

LAPORAN PRAKTIKUM SISTEM OPERASI
MODUL 1 SAMPAI MODUL 10



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MODUL 1

1. Memanggil direktori OS

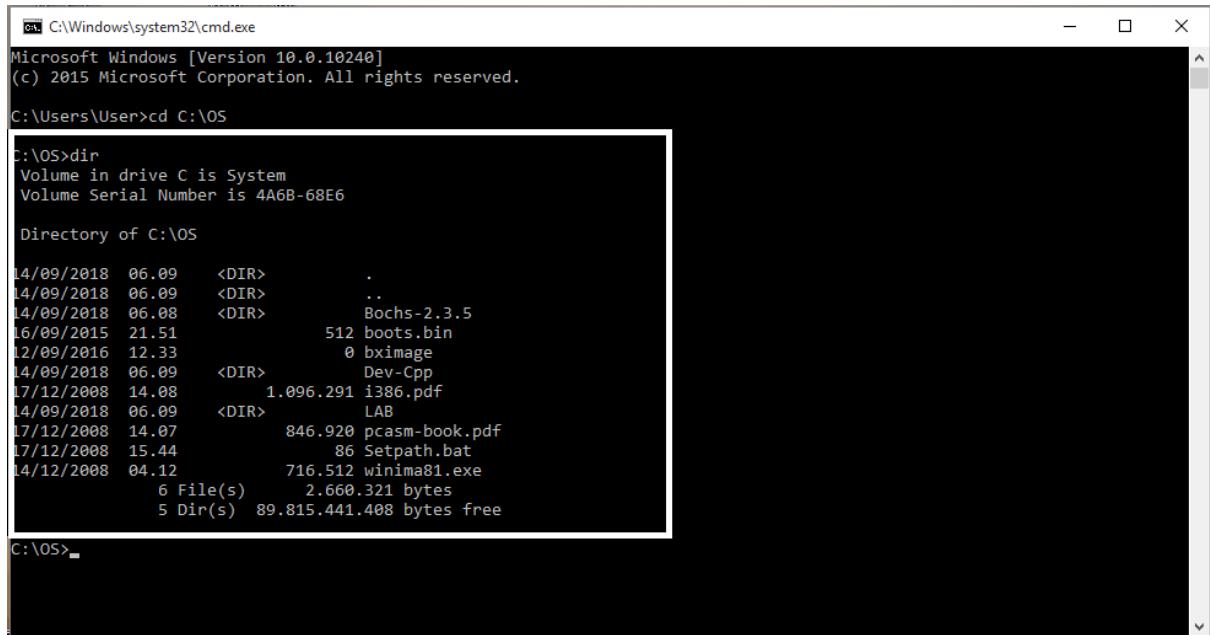


```
C:\Select C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.10240]
(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\User>cd C:\OS

C:\OS>
```

2. Melihat isi direktori



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.10240]
(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\User>cd C:\OS

C:\OS>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\OS

14/09/2018 06.09 <DIR> .
14/09/2018 06.09 <DIR> ..
14/09/2018 06.08 <DIR> Bochs-2.3.5
16/09/2015 21.51 512 boots.bin
12/09/2016 12.33 0 bximage
14/09/2018 06.09 <DIR> Dev-Cpp
17/12/2008 14.08 1.096.291 i386.pdf
14/09/2018 06.09 <DIR> LAB
17/12/2008 14.07 846.920 pcasm-book.pdf
17/12/2008 15.44 86 Setpath.bat
14/12/2008 04.12 716.512 winima81.exe
               6 File(s)    2.660.321 bytes
               5 Dir(s)  89.815.441.408 bytes free

C:\OS>
```

3. Mengatur setpath

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.10240]
(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\User>cd C:\OS

C:\OS>dir
 Volume in drive C is System
 Volume Serial Number is 4A6B-68E6

 Directory of C:\OS

14/09/2018  06.09    <DIR>      .
14/09/2018  06.09    <DIR>      ..
14/09/2018  06.08    <DIR>      Bochs-2.3.5
16/09/2015  21.51          512 boots.bin
12/09/2016  12.33          0 bximage
14/09/2018  06.09    <DIR>      Dev-Cpp
17/12/2008  14.08          1.096.291 i386.pdf
14/09/2018  06.09    <DIR>      LAB
17/12/2008  14.07          846.920 pcasm-book.pdf
17/12/2008  15.44          86 Setpath.bat
14/12/2008  04.12          716.512 winima81.exe
               6 File(s)   2.660.321 bytes
               5 Dir(s)  89.815.441.408 bytes free

C:\OS>type setpath.bat
Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;C:\Windows;C:\Windows\System32
```

4. Masuk pada direktori Lab/Lab1

```
R C:\Windows\system32\cmd.exe
C:\Users\User>cd C:\OS

C:\OS>dir
 Volume in drive C is System
 Volume Serial Number is 4A6B-68E6

 Directory of C:\OS

14/09/2018  06.09    <DIR>      .
14/09/2018  06.09    <DIR>      ..
14/09/2018  06.08    <DIR>      Bochs-2.3.5
16/09/2015  21.51          512 boots.bin
12/09/2016  12.33          0 bximage
14/09/2018  06.09    <DIR>      Dev-Cpp
17/12/2008  14.08          1.096.291 i386.pdf
14/09/2018  06.09    <DIR>      LAB
17/12/2008  14.07          846.920 pcasm-book.pdf
17/12/2008  15.44          86 Setpath.bat
14/12/2008  04.12          716.512 winima81.exe
               6 File(s)   2.660.321 bytes
               5 Dir(s)  89.815.441.408 bytes free

C:\OS>type setpath.bat
Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;C:\Windows;C:\Windows\System32

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

5. Melihat isi dari file boot.asm dengan menggunakan notepad

```

C:\> C:\Windows\system32\cmd.exe
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\OS

14/09/2018  06.09    <DIR>          .
14/09/2018  06.09    <DIR>          ..
14/09/2018  06.08    <DIR>          Bochs-2.3.5
16/09/2015  21.51      512 boots.bin
12/09/2016  12.33      0 bximage
14/09/2018  06.08    <DIR>          Dev-Cpp
17/12/2008  14.08    1.096.291 1386.pdf
14/09/2018  06.09    <DIR>          LAB
17/12/2008  14.07    846.920 pcasm-book.pdf
17/12/2008  15.44      86 Setpath.bat
14/12/2008  04.12    716.512 winim81.exe
               6 File(s)   2.660.321 bytes
               5 Dir(s)  89.815.441.408 bytes free

C:\OS>type setpath.bat
Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;C:\Windows;C:\Win

C:\OS>cd LAB\LAB1
C:\OS\LAB\LAB1>Notepad boot
C:\OS\LAB\LAB1>Notepad boot.asm
C:\OS\LAB\LAB1>

bootasm - 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 0x0840
MediaDescriptor  db 0xF0
SectorsPerFAT    dw 0x0009
SectorsPerTrack  dw 0x0012
NumHeads         dw 0x0002
HiddenSectors    dd 0x00000000
TotalSectorsLarge dd 0x00000000
DriveNumber      db 0x00
Flags            db 0x00

Activate Windows
Go to Settings to activate Windows.

```

6. Membuka file teks makefile dengan menggunakan makefile, yang di mana berisi kumpulan perintah CMD.

```

C:\> C:\Windows\system32\cmd.exe
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\OS

14/09/2018  06.09    <DIR>          .
14/09/2018  06.09    <DIR>          ..
14/09/2018  06.08    <DIR>          Bochs-2.3.5
16/09/2015  21.51      512 boots.bin
12/09/2016  12.33      0 bximage
14/09/2018  06.09    <DIR>          Dev-Cpp
17/12/2008  14.08    1.096.291 1386.pdf
14/09/2018  06.09    <DIR>          LAB
17/12/2008  14.07    846.920 pcasm-book.pdf
17/12/2008  15.44      86 Setpath.bat
14/12/2008  04.12    716.512 winim81.exe
               6 File(s)   2.660.321 bytes
               5 Dir(s)  89.815.441.408 bytes free

C:\OS>type setpath.bat
Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;C:\Windows;C:\Win

C:\OS>cd LAB\LAB1
C:\OS\LAB\LAB1>Notepad boot
C:\OS\LAB\LAB1>Notepad boot.asm
C:\OS\LAB\LAB1>Notepad Makefile
C:\OS\LAB\LAB1>

Makefile - Notepad
File Edit Format View Help
#
# LAB01 - Makefile
#
fp.disk: boot
        dd if=boot.bin of=floppya.img

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

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

clean:
        rm -f *.bin boot kernel

Activate Windows
Go to Settings to activate Windows.

```

```
on C:\Windows\system32\cmd.exe
17/12/2008 15.44             86 Setpath.bat
14/12/2008 04.12           716.512 winimage81.exe
    6 File(s)   2.660 321 bytes
    5 Dir(s)  89.815.441.408 bytes free

C:\OS>type setpath.bat
Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;C:\Windows;C:\Windows\System32

C:\OS>cd LAB\LAB1
C:\OS\LAB\LAB1>Notepad boot
C:\OS\LAB\LAB1>Notepad boot.asm
C:\OS\LAB\LAB1>Notepad Makefile
C:\OS\LAB\LAB1>del floppya.img

C:\OS\LAB\LAB1>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\OS\LAB\LAB1

18/09/2018 10.20 <DIR> .
18/09/2018 10.20 <DIR> ..
12/09/2017 00.48     8.358 bochsout.txt
16/12/2008 06.17     1.628 bochsrc.bxrc
18/10/2016 04.36    14.339 boot.asm
18/10/2016 04.50      512 boot.bin
12/09/2017 00.37      512 boots.bin
17/09/2007 06.22    18.432 bximage.exe
12/09/2017 00.21    10.321.920 c.img
27/02/2007 10.50    342.016 dd.exe
15/12/2008 14.47      78 dosfp.bat
15/12/2008 01.45     7.966 kernel.asm
16/12/2008 06.21    227 Makefile
16/12/2008 02.20      44 s.bat
31/01/2000 19.00    261.120 tdump.exe
  13 File(s)   10.977.152 bytes
  2 Dir(s)  89.815.986.176 bytes free

Activate Windows
Go to Settings to activate Windows.

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

7. Menghapus suatu bootdisk yang bernama floppya.img dan cek pada direktori

```
on C:\Windows\system32\cmd.exe
17/12/2008 15.44             86 Setpath.bat
14/12/2008 04.12           716.512 winimage81.exe
    6 File(s)   2.660 321 bytes
    5 Dir(s)  89.815.441.408 bytes free

C:\OS>type setpath.bat
Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;C:\Windows;C:\Windows\System32

C:\OS>cd LAB\LAB1
C:\OS\LAB\LAB1>Notepad boot
C:\OS\LAB\LAB1>Notepad boot.asm
C:\OS\LAB\LAB1>Notepad Makefile
C:\OS\LAB\LAB1>del floppya.img

C:\OS\LAB\LAB1>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\OS\LAB\LAB1

18/09/2018 10.20 <DIR> .
18/09/2018 10.20 <DIR> ..
12/09/2017 00.48     8.358 bochsout.txt
16/12/2008 06.17     1.628 bochsrc.bxrc
18/10/2016 04.36    14.339 boot.asm
18/10/2016 04.50      512 boot.bin
12/09/2017 00.37      512 boots.bin
17/09/2007 06.22    18.432 bximage.exe
12/09/2017 00.21    10.321.920 c.img
27/02/2007 10.50    342.016 dd.exe
15/12/2008 14.47      78 dosfp.bat
15/12/2008 01.45     7.966 kernel.asm
16/12/2008 06.21    227 Makefile
16/12/2008 02.20      44 s.bat
31/01/2000 19.00    261.120 tdump.exe
  13 File(s)   10.977.152 bytes
  2 Dir(s)  89.815.986.176 bytes free

Activate Windows
Go to Settings to activate Windows.

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

8. Membuat suatu bootdisk baru dengan menggunakan aplikasi bximage.exe

Yang pertama pilih fd

C:\Windows\system32\cmd.exe - bximage
C:\OS>cd LAB\LAB1
C:\OS\LAB\LAB1>Notepad boot
C:\OS\LAB\LAB1>Notepad boot.asm
C:\OS\LAB\LAB1>Notepad Makefile
C:\OS\LAB\LAB1>del floppya.img
C:\OS\LAB\LAB1>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6
Directory of C:\OS\LAB\LAB1
18/09/2018 10.20 <DIR> .
18/09/2018 10.20 <DIR> ..
12/09/2017 00.48 8.358 bochsout.txt
16/12/2008 06.17 1.628 bochsrc.bxrc
18/10/2016 04.36 14.339 boot.asm
18/10/2016 04.50 512 boot.bin
12/09/2017 00.37 512 boots.bin
17/09/2007 06.22 18.432 bximage.exe
12/09/2017 00.21 10.321.920 c.img
27/02/2007 10.50 342.016 dd.exe
15/12/2008 14.47 78 dosfp.bat
15/12/2008 01.45 7.966 kernel.asm
16/12/2008 06.21 227 Makefile
16/12/2008 02.20 44 s.bat
31/01/2000 19.00 261.120 tdump.exe
13 File(s) 10.977.152 bytes
2 Dir(s) 89.815.986.176 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] -

Kemudian tekan enter untuk memilih default

C:\Windows\system32\cmd.exe - bximage
C:\OS>cd LAB\LAB1
C:\OS\LAB\LAB1>Notepad boot.asm
C:\OS\LAB\LAB1>Notepad Makefile
C:\OS\LAB\LAB1>del floppya.img
C:\OS\LAB\LAB1>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6
Directory of C:\OS\LAB\LAB1
18/09/2018 10.20 <DIR> .
18/09/2018 10.20 <DIR> ..
12/09/2017 00.48 8.358 bochsout.txt
16/12/2008 06.17 1.628 bochsrc.bxrc
18/10/2016 04.36 14.339 boot.asm
18/10/2016 04.50 512 boot.bin
12/09/2017 00.37 512 boots.bin
17/09/2007 06.22 18.432 bximage.exe
12/09/2017 00.21 10.321.920 c.img
27/02/2007 10.50 342.016 dd.exe
15/12/2008 14.47 78 dosfp.bat
15/12/2008 01.45 7.966 kernel.asm
16/12/2008 06.21 227 Makefile
16/12/2008 02.20 44 s.bat
31/01/2000 19.00 261.120 tdump.exe
13 File(s) 10.977.152 bytes
2 Dir(s) 89.815.986.176 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]

Lalu beri nama. Di mana di sini diberi nama floppya.img

```
cmd C:\Windows\system32\cmd.exe - bximage
Volume Serial Number is 4A6B-68E6

Directory of C:\OS\LAB\LAB1

18/09/2018 10.20 <DIR> .
18/09/2018 10.20 <DIR> ..
12/09/2017 00.48 8.358 bochsout.txt
16/12/2008 06.17 1.628 bochsrc.bxrc
18/10/2016 04.36 14.339 boot.asm
18/10/2016 04.50 512 boot.bin
12/09/2017 00.37 512 boots.bin
17/09/2007 06.22 18.432 bximage.exe
12/09/2017 00.21 10.321.920 c.img
27/02/2007 10.50 342.016 dd.exe
15/12/2008 14.47 78 dosfp.bat
15/12/2008 01.45 7.966 kernel.asm
16/12/2008 06.21 227 Makefile
16/12/2008 02.20 44 s.bat
31/01/2000 19.00 261.120 tdump.exe
           13 File(s)   10.977.152 bytes
           2 Dir(s)  89.815.986.176 bytes free

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

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

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

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

Activate Windows
Go to Settings to activate Windows.

```
cmd C:\Windows\system32\cmd.exe
=====
12/09/2017 00.21 10.321.920 c.img
27/02/2007 10.50 342.016 dd.exe
15/12/2008 14.47 78 dosfp.bat
15/12/2008 01.45 7.966 kernel.asm
16/12/2008 06.21 227 Makefile
16/12/2008 02.20 44 s.bat
31/01/2000 19.00 261.120 tdump.exe
           13 File(s)   10.977.152 bytes
           2 Dir(s)  89.815.986.176 bytes free

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

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

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

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

Writing: [] Done.

I wrote 1474560 bytes to floppya.img.

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

Press any key to continue
```

Activate Windows
Go to Settings to activate Windows.

9. Cek isi direktori kembali apakah floppya.img telah dibuat.

```
C:\Windows\system32\cmd.exe
heads=2
sectors per track=18
total sectors=2880
total bytes=1474560

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

Writing: [] Done.

I wrote 1474560 bytes to floppya.img.

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

Press any key to continue

C:\OS\LAB\LAB1>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\OS\LAB\LAB1

18/09/2018 10.24 <DIR> .
18/09/2018 10.24 <DIR> ..
12/09/2017 00.48 8.358 bochsout.txt
16/12/2008 06.17 1.628 bochsrc.bxrc
18/10/2016 04.36 14.339 boot.asm
18/10/2016 04.50 512 boot.bin
12/09/2017 00.37 512 boots.bin
17/09/2007 06.22 18.432 bximage.exe
12/09/2017 00.21 10.321.920 c.img
27/02/2007 18.50 342.016 dd.exe
15/12/2008 14.47 78 dosfp.bat
18/09/2018 10.24 1.474.560 floppya.img
15/12/2008 01.45 7.966 kernel.asm
16/12/2008 06.21 227 Makefile
16/12/2008 02.20 44 s.bat
31/01/2000 19.00 261.120 tdump.exe
               14 File(s)   12.451.712 bytes
               2 Dir(s)  89.813.987.328 bytes free

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

Activate Windows
Go to Settings to activate Windows.

10. Kemudian format floppya.img agar menjadi bootdisk.

```
Bochs for Windows - Console
15/12/2008 14.47 78 dosfp.bat
18/09/2018 10.24 1.474.560 floppya.img
15/12/2008 01.45 7.966 kernel.asm
16/12/2008 06.21 227 Makefile
16/12/2008 02.20 44 s.bat
31/01/2000 19.00 261.120 tdump.exe
               14 File(s)   12.451.712 bytes
               2 Dir(s)  89.813.987.328 bytes free

C:\OS\LAB\LAB1>DosFp
C:\OS\LAB\LAB1>cd "...\\Bochs-2.3.5\\dos"
C:\OS\Bochs-2.3.5\dos>..\\bochs -q -f bochsrc2.txt
000000000001[APIC?] local apic in initializing
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
000000000001[      ] reading configuration from bochsrc2.txt
000000000001[      ] installing win32 module as the Bochs GUI
000000000001[      ] using log file bochsout.txt
# In bx_wm32_gui c::exit(void)
Bochs is exiting with the following message:
[WGUI ] POWER button turned off.

C:\OS\Bochs-2.3.5\dos>cd "C:\\os\\lab\\lab1"
C:\OS\LAB\LAB1>DosFp
A:>Format B:
Insert new diskette for drive B:
and press ENTER when ready...
Checking existing disk format.
Formatting 1.44M
Format complete.

Volume label (11 characters, ENTER for none)?
1,457,664 bytes total disk space
1,457,664 bytes available on disk
512 bytes in each allocation unit.
2,847 allocation units available on disk.

Volume Serial Number is 422F-120A
Format another (Y/N)?n

C:\OS\LAB\LAB1>cd "...\\Bochs-2.3.5\\dos"
C:\OS\Bochs-2.3.5\dos>..\\bochs -q -F bochsrc2.txt
000000000001[APIC?] local apic in initializing
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
000000000001[      ] reading configuration from bochsrc2.txt
000000000001[      ] installing win32 module as the Bochs GUI
000000000001[      ] using log file bochsout.txt
```

Activate Windows
Go to Settings to activate Windows.

11. Kemudian salin byte dari floppya.img ke boots.bin yang digunakan untuk bootloader

```
C:\Windows\system32\cmd.exe
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochsrc.txt
# In bx_win32_gui.c::exit(void)
=====
Bochs is exiting with the following message:
[!GUI] POWER button turned off.
=====

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab1"
C:\OS\LAB\LAB1>DOSFp
C:\OS\LAB\LAB1>cd "..\..\Bochs-2.3.5\dos"
C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
000000000001[APIC] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochsrc.txt
# In bx_win32_gui.c::exit(void)
=====
Bochs is exiting with the following message:
[!GUI] POWER button turned off.
=====

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab1"
C:\OS\LAB\LAB1>dd if=floppya.img of=boots.bin count=1
rawwrite dd for windows version 0.5.
Written by John Newbiggin <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>
```

Activate Windows
Go to Settings to activate Windows.

12. Melihat isi memori dari boots.bin

```
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: EB 3C 90 4D 53 57 49 4E 34 2E 31 00 02 01 00 .<.MSWIN4.1.....
000010: 02 E0 00 40 0B F0 09 00 12 00 02 00 00 00 00 ..@. .....
000020: 00 00 00 00 00 00 29 0A 12 2F 42 4E 4F 20 4E 41 .....)/BNO NA
000030: D0 45 20 20 20 20 46 41 54 31 32 20 20 20 33 C9 ME FAT12 3.
000040: 8E D1 BC FC 7B 16 07 BD 78 00 C5 76 00 1E 56 16 ....{...x..v..V.
000050: 55 BF 22 05 89 7E 00 89 4E 02 B1 00 FC F3 A4 00 U."...N.....
000060: 1F BD 00 7C C6 45 FE 0F 38 4E 24 7D 20 8B C1 99 ...].E..8NS} ...
000070: E8 7E 01 83 EB 3A 66 A1 1C 7C 66 3B 07 8A 57 FC ..~.f.[f].W.
000080: 75 00 8A CA 02 88 56 02 80 C3 10 73 ED 33 C9 FE u.....V....S.3.
000090: 06 D0 7D 8A 46 10 98 F7 66 16 03 46 1C 13 56 1F ...}.F..f..V.
0000A0: 03 46 0E 13 D1 08 76 11 60 08 46 FC 89 56 FE B8 .F.....v..F..V..
0000B0: 20 00 F7 E6 88 5E 0B 03 C3 48 F7 F3 01 46 FC 11 ..^..H..F.:
0000C0: 4E FE 61 BF 00 07 E8 28 01 72 3E 38 2D 74 17 60 N.a....(.r>8-t.
0000D0: B1 00 BE D8 7D F3 A6 61 74 3D 4E 74 09 83 C7 20 ....).at-Nt...
0000E0: 3B FB 72 E7 EB DD FE 0E 08 70 78 A7 BE 7F 7D AC ;.r....\}...
0000F0: 98 03 F0 AC 98 49 74 0C 48 74 13 B4 0E BB 07 00 .....@t.Ht. .....
000100: CD 10 EB EF BE 82 7D EB E6 BE 80 7D EB E1 CD 16 .....).r.....
000110: FF 1F 66 8F 84 CD 19 BE 81 7D 88 70 1A 80 45 FE ^..f.....J.).E.
000120: 8A 4E 00 F7 E0 03 46 FC 13 56 FE B1 04 E8 C2 00 .N....F..V. .....
000130: 72 D7 EA 00 02 70 00 52 50 06 53 6A 01 6A 16 91 r...p.RP.Sj.).
000140: 88 46 18 A2 26 05 96 02 33 D2 F7 F6 91 F7 64 42 .F..&..3....B
000150: 87 CA F7 76 1A 8A F2 0A E8 C8 C0 02 0A CC 88 01 ...v.....
000160: 02 80 7E 02 0E 75 04 04 42 88 F4 8A 56 24 CD 13 ..~.U..B..V$..
000170: 61 61 72 0A 48 75 01 42 03 5E 08 49 75 77 C3 03 aar@U.B.^Iuw.
000180: 18 01 27 0D 0A 49 6E 76 61 6C 69 04 20 73 79 73 ...Invalid sys
000190: 74 65 60 20 64 09 73 68 FF 00 0A 44 69 73 68 20 tem disk..Disk
0001A0: 49 2F 4F 20 65 72 6F 72 FF 00 0A 52 65 78 6C I/O error..Repl
0001B0: 61 63 65 20 74 68 65 20 04 69 73 6B ZC 20 61 6E ace the disk, an
0001C0: 64 20 74 68 65 6E 20 70 72 65 73 73 20 61 6E 79 d then press any
0001D0: 20 68 65 79 00 0A 00 00 49 4F 20 20 20 20 28 20 key....IO
0001E0: 53 59 53 4D 53 44 4F 53 20 20 20 53 59 53 7F 01 SYMSDOS ..SYS..
0001F0: 00 41 BB 00 07 60 66 6A 00 E9 3B FF 00 00 55 AA .A...fj.;...U.
```

Activate Windows
Go to Settings to activate Windows.

13. Memanggil Bosch.

```
C:\Windows\system32\cmd.exe
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: EB 3C 90 4D 53 57 49 4E 34 2E 31 00 02 01 01 00 .<.MSWIN4.1.....
000010: 02 E0 00 40 08 F0 09 00 12 00 02 00 00 00 00 00 ...@.....
000020: 00 00 00 00 00 00 29 0A 12 2F 42 4E 4F 20 4E 41 .....).//BNO NA
000030: D0 45 20 20 20 26 46 41 54 31 32 20 20 33 C9 ME FAT12 3.
000040: 8E D1 BC FC 7B 16 07 BD 78 00 C5 76 00 1E 56 16 ....{...x..v..V.
000050: 55 BF 22 05 89 7E 00 89 4E 02 B1 08 FC F3 A4 06 U."...N.....
000060: 1F BD 00 7C C6 45 FE 0F 38 4E 24 7D 20 88 C1 99 ...).E..8N$} ...
000070: E8 7E 01 B3 CA 3A 6A 1C 7C 66 3B 07 8A 57 Fc .....,f.,.Fj.,.W.
000080: 75 00 80 CA 02 88 56 02 88 C3 10 73 ED 33 C9 FF u.....V....s.3.
000090: 06 D8 7D 8A 46 10 98 F7 66 10 03 43 1C 13 56 1E ..}.F...f..F..V.
0000A0: 03 46 0E 13 D1 8B 76 11 60 89 46 Fc 89 56 FE BB ..F...v..`F..V..
0000B0: 20 00 F7 E6 88 SE 00 93 C3 48 F7 F3 01 46 FC 11 ....^..H..F.:
0000C0: 4E FE 61 BF 00 07 E8 28 01 72 3E 38 2D 74 17 60 N.a....(.>8-t.:
0000D0: B1 00 BE D8 7D F3 A6 61 74 3D 4E 74 09 83 C7 20 ....).at-NT...
0000E0: 3B FB 72 E7 EB DD FE 0E D8 7D 78 A7 BE 7F 7D A0 ;r.....}{...}.
0000F0: 98 03 F0 AC 98 40 7C 0C 48 74 13 B3 0E BB 07 00 .....@t.Ht. .....
000100: CD 13 EB EF BE 82 7D EB E6 B0 80 7D EB E1 CD 16 .....}.....
000110: 5E 1F 66 8F 04 CD 19 BE 81 70 88 7D 1A 8D 45 FE ^..f.....}.E.
000120: 8A 4E 0D F7 E1 03 46 FC 13 56 FE B1 04 E8 C2 00 .N....F..V. .....
000130: 72 D7 EA 00 02 70 00 52 50 00 53 6A 01 6A 10 91 r....p.RP.Sj.j. .....
000140: 88 46 18 A2 26 85 96 92 33 D2 F7 F6 91 F7 F6 42 ..F..&...3....B
000150: 87 CA F7 76 1A 8A F2 8A E8 C0 CC 02 0A CC 88 01 ....V. .....
000160: 02 89 7E 02 0E 75 04 84 42 88 F4 8A 56 24 CD 13 ..~..u..B...$.V$..
000170: 61 61 72 0A 40 75 01 02 03 5E 0B 75 77 C3 03 aar.@u.B.^IuW..
000180: 18 01 27 00 0A 49 6E 76 61 60 69 60 20 73 79 73 ...'.Invalid sys
000190: 74 65 6D 20 64 69 73 6B FF 00 0A 44 69 73 6B 20 tem disk..Disk
0001A0: 49 2F 4F 20 65 72 72 6F 72 FF 0D 0A 52 65 70 6C I/O error...Repl
0001B0: 61 63 65 20 74 68 65 28 64 69 73 6B 20 61 6E ace the disk, an
0001C0: 64 29 74 68 65 6E 20 70 72 65 73 73 28 61 6E 79 d them press any
0001D0: 20 68 65 79 00 00 00 49 4E 20 28 20 20 20 key...IO
0001E0: 53 59 53 4D 53 44 4F 53 20 20 53 59 53 7F 01 SYSMSDOS  SYS..
0001F0: 00 41 BB 00 07 60 66 6A 00 E9 3B FF 00 00 55 AA .A...fj.;...U.

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

Activate Windows
Go to Settings to activate Windows.

14. Format floppya.img, dan menambahkan sistem file ke dalamnya, dengan bantuan bosch.

```
Bochs for Windows - Console
=====
000000000001[ ] reading configuration from bochsrc.bxrc
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochsout.txt
# In bx_w32_gui.c:exit(void)

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

=====
C:\OS\LAB\LAB1>

C:\OS\LAB\LAB1>..\.\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 bochsout.txt
# In bx_w32_gui.c:exit(void)

Bochs is exiting with the following message:
[WGUI ] Window closed, exiting!
=====

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

C:\OS\LAB\LAB1>DOSFP
C:\OS\LAB\LAB1>cd "..\.\Bochs-2.3.5\dos"
C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
000000000001[APIC?] local apic in initializing
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochsout.txt
```

Activate Windows
Go to Settings to activate Windows.

15. Selesaikan proses format

The screenshot shows a Bochs for Windows - Console window and a Bochs for Windows - Display window. In the console window, the user runs a script to format drive B. The display window shows the format progress: 'Insert new diskette for drive B:' followed by 'Checking existing disk format.', 'Verifying 1.44M', 'Format complete.', and 'System transferred'. A message box asks for a volume label (11 characters, ENTER for none?). The user enters 'IB43-16E5'. The display window also shows disk statistics: 1,457,664 bytes total disk space, 221,696 bytes used by system, 1,235,968 bytes available on disk, 512 bytes in each allocation unit, and 2,414 allocation units available on disk. The message 'Format another (Y/N)?n' is displayed at the bottom.

```
# In bx_win32_gui_c::exit(void)
=====
Bochs is exiting with the following message:
[WGUI ] POWER button turned off.

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab1"
C:\OS\LAB\LAB1>DosFp
C:\OS\LAB\LAB1>cd "..\..\Bochs-2.3.5\dos"
C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
000000000001[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
000000000001[ ] reading configuration from bochsrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochsout.txt
# In bx_win32_gui_c::exit(void)

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

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab1"
C:\OS\LAB\LAB1>DosFp
C:\OS\LAB\LAB1>cd "..\..\Bochs-2.3.5\dos"
C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
000000000001[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
000000000001[ ] reading configuration from bochsrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochsout.txt
```

Activate Windows
Go to Settings to activate Windows.

