

LAPORAN PRAKTIKUM SISTEM OPERASI
MODUL 1 SAMPAI MODUL 10



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Kelas : E

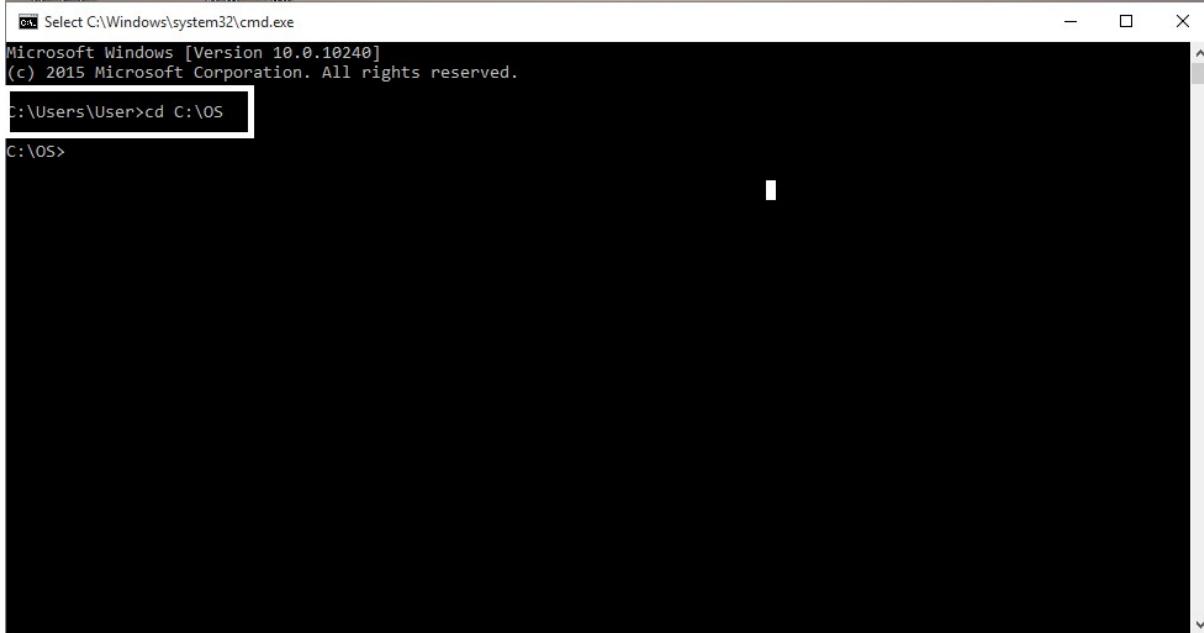
Program Studi Informatika

Fakultas Komunikasi dan Informatika

Universitas Muhammadiyah Surakarta

MODUL 1

1. Memanggil direktori OS

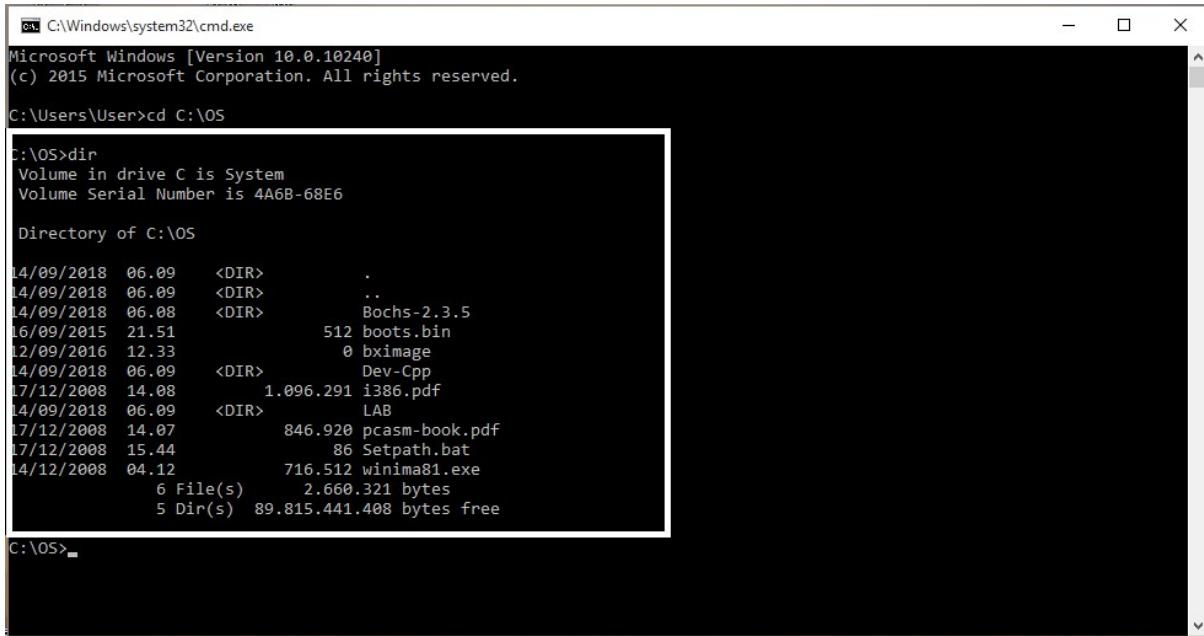


```
cmd Select C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.10240]
(c) 2015 Microsoft Corporation. All rights reserved.

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

C:\OS>
```

2. Melihat isi direktori



```
cmd 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>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:\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 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:\Win

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

```

```

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


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

; Menentukan lokasi awal dari program
[ORG 0x0000]

; loncat ke label START
jmp START

; Keterangan format floppy disk format FAT12

OEM_ID db "QUASI-OS"
BytesPerSector dw 0x200
SectorsPerCluster db 0x01
ReservedSectors dw 0x0001
TotalFATs db 0x02
MaxRootEntries dw 0x00E0
TotalSectorsSmall dw 0x0040
MediaDescriptor db 0xF0
SectorsPerFAT dw 0x0009
SectorsPerTrack dw 0x0012
NumHeads dw 0x0002
HiddenSectors dd 0x00000000
TotalSectorsLarge dd 0x00000000
DriveNumber db 0x00
Flags db 0x00

```

Activate Windows Go to Settings to activate Windows.

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

```

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 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:\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.

```
xx C:\Windows\system32\cmd.exe
17/12/2008 15.44          86 Setpath.bat
14/12/2008 04.12          716.512 winimia81.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 04.58          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 10.58          342.816 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

