik “gcc -o mygrep mygrep.c” untuk mengecek sudah benar atau belum

c. Ketik “./mygrep ya fit.txt”

### 3. copy.c

a. Ketik “nano copy.c” untuk membuat file bernama copy.c

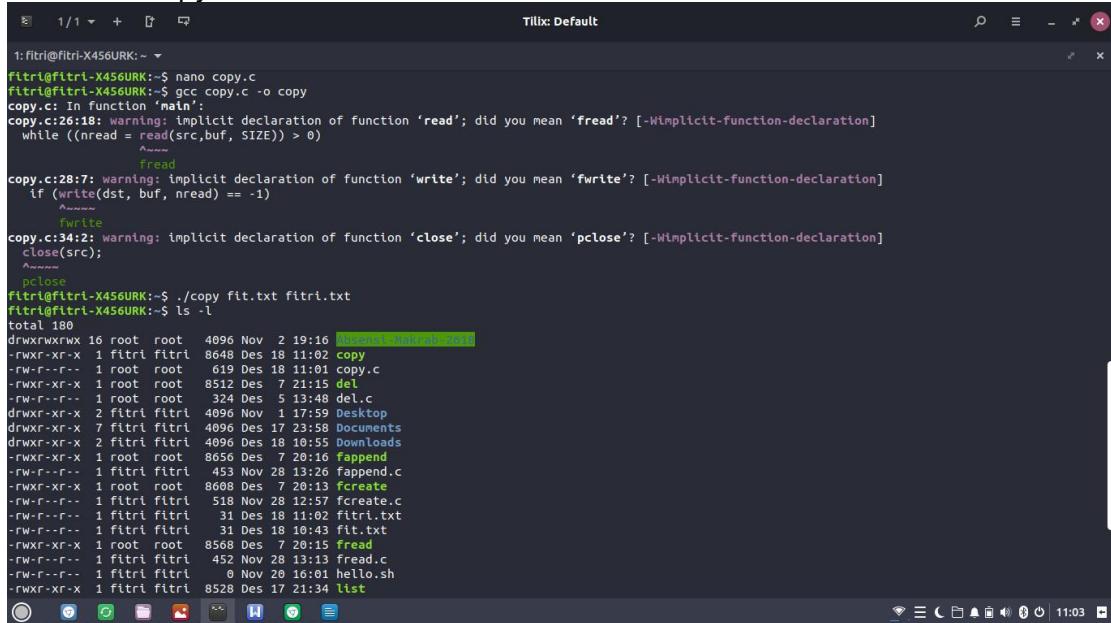


```
GNU nano 2.9.3                                     copy.c

#include <stdio.h>
#include <stdlib.h>
#include <fcntl.h>
#include <sys/stat.h>
#define SIZE 1024
int main(int argc, char *argv[])
{
    int scr, dst, nread;
    char buf[SIZE];
    if (argc != 3)
    {
        printf("Usage: gcc copy.c -o copy\n");
        printf("Usage: ./copy <filename> <newfile> \n");
        exit(-1);
    }
    if ((src = open(argv[1], O_RDONLY)) == -1)
    {
        perror(argv[1]);
        exit(-1);
    }
    if ((dst = creat(argv[2], 0644)) == -1)
    {
        perror(argv[1]);
        exit(-1);
    }
    while ((nread = read(src,buf,SIZE)) > 0)
    {
        if (write(dst,buf,nread) == -1)
        {
            printf("can't write\n");
            exit(-1);
        }
    }
}
File 'copy.c' is unwritable
```