16. Lihat isi direktori

The screenshot shows a Bochs for Windows - Console window and a Bochs for Windows - Display window. In the console window, the user runs a script to list the contents of drive B. The display window shows the directory listing for drive B: with 1 file and 0 directories. The file is named 'COM' with a size of 94,292 bytes and a creation date of 05-05-03 21:22. The message 'Format another (Y/N)?n' is displayed at the bottom.

```
# In bx_win32_gui_c::exit(void)
=====
Bochs is exiting with the following message:
[WGUI ] POWER button turned off.

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab1"
C:\OS\LAB\LAB1>DosFp
C:\OS\LAB\LAB1>cd "..\..\Bochs-2.3.5\dos"
C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
000000000001[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
000000000001[ ] reading configuration from bochsrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochsout.txt
# In bx_win32_gui_c::exit(void)

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

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab1"
C:\OS\LAB\LAB1>DosFp
C:\OS\LAB\LAB1>cd "..\..\Bochs-2.3.5\dos"
C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
000000000001[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
000000000001[ ] reading configuration from bochsrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochsout.txt
```

Activate Windows
Go to Settings to activate Windows.

Tugas

1. Kode ASCII adalah merupakan kode standar yang digunakan dalam pertukaran informasi pada Komputer. Kode ASCII ini seperti Hex dan Unicode tetapi ASCII lebih bersifat universal.

ASCII Table

Dec	Hex	Oct	Char	Dec	Hex	Oct	Char	Dec	Hex	Oct	Char	Dec	Hex	Oct	Char
0	0	0		32	20	40	[space]	64	40	100	@	96	60	140	`
1	1	1	!	33	21	41	"	65	41	101	A	97	61	141	a
2	2	2	"	34	22	42	#	66	42	102	B	98	62	142	b
3	3	3	#	35	23	43	\$	67	43	103	C	99	63	143	c
4	4	4	\$	36	24	44	%	68	44	104	D	100	64	144	d
5	5	5	%	37	25	45	&	69	45	105	E	101	65	145	e
6	6	6	&	38	26	46	*	70	46	106	F	102	66	146	f
7	7	7	*	39	27	47	,	71	47	107	G	103	67	147	g
8	8	10	,	40	28	50	(72	48	110	H	104	68	150	h
9	9	11	(41	29	51)	73	49	111	I	105	69	151	i
10	A	12)	42	2A	52	*	74	4A	112	J	106	6A	152	j
11	B	13	*	43	2B	53	+	75	4B	113	K	107	6B	153	k
12	C	14	+	44	2C	54	,	76	4C	114	L	108	6C	154	l
13	D	15	,	45	2D	55	-	77	4D	115	M	109	6D	155	m
14	E	16	-	46	2E	56	.	78	4E	116	N	110	6E	156	n
15	F	17	.	47	2F	57	/	79	4F	117	O	111	6F	157	o
16	10	20	/	48	30	60	0	80	50	120	P	112	70	160	p
17	11	21	0	49	31	61	1	81	51	121	Q	113	71	161	q
18	12	22	1	50	32	62	2	82	52	122	R	114	72	162	r
19	13	23	2	51	33	63	3	83	53	123	S	115	73	163	s
20	14	24	3	52	34	64	4	84	54	124	T	116	74	164	t
21	15	25	4	53	35	65	5	85	55	125	U	117	75	165	u
22	16	26	5	54	36	66	6	86	56	126	V	118	76	166	v
23	17	27	6	55	37	67	7	87	57	127	W	119	77	167	w
24	18	30	7	56	38	70	8	88	58	130	X	120	78	170	x
25	19	31	8	57	39	71	9	89	59	131	Y	121	79	171	y
26	1A	32	9	58	3A	72	:	90	5A	132	Z	122	7A	172	z
27	1B	33	:	59	3B	73	;	91	5B	133	{	123	7B	173	{
28	1C	34	;	60	3C	74	<	92	5C	134	\	124	7C	174	
29	1D	35	<	61	3D	75	=	93	5D	135]	125	7D	175	}
30	1E	36	=	62	3E	76	>	94	5E	136	^	126	7E	176	~
31	1F	37	>	63	3F	77	?	95	5F	137	-	127	7F	177	

2. Perintah Bahasa assembly untuk keluarga intel x86

- Komentar: Komentar diawali dengan tanda titik koma (:). ; ini adalah komentar
- Label : Label diakhiri dengan tanda titik dua (:). Contoh: main: ,loop: ,proses: ,keluar:
- Definisi data: **DB** : define bytes. **DW** : define words. **DD** : define double words. **EQU** : equals. Membentuk konstanta.
- Perpindahan data **MOV** : move. **LEA** : load effective address. Mengisi suatu register dengan alamat offset sebuah data. **CHG** : exchange. Menukar dua buah register langsung.
- Operasi logika: **AND** : melakukan bitwise and. sintaks: **OR** : melakukan bitwise or. **NOT** : melakukan bitwise not (*one's complement*). **XOR** : melakukan bitwise eksklusif or. **SHL** : shift left. Menggeser bit ke kiri. Bit paling kanan diisi nol. **HR** : shift right. Menggeser bit ke kanan. Bit paling kiri diisi nol. **ROL** : rotate left. Memutar bit ke kiri. Bit paling kiri jadi paling kanan kali ini. **ROR** : rotate right. Memutar bit ke kanan. Bit paling kanan jadi paling kiri.
- Operasi matematika: **ADD** : add. Menjumlahkan dua buah register. **ADC** : add with carry. Menjumlahkan dua register dan carry flag (CF). **INC** : increment. Menjumlahkan isi sebuah register dengan 1. **BB** : subtract with borrow. Mengurangkan dua register dan carry flag (CF). **DEC** : decrement. Mengurang isi sebuah register dengan 1. **MUL** : multiply. Mengalikan register dengan AX atau AH. **UL** : signed multiply. **DIV** : divide. Membagi AX atau DX:AX dengan sebuah register. **IDIV** : signed divide. Sama dengan DIV, hanya saja IDIV menganggap bit-bit yang ada di register sumber sudah dalam bentuk *two's complement*. **NEG** : negate. Membuat isi register menjadi negatif (*two's complement*).
- Pengulangan: **LOOP** : loop. Mengulang sebuah proses. Pertama register CX dikurangi satu. Bila CX sama dengan nol, maka looping berhenti. Bila tidak nol, maka

lompat ke label tujuan. **LOOPE** : loop while equal. Melakukan pengulangan selama CX $\neq 0$ dan ZF = 1. CX tetap dikurangi 1 sebelum diperiksa. sintaks: **LOOPZ** : loop while zero. Identik dengan LOOPE. **LOOPNE** : loop while not equal. Melakukan pengulangan selama CX $\neq 0$ dan ZF = 0. CX tetap dikurangi 1 sebelum diperiksa. **LOOPNZ** : loop while not zero. Identik dengan LOOPNE. **REP** : repeat. Mengulang perintah sebanyak CX kali.

MODUL 2

1. ketik perintah ‘cd os’ untuk masuk ke OS nya.

```
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\LENOVO A9>cd c:/

c:\>cd os
```

2. jalankan ‘setpath’, setelah itu pindah ke LAB 2 dengan mengetikan ‘cd lab/lab2’.

```
c:\OS>setpath

c:\OS>Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl;C:\Windows;C:\Windows\System32
c:\OS>cd lab/lab2
```

3. lalu ketikan ‘dir’ untuk melihat isi direktori kerja, dan akan tampak seperti gambar berikut.

```
c:\OS\LAB\LAB2>dir
 Volume in drive C is rio
 Volume Serial Number is C8BC-A4E1

 Directory of c:\OS\LAB\LAB2

20/09/2018  19:01    <DIR>          .
20/09/2018  19:01    <DIR>          ..
20/09/2018  19:01            1.474.560 a.img
19/09/2018  12:00            10.130 bochs.log
16/12/2008  00:18            1.625 bochsrc.bxrc
19/09/2018  12:08            15.922 boot.asm
16/09/2007  23:22            18.432 bximage.exe
27/02/2007  04:50            342.016 dd.exe
15/12/2008  21:52              78 dosfp.bat
19/09/2018  11:45            1.474.560 floppya.img
19/09/2018  12:09            7.966 kernel.asm
16/12/2008  00:21            228 Makefile
15/12/2008  20:20            44 s.bat
                           11 File(s)   3.345.561 bytes
                           2 Dir(s)   133.107.732.480 bytes free
```

4. selanjutnya jalankan ‘bximage’, dan diteruskan dengan menjawab pertanyaan-pertanyaan yang akan muncul setelah menjalankan bximage.

```

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]
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

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

Writing: [] Done.

I wrote 1474560 bytes to floppya.img.

```

5. pastikan hasil file ‘floppya.img’ dengan memasukan perintah ‘dir’, hasilnya seperti gambar dibawah.

```

c:\OS\LAB\LAB2>dir
Volume in drive C is rio
Volume Serial Number is C8BC-A4E1

Directory of c:\OS\LAB\LAB2

20/09/2018  19:01    <DIR>      .
20/09/2018  19:01    <DIR>      ..
20/09/2018  19:01            1.474.560 a.img
19/09/2018  12:00            10.130 bochs.log
16/12/2008  00:18            1.625 bochsrc.bxrc
19/09/2018  12:08            15.922 boot.asm
16/09/2007  23:22            18.432 bximage.exe
27/02/2007  04:50            342.016 dd.exe
15/12/2008  21:52            78 dosfp.bat
20/09/2018  19:02            1.474.560 floppya.img
19/09/2018  12:09            7.966 kernel.asm
16/12/2008  00:21            228 Makefile
15/12/2008  20:20            44 s.bat
                           11 File(s)   3.345.561 bytes
                           2 Dir(s)  133.107.744.768 bytes free

```

6. jalankan perintah ‘dosfp’, lalu pindah ke windows ‘Bochs’ untuk mengatur lokasi file image, tampak seperti gambar dibawah. Dari prompt A:> ketikan perintah ‘format b: /s’ dan selesaikan prosesnya lalu tutup ‘Bochs’ dengan menu power.

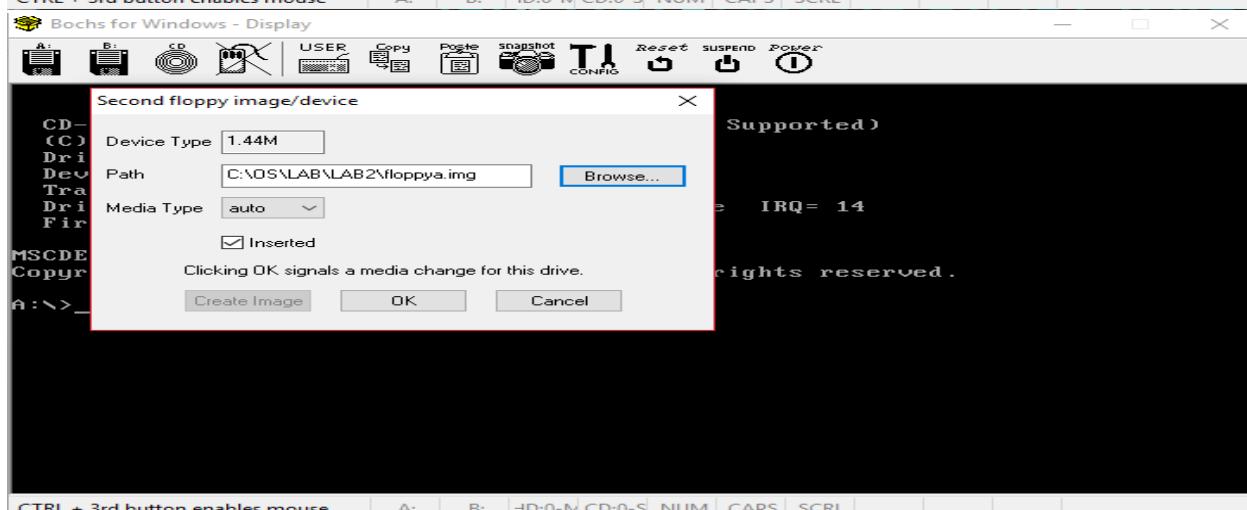
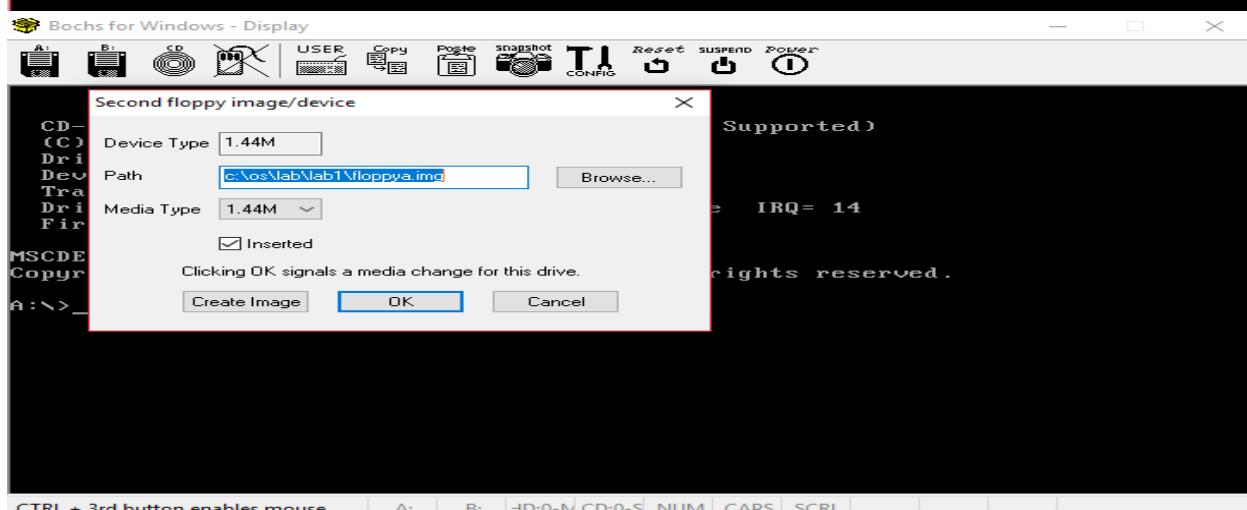
```

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
00000000000i[APIC?] local apic in initializing
=====
          Bochs x86 Emulator 2.3.5
      Build from CVS snapshot, on September 16, 2007
=====
00000000000i[      ] reading configuration from bochsrc2.txt
00000000000i[      ] installing win32 module as the Bochs GUI
00000000000i[      ] using log file bochsout.txt
# In bx_win32_gui_c::exit(void)!

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

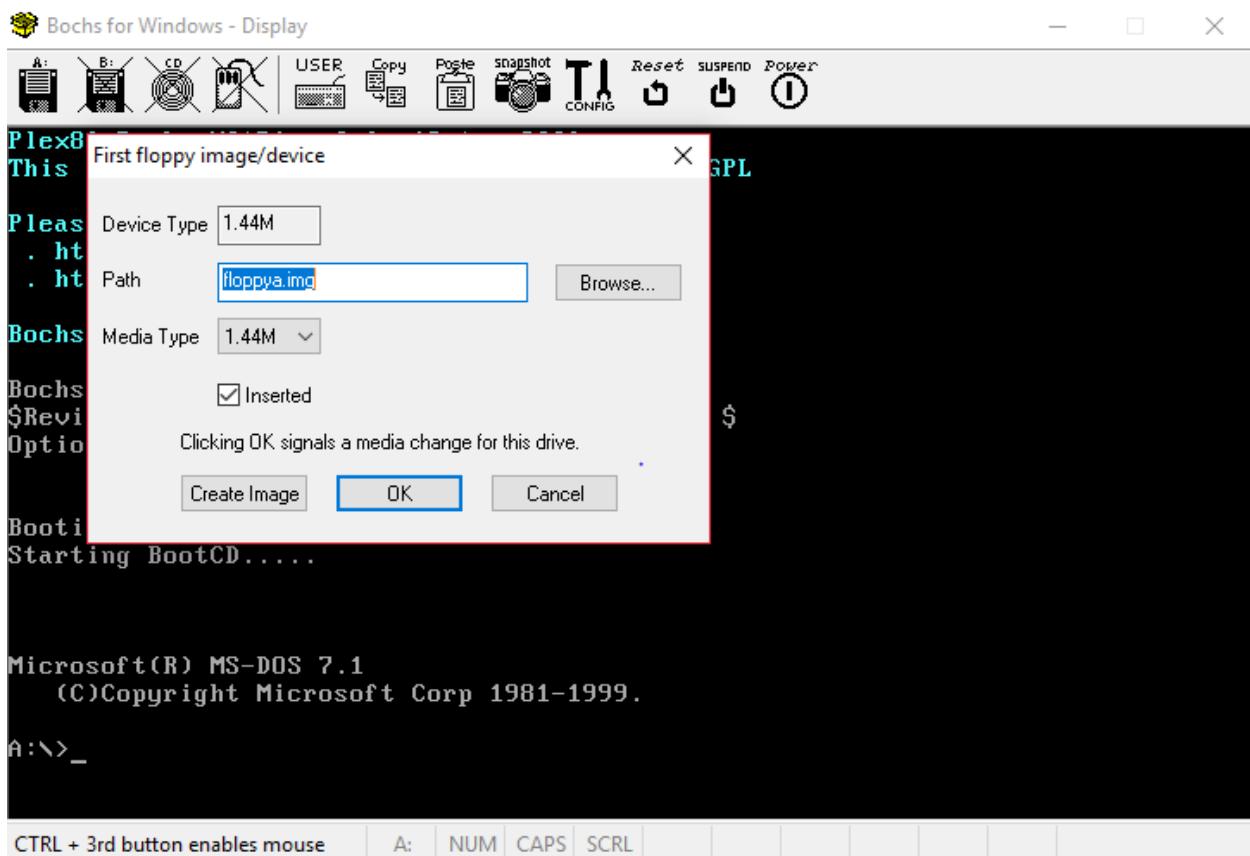
=====
c:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab2"

```



7. jalankan perintah 's' dan akan menuju ke PC simulator dan pastikan posisi 'floppya.img'.

```
C:\OS\LAB\LAB2>s  
C:\OS\LAB\LAB2>..\.bochs-2.3.5\bochs -q -f bochsrc.bxrc  
0000000000i[APIC?] local apic in initializing  
=====  
Bochs x86 Emulator 2.3.5  
Build from CVS snapshot, on September 16, 2007  
=====  
0000000000i[      ] reading configuration from bochsrc.bxrc  
0000000000i[      ] installing win32 module as the Bochs GUI  
0000000000i[      ] using log file bochs.log  
# In bx_win32_gui_c::exit(void)!  
=====  
Bochs is exiting with the following message:  
[WGUI ] POWER button turned off.  
=====  
C:\OS\LAB\LAB2>cls
```



8. ketikan perintah 'cls' untuk membersihkan layar, dan selanjutnya jalankan perintah 'make fp.disk' dan Jika berhasil akan muncul seperti gambar dibawah.

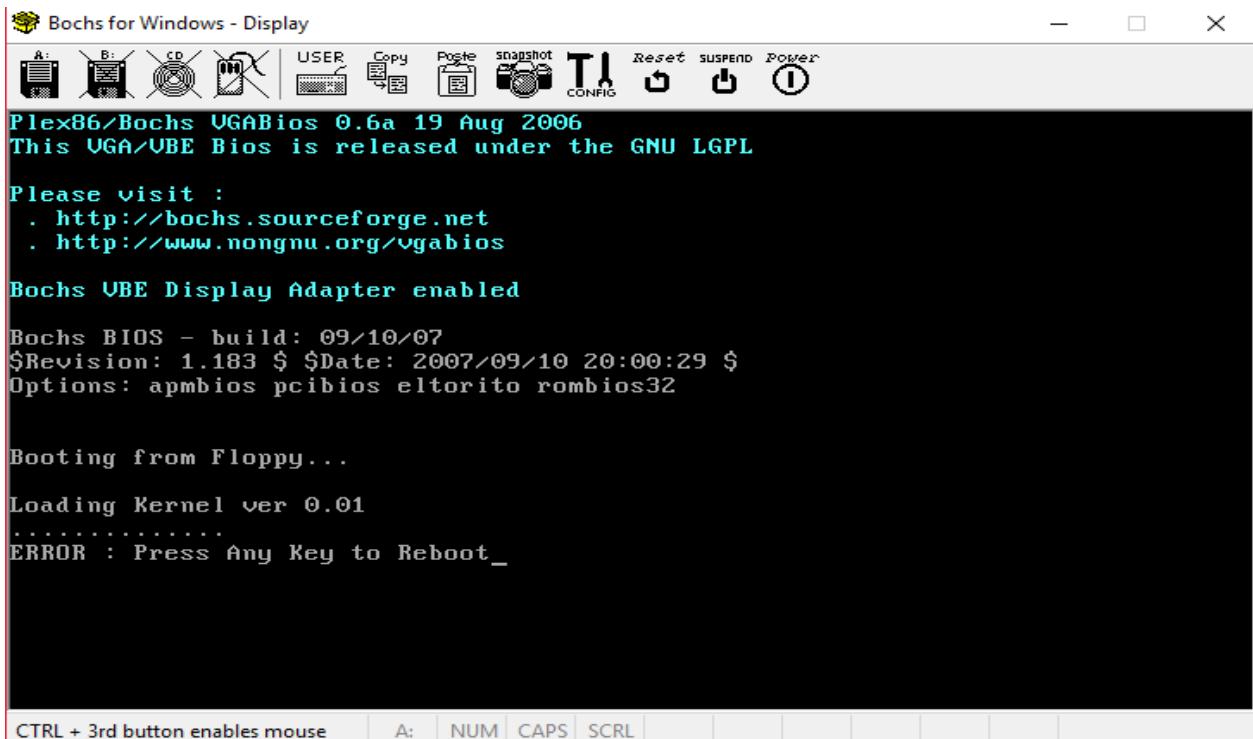
```

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

C:\OS\LAB\LAB2>s

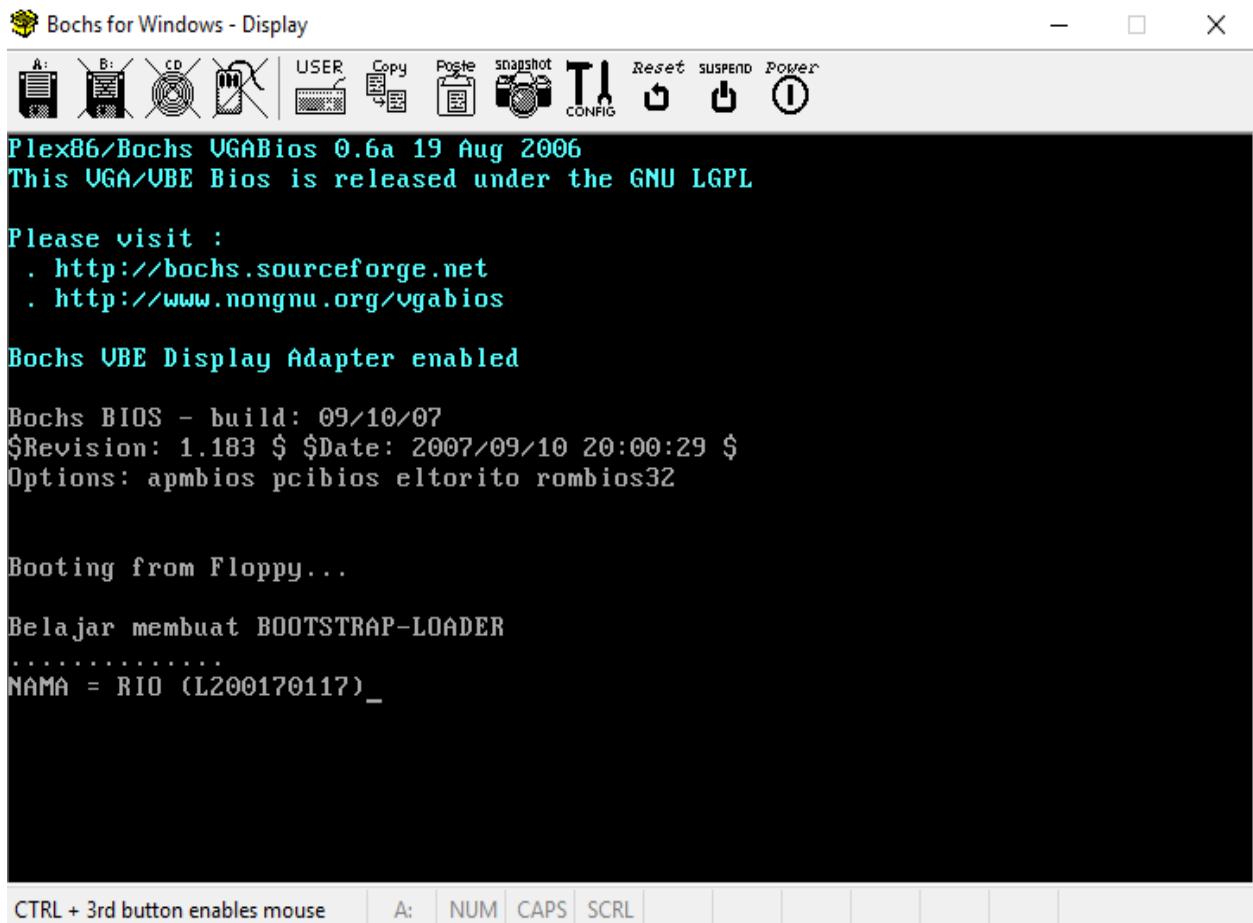
C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -q -f bochssrc.bxrc
00000000000i[APIC?] local apic in initializing
=====
          Bochs x86 Emulator 2.3.5
          Build from CVS snapshot, on September 16, 2007
=====
00000000000i[      ] reading configuration from bochssrc.bxrc
00000000000i[      ] installing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

9. ketikan perintah ‘s’ untuk menjalankan PC simulator dan akan muncul seperti gambar dibawah.



10. ketikan ‘notepad boot.asm’ dan menyunting file boot.asm, cari teks ‘loading kernel’ pada notepad lalu sunting teks tersebut. Selanjutnya save dan lanjutkan ke cmd dengan menjalankan perintah ‘make fp.disk’, setelah itu ketikan ‘s’ dan teks pada boot.asm akan berubah seperti gambar dibawah ini.

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



11.ketikan ‘make kernel’ untuk membuat kernel’.

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

12.selanjutnya ketikan ‘dir’ untuk melihat bahwa kernel telah ditambahkan.

```
C:\OS\LAB\LAB2>dir
Volume in drive C is rio
Volume Serial Number is C8BC-A4E1

Directory of C:\OS\LAB\LAB2

20/09/2018  19:58    <DIR>          .
20/09/2018  19:58    <DIR>          ..
20/09/2018  19:01           1.474.560 a.img
20/09/2018  19:57           10.130 bochs.log
16/12/2008  00:18           1.625 bochsrc.bxrc
20/09/2018  19:55           15.923 boot.asm
20/09/2018  19:55           512 boot.bin
16/09/2007  23:22           18.432 bximage.exe
27/02/2007  04:50           342.016 dd.exe
15/12/2008  21:52           78 dosfp.bat
20/09/2018  19:55           1.474.560 floppya.img
19/09/2018  12:09           7.966 kernel.asm
20/09/2018  19:58           611 kernel.bin
16/12/2008  00:21           228 Makefile
15/12/2008  20:20           44 s.bat
                           13 File(s)   3.346.685 bytes
                           2 Dir(s)  133.103.751.168 bytes free
```

13.jalankan perintah ‘s’ dan akan muncul booting from floppy

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

C:\OS\LAB\LAB2>..\.bochs-2.3.5\bochs -q -f bochsrc.bxrc
00000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
00000000000i[      ] reading configuration from bochsrc.bxrc
00000000000i[      ] installing win32 module as the Bochs GUI
00000000000i[      ] using log file bochs.log
# In bx_win32_gui_c::exit(void)!

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

14.jalankan perintah ‘notepad kernel.asm’ lalu cari teks ‘welcome to my kernel’ pada notepad dan edit teks tersebut menjadi ‘belajar membuat kernel’ dan save.

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

```
C:\OS\LAB\LAB2>s
C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
00000000000i[APIC?] local apic in initializing
=====
          Bochs x86 Emulator 2.3.5
          Build from CVS snapshot, on September 16, 2007
=====
00000000000i[      ] reading configuration from bochsrc.bxrc
00000000000i[      ] installing win32 module as the Bochs GUI
00000000000i[      ] using log file bochs.log
# In bx_win32_gui_c::exit(void)!

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

MODUL 3

1. Masuk ke direktori C:/OS, lakukan setpath dan masuk ke direktori lab/lab3

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.10240]
(c) 2015 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>
```

2. ketikkan type s.bat

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.10240]
(c) 2015 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>type s.bat
..\..\bochs-2.3.5\bochsrc -q -f bochsrc.bxrc
C:\OS\LAB\LAB3>
```

4. Lakukan debugging dengan cara ketik ‘S’

```

on Bochs for Windows - Console
Microsoft Windows [Version 10.0.10240]
(c) 2015 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\Sy
C:\OS>cd lab/lab3

C:\OS\LAB\LAB3>type s.bat
..\\bochs-2.3.5\bochsrcdbg -q -f bochsrc.bxrc

C:\OS\LAB\LAB3>s

C:\OS\LAB\LAB3>..\bochs-2.3.5\bochsrcdbg -q -f bochsrc.bxrc
0000000000[APIC?]
local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
0000000000[ ] reading configuration from bochsrc.bxrc
0000000000[ ] installing win32 module as the Bochs GUI
0000000000[ ] using log file bochs.log
Next at t=0
(0) [0xfffffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:1>

```

Activate Windows
Go to Settings to activate Windows.

5. Ketikkan ‘r’ untuk melihat isi register CS dan IP.

```

on Bochs for Windows - Console
Microsoft Windows [Version 10.0.10240]
(c) 2015 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\Sy
C:\OS>cd lab/lab3

C:\OS\LAB\LAB3>type s.bat
..\\bochs-2.3.5\bochsrcdbg -q -f bochsrc.bxrc

C:\OS\LAB\LAB3>..\bochs-2.3.5\bochsrcdbg -q -f bochsrc.bxrc
0000000000[APIC?]
local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
0000000000[ ] reading configuration from bochsrc.bxrc
0000000000[ ] installing win32 module as the Bochs GUI
0000000000[ ] using log file bochs.log
Next at t=0
(0) [0xfffffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:1> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:00000f20 rbx: 0x00000000:00000000
rsp: 0x00000000:00000000 rbp: 0x00000000:00000000
rsi: 0x00000000:00000000 rdi: 0x00000000:00000000
r8 : 0x00000000:00000000 r9 : 0x00000000:00000000
r10: 0x00000000:00000000 r11: 0x00000000:00000000
r12: 0x00000000:00000000 r13: 0x00000000:00000000
r14: 0x00000000:00000000 r15: 0x00000000:00000000
rip: 0x00000000:0000ffff
eflags: 0x00000002
IOPL=0 id vip ac vm rf nt of df if tf sf zf af pf cf
<bochs:2>

```

Activate Windows
Go to Settings to activate Windows.