```
xx C:\Windows\system32\cmd.exe
17/12/2008 15.44          86 Setpath.bat
14/12/2008 04.12          716.512 winimia81.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 04.58          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 10.58          342.816 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  04.58      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 free
               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] -

```

Activate Windows
Go to Settings to activate Windows.

Kemudian untuk ukuran tekan enter untuk memilih default

```

C:\Windows\system32\cmd.exe - bximage
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  04.58      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 free
               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] -

```

Activate Windows
Go to Settings to activate Windows.

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

```

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
27/03/2007  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.

C:\Windows\system32\cmd.exe
12/09/2017  00.21          10.321.920 c.img
27/03/2007  10.50          342.016 dd.bat
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
C:\OS\LAB\LAB1>
=====

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

10/09/2018 10.24 <DIR> .
10/09/2018 10.24 <DIR> ..
12/09/2017 00.48 8.358 bochsout.txt
16/12/2008 06.17 1.628 bochsrc.bxrc
18/10/2015 04.36 14.339 boot.asm
18/10/2015 04.56 512 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
07/02/2007 10.50 342.016 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
16/12/2008 19.00 261.120 tdump.exe
14 File(s) 12.451.712 bytes
2 Dir(s) 89.813.987.328 bytes free

Activate Windows
Go to Settings to activate Windows.

C:\OS\LAB\LAB1>

```

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_win32_gui.c::exit(void)!