b. Ketik “gcc copy.c -o copy” untuk mengecek apakah sudah benar atau belum

c. Ketik “./copy fit.txt fitri.txt”



```
1:fitri@fitri-X456URK:~ ~
fitri@fitri-X456URK:~ $ nano copy.c
fitri@fitri-X456URK:~ $ gcc copy.c -o copy
copy.c: In function 'main':
copy.c:26:18: warning: implicit declaration of function 'read'; did you mean 'fread'? [-Wimplicit-function-declaration]
    while ((nread = read(src,buf,SIZE)) > 0)
           ^
           fread
copy.c:28:7: warning: implicit declaration of function 'write'; did you mean 'fwrite'? [-Wimplicit-function-declaration]
    if (write(dst,buf,nread) == -1)
           ^
           fwrite
copy.c:34:2: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
    close(src);
           ^
           pclose
fitri@fitri-X456URK:~ $ ./copy fit.txt fitri.txt
fitri@fitri-X456URK:~ $ ls -l
total 100
drwxrwxrwx 16 root root 4096 Nov  2 19:16 /home/fitri/Hakainan-2018
-rw-r--r--  1 fitri fitri 8648 Des 18 11:02 copy.c
-rw-r--r--  1 root root  619 Des 18 11:01 copy
-rw-r--r--  1 root root  8512 Des  7 21:15 del
-rw-r--r--  1 root root  324 Des  5 13:48 del.c
drwxr-xr-x  2 fitri fitri 4096 Nov  1 17:59 Desktop
drwxr-xr-x  7 fitri fitri 4096 Des 17 23:58 Documents
drwxr-xr-x  2 fitri fitri 4096 Des 18 10:55 Downloads
-rw-r--r--  1 root root  8656 Des  7 20:16 fappend
-rw-r--r--  1 fitri fitri  453 Nov 28 13:26 fappend.c
-rw-r--r--  1 root root  8600 Des  7 20:16 fcreate
-rw-r--r--  1 fitri fitri  518 Nov 28 12:57 fcreate.c
-rw-r--r--  1 fitri fitri  31 Des 18 11:02 fitri.txt
-rw-r--r--  1 fitri fitri  31 Des 18 10:43 fit.txt
-rw-r--r--  1 root root  8568 Des  7 20:15 fread
-rw-r--r--  1 fitri fitri  452 Nov 28 13:13 fread.c
-rw-r--r--  1 fitri fitri   0 Nov 28 16:01 hello.sh
-rwxr-xr-x  1 fitri fitri 8528 Des 17 21:34 list
```

```

1: fitri@fitri-X456URK:~ 
  pclose
fitri@fitri-X456URK:~$ ./copy fit.txt fitri.txt
fitri@fitri-X456URK:~$ ls -l
total 180
drwxrwxrwx 16 root root 4096 Nov  2 19:16 absentia-Makalah-2018
-rw-r--r--  1 fitri fitri 8648 Des 18 11:02 copy
-rw-r--r--  1 root root  619 Des 18 11:01 copy.c
-rw-r--r--  1 root root  8512 Des  7 21:15 del
-rw-r--r--  1 root root  324 Des  5 13:48 del.c
drwxr-xr-x  2 fitri fitri 4096 Nov  1 17:59 Desktop
drwxr-xr-x  7 fitri fitri 4096 Des 17 23:58 Documents
drwxr-xr-x  2 fitri fitri 4096 Des 18 10:55 Downloads
-rw-r--r--  1 root root  8656 Des  7 20:16 fappend
-rw-r--r--  1 fitri fitri 453 Nov 28 13:26 fappend.c
-rw-r--r--  1 root root  8608 Des  7 20:13 fcreate
-rw-r--r--  1 fitri fitri 518 Nov 28 12:57 fcreate.c
-rw-r--r--  1 fitri fitri  31 Des 18 11:02 fitri.txt
-rw-r--r--  1 fitri fitri  31 Des 18 10:43 fit.txt
-rw-r--r--  1 root root  8568 Des  7 20:15 fread
-rw-r--r--  1 fitri fitri 452 Nov 28 13:13 fread.c
-rw-r--r--  1 fitri fitri  8 Nov 28 16:01 hello.sh
-rw-r--r--  1 fitri fitri 8528 Des 17 21:34 list
-rw-r--r--  1 root root  315 Des  5 12:49 list.c
-rw-r--r--  1 root root  24 Des  7 20:17 modul.txt
drwxr-xr-x  2 fitri fitri 4096 Okt 16 01:53 Music
-rw-r--r--  1 fitri fitri 8651 Des 18 10:42 mygrep
-rw-r--r--  1 root root  845 Des  5 13:10 mygrep.c
drwxr-xr-x  2 fitri fitri 12288 Des 18 10:47 Pictures
-rw-r--r--  1 fitri fitri  41 Nov 30 13:33 prak.txt
drwxr-xr-x  2 fitri fitri 4096 Okt 16 01:53 Public
drwxr-xr-x  6 fitri fitri 4096 Nov 28 10:29 snap
drwxr-xr-x  2 fitri fitri 4096 Nov  1 17:59 Templates
-rw-r--r--  1 fitri fitri  16 Des  5 13:35 test.txt
drwxr-xr-x  3 fitri fitri 4096 Nov 29 12:01 Videos
fitri@fitri-X456URK:~$ 

```

#### 4. del.c

- Ketik “nano del.c” untuk membuat file bernama del.c
- Ketik “gcc -o copy copy.c” untuk mengecek apakah sudah benar atau belum

```

1: root@fitri-X456URK:~/home/fitri 
GNU nano 2.9.3                               del.c

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

^D Get Help      ^O Write Out      ^W Where Is      ^X Cut Text      ^J Justify      ^G Cur Pos      M-U Undo      M-A Mark Text      M-B To Bracket
^X Exit          ^R Read File      ^H Replace      ^U Uncut Text     ^T To Spell      ^L Go To Line     M-R Redo      M-C Copy Text      M-W WhereIs Next
^Q 1/1 +  [-]   Tilix: Default
^Q 1/1 +  [-]   Tilix: Default
1: root@fitri-X456URK:~/home/fitri #
root@fitri-X456URK:~/home/fitri# nano del.c
root@fitri-X456URK:~/home/fitri# gcc -o del del.c
del.c: In function 'main':
del.c:15:3: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
  close(fd);
  ^
  pclose
del.c:16:3: warning: implicit declaration of function 'unlink'; did you mean 'unlink'? [-Wimplicit-function-declaration]
  unlink(argv[1]);
  ^
  unix
root@fitri-X456URK:~/home/fitri# 

```

- Ketik “./del fit.txt” untuk menghapus file fit.txt

```

1: root@fitri-X456URK:~/home/fitri 
root@fitri-X456URK:~/home/fitri# ./del fit.txt
root@fitri-X456URK:~/home/fitri# 

```



The screenshot shows a terminal window titled "Tilix: Default". The command entered is ".list", which displays a long list of files and directories in the current directory. The list includes standard system folders like "Documents", "Downloads", "Music", "Pictures", "Public", and "Templates", along with several custom C source files such as "create.c", "fread.c", "copy.c", "fappend.c", "fcreate.c", and "mygrep.c", as well as shell scripts "hello.sh" and "test.txt". The output ends with "root@fitri-X456URK:/home/fitri#".

```
1:root@fitri-X456URK:/home/fitri ~
root@fitri-X456URK:/home/fitri# ./list
Absensi-Makrab-2018 Desktop Documents Downloads Music Pictures Public Templates
Videos copy.c del del.c fappend fappend.c fcreate mygrep
create.c fread fread.c hello.sh list list.c modul.txt mygrep
mygrep.c prak.txt snap test.txt
root@fitri-X456URK:/home/fitri#
```