6. Ketikkan ‘s’

Bochs for Windows - Console

```
C:\OS\LAB\LAB3>type s.bat
..\\bochs-2.3.5\bochsrc -q -f bochsrc.bxrc

C:\OS\LAB\LAB3>s
000000000001[ ] reading configuration from bochsrc.bxrc
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochs.log
Next at t=0
(0) [0xfffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:1> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:00000000 rbx: 0x00000000:00000000
rsp: 0x00000000:00000000 rbp: 0x00000000:00000000
rsi: 0x00000000:00000000 rdi: 0x00000000:00000000
r8 : 0x00000000:00000000 r9 : 0x00000000:00000000
r10: 0x00000000:00000000 r11: 0x00000000:00000000
r12: 0x00000000:00000000 r13: 0x00000000:00000000
r14: 0x00000000:00000000 r15: 0x00000000:00000000
rip: 0x00000000:0000ffff
eflags: 0x00000002
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:2>
Next at t=1
(0) [0x00fe05b] f000:e05b (unk. ctxt): xor ax, ax ; 31c0
<bochs:3> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:00000000 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>
```

Bochs for Windows - Display

CTRL + 3rd button enables mouse

Activate Windows
Go to Settings to activate Windows.

7. Kemudian masukkan perintah ‘vb 0:0x7C00’ untuk membuat pemberhentian di alamat tersebut.

Bochs for Windows - Console

```
Next at t=0
(0) [0xfffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:1> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:00000000 rbx: 0x00000000:00000000
rsp: 0x00000000:00000000 rbp: 0x00000000:00000000
rsi: 0x00000000:00000000 rdi: 0x00000000:00000000
r8 : 0x00000000:00000000 r9 : 0x00000000:00000000
r10: 0x00000000:00000000 r11: 0x00000000:00000000
r12: 0x00000000:00000000 r13: 0x00000000:00000000
r14: 0x00000000:00000000 r15: 0x00000000:00000000
rip: 0x00000000:0000ffff
eflags: 0x00000002
IOPL=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:2> s
Next at t=1
(0) [0x00fe05b] f000:e05b (unk. ctxt): xor ax, ax ; 31c0
<bochs:3> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:00000000 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 0:0x7C00
<bochs:5> c
(4098424) Breakpoint 2748984, in 0000:7c00 (0x00007c00)
Next at t=2082128
(0) [0x00007c00] 0000:7c00 (unk. ctxt): jmp .+0x003b (0x00007c3e) ; e93b00
<bochs:6>
```

Bochs for Windows - Display

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

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

Bochs VBE Display Adapter enabled

Bochs BIOS - build: 09/10/07
\$Revision: 1.183 \$ \$Date: 2007/09/10 20:00:29 \$
Options: apmbios pcbios eltorito rombios32

Booting from Floppy...

CTRL + 3rd button enables mouse

Activate Windows
Go to Settings to activate Windows.

8. Ketikkan ‘c’ untuk continue / melanjutkan. Lalu ketikkan ‘s’ berulang sebanyak 10 kali, dan lakukan pengecekan dengan file boot.asm

The screenshot shows two windows. On the left is the 'Bochs for Windows - Console' window displaying assembly code. On the right is a 'boot - Notepad' window containing the boot.asm source code.

```

Boot - Notepad
File Edit Format View Help
BytesPerSector dw 0x0200
SectorsPerCluster db 0x01
ReservedSectors dw 0x0001
TotalFATs db 0x02
MaxRootEntries dw 0x00E0
TotalSectorsSmall dw 0x0B40
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"

=====
;(3) Blok BOOT CODE
=====
START:
; Mengatur lokasi kode program pada alamat 7C00:0000, dan mengatur REGISTER SEGMENT
    cli
    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
    sti

; sp bergerak dari alamat atas ke bawah
; aktifkan aktifitas interupsi windows.

```

9. Ketikkan ‘q’ untuk menghentikan debugging. Kemudian lakukan debugging lagi dengan cara ketikkan ‘s’, kemudian ketikkan ‘vb 0x0100:0x0000’ untuk menghentikan langkah saat PC mulai mengeksekusi instruksi dari program ‘kernel.bin’, lalu ketikkan ‘c’

The screenshot shows three windows. The left window is the 'Bochs for Windows - Console'. The middle window is the 'Bochs for Windows - Display' showing the BIOS setup screen. The bottom window is a terminal window showing command-line input and output.

```

Bochs for Windows - Console
<bochs:> s
Next at t=2082134
(0) [0x00007c48] 0000:7c48 (unk. ctxt): mov gs, ax ; 8ee8
<bochs:> s
Next at t=2082135
(0) [0x00007c4a] 0000:7c4a (unk. ctxt): mov ax, 0x0000 ; b80000
<bochs:> s
Next at t=2082136
(0) [0x00007c4d] 0000:7c4d (unk. ctxt): mov ss, ax ; 8ed0
<bochs:> s
Next at t=2082137
(0) [0x00007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xffff ; bcffff
<bochs:> s
Next at t=2082138
(0) [0x00007c52] 0000:7c52 (unk. ctxt): sti ; fb
<bochs:> q
# In bx_w32_gui.c::exit(void)

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

C:\OS\LAB\LAB3>h
'h' is not recognized as an internal or external command,
operable program or batch file.

C:\OS\LAB\LAB3>
C:\OS\LAB\LAB3>..\bochs-2.3.5\bochsdbg -q -f bochsrc.bxrc
000000000001[APIC?]
local apic in initializing
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
000000000001[ ] reading configuration from bochsrc.bxrc
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochs.log
Next at t=0
(0) [0xffffffffff] f000:fff0 (unk. ctxt): jmp far f000:e05b ; ea5be00f0
<bochs:> vb 0x0100:0x0000
<bochs:> c
(9537920) Breakpoint 2748984, in 0100:0000 (0x00001000)
Next at t=2945013
(0) [0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100 ; b80001
<bochs:> 3>

Bochs for Windows - Display
Plex86 Bochs VGA/Bios 0.6a 19 Aug 2006
This VBE BIOS is released under the GNU GPL

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

Bochs VBE Display Adapter enabled

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

Booting from Floppy...
Loading kernel ver 0.01
.....
.

CTRL + 3rd button enables mouse  NUM CAPS SCRL
Activate Windows
Go to Settings to activate Windows.

```

10. Kemudian ketikkan ‘s’ minimal 10x. Lalu bandingkan hasilnya dengan isi file kernel.asm.

The screenshot shows two windows side-by-side. On the left is the 'Bochs x86 Emulator 2.3.5' console window, which displays assembly instructions and memory dump output. On the right is a 'kernel - Notepad' window containing the assembly code for the kernel. A vertical red box highlights a section of the assembly code in the notepad, specifically the interrupt handling and stack setup code.

```

Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc.bxrc
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochs.log
Next at t=0
(0) [0xfffffff0] f000:fff0 (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:>1> vb 0x0100:0x0000
<bochs:>2> c
(9537920) Breakpoint 2748984, in 0100:0000 (0x00001000)
(0) [0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100 ; b80001
<bochs:>3> s
Next at t=2945014
(0) [0x00001003] 0100:0003 (unk. ctxt): mov ds, ax ; 8ed8
<bochs:>4> s
Next at t=2945015
(0) [0x00001005] 0100:0005 (unk. ctxt): mov es, ax ; 8ec0
<bochs:>5> s
Next at t=2945016
(0) [0x00001007] 0100:0007 (unk. ctxt): cli ; fa
<bochs:>6> s
Next at t=2945017
(0) [0x00001008] 0100:0008 (unk. ctxt): mov ss, ax ; 8ed0
<bochs:>7> s
Next at t=2945018
(0) [0x0000100a] 0100:000a (unk. ctxt): mov sp, 0xfffff ; bcffff
<bochs:>8> s
Next at t=2945019
(0) [0x0000100d] 0100:000d (unk. ctxt): sti ; fb
<bochs:>9> s
Next at t=2945020
(0) [0x0000100e] 0100:000e (unk. ctxt): push dx ; 52
<bochs:>10> s
Next at t=2945021
(0) [0x0000100f] 0100:000f (unk. ctxt): push es ; 06
<bochs:>11> s
Next at t=2945022
(0) [0x00001010] 0100:0010 (unk. ctxt): xor ax, ax ; 31c0
<bochs:>12> s
Next at t=2945023
(0) [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 #####
    mov ax, 0x100 ;Lokasi memori untuk menempatkan kernel
    mov ds, ax
    mov es, ax

    cli ;set interrupt OFF
    mov ss, ax ;atur stack segment
    mov sp, 0xFFFF ;atur stack pointer maksimum 64K
    sti ;set interrupt ON

    push dx
    push es
    xor ax, ax
    mov es, ax

    cli
    mov word [es:0x21*4], _int0x21 ; setup interrupt service
    mov [es:0x21*4+2], cs ; untuk menampilkan karakter di layar
    sti
    pop es
    pop dx

    mov si, strWelcomeMsg ; Tampilkan informasi proses
    mov al, 0x01 ; request service 0x01
    int 0x21 ; int 0x21

    call _shell ; call^the^shell
                ; Go to Settings to activate Windows.

```

TUGAS!

1. Tabel pemetaan memori pada PC

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

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

- a) **Real Mode:** Real-Mode adalah sebuah modus di mana prosesor Intel x86 berjalan seolah-olah dirinya adalah sebuah prosesor Intel 8085 atau Intel 8088, meski ia merupakan prosesor Intel 80286 atau lebih tinggi. Karenanya, modus ini juga disebut sebagai modus 8086 (8086 Mode). Dalam modus ini, prosesor hanya dapat mengeksekusi instruksi 16-bit saja dengan menggunakan register internal yang berukuran 16-bit, serta hanya dapat mengakses hanya 1024 KB dari memori karena hanya menggunakan 20-bit jalur bus alamat. Semua program DOS berjalan pada modus ini.

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

MODUL 4

Percobaan Pertama: Melihat versi MS-DOS

1. Mengetikkan ver.

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.10240]
(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\User>ver
Microsoft Windows [Version 10.0.10240]

C:\Users\User>
```

Percobaan Kedua: Melihat, masuk, keluar dari direktori

1. Melihat isi direktori dengan mengetikkan dir.

```
C:\Windows\system32\cmd.exe
C:\Users\User>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\Users\user

05/10/2018 22:39 <DIR> .
05/10/2018 22:39 <DIR> ..
07/07/2018 18:28 187 .gitconfig
14/09/2018 05:19 <DIR> .gnome2
14/09/2018 05:20 1.171 .gvrngrc
16/09/2018 21:40 <DIR> .nbi
16/09/2018 21:25 <DIR> .oracle_jre_usage
18/09/2018 16:27 218 .recently-used.xbel
27/09/2018 17:05 <DIR> .VirtualBox
11/10/2016 11:23 <DIR> Contacts
20/09/2018 15:51 <DIR> Desktop
09/10/2018 12:12 <DIR> Documents
09/10/2018 06:54 <DIR> Downloads
11/10/2016 11:38 <DIR> Favorites
28/03/2018 21:27 <DIR> greenfoot
14/09/2018 08:19 <DIR> GVR
08/10/2018 10:30 339 gvr_stderr.log
08/10/2018 11:39 805 gvr_stdout.log
27/07/2017 13:25 <DIR> Intel
11/10/2016 11:23 <DIR> Links
28/08/2018 10:31 <DIR> Music
23/09/2018 21:22 <DIR> OneDrive
24/08/2018 19:59 <DIR> Pictures
11/10/2016 11:23 <DIR> Saved Games
11/10/2016 11:25 <DIR> Searches
09/10/2018 06:33 <DIR> Videos
26/09/2018 15:06 <DIR> VirtualBox VMs
               5 File(s)    2.720 bytes
              22 Dir(s)   86.745.776.128 bytes free

C:\Users\User>
```

2. Keluar dari direktori dengan mengetikkan cd.. hingga sampai ke direktori C:

```
on C:\Windows\system32\cmd.exe
C:\Users\User>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\Users\User

05/10/2018 22:39 <DIR> .
05/10/2018 22:39 <DIR> 187 .gitconfig
07/07/2018 18:28 <DIR> 1.171 .gnome2
14/09/2018 85.19 <DIR> .gvrngrc
14/09/2018 85.20 1.171 .oracle_jre_usage
16/09/2018 21.40 <DIR> .nbi
16/09/2018 21.25 <DIR> .recently-used.xbel
18/09/2018 16.27 218 .VirtualBox
27/09/2018 17.05 <DIR> Contacts
11/10/2016 11.23 <DIR> Desktop
20/09/2018 15.51 <DIR> Documents
09/10/2018 12.12 <DIR> Downloads
09/10/2018 06.54 <DIR> Favorites
11/10/2016 11.38 <DIR> Favorites
28/03/2018 21.27 <DIR> greenfoot
14/09/2018 08.19 <DIR> GvR
08/10/2018 10.30 339 gvr_stderr.log
08/10/2018 11.39 805 gvr_stdout.log
27/07/2017 13.25 <DIR> Intel
11/10/2016 11.23 <DIR> Links
28/08/2018 10.31 <DIR> Music
23/09/2018 21.22 <DIR> OneDrive
24/08/2018 19.59 <DIR> Pictures
11/10/2016 11.23 <DIR> Saved Games
11/10/2016 11.25 <DIR> Searches
09/10/2018 06.33 <DIR> Videos
26/09/2018 15.06 <DIR> VirtualBox VMs
      5 File(s) 2.720 bytes
     22 Dir(s) 86.745.776.128 bytes free

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

3. Melihat isi direktori C: dengan mengetikkan dir

```
on C:\Windows\system32\cmd.exe
11/10/2016 11.23 <DIR> Contacts
20/09/2018 15.51 <DIR> Desktop
09/10/2018 12.12 <DIR> Documents
09/10/2018 06.54 <DIR> Downloads
11/10/2016 11.38 <DIR> Favorites
28/03/2018 21.27 <DIR> greenfoot
14/09/2018 08.19 <DIR> GvR
08/10/2018 10.30 339 gvr_stderr.log
08/10/2018 11.39 805 gvr_stdout.log
27/07/2017 13.25 <DIR> Intel
11/10/2016 11.23 <DIR> Links
28/08/2018 10.31 <DIR> Music
23/09/2018 21.22 <DIR> OneDrive
24/08/2018 19.59 <DIR> Pictures
11/10/2016 11.23 <DIR> Saved Games
11/10/2016 11.25 <DIR> Searches
09/10/2018 06.33 <DIR> Videos
26/09/2018 15.06 <DIR> VirtualBox VMs
      5 File(s) 2.720 bytes
     22 Dir(s) 86.745.776.128 bytes free

C:\Users\User>cd..
C:\Users\User>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

27/07/2017 13.26 <DIR> Intel
14/09/2018 06.09 <DIR> OS
10/07/2015 18.04 <DIR> PerfLogs
26/09/2018 15.01 <DIR> Program Files
14/09/2018 05.19 <DIR> Program Files (x86)
11/10/2016 11.40 <DIR> Transtool
11/10/2016 11.42 <DIR> Users
09/10/2018 07.20 <DIR> Windows
22/03/2018 21.34 <DIR> xamp
      0 File(s)          0 bytes
      9 Dir(s) 86.747.389.952 bytes free

C:\>
```

4. Ketikkan dir/p untuk menampilkan nama file perhalaman

```
on C:\Windows\system32\cmd.exe
      5 File(s)          2.720 bytes
      22 Dir(s)  86.745.776.128 bytes free

C:\Users\User>cd..
C:\Users>cd..

C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

27/07/2017  13.26    <DIR>        Intel
14/09/2018  06.09    <DIR>        OS
10/07/2015  18.04    <DIR>        PerfLogs
26/09/2018  15.01    <DIR>        Program Files
14/09/2018  05.19    <DIR>        Program Files (x86)
11/10/2016  11.40    <DIR>        Transtool
11/10/2016  11.42    <DIR>        Users
09/10/2018  07.20    <DIR>        Windows
22/03/2018  21.34    <DIR>        xampp
          0 File(s)          0 bytes
         9 Dir(s)  86.747.389.952 bytes free

C:\>dir/p
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

27/07/2017  13.26    <DIR>        Intel
14/09/2018  06.09    <DIR>        OS
10/07/2015  18.04    <DIR>        PerfLogs
26/09/2018  15.01    <DIR>        Program Files
14/09/2018  05.19    <DIR>        Program Files (x86)
11/10/2016  11.40    <DIR>        Transtool
11/10/2016  11.42    <DIR>        Users
09/10/2018  07.20    <DIR>        Windows
22/03/2018  21.34    <DIR>        xampp
          0 File(s)          0 bytes
         9 Dir(s)  86.746.161.152 bytes free

C:\>
```

5. Ketikkan dir/w untuk menampilkan file secara mendatar.

```
on C:\Windows\system32\cmd.exe
10/07/2015  18.04    <DIR>        PerfLogs
26/09/2018  15.01    <DIR>        Program Files
14/09/2018  05.19    <DIR>        Program Files (x86)
11/10/2016  11.40    <DIR>        Transtool
11/10/2016  11.42    <DIR>        Users
09/10/2018  07.20    <DIR>        Windows
22/03/2018  21.34    <DIR>        xampp
          0 File(s)          0 bytes
         9 Dir(s)  86.747.389.952 bytes free

C:\>dir/p
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

27/07/2017  13.26    <DIR>        Intel
14/09/2018  06.09    <DIR>        OS
10/07/2015  18.04    <DIR>        PerfLogs
26/09/2018  15.01    <DIR>        Program Files
14/09/2018  05.19    <DIR>        Program Files (x86)
11/10/2016  11.40    <DIR>        Transtool
11/10/2016  11.42    <DIR>        Users
09/10/2018  07.20    <DIR>        Windows
22/03/2018  21.34    <DIR>        xampp
          0 File(s)          0 bytes
         9 Dir(s)  86.746.161.152 bytes free

C:\>dir/w
'dir' is not recognized as an internal or external command,
operable program or batch file.

C:\>dir/w
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

[Intel]           [OS]           [PerfLogs]           [Program Files]           [Program Files (x86)] [Transtool]           [Users]
[Windows]         [xampp]         0 File(s)          0 bytes
                  9 Dir(s)  86.746.095.616 bytes free

C:\>
```

6. dir/a untuk menampilkan semua file, terutama yang terhidden

```

on C:\Windows\system32\cmd.exe
operable program or batch file.

C:\>dir/w
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

[Intel] [OS] [PerfLogs] [Program Files] [Program Files (x86)] [Transtool] [Users]
[Windows] [xampp] 0 File(s) 0 bytes
9 Dir(s) 86.746.095.616 bytes free

C:\>dir/a
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

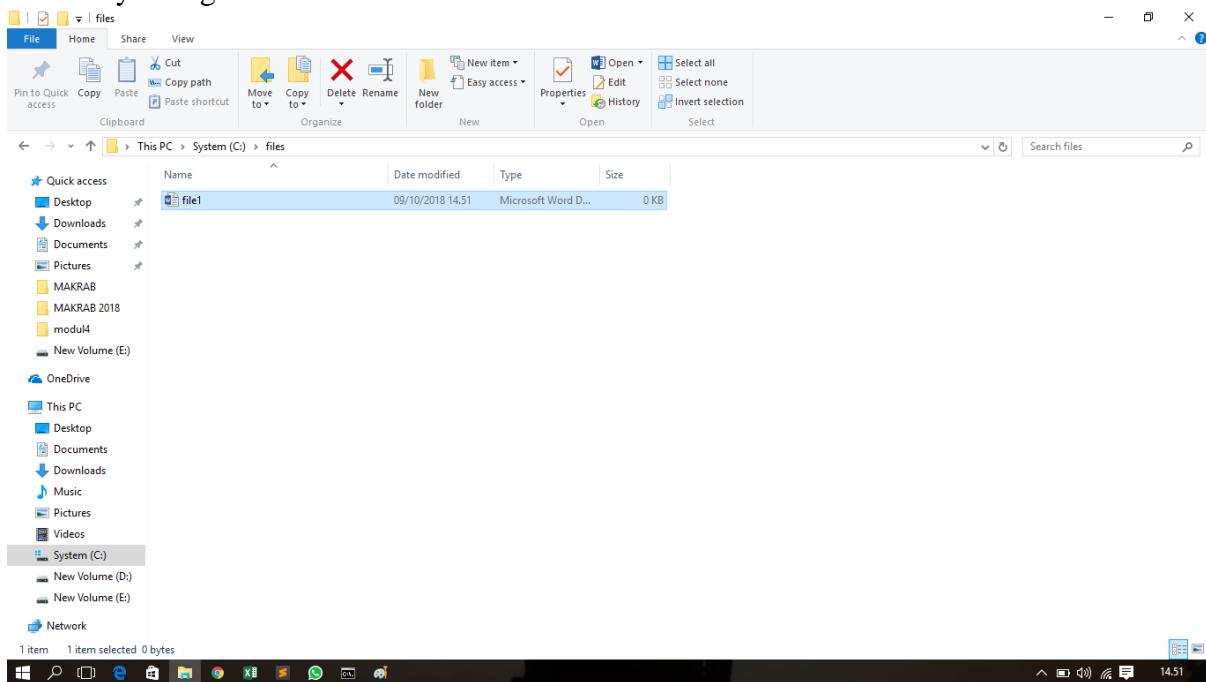
27/07/2017 13.22 <DIR> $Recycle.Bin
10/07/2015 18.00 395.268 bootmgr
10/07/2015 18.00 1 BOOTNXT
01/10/2018 14.08 <DIR> Config.Msi
10/07/2015 19.21 <JUNCTION> Documents and Settings [C:\Users]
09/10/2018 14.09 1.662.713.856 hiberfil.sys
27/07/2017 13.26 <DIR> Intel
11/10/2016 11.36 <DIR> MSOCache
14/09/2018 06.09 <DIR> OS
05/10/2018 07.41 1.006.632.960 pagefile.sys
10/07/2015 18.04 <DIR> PerfLogs
26/09/2018 15.01 <DIR> Program Files
14/09/2018 05.19 <DIR> Program Files (x86)
22/08/2018 13.59 <DIR> ProgramData
11/10/2016 11.19 <DIR> Recovery
05/10/2018 07.41 268.435.456 swapfile.sys
02/05/2018 14.58 <DIR> System Volume Information
11/10/2016 11.40 <DIR> Transtool
11/10/2016 11.42 <DIR> Users
09/10/2018 07.20 <DIR> Windows
22/03/2018 21.34 <DIR> xampp
      5 File(s) 2.938.177.541 bytes
     16 Dir(s) 86.746.828.880 bytes free

C:\>

```

Percobaan Ketiga: Merubah nama file

- Buat semua folder bernama files di direktori C: kemudia buat sebuah file docx di dalamnya dengan ama file1



- Lihat isi direktori, kemudia masuk ke direktori files.

```
on C:\Windows\system32\cmd.exe
C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

09/10/2018 14.51 <DIR>      files
27/07/2017 13.26 <DIR>      Intel
14/09/2018 06.09 <DIR>      OS
10/07/2015 18.04 <DIR>      PerfLogs
26/09/2018 15.01 <DIR>      Program Files
14/09/2018 05.19 <DIR>      Program Files (x86)
11/10/2016 11.40 <DIR>      Transtool
11/10/2016 11.42 <DIR>      Users
09/10/2018 07.20 <DIR>      Windows
22/03/2018 21.34 <DIR>      xampp
          0 File(s)           0 bytes
          10 Dir(s)  86.747.557.888 bytes free

C:\>cd files
C:\files>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\files

09/10/2018 14.51 <DIR>      .
09/10/2018 14.51 <DIR>      ..
09/10/2018 14.51           0 file1.docx
          1 File(s)           0 bytes
          2 Dir(s)  86.746.275.840 bytes free

C:\files>
```

3. Ubah nama file dengan perintah ren nama_file_awal.ekstensi nama_file_baru.ekstensi

```
on C:\Windows\system32\cmd.exe
C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

09/10/2018 14.51 <DIR>      files
27/07/2017 13.26 <DIR>      Intel
14/09/2018 06.09 <DIR>      OS
10/07/2015 18.04 <DIR>      PerfLogs
26/09/2018 15.01 <DIR>      Program Files
14/09/2018 05.19 <DIR>      Program Files (x86)
11/10/2016 11.40 <DIR>      Transtool
11/10/2016 11.42 <DIR>      Users
09/10/2018 07.20 <DIR>      Windows
22/03/2018 21.34 <DIR>      xampp
          0 File(s)           0 bytes
          10 Dir(s)  86.747.557.888 bytes free

C:\>cd files
C:\files>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\files

09/10/2018 14.51 <DIR>      .
09/10/2018 14.51 <DIR>      ..
09/10/2018 14.51           0 file1.docx
          1 File(s)           0 bytes
          2 Dir(s)  86.746.275.840 bytes free

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

4. Ubah nama file dengan perintah rename nama_file_awal.ekstensi nama_file_baru.ekstensi

```
on C:\Windows\system32\cmd.exe
C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

09/10/2018 14.51 <DIR>      files
27/07/2017 13.26 <DIR>      Intel
14/09/2018 06.00 <DIR>      OS
10/07/2015 18.04 <DIR>      PerfLogs
26/09/2018 15.01 <DIR>      Program Files
14/09/2018 05.19 <DIR>      Program Files (x86)
11/10/2016 11.40 <DIR>      Transtool
11/10/2016 11.42 <DIR>      Users
09/10/2018 07.20 <DIR>      Windows
22/03/2018 21.34 <DIR>      xampp
          0 File(s)           0 bytes
          10 Dir(s)  86.747.557.888 bytes free

C:\>cd files
C:\files>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\files

09/10/2018 14.51 <DIR>      .
09/10/2018 14.51 <DIR>      ..
09/10/2018 14.51           0 file1.docx
          1 File(s)           0 bytes
          2 Dir(s)  86.746.275.840 bytes free

C:\files>ren file1.docx file.docx
C:\files>rename file.docx file2.docx
C:\files>
```

5. Kemudian apakah sudah terganti dengan melihat isi direktori dengan mengetikkan dir.

```
on C:\Windows\system32\cmd.exe
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\files

09/10/2018 14.51 <DIR>      .
09/10/2018 14.51 <DIR>      ..
09/10/2018 14.51           0 file1.docx
          1 File(s)           0 bytes
          2 Dir(s)  86.746.275.840 bytes free

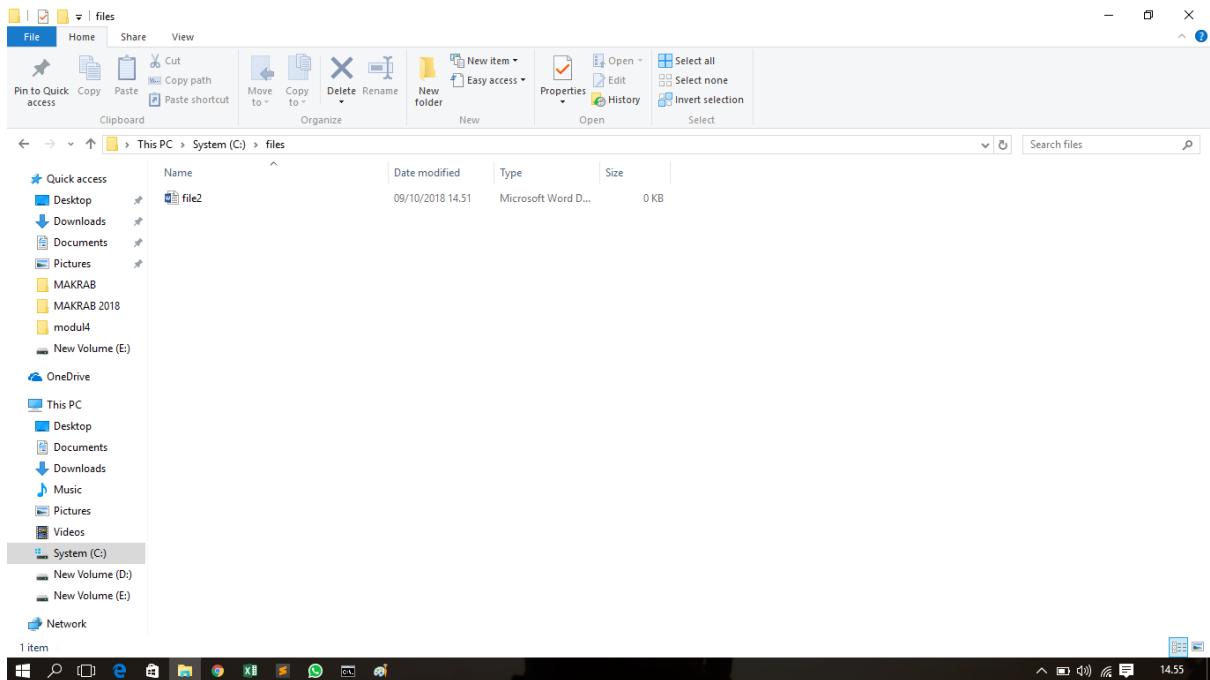
C:\files>ren file1.docx file.docx
C:\files>rename file.docx file2.docx
C:\files>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\files

09/10/2018 14.54 <DIR>      .
09/10/2018 14.54 <DIR>      ..
09/10/2018 14.51           0 file2.docx
          1 File(s)           0 bytes
          2 Dir(s)  86.746.423.296 bytes free

C:\files>
```

6. Kemudian pastikan apakah sudah terganti dengan melihatnya pada windows explorer.



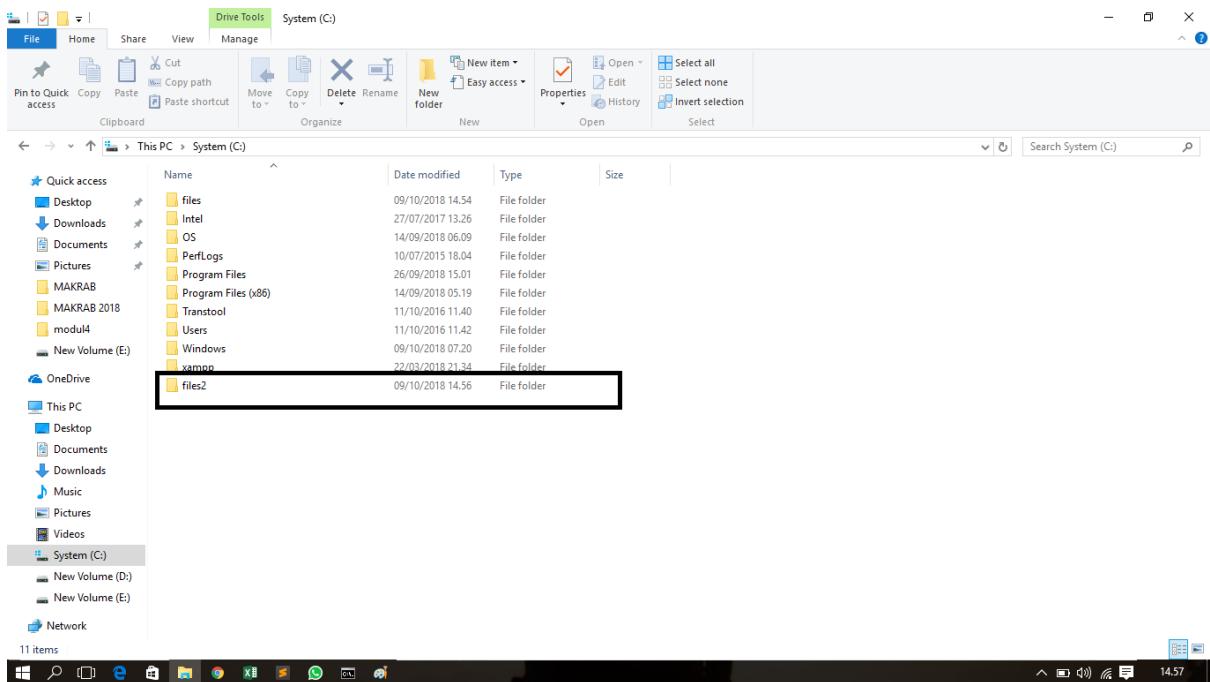
Percobaan keempat: Copy file dan menghapus file

1. Keluar dari direktori files dengan mengetikkan cd..

```
C:\Windows\system32\cmd.exe
C:\files>cd..
C:\>
```

A screenshot of a Windows Command Prompt window. The title bar says 'cmd.exe'. The command line shows 'C:\Windows\system32\cmd.exe' and 'C:\files>cd..'. The output shows 'C:\>'. The window has a dark background and a light gray border.

2. Buatlah sebuah folder baru bernama files2 di direktori C:

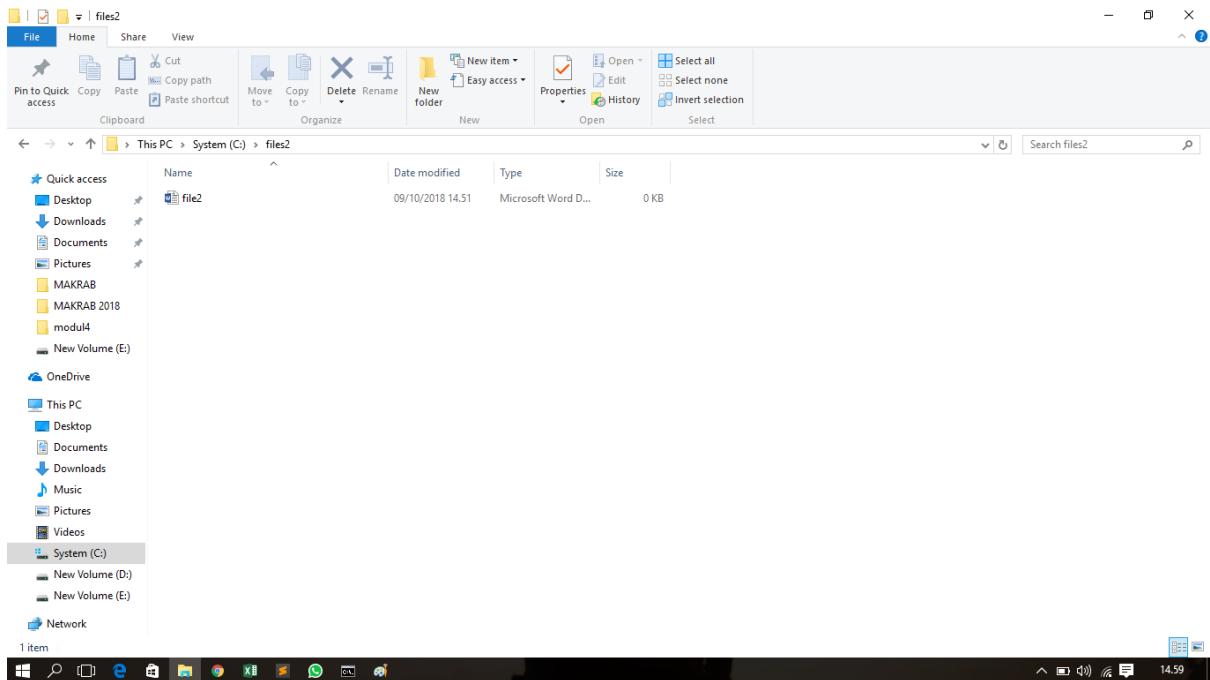


3. Menyalin semua isi file di suatu folder dengan cara mengetikkan copy direktori\nama_folder_awal direktori\\ nama_folder_tujuan

```
C:\Windows\system32\cmd.exe
C:\files>cd..
C:\>copy C:\files C:\files2
C:\files\file2.docx
    1 file(s) copied.

C:\>-
```

4. Cek pada windows explorer.



5. Untuk mengkopi lain direktori juga berlaku sama. Jika ingin mengecek melalui cmd dapat menggunakan dir.



```
C:\Windows\system32\cmd.exe
C:\files>cd..
C:\>copy C:\files C:\files2
C:\files>file2.docx
    1 file(s) copied.

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

C:\files>
```

```
ox C:\Windows\system32\cmd.exe
C:\files>cd..
C:\>copy C:\files C:\files2
C:\files\file2.docx
    1 file(s) copied.
C:\>cd files
C:\files>copy C:\files\file2.docx D:\\
    1 file(s) copied.
C:\files>cd
C:\files
C:\files>cd..
C:\>D:
D:\>
```

```
ox C:\Windows\system32\cmd.exe
C:\files>cd..
C:\>copy C:\files C:\files2
C:\files\file2.docx
    1 file(s) copied.
C:\>cd files
C:\files>copy C:\files\file2.docx D:\\
    1 file(s) copied.
C:\files>cd
C:\files
C:\files>cd..
C:\>D:
D:\>dir
Volume in drive D is New Volume
Volume Serial Number is F4CA-991B
Directory of D:\

13/05/2018  14.39      <DIR>        ADOBE
03/10/2018  06.57      <DIR>        Aplikasi
28/04/2018  15.17      <DIR>        CETAK
16/08/2018  16.21      <DIR>        DESAINKU
25/06/2018  12.06      <DIR>        FFOutput
09/10/2018  14.51      0 file2.docx
01/05/2018  10.28      <DIR>        fml
18/07/2018  07.44      <DIR>        FOTO
11/04/2018  11.09      <DIR>        HP
12/07/2018  20.24      <DIR>        leaves-and-wombats
16/08/2018  09.22      <DIR>        MUSIC
10/08/2018  10.22      <DIR>        TUTORIAL
18/05/2018  20.07      <DIR>        Wallpaper
31/07/2018  16.36      <DIR>        zia
               1 File(s)          0 bytes
               13 Dir(s)  400.511.463.424 bytes free
D:\>_
```

6. Untuk mengapus ketikkan del nama_folder

```
on C:\Windows\system32\cmd.exe
28/04/2018 15.17 <DIR>      CETAK
16/08/2018 18.21 <DIR>      DESAINKU
25/06/2018 12.06 <DIR>      FFOutput
09/10/2018 14.51          0 file2.docx
28/08/2018 18.28 <DIR>      FILM
18/07/2018 07.44 <DIR>      FOTO
11/04/2018 11.09 <DIR>      HP
12/07/2018 20.24 <DIR>      leaves-and-wombats
16/08/2018 09.22 <DIR>      MUSIC
10/08/2018 18.22 <DIR>      TUTORIAL
18/05/2018 20.07 <DIR>      Wallpaper
31/07/2018 16.36 <DIR>      zia
1 File(s)   0 bytes
13 Dir(s)  400.511.463.424 bytes free

D:\>C:
C:\>cd
C:\>

C:\>del files
C:\files\*, Are you sure (Y/N)? Y
C:\>
```

7. Kemudia kembali menuju direktori yang terdapat folder dekstop. Kemudia copy semua isi folder dan pindah pada suatu folder di mana folder baru dibuat saat mengcopy. Dengan cara mengetikkan xcopy Dekstop D:nama_folder\ /s/e

```
on C:\Windows\system32\cmd.exe
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\nvfbcc.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\nvfbcc64.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvidia-smi_1.pd_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvidia-smi.ex_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvifd.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvifr.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvifr64.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvifropengl32.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvifropengl64.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvinfo.pb_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvinit.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvinitx.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvlddmkm.sy_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvmcumd.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvml.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvoglshim32.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvoglshim64.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvoglv32.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvoglv64.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvopencl32.dl_
Desktop\ES-475G\VGA NEW Core I5\nVidia NVIDIA VGA N165-GT1\MOD01D00X60061000M\Display.Driver\Nvopencl64.dl_
C:\Users\userxcopy Desktop\baru\ /s/e
Desktop\CorelDRAW X7 17.3.lnk
Desktop\Flip PDF Professional.lnk
Desktop\Format Factory.lnk
Desktop\GitHub Desktop.lnk
Desktop\Google Chrome.lnk
Desktop\GreenFoot.lnk
Desktop\GvRng.lnk
Desktop\Internet Download Manager.lnk
Desktop\KMPlayer.lnk
Desktop\LINE.lnk
Desktop\Nero Express.lnk
Desktop\Photoscape.lnk
Desktop\Photoshop CS4.lnk
Desktop\Spotify.lnk
Desktop\Sublime Text 3.lnk
Desktop\WhatsApp.lnk
Desktop\modul\praktikum\pbo\Program.class
Desktop\modul\praktikum\pbo\Program.java
19 File(s) copied
C:\Users\User\>
```

8. Kemudian cek pada folder D.

```
on C:\Windows\system32\cmd.exe
Desktop\GitHub Desktop.lnk
Desktop\Google Chrome.lnk
Desktop\GreenFoot.lnk
Desktop\GvRng.lnk
Desktop\Internet Download Manager.lnk
Desktop\KMPPlayer.lnk
Desktop\LTNE.lnk
Desktop\Nero Express.lnk
Desktop\PhotoScape.lnk
Desktop\Photoshop CS4.lnk
Desktop\Spotify.lnk
Desktop\Sublime Text 3.lnk
Desktop\WhatsApp.lnk
Desktop\modul\praktikum\pbo\Program.class
Desktop\modul\praktikum\pbo\Program.java
19 File(s) copied

C:\Users\User>D:
D:\>dir
Volume in drive D is New Volume
Volume Serial Number is F4CA-991B

Directory of D:\

13/05/2018 14.39 <DIR> ADOBE
09/10/2018 15.15 <DIR> Aplikasi
09/10/2018 15.26 <DIR> baru
28/04/2018 15.17 <DIR> CETAK
16/08/2018 10.21 <DIR> DESAINKU
25/06/2018 12.06 <DIR> FFOutput
09/10/2018 14.51 0 file2.docx
28/08/2018 18.28 <DIR> FILM
18/07/2018 07.44 <DIR> FOTO
11/04/2018 11.09 <DIR> HP
12/07/2018 20.24 <DIR> leaves-and-wombats
16/08/2018 09.22 <DIR> MUSIC
10/08/2018 10.22 <DIR> TUTORIAL
18/05/2018 20.07 <DIR> Wallpaper
31/07/2018 16.36 <DIR> zia
1 File(s) 0 bytes
14 Dir(s) 392.181.448.704 bytes free
D:\>
```

Percobaan Kelima: Membuat dan menghapus direktori

1. Masuk ke direktori C:

```
on C:\Windows\system32\cmd.exe
D:\baru>cd..
D:\>C:
C:\Users\User>cd..
C:\Users>cd..
C:\>
```

2. Buat sebuah folder baru dengan nama baru dengan cara mengetikkan md baru, kemudian lihat apakah sudah terbuat dengan melihat isi direktori C:

```
on C:\Windows\system32\cmd.exe
D:\baru>cd..
D:\>C:
C:\Users\User>cd..
C:\Users>cd..
C:\md baru
C:\dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6
Directory of C:\
09/10/2018 15.38 <DIR> baru
09/10/2018 15.05 <DIR> files
09/10/2018 14.58 <DIR> files2
27/07/2017 13.26 <DIR> Intel
14/09/2018 06.00 <DIR> OS
10/07/2015 18.04 <DIR> PerfLogs
26/09/2018 15.01 <DIR> Program Files
14/09/2018 05.19 <DIR> Program Files (x86)
11/10/2016 11.40 <DIR> Transtool
11/10/2016 11.42 <DIR> Users
09/10/2018 07.20 <DIR> Windows
22/03/2018 21.34 <DIR> xampp
          0 File(s)          0 bytes
          12 Dir(s)  91.190.657.024 bytes free
C:\>
```

3. Kemudian hapus direktori dengan rd baru, dan lihat apakah sudah terhapus.

```
on C:\Windows\system32\cmd.exe
C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6
Directory of C:\
09/10/2018 15.38 <DIR> baru
09/10/2018 15.05 <DIR> files
09/10/2018 14.58 <DIR> files2
27/07/2017 13.26 <DIR> Intel
14/09/2018 06.00 <DIR> OS
10/07/2015 18.04 <DIR> PerfLogs
26/09/2018 15.01 <DIR> Program Files
14/09/2018 05.19 <DIR> Program Files (x86)
11/10/2016 11.40 <DIR> Transtool
11/10/2016 11.42 <DIR> Users
09/10/2018 07.20 <DIR> Windows
22/03/2018 21.34 <DIR> xampp
          0 File(s)          0 bytes
          12 Dir(s)  91.190.652.928 bytes free
C:\>rd baru
C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6
Directory of C:\
          0 File(s)
          11 Dir(s)  91.190.587.392 bytes free
C:\>
```

4. Kemudian buat kembali suatu folder dengan nama baru1 dengan perintah mkdir nama_file_baru. Kemudian lihat apakah sudah terbuat atau belum.

```
on C:\Windows\system32\cmd.exe
C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

09/10/2018  15.05    <DIR>        files
09/10/2018  14.58    <DIR>        files2
27/07/2017  13.26    <DIR>        Intel
14/09/2018  06.09    <DIR>        OS
10/07/2015  18.04    <DIR>        PerfLogs
26/09/2018  15.01    <DIR>        Program Files
14/09/2018  05.19    <DIR>        Program Files (x86)
11/10/2016  11.40    <DIR>        Transtool
11/10/2016  11.42    <DIR>        Users
09/10/2018  07.20    <DIR>        Windows
22/03/2018  21.34    <DIR>        xamp
               0 File(s)          0 bytes
               11 Dir(s)  91.190.648.832 bytes free

C:\>mkdir baru1
C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

09/10/2018  15.32    <DIR>        baru1
09/10/2018  15.05    <DIR>        files
09/10/2018  14.58    <DIR>        files2
27/07/2017  13.26    <DIR>        Intel
14/09/2018  06.09    <DIR>        OS
10/07/2015  18.04    <DIR>        PerfLogs
26/09/2018  15.01    <DIR>        Program Files
14/09/2018  05.19    <DIR>        Program Files (x86)
11/10/2016  11.40    <DIR>        Transtool
11/10/2016  11.42    <DIR>        Users
09/10/2018  07.20    <DIR>        Windows
22/03/2018  21.34    <DIR>        xamp
               0 File(s)          0 bytes
               12 Dir(s)  91.190.648.832 bytes free

C:\>
```

5. Kemudia hapus dengan perintah rmdir nama_folder. Dan lihat apakah sudah terhapus.

```
on C:\Windows\system32\cmd.exe
C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

09/10/2018  15.32    <DIR>        baru1
09/10/2018  15.05    <DIR>        files
09/10/2018  14.58    <DIR>        files2
27/07/2017  13.26    <DIR>        Intel
14/09/2018  06.09    <DIR>        OS
10/07/2015  18.04    <DIR>        PerfLogs
26/09/2018  15.01    <DIR>        Program Files
14/09/2018  05.19    <DIR>        Program Files (x86)
11/10/2016  11.40    <DIR>        Transtool
11/10/2016  11.42    <DIR>        Users
09/10/2018  07.20    <DIR>        Windows
22/03/2018  21.34    <DIR>        xamp
               0 File(s)          0 bytes
               12 Dir(s)  91.190.648.832 bytes free

C:\>rmdir baru1
C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

09/10/2018  15.05    <DIR>        files
09/10/2018  14.58    <DIR>        files2
27/07/2017  13.26    <DIR>        Intel
14/09/2018  06.09    <DIR>        OS
10/07/2015  18.04    <DIR>        PerfLogs
26/09/2018  15.01    <DIR>        Program Files
14/09/2018  05.19    <DIR>        Program Files (x86)
11/10/2016  11.40    <DIR>        Transtool
11/10/2016  11.42    <DIR>        Users
09/10/2018  07.20    <DIR>        Windows
22/03/2018  21.34    <DIR>        xamp
               0 File(s)          0 bytes
               11 Dir(s)  91.190.644.736 bytes free

C:\>
```

6. Kemudian buat suatu folder dengan perintah md \nama_folder. Dan cek.

```
on C:\Windows\system32\cmd.exe
C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

09/10/2018 15.05 <DIR>      files
09/10/2018 14.58 <DIR>      files2
27/07/2017 13.26 <DIR>      Intel
14/09/2018 06.09 <DIR>      OS
10/07/2015 18.04 <DIR>      PerfLogs
26/09/2018 15.01 <DIR>      Program Files
14/09/2018 05.19 <DIR>      Program Files (x86)
11/10/2016 11.40 <DIR>      Transtool
11/10/2016 11.42 <DIR>      Users
09/10/2018 07.20 <DIR>      Windows
22/03/2018 21.34 <DIR>      xampp
               0 File(s)   0 bytes
               11 Dir(s)  91.190.644.736 bytes free

C:\>md \komputer
C:\>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\

09/10/2018 15.05 <DIR>      files
09/10/2018 14.58 <DIR>      files2
27/07/2017 13.26 <DIR>      Intel
09/10/2018 15.34 <DIR>      komputer
               0 File(s)   0 bytes
               12 Dir(s)  91.190.644.736 bytes free

C:\>
```

7. Lalu buat kembali suatu folder pada suatu folder dengan cara md \folder_awal\folder_yang akan_dibuat

```
on C:\Windows\system32\cmd.exe
Directory of C:\

09/10/2018 15.05 <DIR>      files
09/10/2018 14.58 <DIR>      files2
27/07/2017 13.26 <DIR>      Intel
09/10/2018 15.34 <DIR>      komputer
14/09/2018 06.09 <DIR>      OS
10/07/2015 18.04 <DIR>      PerfLogs
26/09/2018 15.01 <DIR>      Program Files
14/09/2018 05.19 <DIR>      Program Files (x86)
11/10/2016 11.40 <DIR>      Transtool
11/10/2016 11.42 <DIR>      Users
09/10/2018 07.20 <DIR>      Windows
22/03/2018 21.34 <DIR>      xampp
               0 File(s)   0 bytes
               12 Dir(s)  91.190.644.736 bytes free

C:\>md \files\film
C:\>
```

8. Kemudian cek dengan masuk dan melihat isi direktori.

```
on C:\Windows\system32\cmd.exe
Directory of C:\

09/10/2018 15:05 <DIR>       files
09/10/2018 14:58 <DIR>       files2
27/07/2017 13:26 <DIR>       Intel
09/10/2018 15:34 <DIR>       komputer
14/09/2018 06:09 <DIR>       OS
10/07/2015 18:04 <DIR>       PerfLogs
26/09/2018 15:01 <DIR>       Program Files
14/09/2018 05:19 <DIR>       Program Files (x86)
11/10/2016 11:40 <DIR>       Transtool
11/10/2016 11:42 <DIR>       Users
09/10/2018 07:20 <DIR>       Windows
22/03/2018 21:34 <DIR>       xamp
               0 File(s)   0 bytes
               12 Dir(s)  91.190.644.736 bytes free

C:\>md \files\film
C:\>cd files

C:\files>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\files

09/10/2018 15:35 <DIR>       .
09/10/2018 15:35 <DIR>       ..
09/10/2018 15:35 <DIR>       film
               0 File(s)   0 bytes
               3 Dir(s)  91.190.636.544 bytes free

C:\files>
```

Percobaan Keenam: Memindahkan file dan menampilkan isi folder secara terstruktur.

1. Buat suatu file pada folder C:\files\baru. Kemudia pindahkan file ke folder C:\files 2.

```
on C:\Windows\system32\cmd.exe
C:\files>cd..
C:\>move C:\files\baru\pindah.docx C:\files2
      1 file(s) moved.

C:\>~
```

```
on C:\Windows\system32\cmd.exe
C:\files>cd..
C:\>move C:\files\baru\pindah.docx C:\files2
  1 file(s) moved.
C:\>
```

2. Kemudian cek pada direktori files2.

```
on C:\Windows\system32\cmd.exe
27/07/2017 13.26 <DIR>      Intel
09/10/2018 15.34 <DIR>      komputer
14/09/2018 06.09 <DIR>      OS
10/07/2015 18.04 <DIR>      PerfLogs
26/09/2018 15.01 <DIR>      Program Files
14/09/2018 05.19 <DIR>      Program Files (x86)
11/10/2016 11.40 <DIR>      Transtool
11/10/2016 11.42 <DIR>      Users
09/10/2018 07.20 <DIR>      Windows
22/03/2018 21.34 <DIR>      xamp
          0 File(s)           0 bytes
         12 Dir(s)  91.189.350.400 bytes free

C:\>cd files2
C:\files2>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\files2

09/10/2018 15.39      .
09/10/2018 15.39      <DIR>      ..
09/10/2018 14.51      0 file2.docx
09/10/2018 15.38      0 pindah.docx
09/10/2018 15.38      0 pindah.txt
          3 File(s)           0 bytes
         2 Dir(s)  91.189.350.400 bytes free

C:\files2>
```

3. Kemudian lihat hierarki pada suatu folder, seperti folder files dan windows.

```
C:\Windows\system32\cmd.exe
09/10/2018 07.20 <DIR> Windows
22/08/2018 21.34 <DIR> xamp
    0 File(s) 0 bytes
    12 Dir(s) 91.189.350.400 bytes free

C:>cd files2

C:\files2>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\files2

09/10/2018 15.39 <DIR> .
09/10/2018 15.39 <DIR> ..
09/10/2018 14.51 0 file2.docx
09/10/2018 15.38 0 pindah.docx
09/10/2018 15.38 0 pindah.txt
    3 File(s) 0 bytes
    2 Dir(s) 91.189.350.400 bytes free

C:\files2>cd..

C:\>tree c:\files
Folder PATH listing for volume System
Volume serial number is 4A6B-68E6
C:\FILES
    |---baru
    |---film
C:\>
```

```
C:\Windows\system32\cmd.exe
--x86_system_enterpriseservices_b63f5f7711d50a3a_4_0_10240_16384_none_2d294c34bc1feeb
--x86_system_printing_31bf3856ad364e35_4_0_10240_16384_none_21d699246a470cecd
--x86_system_transactions_b7a5c561934e089_4_0_10240_16384_none_6b0d609d79387619
--x86_system_web_b03f5f7f11d50a3a_4_0_10240_16384_none_4ea5924272e38ba
--x86_taskschedulersettings_resources_31bf3856ad364e35_10_0_10240_16384_en-us_9f4ee13110079c7f
--x86_wcf-m_smsschost_perf_c_reg_31bf3856ad364e35_10_0_10240_16384_none_dc2f97f100d395
--x86_wcf-m_smsschost_perf_c_vrg_31bf3856ad364e35_10_0_10240_16384_none_e1f2fba7ed4c74f4
--x86_wcf-m_sm_cfg_ins_exe_31bf3856ad364e35_10_0_10240_16384_none_ac03323af75c3d9
--x86_wcf-m_sm_evt_dll_vista_31bf3856ad364e35_10_0_10240_16384_none_244c07f7ab17a01
--x86_wcf-m_sm_ins_rc_dll_31bf3856ad364e35_10_0_10240_16384_none_74de1b82c147c94
--x86_wcf-m_svc_mod_end_perf_vrg_31bf3856ad364e35_10_0_10240_16384_none_72b67280722f6b0e
--x86_wcf-m_svc_mod_end_perf_vrg_31bf3856ad364e35_10_0_10240_16384_none_7879f4b66e7bc6d
--x86_wcf-m_svc_mod_op_perf_c_reg_31bf3856ad364e35_10_0_10240_16384_none_73a15f9e0ed0dd1c
--x86_wcf-m_svc_mod_op_perf_c_vrg_31bf3856ad364e35_10_0_10240_16384_none_74daed5ae0165a75
--x86_wcf-m_svc_mod_svc_perf_vrg_31bf3856ad364e35_10_0_10240_16384_none_229ce83d718524d1
--x86_wcf-m_svc_mod_svc_perf_vrg_31bf3856ad364e35_10_0_10240_16384_none_28606a736dd0c630
--x86_wcf-m_svc_mon_sup_dll_31bf3856ad364e35_10_0_10240_16384_none_51bfdb782d0ee444b
--x86_wcf-m_tx_bridge_perf_c_reg_31bf3856ad364e35_10_0_10240_16384_none_2878312613158ffd
--x86_wcf-m_tx_bridge_perf_c_vrg_31bf3856ad364e35_10_0_10240_16384_none_2e3bb35c0f61315c
--x86_wcf-system_identitymodel_selectors_b03f5f7f11d50a3a_10_0_10240_16384_none_3179031ea62581bd
--x86_wcf-system_identitymodel_b03f5f7f11d50a3a_10_0_10240_16384_none_f3b013bb591d44f
--x86_wcf-system_io_log_b03f5f7f11d50a3a_10_0_10240_16384_none_a87549103031a064
--x86_wcf-system_runtime_serialization_b03f5f7f11d50a3a_10_0_10240_16384_none_d5485b0495c85ab6
--x86_wcf-system_servicemodel_b03f5f7f11d50a3a_10_0_10240_16384_none_e3006af060881868
--x86_windows_id-connect_r_wlidnspr_resources_31bf3856ad364e35_10_0_10240_16384_en-us_13ed3a5c46fcbb1567
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_de-de_670354ef881501c3
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_en-gb_080b6fc4ca7bc95c3
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_en-us_0ff42aae876f30d88
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_es-es_0ffbf87cc7719ff2d
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_es-mx_11f6757275ade2d8
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_fr-ca_aaed48156e47bb5
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_fr-fr_b276fdcb69ec158f
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_it-it_9ce9ef412411fb0d
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_ja-jp_3ec4731f34390ce8
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_ko-kr_e22e4fd426a9d3fe
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_pt-br_1190616ce3a70b27
--x86_windows_media_speech_wlrint_resources_31bf3856ad364e35_10_0_10240_16384_zh-cn_6f7a95565e14e79a
--x86_windowssearchcomponent_31bf3856ad364e35_10_0_10240_16384_none_859fde061599e1fd
--x86_wordbreakerstemmer_neutralLegacy_31bf3856ad364e35_7_0_10240_16384_none_56754738860b73b
--x86_wpf-presentationhostexe_31bf3856ad364e35_10_0_10240_16384_none_1bd6997c026db7a7
--x86_wpf-presentationhostproxy_31bf3856ad364e35_10_0_10240_16384_none_d66cec75c1ef6d9
```

TUGAS

1. Buat file multimedia pada drive D:

```
C:\Windows\system32\cmd.exe
x86 Windows-media-speech-winrt.resources_31bf3856ad364e35_10.0.10240.16384 es-es 0fbf87cc7719ff2d
x86 Windows-media-speech-winrt.resources_31bf3856ad364e35_10.0.10240.16384 es-mx 11f6757275ade2d8
x86 Windows-media-speech-winrt.resources_31bf3856ad364e35_10.0.10240.16384 fr-ca_aae4d48156ec47bb5
x86 Windows-media-speech-winrt.resources_31bf3856ad364e35_10.0.10240.16384 fr-fr b276fdcb69ec158f
x86 Windows-media-speech-winrt.resources_31bf3856ad364e35_10.0.10240.16384 it-it 9ceef412411dfb0d
x86 Windows-media-speech-winrt.resources_31bf3856ad364e35_10.0.10240.16384 ja-jp 3ec4731f34390ce8
x86 Windows-media-speech-winrt.resources_31bf3856ad364e35_10.0.10240.16384 ko-kr e22e4fd426a9d3fe
x86 Windows-media-speech-winrt.resources_31bf3856ad364e35_10.0.10240.16384 pt-br 1190616ce3a70b27
x86 Windows-media-speech-winrt.resources_31bf3856ad364e35_10.0.10240.16384 zh-cn 6f7a95565e14e79a
x86 wordbreakerstemmer-neutral-legacy_31bf3856ad364e35_7.0.10240.16384 none 859fde061590e1fd
x86 wpf-presentationhostexe_31bf3856ad364e35_10.0.10240.16384 none_1bd6097c026db7a7
x86 wpf-presentationhostproxy_31bf3856ad364e35_10.0.10240.16384 none_d66ced75c1ef6d9

C:>D:
D:\>md \multimedia
D:\>dir
Volume in drive D is New Volume
Volume Serial Number is F4CA-991B

Directory of D:\

13/05/2018 14.39 <DIR> ADOBE
09/10/2018 15.15 <DIR> Aplikasi
09/10/2018 15.26 <DIR> baru
28/04/2018 15.17 <DIR> CETAK
16/08/2018 16.21 <DIR> DESAINKU
25/06/2018 12.06 <DIR> FFOutput
09/10/2018 14.51 0 file2.docx
28/08/2018 16.28 <DIR> FILM
18/07/2018 07.44 <DIR> FOTO
11/04/2018 11.09 <DIR> HP
12/07/2018 20.24 <DIR> leaves-and-wombats
09/10/2018 15.45 <DIR> multimedia
15/08/2018 09.22 <DIR> MUSIC
10/08/2018 10.22 <DIR> TUTORIAL
18/05/2018 20.07 <DIR> Wallpaper
31/07/2018 16.36 <DIR> zia
    1 File(s) 0 bytes
    0 Dir(s) 392.181.448.704 bytes free

D:\>
```

2. Kemudia lihat isi direktori D: apakah sudah ada file atau belum.

```
C:\Windows\system32\cmd.exe
16/08/2018 10.21 <DIR> DESAINKU
25/06/2018 12.06 <DIR> FFOutput
09/10/2018 14.51 0 file2.docx
28/08/2018 16.28 <DIR> FILM
18/07/2018 07.44 <DIR> FOTO
11/04/2018 11.09 <DIR> HP
12/07/2018 20.24 <DIR> leaves-and-wombats
09/10/2018 15.45 <DIR> multimedia
16/08/2018 09.22 <DIR> MUSIC
10/08/2018 10.22 <DIR> TUTORIAL
18/05/2018 20.07 <DIR> Wallpaper
31/07/2018 16.36 <DIR> zia
    1 File(s) 0 bytes
    15 Dir(s) 392.181.448.704 bytes free

D:\>dir
Volume in drive D is New Volume
Volume Serial Number is F4CA-991B

Directory of D:\

17/05/2018 14.30 <DIR> ADOBE
22/05/2018 11.26 382.315 alun.jpg
09/01/2018 05.14 3.951.020 bahagia.mp3
09/05/2018 12.06 <DIR> baru
28/04/2018 15.17 <DIR> CETAK
16/08/2018 16.21 <DIR> DESAINKU
25/06/2018 13.05 <DIR> FFOutput
09/10/2018 14.51 0 file2.docx
28/08/2018 16.28 <DIR> FILM
18/07/2018 07.44 <DIR> FOTO
11/04/2018 11.09 <DIR> HP
12/07/2018 20.24 <DIR> leaves-and-wombats
09/10/2018 15.45 <DIR> multimedia
10/06/2018 09.22 <DIR> MUSIC
09/10/2018 15.47 0 teks.txt
10/06/2018 10.22 <DIR> TUTORIAL
18/05/2018 20.07 <DIR> Wallpaper
31/07/2018 16.36 <DIR> zia
    4 File(s) 4.333.335 bytes
    15 Dir(s) 392.177.111.040 bytes free

D:\>
```

3. Kemudian copy file ke folder multimedia.

```
C:\Windows\system32\cmd.exe
09/10/2018 15.45 <DIR> multimedia
16/08/2018 09.22 <DIR> MUSIC
10/08/2018 10.22 <DIR> TUTORIAL
18/05/2018 20.07 <DIR> Wallpaper
31/07/2018 16.36 <DIR> zia
    1 File(s)      0 bytes
    15 Dir(s) 392.181.448.704 bytes free

D:\>dir
Volume in drive D is New Volume
Volume Serial Number is F4CA-991B

Directory of D:\

13/05/2018 14.39 <DIR> ADOBE
22/05/2018 11.26 382.315 alun.jpg
09/10/2018 15.15 <DIR> Aplikasi
09/01/2018 05.14 3.951.020 bahagia.mp3
09/10/2018 15.26 <DIR> baru
28/04/2018 15.17 <DIR> CETAK
16/08/2018 10.21 <DIR> DESAINKU
25/06/2018 12.06 <DIR> FFOutput
09/10/2018 14.51 0 file2.docx
28/08/2018 10.28 <DIR> FILM
18/07/2018 07.44 <DIR> FOTO
11/04/2018 11.09 <DIR> HP
12/07/2018 20.24 <DIR> leaves-and-wombats
09/10/2018 15.45 <DIR> multimedia
16/08/2018 09.22 <DIR> MUSIC
09/10/2018 15.47 0 teks.txt
10/08/2018 10.22 <DIR> TUTORIAL
18/05/2018 20.07 <DIR> Wallpaper
31/07/2018 16.36 <DIR> zia
    4 File(s)      4.333.335 bytes
    15 Dir(s) 392.177.111.040 bytes free

D:\>copy D:\alun.jpg
The file cannot be copied onto itself.
    0 file(s) copied.

D:\>copy D:\alun.jpg D:\multimedia
    1 file(s) copied.

D:\>
```

```
C:\Windows\system32\cmd.exe
18/05/2018 20.07 <DIR> Wallpaper
31/07/2018 16.36 <DIR> zia
    1 File(s)      0 bytes
    15 Dir(s) 392.181.448.704 bytes free

D:\>dir
Volume in drive D is New Volume
Volume Serial Number is F4CA-991B

Directory of D:\

13/05/2018 14.39 <DIR> ADOBE
22/05/2018 11.26 382.315 alun.jpg
09/10/2018 15.15 <DIR> Aplikasi
09/01/2018 05.14 3.951.020 bahagia.mp3
09/10/2018 15.26 <DIR> baru
28/04/2018 15.17 <DIR> CETAK
16/08/2018 10.21 <DIR> DESAINKU
25/06/2018 12.06 <DIR> FFOutput
09/10/2018 14.51 0 file2.docx
28/08/2018 10.28 <DIR> FILM
18/07/2018 07.44 <DIR> FOTO
11/04/2018 11.09 <DIR> HP
12/07/2018 20.24 <DIR> leaves-and-wombats
09/10/2018 15.45 <DIR> multimedia
16/08/2018 09.22 <DIR> MUSIC
09/10/2018 15.47 0 teks.txt
10/08/2018 10.22 <DIR> TUTORIAL
18/05/2018 20.07 <DIR> Wallpaper
31/07/2018 16.36 <DIR> zia
    4 File(s)      4.333.335 bytes
    15 Dir(s) 392.177.111.040 bytes free

D:\>copy D:\alun.jpg
The file cannot be copied onto itself.
    0 file(s) copied.

D:\>copy D:\bahagia.mp3 D:\multimedia
    1 file(s) copied.

D:\>
```

```
cmd C:\Windows\system32\cmd.exe
      15 Dir(s) 392.181.448.704 bytes free

D:\>dir
Volume in drive D is New Volume
Volume Serial Number is F4CA-991B

Directory of D:\

13/05/2018  14.39    <DIR>      ADOBE
22/05/2018  11.26    382.315  alun.jpg
09/10/2018  15.15    <DIR>      Aplikasi
09/01/2018  05.14    3.951.020 bahagia.mp3
09/10/2018  15.26    <DIR>      baru
28/04/2018  15.17    <DIR>      CETAK
16/08/2018  16.21    <DIR>      DESAINKU
25/06/2018  12.06    <DIR>      FFOutput
09/10/2018  14.51    0 file2.docx
28/08/2018  16.28    <DIR>      FILM
18/07/2018  07.44    <DIR>      FOTO
11/04/2018  11.09    <DIR>      HP
12/07/2018  26.24    <DIR>      leaves-and-wombats
09/10/2018  15.45    <DIR>      multimedia
16/08/2018  09.22    <DIR>      MUSIC
09/10/2018  15.47    0 teks.txt
10/08/2018  16.22    <DIR>      TUTORIAL
18/05/2018  20.07    <DIR>      Wallpaper
31/07/2018  16.36    <DIR>      zia
        4 File(s)   4.333.335 bytes
      15 Dir(s) 392.177.111.040 bytes free

D:\>copy D:\alun.jpg
The file cannot be copied onto itself.
      0 file(s) copied.

D:\>copy D:\alun.jpg D:\multimedia
      1 file(s) copied.

D:\>copy D:\bahagia.mp3 D:\multimedia
      1 file(s) copied.

D:\>copy D:\file2.docx D:\multimedia
      1 file(s) copied.

D:\>
```

```
cmd C:\Windows\system32\cmd.exe
      15 Dir(s) 392.181.448.704 bytes free

Volume in drive D is New Volume
Volume Serial Number is F4CA-991B

Directory of D:\

13/05/2018  14.39    <DIR>      ADOBE
22/05/2018  11.26    382.315  alun.jpg
09/10/2018  15.15    <DIR>      Aplikasi
09/01/2018  05.14    3.951.020 bahagia.mp3
09/10/2018  15.26    <DIR>      baru
28/04/2018  15.17    <DIR>      CETAK
16/08/2018  16.21    <DIR>      DESAINKU
25/06/2018  12.06    <DIR>      FFOutput
09/10/2018  14.51    0 file2.docx
28/08/2018  16.28    <DIR>      FILM
18/07/2018  07.44    <DIR>      FOTO
11/04/2018  11.09    <DIR>      HP
12/07/2018  26.24    <DIR>      leaves-and-wombats
09/10/2018  15.45    <DIR>      multimedia
16/08/2018  09.22    <DIR>      MUSIC
09/10/2018  15.47    0 teks.txt
10/08/2018  16.22    <DIR>      TUTORIAL
18/05/2018  20.07    <DIR>      Wallpaper
31/07/2018  16.36    <DIR>      zia
        4 File(s)   4.333.335 bytes
      15 Dir(s) 392.177.111.040 bytes free

D:\>copy D:\alun.jpg
The file cannot be copied onto itself.
      0 file(s) copied.

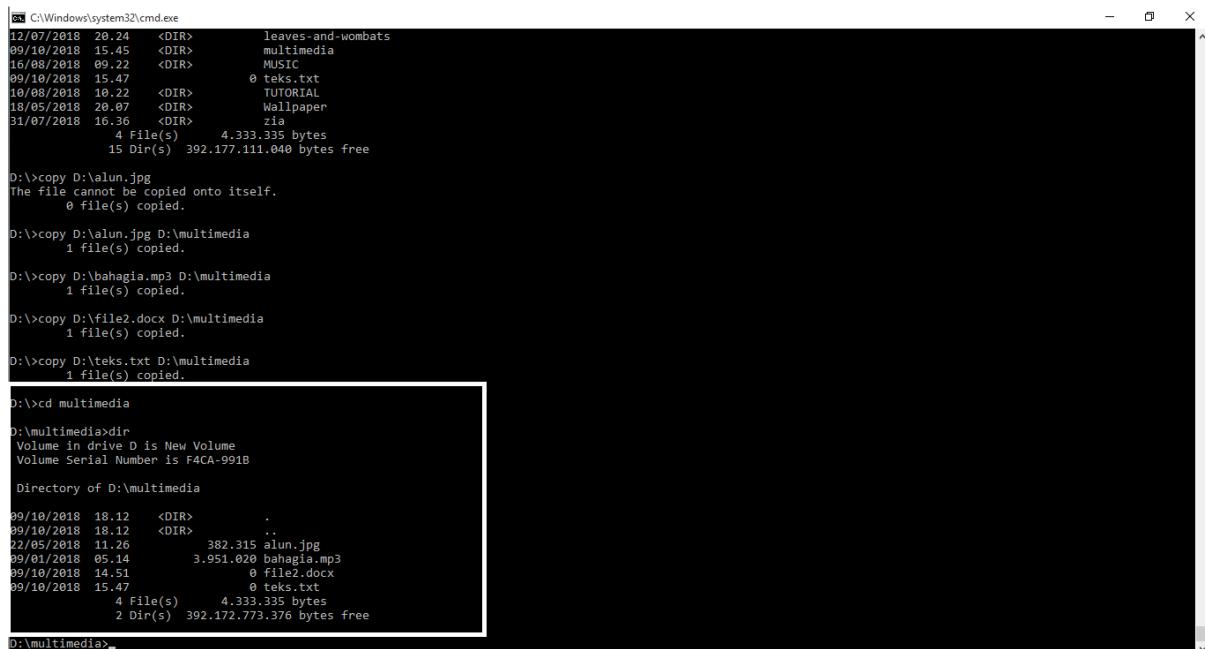
D:\>copy D:\alun.jpg D:\multimedia
      1 file(s) copied.

D:\>copy D:\bahagia.mp3 D:\multimedia
      1 file(s) copied.

D:\>copy D:\file2.docx D:\multimedia
      1 file(s) copied.

D:\>copy D:\teks.txt D:\multimedia
      1 file(s) copied.
```

4. Lalu cek pada folder multimedia.



```
C:\Windows\system32\cmd.exe
12/07/2018 20.24 <DIR> leaves-and-wombats
09/10/2018 15.45 <DIR> multimedia
16/08/2018 09.22 <DIR> MUSIC
09/10/2018 15.47 0 teks.txt
10/08/2018 10.22 <DIR> TUTORIAL
18/05/2018 20.07 <DIR> Wallpaper
31/07/2018 16.36 <DIR> zia
        4 File(s) 4.333.335 bytes
      15 Dir(s) 392.177.111.040 bytes free

D:>copy D:\alun.jpg
The file cannot be copied onto itself.
    0 file(s) copied.

D:>copy D:\alun.jpg D:\multimedia
    1 file(s) copied.

D:>copy D:\bahagia.mp3 D:\multimedia
    1 file(s) copied.

D:>copy D:\file2.docx D:\multimedia
    1 file(s) copied.

D:>copy D:\teks.txt D:\multimedia
    1 file(s) copied.

D:>cd multimedia
D:\multimedia>dir
Volume in drive D is New Volume
Volume Serial Number is F4CA-991B

Directory of D:\multimedia

09/10/2018 18.12 <DIR> .
09/10/2018 18.12 <DIR> ..
22/05/2018 11.26 382.315 alun.jpg
09/01/2018 05.14 3.951.020 bahagia.mp3
09/10/2018 14.51 0 file2.docx
09/10/2018 15.47 0 teks.txt
        4 File(s) 4.333.335 bytes
      2 Dir(s) 392.172.773.376 bytes free

D:\multimedia>
```

MODUL 5

1. 5 Distro Linux

- **Linux Mint**

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

- **Ubuntu**

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

- **Kali Linux**

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

di bidang penetration testing, forensik, reverse engineering, dan vulnerability assessment.

- **CentOS 7**

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

- **openSUSE**

Sebelumnya dikenal sebagai SUSE Linux dan kemudian SuSE Linux Professional, openSUSE ditujukan untuk para pengembang dan administrator sistem. Untuk alasan itu, distro ini mempunyai protokol keamanan yang sangat ketat. OpenSUSE ini mempunyai dua varian distro utama: openSUSE Leap dan openSUSE Tumbleweed. Pengembangan Leap menggunakan source code dari SUSE Linux Enterprise, yang membuatnya jauh lebih stabil dari Tumbleweed. Versi baru dari openSUSE Leap ini dirilis kira-kira setahun sekali dan didukung selama tiga tahun. Berbeda dari Leap, pengembangan Tumbleweed didasarkan pada Factory, base development dari openSUSE sendiri. Tumbleweed menggunakan model peluncuran rolling. Dengan kata lain, suatu package aplikasi akan tersedia untuk didownload setelah diuji. Artinya, Tumbleweed berisi aplikasi terbaru yang stabil dan bagus untuk penggunaan sehari-hari.

2. 20 Perintah Dasar Linux

- ls = melihat isi direktori
- mkdir = menciptakan direktori
- cd = mengubah direktori

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

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

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

command : init 0, shutdown -i0

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

command: init 1, shutdown -i1

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

command: init2, shutdown -i2

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

command: init 3, shutdown -i3

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

command: init4, shutdown -i4

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

command: init5, shutdown -i5

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

command: init 6, shutdown -i6

4. Pengertian Quota

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

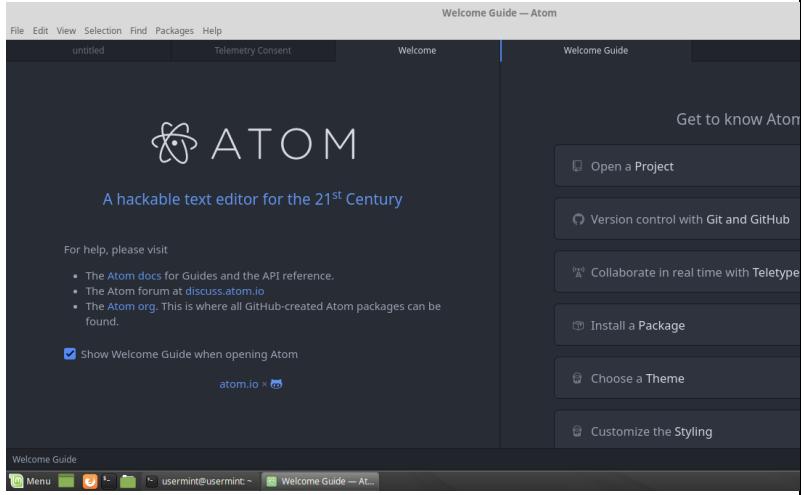
Disk quota bisa diterapkan per user atau per group.jika diterapkan per user maka quota yang diterapkan mutlak milik user tersebut. misal : user Ical memiliki disk quota 5 MB, maka total 5MB tersebut adalah mutlak milik user Ical.jika disk quota diterapkan per group maka kapasitas yang ditetapkan adalah milik bersama group tersebut. misal : user Ical dan RedHat adalah anggota group Linux's. Jika group Linux's diberi quota sebesar 10 MB maka kapasitas tersebut adalah milik user Ical dan RedHat. Jadi misalkan user Ical menggunakan sebanyak 6MB maka masih terdapat 4MB untuk digunakan oleh user RedHat.

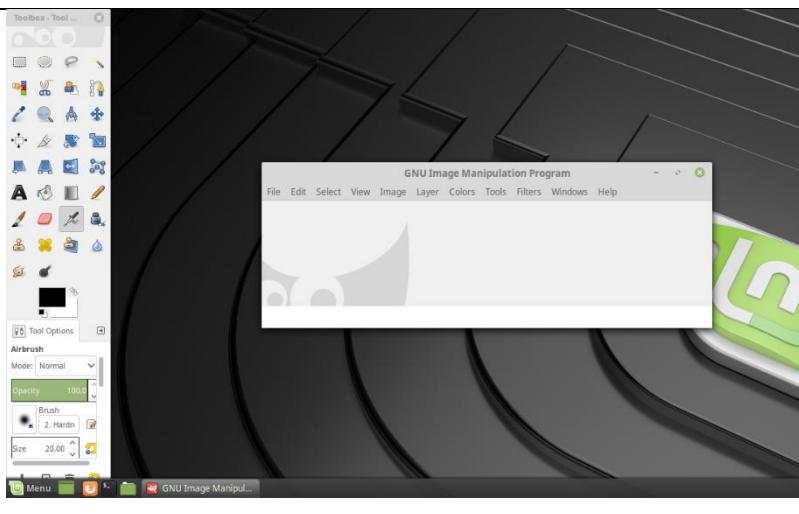
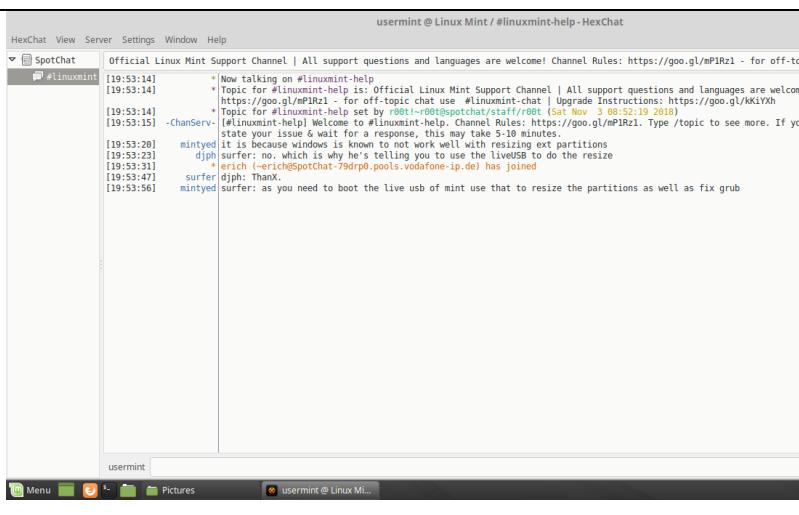
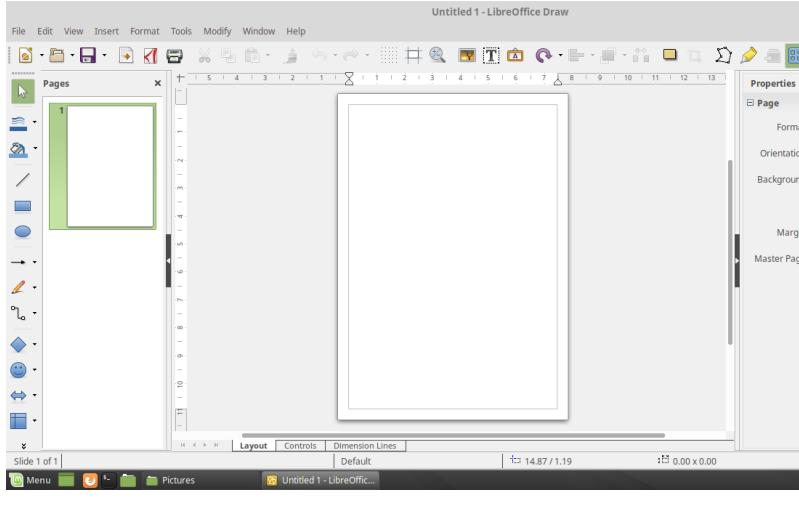
Pembatasan disk quota ditentukan oleh dua kategori yaitu hard limit dan soft limit:

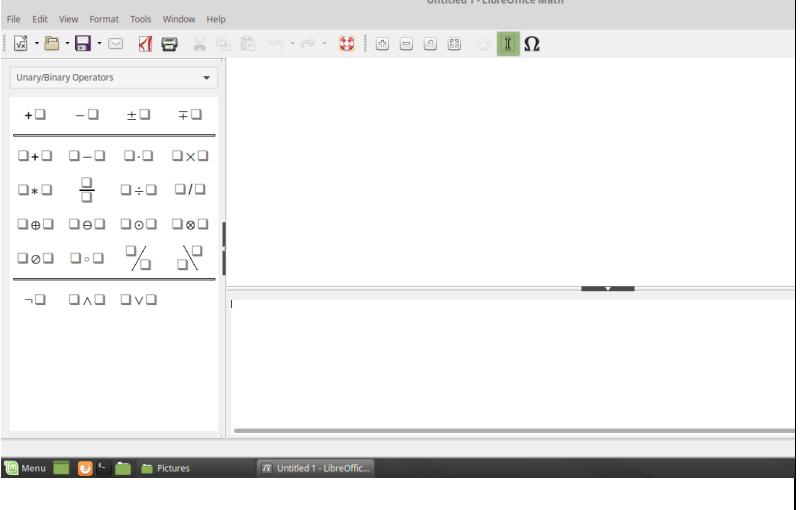
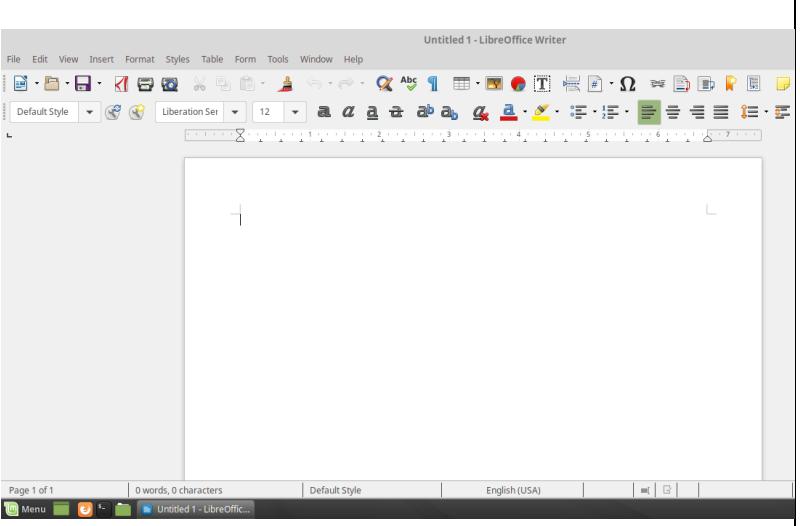
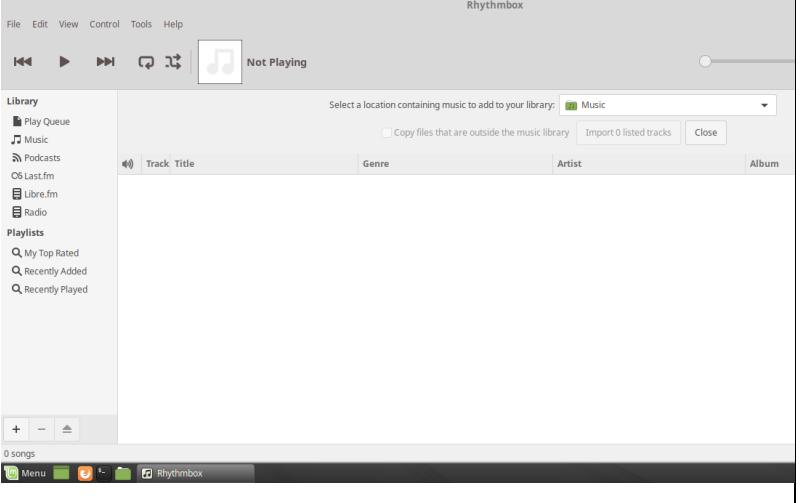
Hard Limit adalah batas yang tidak dapat dilewati. jika user telah mencapai batas hard limit maka user tersebut tidak dapat memasukkan data lagi ke hard disk. Contoh jika user Ical memiliki quota 5 MB dan sudah digunakan 4.9 MB dengan demikian sisanya tinggal 0.1 MB jika kemudian dia mencoba untuk menyimpan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

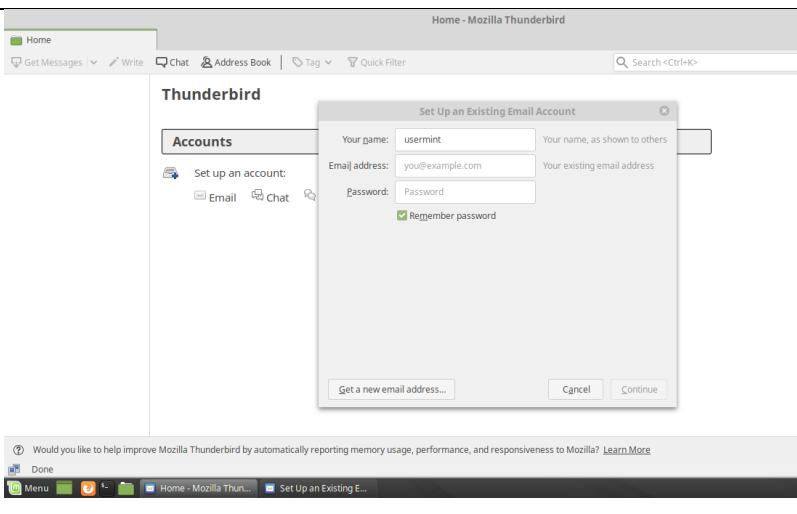
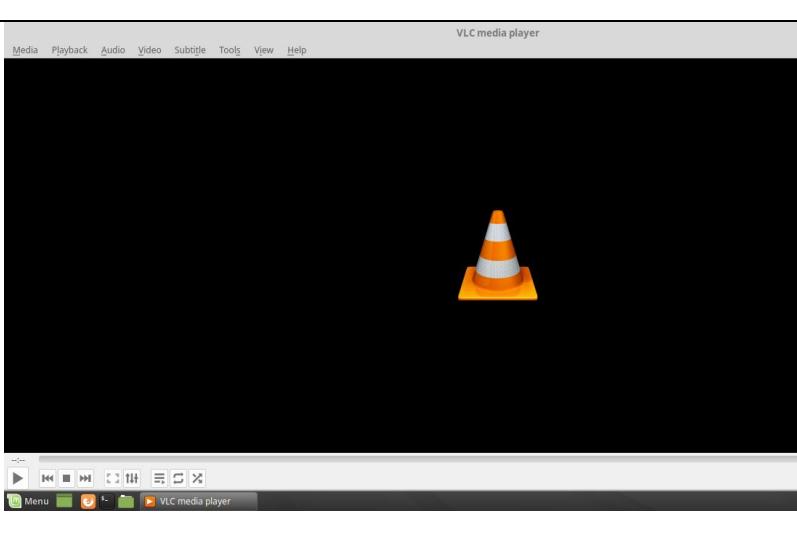
Soft Limit adalah batas yang bisa dilewati. Namun hanya dalam periode tertentu, periode tersebut disebut dengan grace period. Default nilai grace period adalah 7 hari. Umumnya nilai hard limit lebih besar dari soft limit. untuk lebih jelas perhatikan contoh berikut, misalkan user Ical diberikan soft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

MODUL 6

No	Applikasi	Tampilan	Fungsi
1	Atom	 <p>The screenshot shows the Atom text editor's welcome guide. The main area displays the Atom logo and the text "A hackable text editor for the 21st Century". Below this, there's a section for help with links to Atom docs, the forum, and the Atom.org website. A checkbox for "Show Welcome Guide when opening Atom" is checked. To the right, a sidebar titled "Get to know Atom" lists several options: "Open a Project", "Version control with Git and GitHub", "Collaborate in real time with Teletype", "Install a Package", "Choose a Theme", and "Customize the Styling". The bottom of the window shows the Linux Mint desktop environment.</p>	Berfungsi sebagai teks editor.
2	Firefox Web Browser	 <p>The screenshot shows the Firefox browser window with the URL "https://www.linuxmint.com/start/tara/" in the address bar. The page content is the Linux Mint start page, featuring the Linux Mint logo and navigation links for Web, Images, Video, News, Maps, Gmail, and more. It also includes a search bar and news sections for "Latest news from the Linux Mint blog" and "Monthly News – October 2018". The bottom of the window shows the Linux Mint desktop environment.</p>	Sebagai web-browser atau penjelajah web.
3	Gimp		Berfungsi sebagai aplikasi pengolah gambar.

			
4	HexChat		<p>Berfungsi sebagai aplikasi chatting IRC.</p>
5	LibreOffice Draw		<p>Berfungsi untuk membuat dan memanipulasi data gambar digital 2 dimensi.</p>

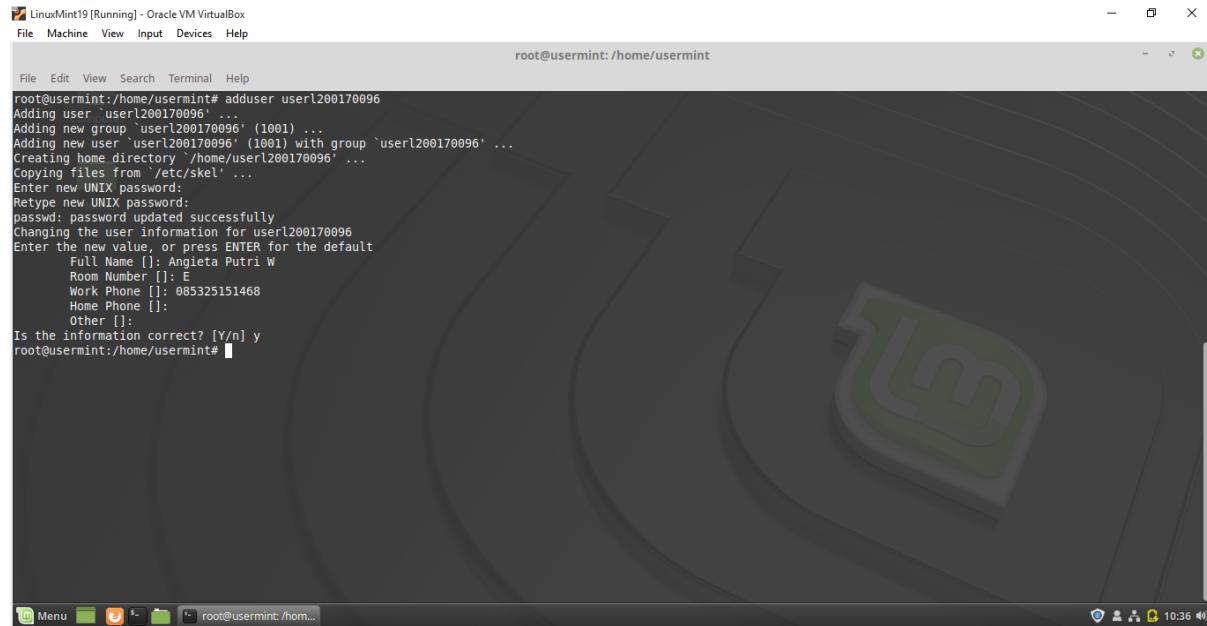
6	LibreOffice Math		<p>Berfungsi sebagai penyunting rumus atau persamaan pada dokumen teks seperti LibreOffice Writer.</p>
7	LibreOffice Writer		<p>Berfungsi sebagai aplikasi pengolah kata.</p>
8	Rhythmbox		<p>Berfungsi sebagai aplikasi pemutar lagu.</p>
9	Thunderbird		<p>Berfungsi sebagai aplikasi klien surat elektronik.</p>

			
10	VLC Media Player		<p>Berfungsi sebagai aplikasi pemutar berkas multimedia.</p>

MODUL 7

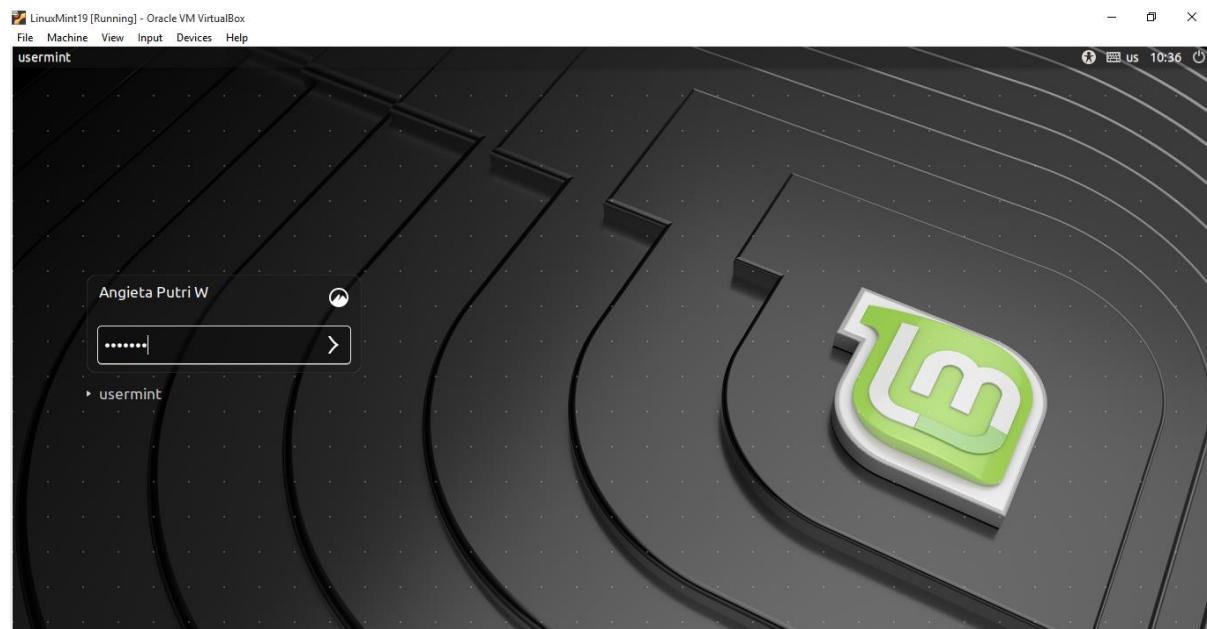
Praktikum 1:

1. Membuat user baru



```
LinuxMint19 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@usermint:/home/usermint
File Edit View Search Terminal Help
root@usermint:/home/usermint# adduser userl200170096
Adding user 'userl200170096' ...
Adding new group 'userl200170096' (1001) ...
Adding new user 'userl200170096' (1001) with group 'userl200170096' ...
Creating home directory '/home/userl200170096' ...
Copying files from '/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for userl200170096
Enter the new value, or press ENTER for the default
    Full Name []: Angieta Putri W
    Room Number []: E
    Work Phone []: 085325151468
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
root@usermint:/home/usermint#
```

2. Login ke user baru



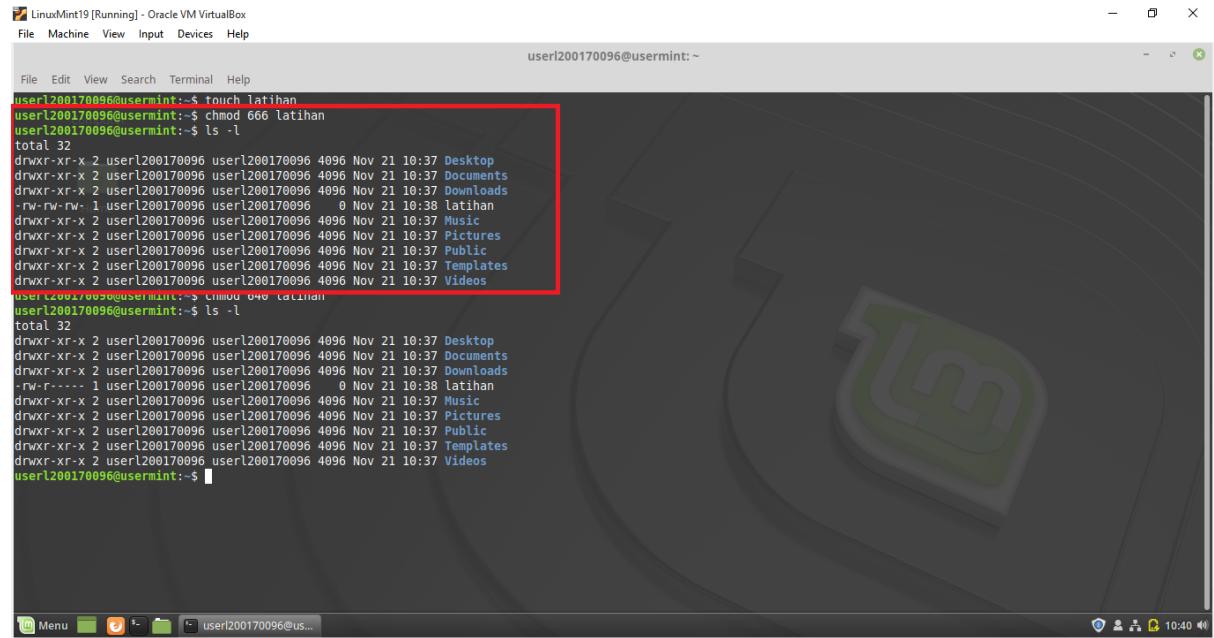


Praktikum 2:

1. Membuat file baru

A screenshot of a terminal window titled 'userl200170096@usermint:~'. The window shows a command-line interface with the user's name and terminal location. A red box highlights the command 'touch latihan' which the user has just typed. The terminal is set against a dark background.

2. Membuat izin akses menjadi read dan write untuk semua pengguna

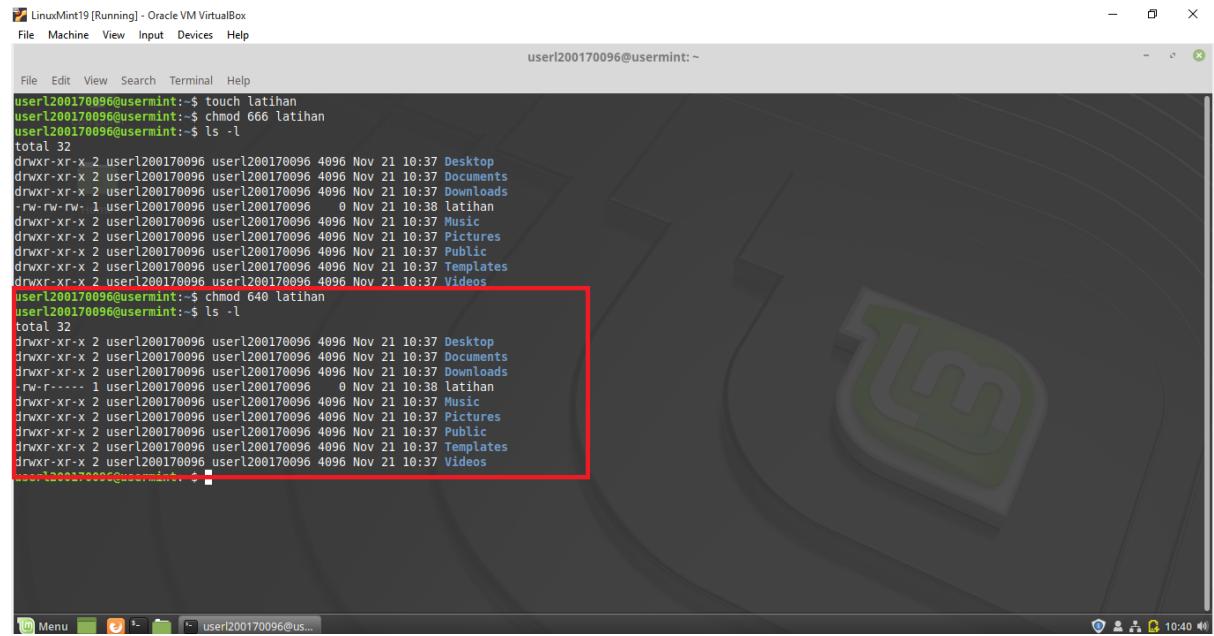


A screenshot of a Linux Mint terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The terminal shows the following command sequence:

```
user1200170096@usermint:~$ touch latihan
user1200170096@usermint:~$ chmod 666 latihan
user1200170096@usermint:~$ ls -l
total 32
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Downloads
-rw-rw-r-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Videos
user1200170096@usermint:~$
```

The terminal window has a red box highlighting the command "chmod 666 latihan" and its output. The desktop background features the Linux Mint logo.

3. Membuat izin akses menjadi read, write untuk user dan read untuk group

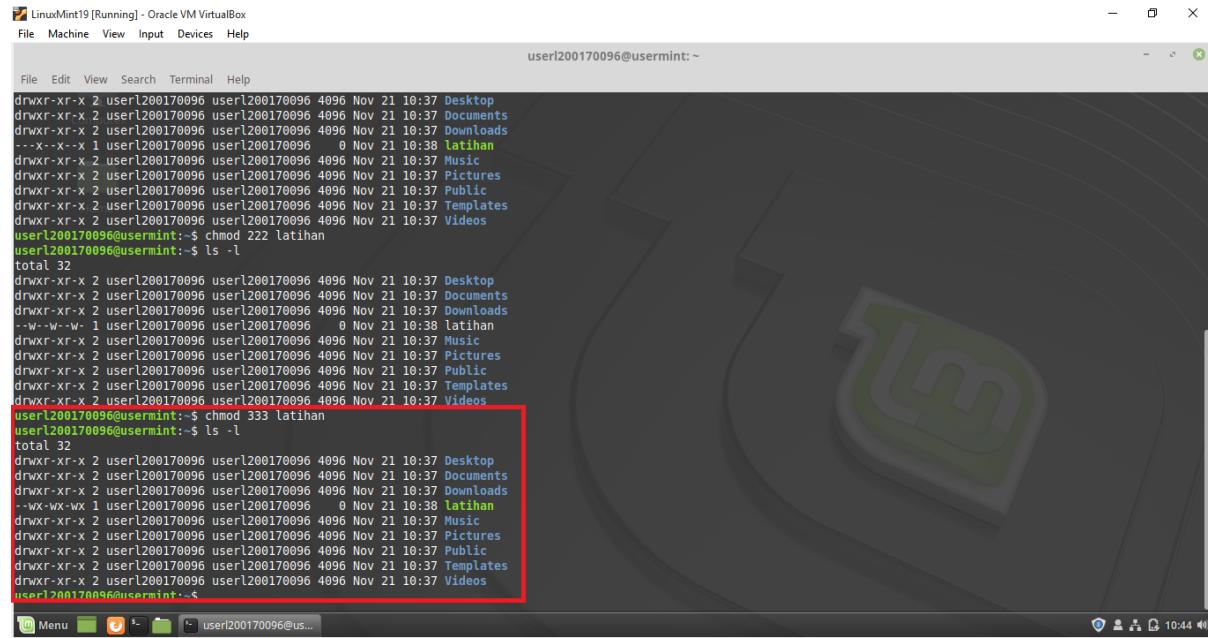


A screenshot of a Linux Mint terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The terminal shows the following command sequence:

```
user1200170096@usermint:~$ touch latihan
user1200170096@usermint:~$ chmod 646 latihan
user1200170096@usermint:~$ ls -l
total 32
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Downloads
-rw-rw-r-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Videos
user1200170096@usermint:~$ chmod 640 latihan
user1200170096@usermint:~$ ls -l
total 32
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Downloads
-rw-r----- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Videos
```

The terminal window has a red box highlighting the command "chmod 640 latihan" and its output. The desktop background features the Linux Mint logo.

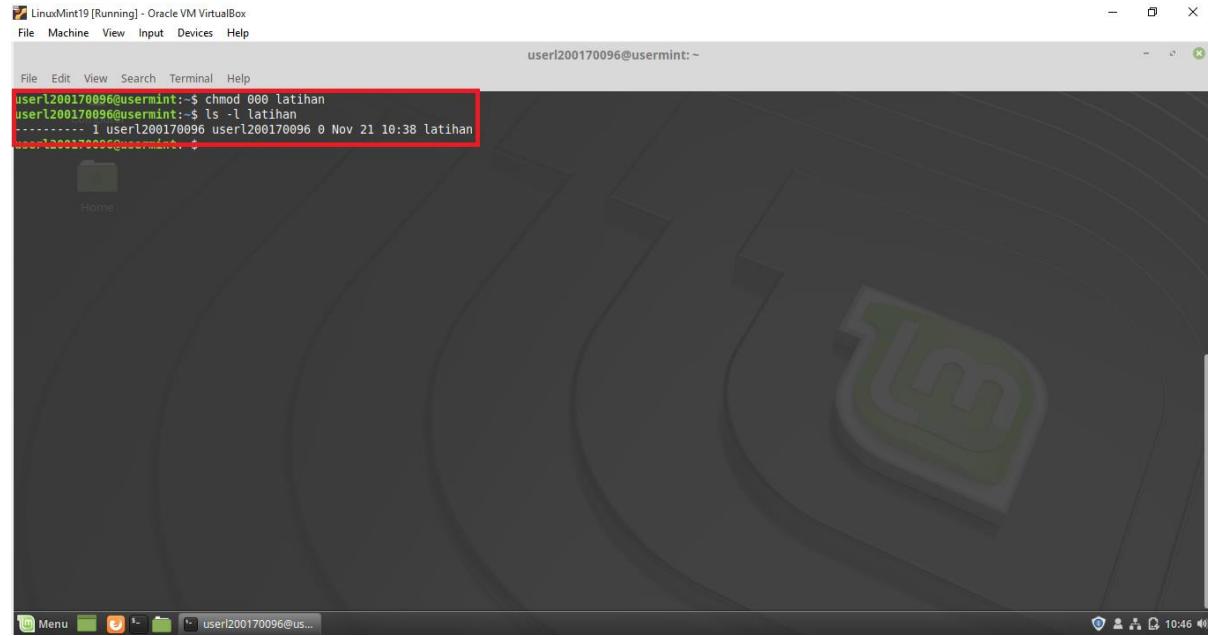
6. Membuat izin akses menjadi write dan execute untuk semua pengguna



```
LinuxMint19 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
user1200170096@usermint: ~
File Edit View Search Terminal Help
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Downloads
--x--x--x 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Videos
user1200170096@usermint: ~$ chmod 222 latihan
user1200170096@usermint: ~$ ls -l
total 32
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Downloads
--w--w--w 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Videos
user1200170096@usermint: ~$ chmod 333 latihan
user1200170096@usermint: ~$ ls -l
total 32
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Downloads
--wx--wx--x 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user1200170096 user1200170096 4096 Nov 21 10:37 Videos
user1200170096@usermint: ~$
```

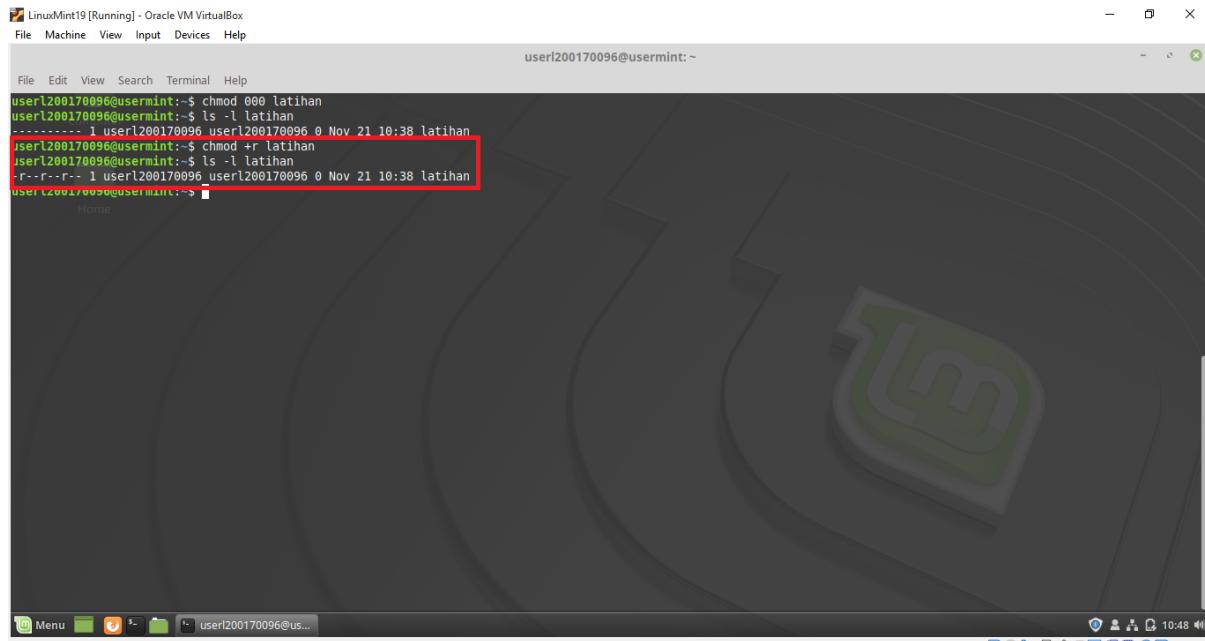
Praktikum 3

1. Tidak memberikan hak akses



```
LinuxMint19 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
user1200170096@usermint: ~
File Edit View Search Terminal Help
user1200170096@usermint: ~$ chmod 000 latihan
user1200170096@usermint: ~$ ls -l latihan
----- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint: ~$
```

2. Menambah hak akses read

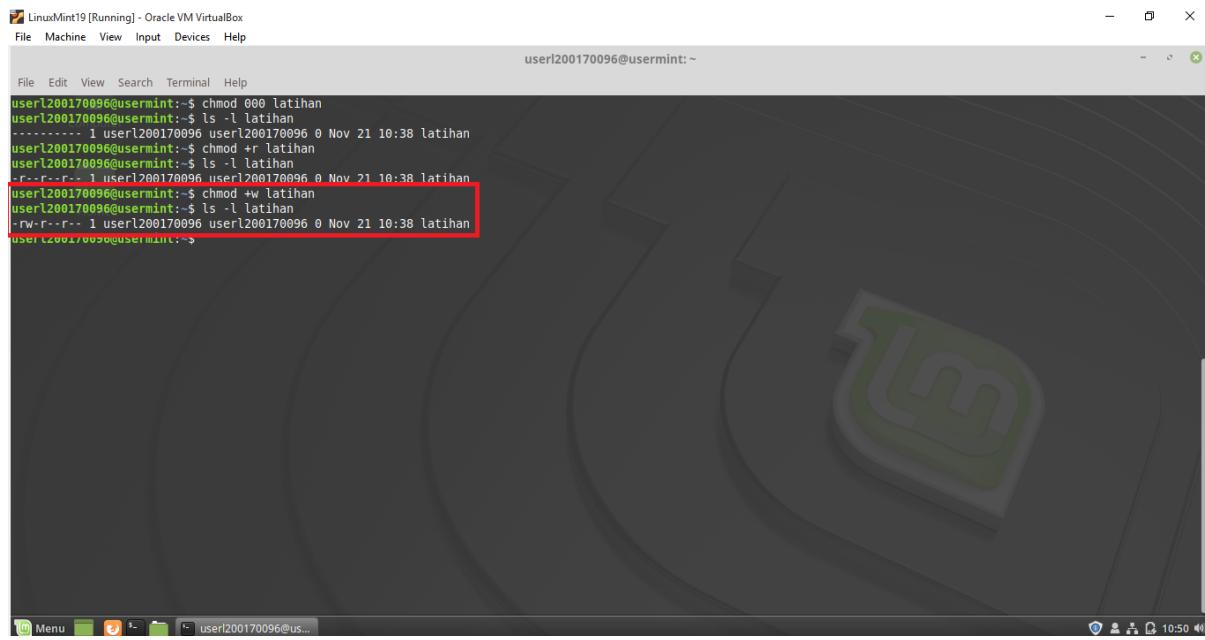


```
LinuxMint19 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
user200170096@usermint:~
```

```
File Edit View Search Terminal Help
user200170096@usermint:~$ chmod 000 latihan
user200170096@usermint:~$ ls -l latihan
----- 1 user200170096 user200170096 0 Nov 21 10:38 latihan
user200170096@usermint:~$ chmod +r latihan
user200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 user200170096 user200170096 0 Nov 21 10:38 latihan
user200170096@usermint:~$
```

The terminal window shows the user running the command `chmod +r latihan` to add the read permission bit to the file `latihan`. The output of the `ls -l` command is highlighted with a red box, showing the file's permissions changed from `-----` to `-r--r--r--`.

3. Menambahkan hak akses write



```
LinuxMint19 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
user200170096@usermint:~
```

```
File Edit View Search Terminal Help
user200170096@usermint:~$ chmod 000 latihan
user200170096@usermint:~$ ls -l latihan
----- 1 user200170096 user200170096 0 Nov 21 10:38 latihan
user200170096@usermint:~$ chmod +r latihan
user200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 user200170096 user200170096 0 Nov 21 10:38 latihan
user200170096@usermint:~$ chmod +w latihan
user200170096@usermint:~$ ls -l latihan
-rw-r--r-- 1 user200170096 user200170096 0 Nov 21 10:38 latihan
user200170096@usermint:~$
```

The terminal window shows the user running the command `chmod +w latihan` to add the write permission bit to the file `latihan`. The output of the `ls -l` command is highlighted with a red box, showing the file's permissions changed from `-r--r--r--` to `-rw-r--r--`.

4. Menambahkan hak akses execute

The screenshot shows a terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The terminal session starts with the user "userl200170096" at the prompt "userl200170096@usermint:~". The user runs several commands to change the file permissions of "latihan": "chmod 000 latihan", "ls -l latihan", "chmod +r latihan", "ls -l latihan", "chmod +w latihan", "ls -l latihan", "chmod +x latihan", "ls -l latihan", and finally "ls -l latihan" again. The last command's output is highlighted with a red box, showing the file "latihan" with permissions "-rwxr-xr-x".

```
userl200170096@usermint:~$ chmod 000 latihan
userl200170096@usermint:~$ ls -l latihan
-----
1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod +r latihan
userl200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod +w latihan
userl200170096@usermint:~$ ls -l latihan
-rw-r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod +x latihan
userl200170096@usermint:~$ ls -l latihan
-rwxr-xr-x 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$
```

5. Menghilangkan hak akses execute

The screenshot shows a terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The terminal session starts with the user "userl200170096" at the prompt "userl200170096@usermint:~". The user runs several commands to remove execute permissions from "latihan": "chmod 000 latihan", "ls -l latihan", "chmod +r latihan", "ls -l latihan", "chmod +w latihan", "ls -l latihan", "chmod +x latihan", "ls -l latihan", and finally "ls -l latihan" again. The last command's output is highlighted with a red box, showing the file "latihan" with permissions "-rw-r--r--".

```
userl200170096@usermint:~$ chmod 000 latihan
userl200170096@usermint:~$ ls -l latihan
-----
1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod +r latihan
userl200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod +w latihan
userl200170096@usermint:~$ ls -l latihan
-rw-r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod +x latihan
userl200170096@usermint:~$ ls -l latihan
-rw-r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod -x latihan
userl200170096@usermint:~$ ls -l latihan
-rw-r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$
```

6. Menghilangkan hak akses write

The screenshot shows a terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The command history shows the user navigating through directory permissions:

```
userl200170096@usermint:~$ chmod 000 latihan
userl200170096@usermint:~$ ls -l latihan
.....
1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod +r latihan
userl200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod +w latihan
userl200170096@usermint:~$ ls -l latihan
-rw-r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod -x latihan
userl200170096@usermint:~$ ls -l latihan
-rwxr-xr-x 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod -x latihan
userl200170096@usermint:~$ ls -l latihan
-rw-r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod -w latihan
userl200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$
```

The command `chmod -w latihan` is highlighted with a red rectangle.

7. Menghilangkan hak akses read

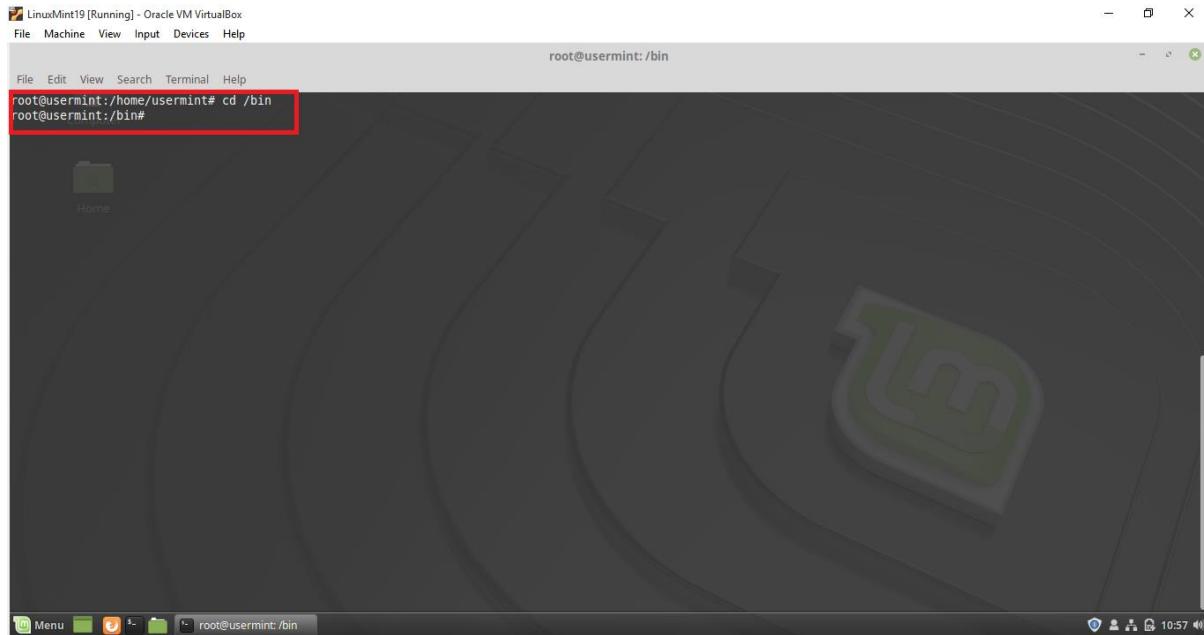
The screenshot shows a terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The command history shows the user navigating through directory permissions:

```
userl200170096@usermint:~$ chmod 000 latihan
userl200170096@usermint:~$ ls -l latihan
.....
1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod +r latihan
userl200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod +w latihan
userl200170096@usermint:~$ ls -l latihan
-rw-r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod -x latihan
userl200170096@usermint:~$ ls -l latihan
-rwxr-xr-x 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod -x latihan
userl200170096@usermint:~$ ls -l latihan
-rw-r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod -w latihan
userl200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod -r latihan
userl200170096@usermint:~$ ls -l latihan
.....
1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$
```

The command `chmod -r latihan` is highlighted with a red rectangle.

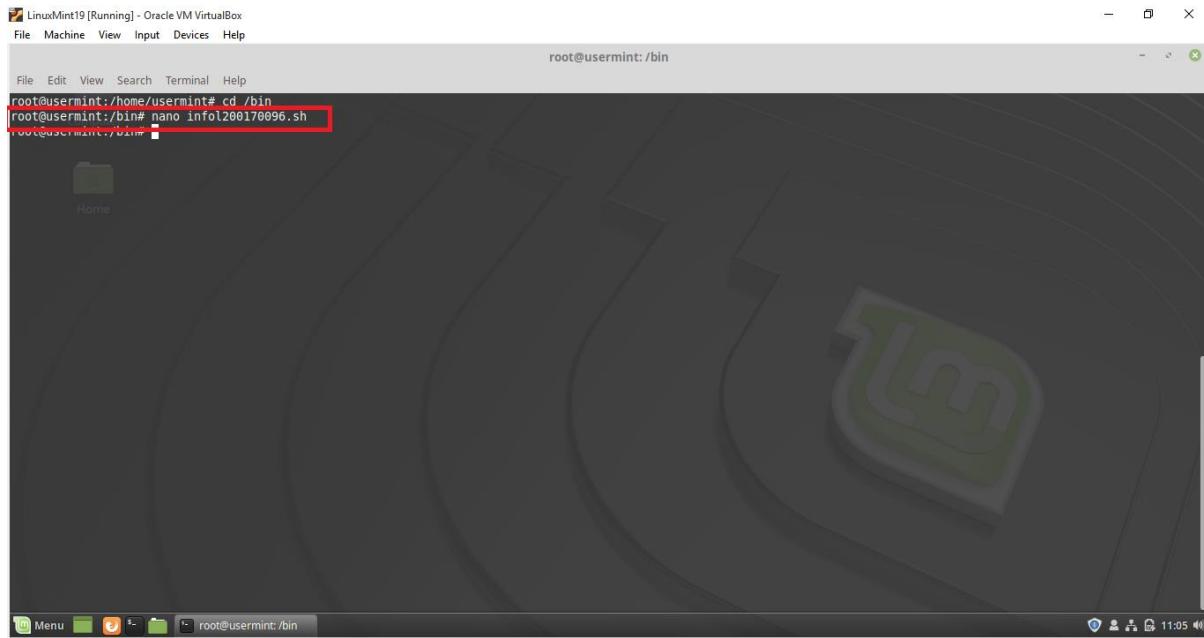
Praktikum 4

1. Masuk ke bin



A screenshot of a Linux Mint 19 desktop environment. A terminal window titled 'root@usermint: /bin' is open. The terminal shows the command 'root@usermint:/home/usermint# cd /bin' being typed. The entire command line is highlighted with a red box. The desktop background features the classic Linux Mint logo.

2. Membuat file dan sekaligus ketik isi



A screenshot of a Linux Mint 19 desktop environment. A terminal window titled 'root@usermint: /bin' is open. The terminal shows the command 'root@usermint:/home/usermint# cd /bin' followed by 'root@usermint:/bin# nano info1200170096.sh'. The entire command line is highlighted with a red box. The desktop background features the classic Linux Mint logo.

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint:/bin

GNU nano 2.9.3 infol200170096.sh Modified

```
#!/bin/sh
WAKTU="Tanggal dan Jam saat ini :`date`"
JMLUSER=`cat /etc/passwd | wc -l`
AKU="Status personal :`echo $WAKTU`"
echo $AKU
date
echo "JMLUSER"
who | wc -l
echo "$AKU"
whoami
exit 0
```

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

Menu 11:05 Right Ctrl

3. Masukkan perintah logininfo.sh

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

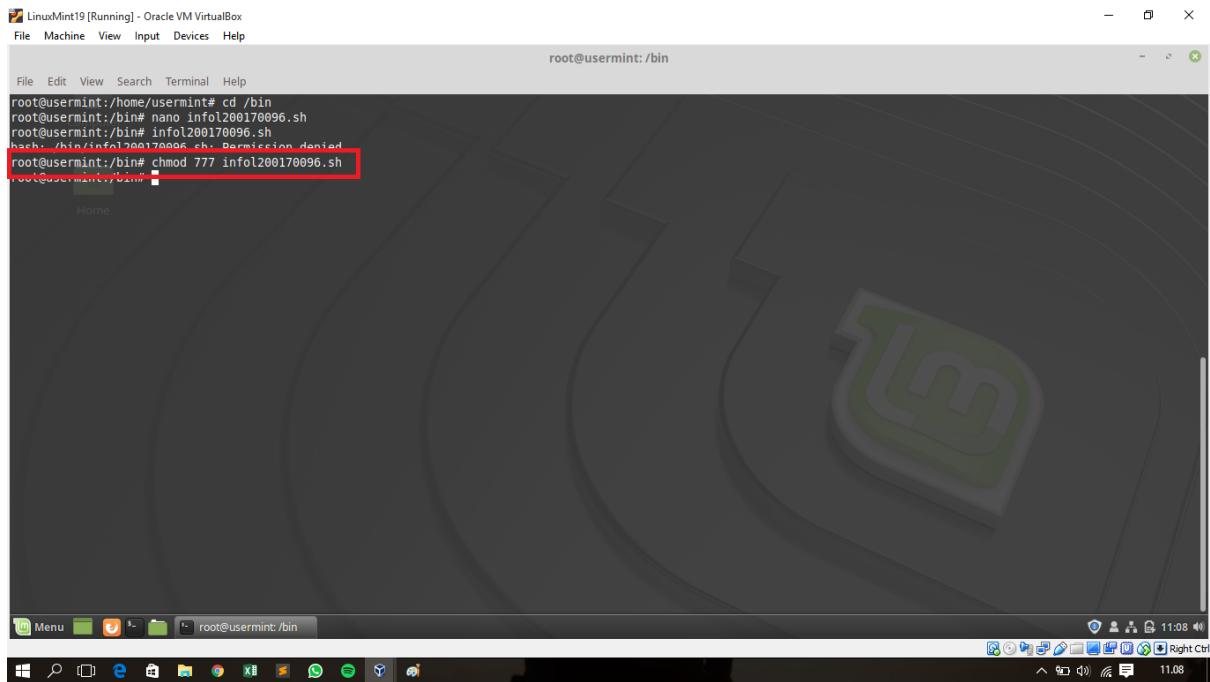
root@usermint:/bin

```
root@usermint:/home/usermint# cd /bin
root@usermint:/bin# nano infol200170096.sh
root@usermint:/bin# infol200170096.sh
bash: /bin/infol200170096.sh: Permission denied
root@usermint:/bin#
```

Home

Menu 11:07 Right Ctrl

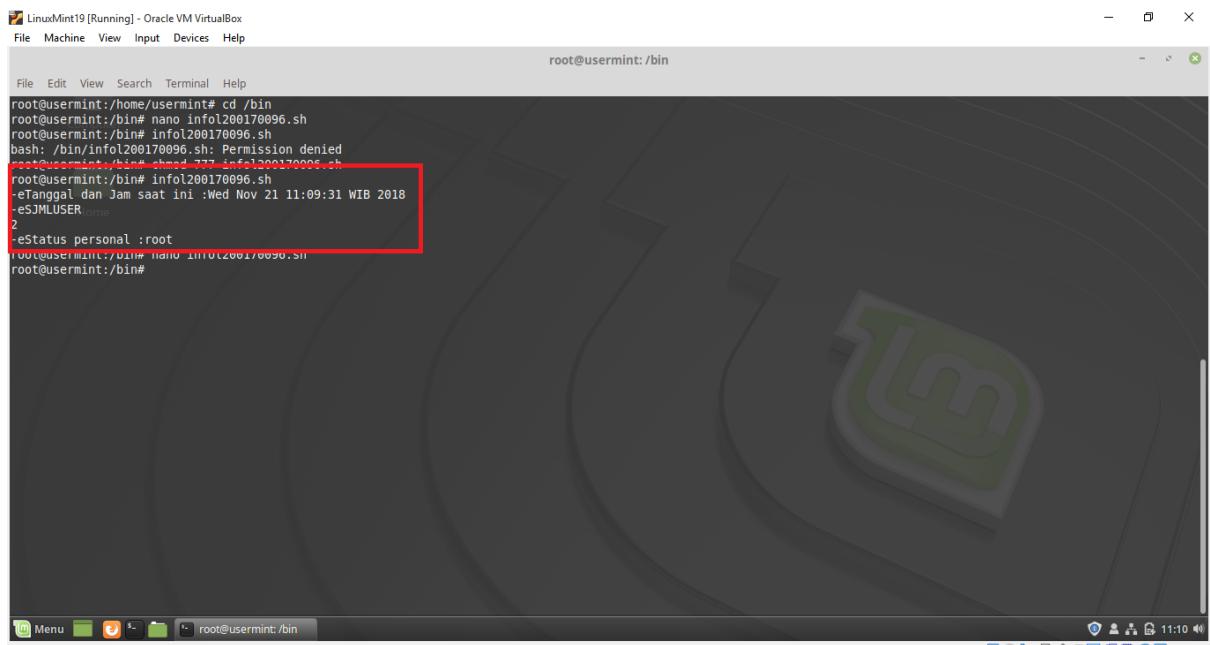
5. Ubah hak akses



A screenshot of a Linux Mint terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The window shows a root shell session. The user has run several commands: "cd /bin", "nano infol200170096.sh", "infol200170096.sh", and "chmod 777 infol200170096.sh". The last command results in the error "Permission denied". The terminal window is highlighted with a red rectangle around the error message.

```
root@sermint:/home/sermint# cd /bin
root@sermint:/bin# nano infol200170096.sh
root@sermint:/bin# infol200170096.sh
bash: /bin/infol200170096.sh: Permission denied
root@sermint:/bin# chmod 777 infol200170096.sh
root@sermint:/bin#
```

6. Lihat hasilnya



A screenshot of a Linux Mint terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The window shows a root shell session. The user has run several commands: "cd /bin", "nano infol200170096.sh", "infol200170096.sh", and "chmod 777 infol200170096.sh". The user then runs "infol200170096.sh" again, which successfully executes and displays the message "eStatus personal :root". The terminal window is highlighted with a red rectangle around the output of the script.

```
root@sermint:/home/sermint# cd /bin
root@sermint:/bin# nano infol200170096.sh
root@sermint:/bin# infol200170096.sh
bash: /bin/infol200170096.sh: Permission denied
root@sermint:/bin# chmod 777 infol200170096.sh
root@sermint:/bin# infol200170096.sh
-eTanggal dan Jam saat ini :Wed Nov 21 11:09:31 WIB 2018
-eSMLUSER :ame
2
-eStatus personal :root
root@sermint:/bin# nano infol200170096.sh
root@sermint:/bin#
```

MODUL 8

Fork.c

The screenshot shows a Linux Mint 19 desktop environment within Oracle VM VirtualBox. A terminal window titled 'root@usermint:/home/usermint' is open, displaying the 'fork.c' source code. The code includes #include directives for stdio.h, stdlib.h, unistd.h, and sys/types.h. The main() function initializes a pid_t variable 'pid' to 0, sets 'x' to 5, and then uses an if-else-if ladder to print process information based on the value of 'pid'. The terminal window also shows various nano editor keyboard shortcuts at the bottom.

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

int main(){
    pid_t pid;
    int x = 5;
    x++;
    if(pid < 0){
        printf("Process creation error");exit(-1);
    }
    else if(pid == 0){
        printf("Child process:");
        printf("\nProcess id is %d", getpid());
        printf("\nValue of x is %d", x);
        printf("\nProcess id of parent is %d\n\n", getppid());
    }
    else{
        printf("Parent process:");
        printf("\nProcess id is %d", getpid());
        printf("\nValue of x is %d", x);
        printf("\nProcess id of parent is %d\n\n", getppid());
    }
}
```

The screenshot shows the same Linux Mint 19 desktop environment. The terminal window now displays the output of the 'fork.c' program. It shows the process creation error, the child process ID (0), the parent process ID (1), and the value of 'x' (5). The command 'gcc fork.c -o fork' is highlighted with a red box. The terminal window title is 'root@usermint:/home/usermint#'. The desktop interface at the bottom includes a taskbar with various application icons and system status indicators.

```
root@usermint:/home/usermint# nano fork.c
Use "fg" to return to nano.

[1]+  Stopped                  nano fork.c
root@usermint:/home/usermint# nano fork.c
root@usermint:/home/usermint# gcc fork.c -o fork
root@usermint:/home/usermint# nano fork.c
root@usermint:/home/usermint# gcc fork.c -o fork
root@usermint:/home/usermint#
```

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint:/home/usermint# nano fork.c
Use "fg" to return to nano.
[1]+ Stopped nano fork.c
root@usermint:/home/usermint# nano fork.c
root@usermint:/home/usermint# gcc fork.c -o fork
root@usermint:/home/usermint# nano fork.c
root@usermint:/home/usermint# gcc fork.c -o fork
root@usermint:/home/usermint# ./fork
Parent process:
Process id is 3026
Value of x is 6
Process id of parent is 1436

root@usermint:/home/usermint#

The terminal window shows the execution of a C program named 'fork.c'. The program uses the 'fork' system call to create a child process. The parent process (id 3026) prints its own ID and the value of variable 'x' (which is 6). The child process (id 1436) is shown as stopped at the 'Stopped' prompt.

Wait.c

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint:/home/usermint# nano 2.9.3
GNU nano 2.9.3

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

Get Help F0 Write Out F1 Where Is F2 Cut Text F3 Justify F4 Cur Pos M-U Undo M-A Mark Text M-J To Bracket M-P Previous F5 Exit F6 Read File F7 Replace F8 Uncut Text F9 To Spell F10 Go To Line M-B Redo M-C Copy Text M-W WhereIs Next M-V Next

20:48

The terminal window shows the execution of a C program named '2.9.3'. The program uses 'fork' to create a child process. The parent process (pid 3026) prints 'Parent starts' and then loops through even numbers from 2 to 10. The child process (pid 1436) prints 'Child starts' and then loops through odd numbers from 1 to 10. Both processes then print 'ends'.

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint: /home/usermint

File Edit View Search Terminal Help

```
root@usermint:/home/usermint# nano fork.c
Use "fg" to return to nano.

[1]+ Stopped                  nano fork.c
root@usermint:/home/usermint# nano fork.c
root@usermint:/home/usermint# gcc fork.c -o fork
root@usermint:/home/usermint# nano fork.c
root@usermint:/home/usermint# gcc fork.c -o fork
root@usermint:/home/usermint# ./fork
Parent process:
Process id is 3026
Value of x is 6
Process id of parent is 1436

root@usermint:/home/usermint# nano wait.c
root@usermint:/home/usermint# gcc wait.c -o wait
wait.c:3:10: fatal error: unistd.h: No such file or directory
 #include <unistd.h>
             ^
compilation terminated.
root@usermint:/home/usermint# nano wait.c
root@usermint:/home/usermint# nano wait.c
root@usermint:/home/usermint# gcc wait.c -o wait
wait.c: In function 'main':
wait.c:16:10: error: 'p' undeclared (first use in this function)
 else if(p > 0){
^
wait.c:16:10: note: each undeclared identifier is reported only once for each function it appears in
root@usermint:/home/usermint# nano wait.c
root@usermint:/home/usermint# gcc wait.c -o wait
root@usermint:/home/usermint# nano wait.c
root@usermint:/home/usermint# gcc wait.c -o wait
root@usermint:/home/usermint#
```

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint: /home/usermint

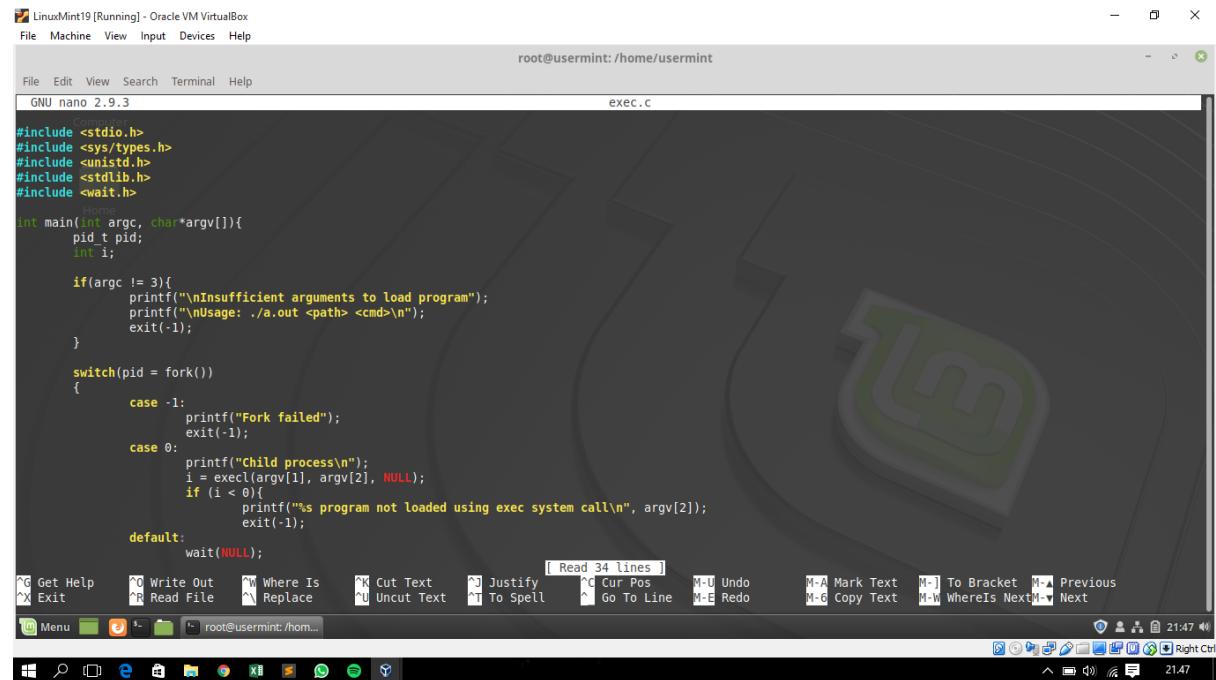
```
File Edit View Search Terminal Help
root@usermint:/home/usermint# ./fork
Parent process:
Process id is 3026
Value of x is 6
Process id of parent is 1436

root@usermint:/home/usermint# nano wait.c
root@usermint:/home/usermint# gcc wait.c -o wait
wait.c:3:10: fatal error: unistd.h: No such file or directory
 #include <unistd.h>
 ^
compilation terminated.
root@usermint:/home/usermint# nano wait.c
root@usermint:/home/usermint# nano wait.c
root@usermint:/home/usermint# gcc wait.c -o wait
wait.c: In function `main':
wait.c:16:10: error: 'p' undeclared (first use in this function)
 else if(p > 0){  
^
wait.c:16:10: note: each undeclared identifier is reported only once for each function it appears in
root@usermint:/home/usermint# nano wait.c
root@usermint:/home/usermint# gcc wait.c -o wait
root@usermint:/home/usermint# nano wait.c
root@usermint:/home/usermint# gcc wait.c -o wait
root@usermint:/home/usermint# ./wait

Child starts
Nomor Ganjal: 1 3 5 7 9
Child ends

Parent starts
Nomor Genap: 2 4 6 8 10
Parent ends
root@usermint:/home/usermint#
```

Exec.c

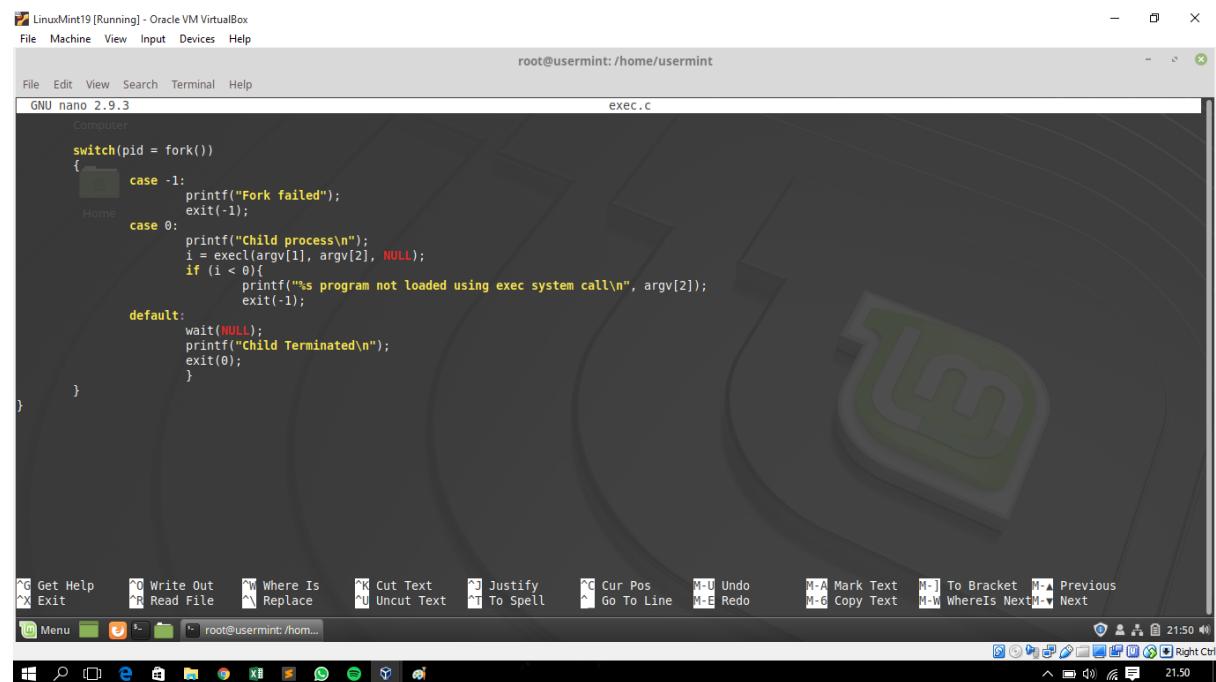


```
#include <stdio.h>
#include <sys/types.h>
#include <unistd.h>
#include <stdlib.h>
#include <wait.h>

int main(int argc, char*argv[]){
    pid_t pid;
    int i;

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

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



```
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);
}
```

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint: /home/usermint

```
usermint@usermint:~$ sudo su
[sudo] password for usermint:
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# gcc exec.c -o exec
root@usermint:/home/usermint#
```

Home

Menu

21:50

Windows Taskbar

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint: /home/usermint

```
usermint@usermint:~$ sudo su
[sudo] password for usermint:
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# gcc exec.c -o exec
root@usermint:/home/usermint# ./a.out /bin/ls
Child process
a.out Desktop dirlist.c Downloads exec.c fork.c Music Public stat.c Videos wait.c
coba.c dirlist Documents exec fork fork.c.save Pictures stat Templates wait
Child Terminated
```

root@usermint:/home/usermint#

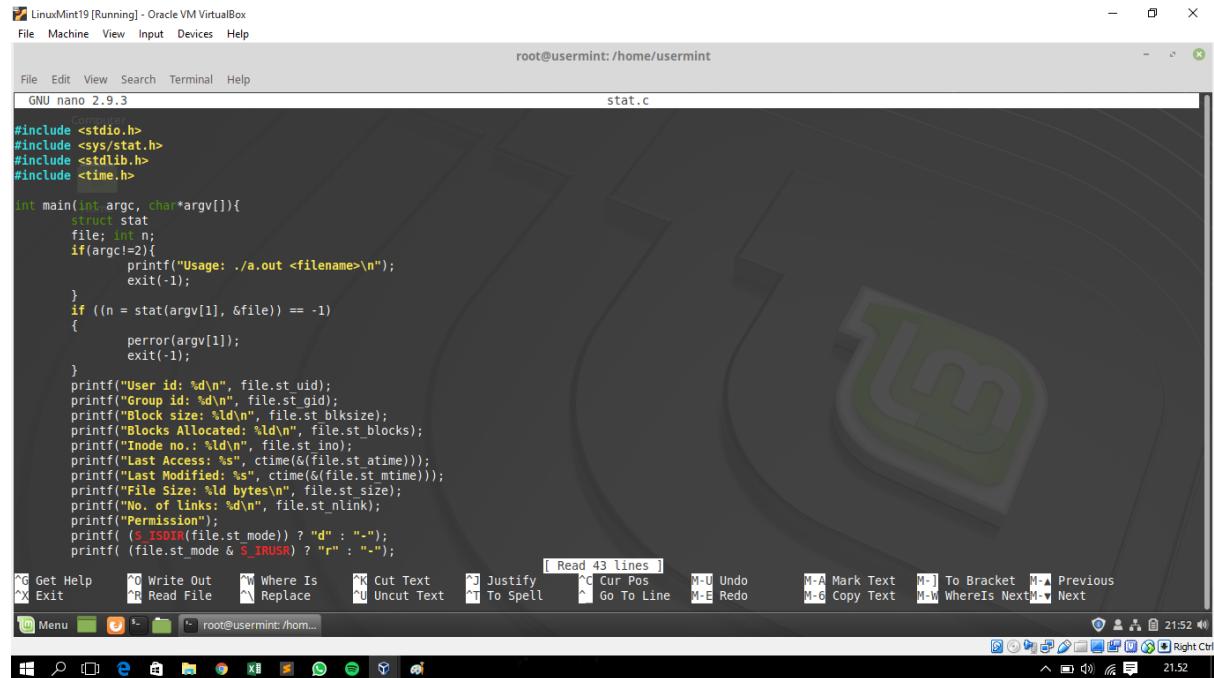
Home

Menu

21:51

Windows Taskbar

Stat.c



LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint:/home/usermint

File Edit View Search Terminal Help

GNU nano 2.9.3 stat.c

```
#include <stdio.h>
#include <sys/stat.h>
#include <stdlib.h>
#include <time.h>

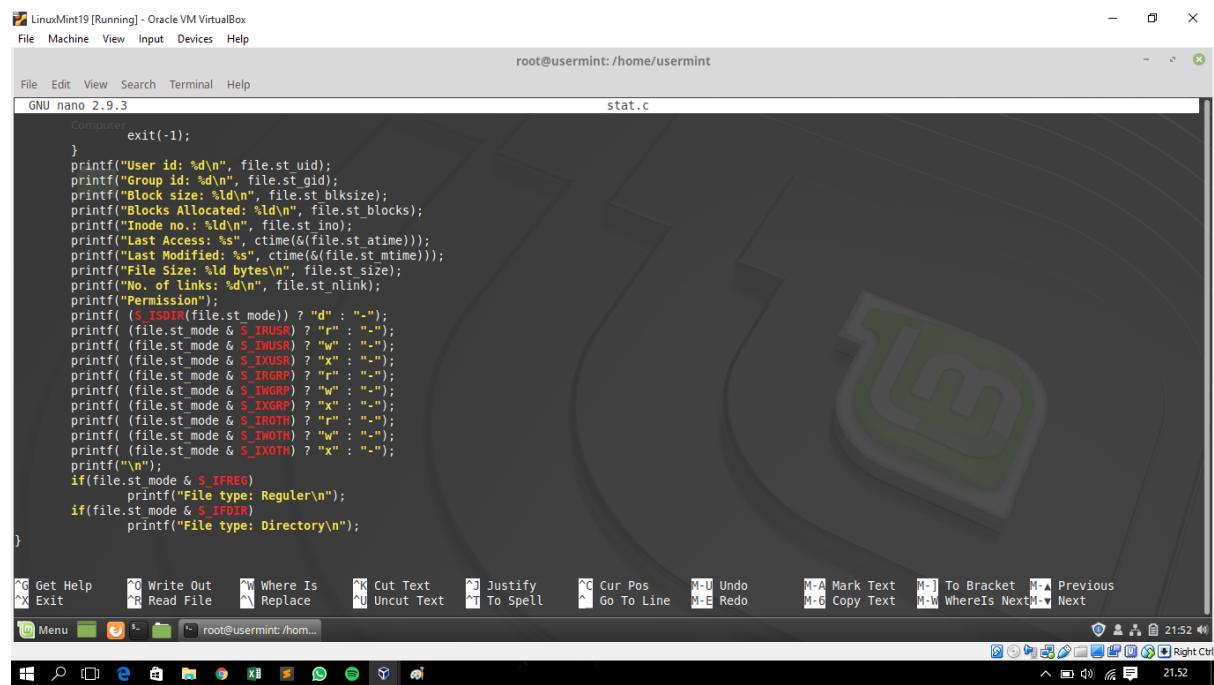
int main(int argc, char*argv[]){
    struct stat
    file; int n;
    if(argc!=2){
        printf("Usage: ./a.out <filename>\n");
        exit(-1);
    }
    if ((n = stat(argv[1], &file)) == -1)
    {
        perror(argv[1]);
        exit(-1);
    }
    printf("User id: %d\n", file.st_uid);
    printf("Group id: %d\n", file.st_gid);
    printf("Block size: %ld\n", file.st_blksize);
    printf("Blocks Allocated: %ld\n", file.st_blocks);
    printf("Inode no.: %ld\n", file.st_ino);
    printf("Last Access: %s", ctime(&(file.st_atime)));
    printf("Last Modified: %s", ctime(&(file.st_mtime)));
    printf("File Size: %ld bytes\n", file.st_size);
    printf("No. of links: %d\n", file.st_nlink);
    printf("Permission");
    printf( (S_ISDIR(file.st_mode)) ? "d" : "-");
    printf( (file.st_mode & S_IRUSR) ? "r" : "-");
    [ Read 43 lines ]
```

Get Help Write Out Where Is Cut Text Justify Cur Pos Undo Mark Text To Bracket Previous

Exit Read File Replace Uncut Text To Spell Go To Line Redo Copy Text WhereIs Next M-A M-B M-C M-D M-E M-F M-G M-H M-I M-J M-K M-L M-M M-N M-O M-P M-Q M-R M-S M-T M-U M-V M-W M-X M-Y M-Z

Menu root@usermint:/home/ 21:52

Windows taskbar icons: File Explorer, File Manager, Task View, Taskbar settings, Taskbar info, Taskbar controls.



LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint:/home/usermint

File Edit View Search Terminal Help

GNU nano 2.9.3 stat.c

```
Computer
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 Access: %s", ctime(&(file.st_atime)));
printf("Last Modified: %s", ctime(&(file.st_mtime)));
printf("File Size: %ld bytes\n", file.st_size);
printf("No. of links: %d\n", file.st_nlink);
printf("Permission");
printf( (S_ISDIR(file.st_mode)) ? "d" : "-");
printf( (file.st_mode & S_IRUSR) ? "r" : "-");
printf( (file.st_mode & S_IWUSR) ? "w" : "-");
printf( (file.st_mode & S_IXUSR) ? "x" : "-");
printf( (file.st_mode & S_ISGRP) ? "r" : "-");
printf( (file.st_mode & S_IWGRP) ? "w" : "-");
printf( (file.st_mode & S_IXGRP) ? "x" : "-");
printf( (file.st_mode & S_IROTH) ? "r" : "-");
printf( (file.st_mode & S_IWOTH) ? "w" : "-");
printf( (file.st_mode & S_IXOTH) ? "x" : "-");
printf("\n");
if(file.st_mode & S_IFREG)
    printf("File type: Regular\n");
if(file.st_mode & S_IFDIR)
    printf("File type: Directory\n");
```

Get Help Write Out Where Is Cut Text Justify Cur Pos Undo Mark Text To Bracket Previous

Exit Read File Replace Uncut Text To Spell Go To Line Redo Copy Text WhereIs Next M-A M-B M-C M-D M-E M-F M-G M-H M-I M-J M-K M-L M-M M-N M-O M-P M-Q M-R M-S M-T M-U M-V M-W M-X M-Y M-Z

Menu root@usermint:/home/ 21:52

Windows taskbar icons: File Explorer, File Manager, Task View, Taskbar settings, Taskbar info, Taskbar controls.

```
LinuxMint19 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@usermint: /home/usermint
File Edit View Search Terminal Help
usermint@usermint:~$ sudo su
[sudo] password for usermint:
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# gcc exec.c -o exec
root@usermint:/home/usermint# ./a.out /bin/ls ls
Child process
a.out Desktop dirlist.c Downloads exec.c fork.c Music Public stat.c Videos wait.c
cba.c dirlist Documents exec fork fork.c.save Pictures stat Templates wait
Child Terminated
root@usermint:/home/usermint# nano stat.c
root@usermint:/home/usermint# gcc stat.c -o stat
root@usermint:/home/usermint#
```

```
LinuxMint19 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@usermint: /home/usermint
File Edit View Search Terminal Help
usermint@usermint:~$ sudo su
[sudo] password for usermint:
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# gcc exec.c -o exec
root@usermint:/home/usermint# ./a.out /bin/ls ls
Child process
a.out Desktop dirlist.c Downloads exec.c fork.c Music Public stat.c Videos wait.c
cba.c dirlist Documents exec fork fork.c.save Pictures stat Templates wait
Child Terminated
root@usermint:/home/usermint# nano stat.c
root@usermint:/home/usermint# gcc stat.c -o stat
root@usermint:/home/usermint# ./stat
Usage: ./a.out <filename>
root@usermint:/home/usermint# ./a.out fork.c
Insufficient arguments to load program
Usage: ./a.out <path> <cmd>
root@usermint:/home/usermint# ./a.out fork
Insufficient arguments to load program
Usage: ./a.out <path> <cmd>
root@usermint:/home/usermint# ./a.out wait
Insufficient arguments to load program
Usage: ./a.out <path> <cmd>
root@usermint:/home/usermint# ./stat
Usage: ./a.out <filename>
root@usermint:/home/usermint#
```

Dirlist.c

The screenshot shows a Linux Mint 19 desktop environment with a terminal window open. The terminal window title is "root@usermint: /home/usermint". The code in the terminal is:

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

int main(int argc, char *argv[]){
    struct dirent *dptr;
    DIR *dname;

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

The terminal window has a menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". Below the menu is a toolbar with various icons. The status bar at the bottom shows "root@usermint: /hom..." and the date/time "21:43".

The screenshot shows a Linux Mint 19 desktop environment with a terminal window open. The terminal window title is "root@usermint: /home/usermint". The command entered was "g++ exec.c -std=c++11 -Wformat". The output shows compilation errors:

```
exec.c:23:3: warning: missing sentinel in function call [-Wformat=]
    i = execl(argv[1], argv[2], 0);
^
root@usermint:/home/usermint# g++ exec.c -std=c++11 -Wformat
root@usermint:/home/usermint# gcc exec.c -o exec
exec.c: In function 'main':
exec.c:23:3: warning: missing sentinel in function call [-Wformat=]
    i = execl(argv[1], argv[2], 0);
^
root@usermint:/home/usermint# g++ exec.c -std=c++98 -Wformat
root@usermint:/home/usermint# gcc exec.c -o exec
exec.c: In function 'main':
exec.c:23:3: warning: missing sentinel in function call [-Wformat=]
    i = execl(argv[1], argv[2], 0);
^
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# gcc exec.c -o exec
exec.c: In function 'main':
exec.c:23:3: warning: missing sentinel in function call [-Wformat=]
    i = execl(argv[1], argv[2], 0);
^
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# nano dirlist.c
root@usermint:/home/usermint# gcc dirlist.c -o dirlist
dirlist.c:5:16: error: expected ')' before 'char'
    int main(argc, char *argv[]){
                    ^
root@usermint:/home/usermint# nano dirlist.c
root@usermint:/home/usermint# gcc dirlist.c -o dirlist
root@usermint:/home/usermint# gcc dirlist.c -o dirlist
root@usermint:/home/usermint#
```

The last few lines of the output are highlighted with a red box. The terminal window has a menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". Below the menu is a toolbar with various icons. The status bar at the bottom shows "root@usermint: /hom..." and the date/time "21:43".

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint: /home/usermint

```
usermint@usermint:~$ sudo su
[sudo] password for usermint:
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# nano exec.c
root@usermint:/home/usermint# gcc exec.c -o exec
root@usermint:/home/usermint# ./a.out /bin/ls ls
Child process
a.out Desktop dirlist.c Downloads exec.c fork.c Music Public stat.c Videos wait.c
coba.c dirlist Documents exec fork fork.c.save Pictures stat Templates wait
Child Terminated
root@usermint:/home/usermint# nano stat.c
root@usermint:/home/usermint# gcc stat.c -o stat
root@usermint:/home/usermint# ./stat
Usage: ./a.out <filename>
root@usermint:/home/usermint# ./a.out fork.c

Insufficient arguments to load program
Usage: ./a.out <path> <cmd>
root@usermint:/home/usermint# ./a.out fork

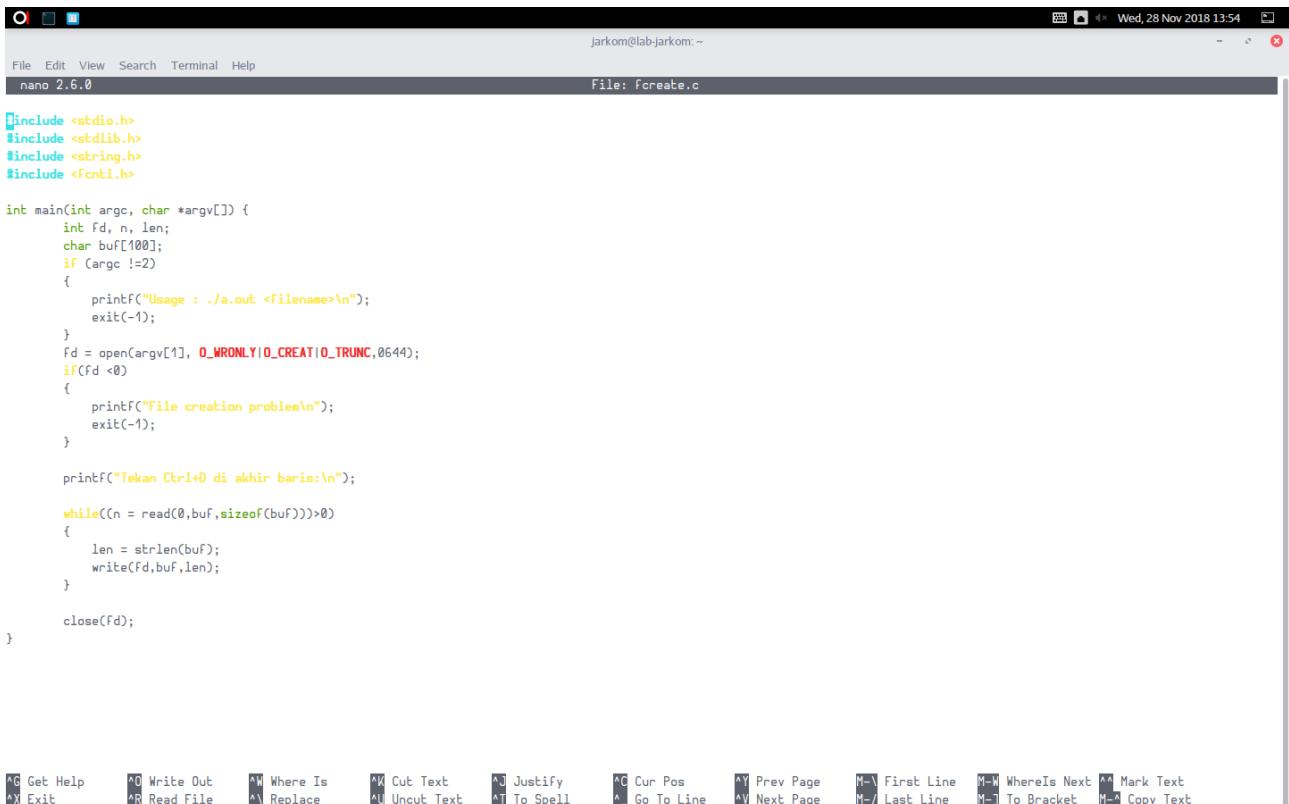
Insufficient arguments to load program
Usage: ./a.out <path> <cmd>
root@usermint:/home/usermint# ./a.out wait

Insufficient arguments to load program
Usage: ./a.out <path> <cmd>
root@usermint:/home/usermint# ./stat
Usage: ./a.out <filename>
root@usermint:/home/usermint# gcc dirlist.c -o dirlist
root@usermint:/home/usermint#
```

21:57 21.57

MODUL 9

FCREATE :



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

File Edit View Search Terminal Help
jarkom@lab-jarkom: ~ File: fcreate.c

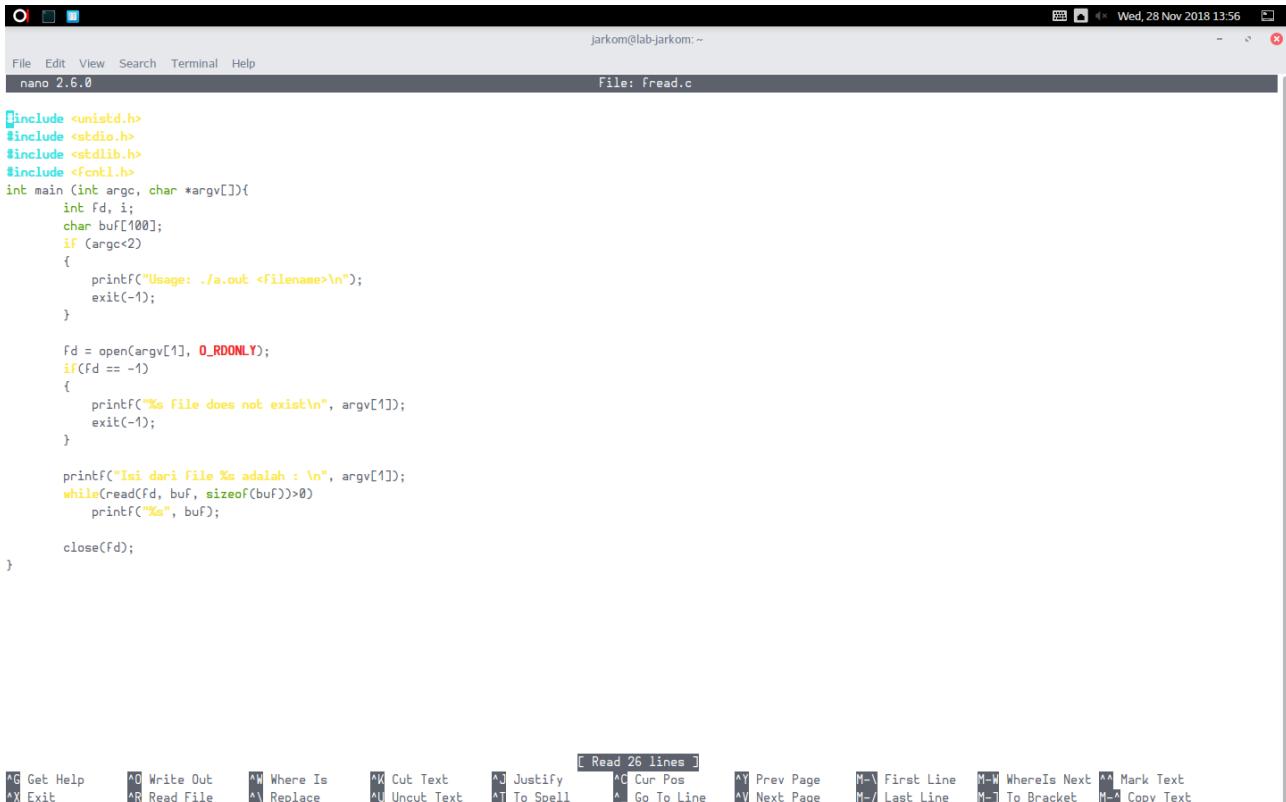
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos ^Y Prev Page M-\ First Line M-W WhereIs Next ^X Mark Text
^X Exit ^R Read File ^A Replace ^U Uncut Text ^T To Spell ^L Go To Line ^V Next Page M-/ Last Line M-J To Bracket M-A Copy Text



```
jarkom@lab-jarkom: ~$ gcc -o fread fread.c
jarkom@lab-jarkom: ~$ ./fcreate test.txt
Tekan Ctrl+D di akhir baris:
HELLO WORDjarkom@lab-jarkom: ~$
```

File Edit View Search Terminal Help
jarkom@lab-jarkom: ~

FREAD :



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

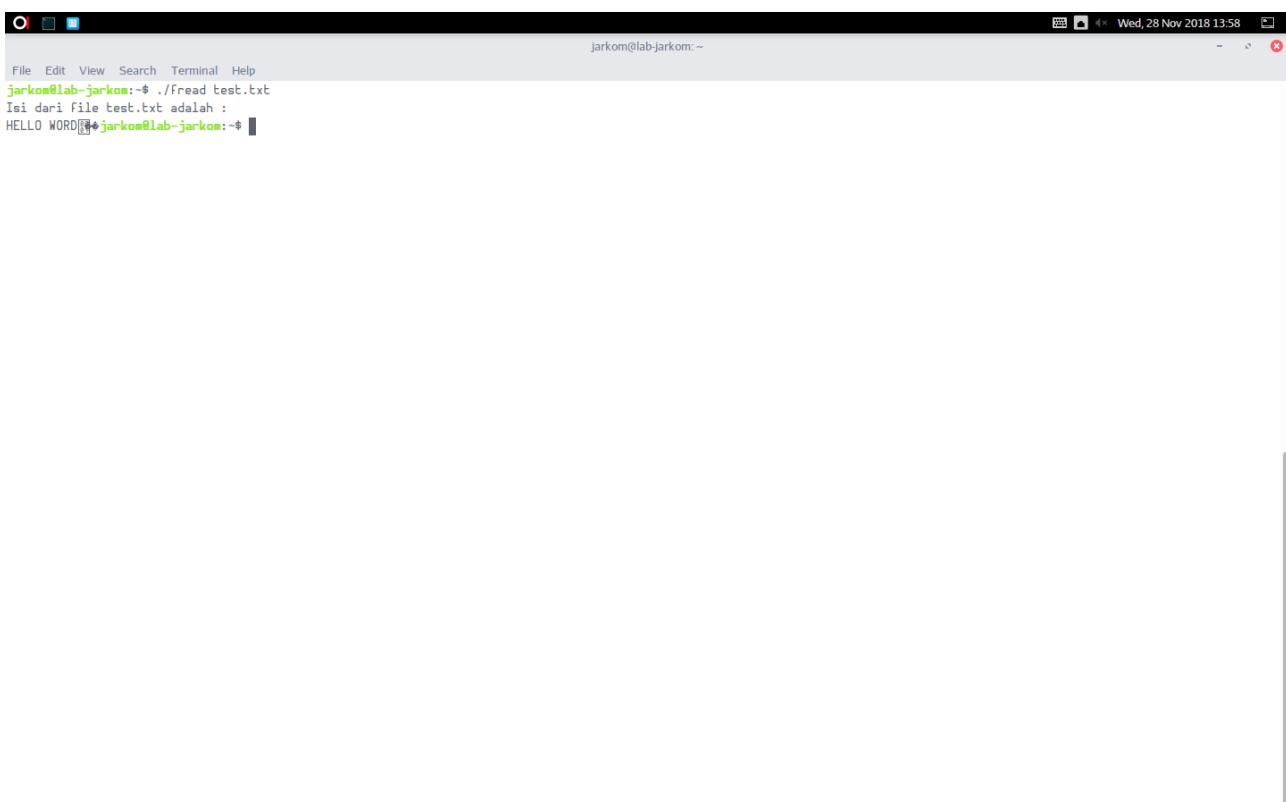
    fd = open(argv[1], O_RDONLY);
    if(fd == -1)
    {
        printf("%s file does not exist\n", argv[1]);
        exit(-1);
    }

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

    close(fd);
}
```

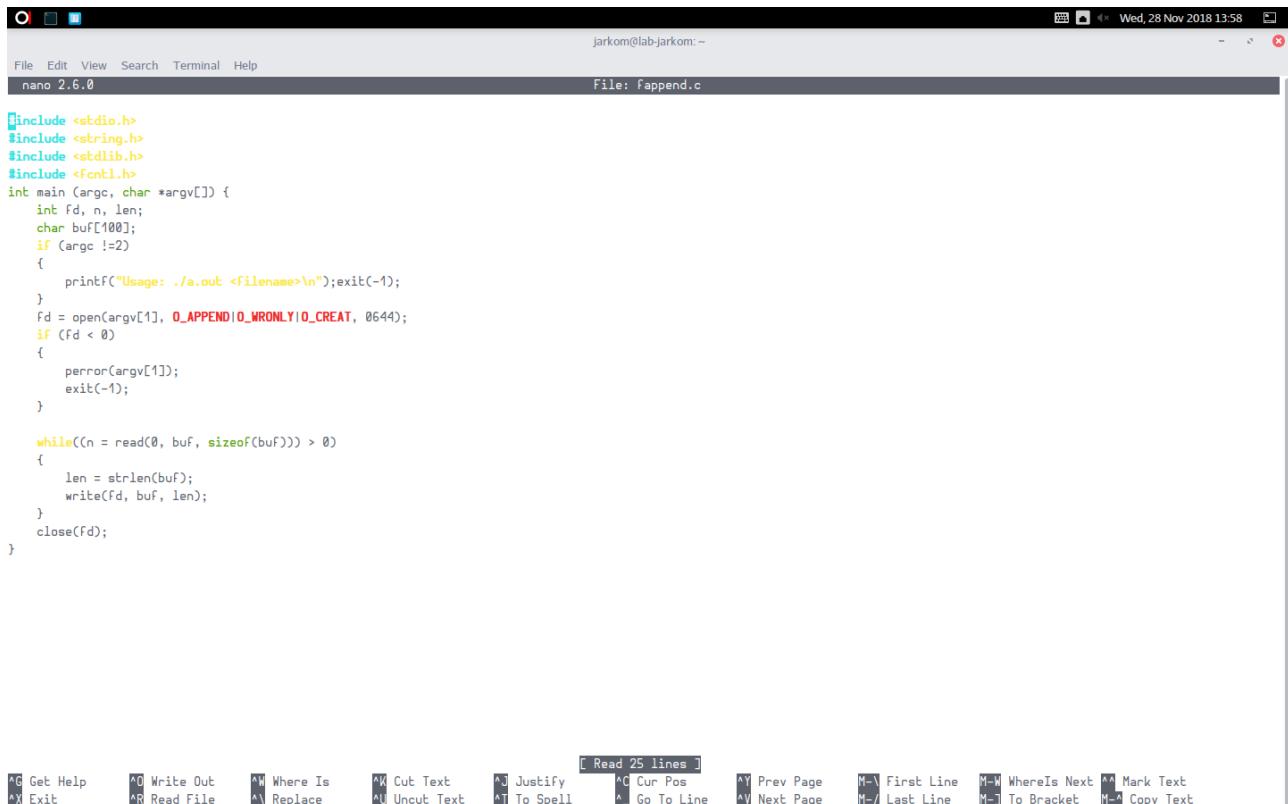
[Read 26 lines]

^G Get Help **^D** Write Out **^W** Where Is **^K** Cut Text **^J** Justify **^C** Cur Pos **^Y** Prev Page **M-1** First Line **M-W** WhereIs Next **^A** Mark Text
^X Exit **^R** Read File **^A** Replace **^U** Uncut Text **^T** To Spell **^L** Go To Line **^V** Next Page **M-/** Last Line **M-3** To Bracket **M-A** Copy Text



```
jarkom@lab-jarkom:~$ ./fread test.txt
Isi dari file test.txt adalah :
HELLO WORDjarkom@lab-jarkom:~$
```

FAPPEND:



```
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include <fcntl.h>
int main (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);
}
```

[Read 25 lines]

M-G Get Help **M-O** Write Out **M-W** Where Is **M-K** Cut Text **M-J** Justify **M-C** Cur Pos **M-Y** Prev Page **M-1** First Line **M-W** WhereIs Next **M-M** Mark Text
^X Exit **^R** Read File **^A** Replace **^U** Uncut Text **^T** To Spell **^L** Go To Line **^V** Next Page **M-1** Last Line **M-2** To Bracket **M-A** Copy Text

MODUL 10

1. List.c

```
GNU nano 2.9.3                               list.c

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

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

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

```
usermint@usermint:~$ sudo su
[sudo] password for usermint:
root@usermint:/home/usermint# nano list.c
root@usermint:/home/usermint# gcc -o list list.c
list.c: In function 'main':
list.c:8:2: warning: implicit declaration of function 'getcwd'; did you mean 'getw'? [-Wimplicit-function-declaration]
  getcwd(pathname);
  ^~~~~~  Home
  getw
root@usermint:/home/usermint#
```

```
usermint@usermint:~$ ./list
root@usermint:/home/usermint# ./list
Desktop      Documents      Downloads      Music      Pictures      Public      Templates      Videos      a.out
exec      angiesta.txt      coba.c      copy      copy.c      del      del.c      dirlist      dirlist.c      list
.          exec.c      fcreate      fcreate.c      fork      fork.c      fork.c.save      fork.c.save      wait      wait.c      root@usermint:/home/usermint# ls
total 172
-rw-r--r-- 1 root      root      15 Dec  5 09:26 angiesta.txt
-rwxr-xr-x 1 root      root      7340 Nov 27 09:21 a.out
-rw-r--r-- 1 root      root      279 Nov 27 09:31 coba.c
-rw-r--r-x 1 root      root      7492 Dec 11 15:53 copy
-rwxrwxrwx 1 usermint  usermint  619 Dec  4 23:08 copy.c
-rw-r--r-x 1 root      root      7344 Dec 11 15:55 del
-rw-r--r-x 1 usermint  usermint  316 Dec  4 23:08 del.c
drwxr-xr-x 2 usermint  usermint 4096 Nov 13 19:32 Desktop
-rwxr--r-- 1 root      root      7352 Nov 27 21:57 dirlist
-rw-r--r-- 1 root      root      359 Nov 26 21:42 dirlist.c
drwxr-xr-x 2 usermint  usermint 4096 Nov 13 19:32 Documents
drwxr-xr-x 2 usermint  usermint 4096 Nov 13 19:32 Downloads
-rwxr--r-x 1 root      root      7340 Nov 27 21:58 exec
-rw-r--r-- 1 root      root      628 Nov 27 09:20 exec.c
-rwxr--r-x 1 root      root      7460 Dec  5 09:24 fcreate
-rw-r--r-- 1 root      root      514 Dec  5 09:22 fcreate.c
-rwxr--r-x 1 root      root      7280 Nov 26 20:39 fork
-rw-r--r-- 1 root      root      589 Nov 26 20:37 fork.c
-rw----- 1 root      root      377 Nov 26 22:11 fork.c.save
-rwxr--r-x 1 root      root      7400 Dec 11 15:49 list
```

2. Mygrep.c

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

int main(int argc, char *argv[]){
    FILE *fd;
    char str[100];
    char c;
    int i, flag, j, m, k;
    char temp[50];

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

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

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

Get Help   Write Out   Where Is   Cut Text   Justify   Cur Pos   Undo   Mark Text   To Bracket   Previous
Exit   Read File   Replace   Uncut Text   To Spell   Go To Line   Redo   Copy Text   WhereIs Next   Next
Menu   S...   root@usermint:/hom...
usermint@usermint:~$ sudo su
[sudo] password for usermint:
root@usermint:/home/usermint# nano list.c
root@usermint:/home/usermint# gcc -o list list.c
list.c: In function 'main':
list.c:8:2: warning: implicit declaration of function 'getcwd'; did you mean 'getw'? [-Wimplicit-function-declaration]
    getcwd(pathname);
    ^~~~~~  home
getw
root@usermint:/home/usermint# nano mygrep.c
root@usermint:/home/usermint# gcc -o mygrep mygrep.c
root@usermint:/home/usermint#
```



```
root@usermint:/home/usermint# ls -l
total 128
drwxrwxrwx 1 usermint usermint 316 Dec  4 23:08 del.c
drwxr-xr-x 2 usermint usermint 4096 Nov 13 19:32 Desktop
-rw-r-xr-x 1 root      root     7352 Nov 27 21:57 dirlist
-rw-r-r-- 1 root      root     359 Nov 26 21:42 dirlist.c
drwxr-xr-x 2 usermint usermint 4096 Nov 13 19:32 Documents
drwxr-xr-x 2 usermint usermint 4096 Nov 13 19:32 Downloads
-rw-r-xr-x 1 root      root     7340 Nov 27 21:50 exec
-rw-r-r-- 1 root      root     628 Nov 27 09:20 exec.c
-rw-r-xr-x 1 root      root     7460 Dec  5 09:24 fcreate
-rw-r-r-- 1 root      root     514 Dec  5 09:22 fcreate.c
-rw-r-xr-x 1 root      root     7280 Nov 26 20:39 fork
-rw-r-r-- 1 root      root     589 Nov 26 20:37 fork.c
-rw----- 1 root      root     377 Nov 26 22:11 fork.c.save
-rw-r-xr-x 1 root      root     7400 Dec 11 15:49 list
-rw-rwxrwx 1 usermint usermint 314 Dec  4 23:08 list.c
drwxr-xr-x 2 usermint usermint 4096 Nov 13 19:32 Music
-rw-r-xr-x 1 root      root     7496 Dec 11 15:51 mygrep
-rw-rwxrwx 1 usermint usermint 824 Dec  4 23:08 mygrep.c
drwxr-xr-x 2 usermint usermint 4096 Nov 20 19:38 Pictures
drwxr-xr-x 2 usermint usermint 4096 Nov 13 19:32 Public
-rw-r-xr-x 1 root      root     7584 Nov 27 21:53 stat
-rw-r-r-- 1 root      root     1382 Nov 26 22:10 stat.c
drwxr-xr-x 2 usermint usermint 4096 Nov 13 19:32 Templates
-rw-rw-r-- 1 usermint usermint 0 Dec 11 16:01 'Untitled Document'
drwxr-xr-x 2 usermint usermint 4096 Nov 13 19:32 Videos
-rw-r-xr-x 1 root      root     7308 Nov 26 20:48 wait
-rw-r-r-- 1 root      root     586 Nov 26 20:48 wait.c
root@usermint:/home/usermint# ./mygrep
Usage: ./mygrep <search_text> <filename>
root@usermint:/home/usermint# ./mygrep Halo_angieta.txt
root@usermint:/home/usermint# ./mygrep a angieta.txt
Hallo Angieta
root@usermint:/home/usermint#
```

Using battery power - 2 hours 42 minutes remaining

3. 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
Home
int main(int argc, char *argv[]){
    int src, dst, nread;
    char buf[SIZE];
    if(argc != 3){
        printf("Usage: gcc copy.c -o copy\n");
        printf("Usage: ./copy <filename> <newfile> \n");
        exit(-1);
    }
    if((src = open(argv[1], O_RDONLY)) == -1){
        perror(argv[1]);
        exit(-1);
    }
    if((dst = creat(argv[2], 0644)) == -1){
        perror(argv[1]);
        exit(-1);
    }
    while((nread = read(src, buf, SIZE)) > 0){
        if(write(dst, buf, nread) == -1){
            printf("can't write \n");
            exit(-1);
        }
    }
    close(src);
}
[ Read 31 lines ]
M-G Get Help M-Q 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 M-N Previous
M-X Exit M-R Read File M-H 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 M-V Next
Ubuntu Menu 15:53
```

```
usermint@usermint:~$ sudo su
[sudo] password for usermint:
root@usermint:/home/usermint# nano list.c
root@usermint:/home/usermint# gcc -o list list.c
list.c: In function 'main':
list.c:8:2: warning: implicit declaration of function 'getcwd'; did you mean 'getw'? [-Wimplicit-function-declaration]
    getcwd(pathname);
           ~~~~~ Home
    getw
root@usermint:/home/usermint# nano mygrep.c
root@usermint:/home/usermint# gcc -o mygrep mygrep.c
root@usermint:/home/usermint# nano conv.c
root@usermint:/home/usermint# gcc -o copy copy.c
copy.c: In function 'main':
copy.c:23:17: warning: implicit declaration of function 'read'; did you mean 'fread'? [-Wimplicit-function-declaration]
    while((nread = read(src, buf, SIZE)) > 0){
                    ~~~~~
                    fread
copy.c:24:6: warning: implicit declaration of function 'write'; did you mean 'fwrite'? [-Wimplicit-function-declaration]
    if(write(dst, buf, nread) == -1){
                    ~~~~~
                    fwrite
copy.c:29:2: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
    close(src);
           ~~~~~
    close
root@usermint:/home/usermint#
```

```
File Edit View Search Terminal Help
root@usermint:/home/usermint# ./mygrep
Usage: gcc mygrep.c -o mygrep
Usage: ./mygrep <search text> <filename>
root@usermint:/home/usermint# ./mygrep Halo angjeta.txt
root@usermint:/home/usermint# ./mygrep a angjeta.txt
Halo Angjeta
root@usermint:/home/usermint# ./copy
Usage: gcc copy.c -o copy
Usage: ./copy <filename> <newfile>
root@usermint:/home/usermint# angjeta.txt angjetanew.txt
angjeta.txt: command not found
root@usermint:/home/usermint# angjeta.txt angjetabaru.txt
angjeta.txt: command not found
root@usermint:/home/usermint# ./copy angjeta.txt angjetabaru.txt
root@usermint:/home/usermint# ls -l
total 16
-rw-r--r-- 1 root      root      15 Dec 11 16:07 angjetabaru.txt
-rw-r--r-- 1 root      root      15 Dec  5 09:26 angjeta.txt
-rwx-wx-w- 1 root      root      7340 Nov 27 09:31 angjetanew.txt
-rw-r--r-- 1 root      root      279 Nov 27 09:31 coba.c
-rwxr-xr-x 1 root      root      7492 Dec 11 15:53 copy.c
-rwxrwxrwx 1 usermint usermint  619 Dec  4 23:08 copy.c
-rwxr-xr-x 1 root      root      7344 Dec 11 15:55 del.c
-rwxrwxrwx 1 usermint usermint  316 Dec  4 23:08 del.c
drwxr-xr-x 2 usermint usermint 4096 Nov 13 19:32 Desktop
-rwxr-xr-x 1 root      root      7352 Nov 27 21:57 dirlist
```

4. Del.c

The screenshot shows a Linux desktop environment with two terminal windows.

Top Terminal (nano Editor):

```
GNU nano 2.9.3
#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]);
}
```

Bottom Terminal (Terminal Output):

```
list.c: In function 'main':
list.c:8:2: warning: implicit declaration of function 'getcwd'; did you mean 'getw'? [-Wimplicit-function-declaration]
    getcwd(pathname);
    ^
getw
root@usermint:/home/usermint# nano mygrep.c
root@usermint:/home/usermint# gcc -o mygrep mygrep.c
root@usermint:/home/usermint# nano copy.c
root@usermint:/home/usermint# gcc -o copy copy.c
copy.c: In function 'main':
copy.c:23:17: warning: implicit declaration of function 'read'; did you mean 'fread'? [-Wimplicit-function-declaration]
    while((nread = read(src, buf, SIZE)) > 0){
        ^
        fread
copy.c:24:6: warning: implicit declaration of function 'write'; did you mean 'fwrite'? [-Wimplicit-function-declaration]
    if(write(dst, buf, nread) == -1){
        ^
        fwrite
copy.c:29:2: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
    close(src);
    ^
pclose
root@usermint:/home/usermint# nano del.c
root@usermint:/home/usermint# gcc -o del del.c
del.c: In function 'main':
del.c:14:3: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
    close(fd);
    ^
    pclose
del.c:15:3: warning: implicit declaration of function 'unlink'; did you mean 'unlink'? [-Wimplicit-function-declaration]
    unlink(argv[1]);
    ^
unlink
root@usermint:/home/usermint# ./del angietabaru.txt
Usage: ./del filename
```

The terminal output shows several compilation warnings related to implicit declarations of standard library functions like `getcwd`, `read`, `write`, and `close`. It also shows the usage of the `gcc` compiler to compile and run the `del.c` program, which is intended to delete a file named `angietabaru.txt`.