Bochs is exiting with the following message:
[INFO] 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

Bochs for Windows - Display
MSCDEX Version 2.23
Copyright (C) Microsoft Corp. 1986-1993. All rights reserved.
Bochs 2.3.5 - DOS 6.22 - 09/16/2007 - 00:00:00
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

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
=====
00000000000i[     ] reading configuration from bochsrc2.txt
00000000000i[     ] installing win32 module as the Bochs GUI
00000000000i[     ] using log file bochsrc.out
# 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
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 bochsrc.out
# 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>dd if=floppyfa img of=boots.bin count=1
rawrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out
C:\OS\LAB\LAB1>

```

Activate Windows
Go to Settings to activate Windows.

12. Melihat isi memori dari boots.bin

```

C:\Windows\system32\cmd.exe
=====
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>tddump boots.bin
Turbo Dump Version 5.0.16.12 Copyright (c) 1988, 2000 Inprise Corporation
Display of File BOOTS.BIN
=====
000000: EB 3C 90 40 53 57 49 4E 34 2E 31 00 02 01 01 00 <.MSWIN4.1.....
000010: 02 E0 00 40 00 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 .....)./B0 NA
000030: 4D 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.
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 8B C1 99 ...|.E..8N$} ...
000070: E8 7E 01 83 EB 3A 66 A1 1C 7C 66 3B 07 8A 57 FC ~...:f;...W.
000080: 75 06 08 CA 02 89 56 02 80 C3 10 73 ED 33 C9 FE u....V....s.3...
000090: 00 D8 7D 8A 46 10 98 F7 66 16 03 46 1C 13 56 1E ..}.F...F..F..V.
0000A0: 03 46 0E 13 D1 88 76 11 68 89 4C FC 89 56 FE BB ..F...v..F..V..
0000B0: 20 00 F7 E6 88 5E 00 03 C3 48 F7 F3 01 46 FC 11 .....^..H..F..
0000C0: 4E FE G1 BF 00 07 E8 28 01 72 3E 3B 2D 74 17 60 N.a....(r8:t..
0000D0: B1 0B BE D8 7D F3 A6 61 74 3D 4E 74 00 83 C7 20 .....}.at+Nt...
0000E0: 3B FB 72 E7 FB DD FF 0E D8 7D 7B 47 FE 7D AC ;:r.....}{...}.
0000F0: 98 03 F0 AC 98 40 74 0C 48 74 13 B4 0E BB 07 00 .....@t.Ht....
000100: CD 1B EB EF BE 82 7D EB E6 BE 84 7D EB E1 CD 16 .....}.....
000110: 5E 1F 66 8F 04 CD 19 BE 81 7D 88 7D 1A 8D 45 FE ^..F..}{...}.E.
000120: 8A 4E 00 F7 E1 03 46 FC 13 56 FE B1 04 E8 C2 00 ..N....F..V..
000130: 72 D7 EA 00 02 78 00 52 58 06 53 6A 01 6A 10 91 r...p.RP.Sj.j..
000140: 8B 46 18 A2 26 05 96 92 33 D2 F7 F6 91 F7 F6 42 ..F...&...3....B
000150: 87 CA F7 76 1A 8A F2 8A EB C9 CC 02 9A CC B8 01 ..V.....
000160: 02 89 7E 02 05 75 04 84 42 88 FA 8A 56 24 CD 13 ...u..B...V$...
000170: 61 61 72 0A 48 75 01 42 03 5E 00 49 75 77 C3 03 ear.@u.B.^!u...
000180: 18 01 27 0D 0A 49 6E 76 61 6C 69 64 20 73 79 73 ...Invalid sys
000190: 74 65 60 20 64 69 73 68 FF 00 0A 44 69 73 68 00 rem disk...Disk
0001A0: 49 2F 4F 20 65 72 72 6F 72 FF 00 0A 52 65 70 6C I/O error..Repl
0001B0: 61 63 65 20 74 68 65 20 64 69 73 68 2C 20 61 6E acc the disk, an
0001C0: 64 28 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 28 20 28 20 28 key....IO
0001E0: 53 59 53 40 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>

```

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 E9 00 40 08 F0 00 00 12 00 02 00 00 00 00 00 ...@.....
000020: 00 00 00 00 00 00 20 0A 12 3F 42 4E 0F 30 4E 41 ..... ./BNO MA
000030: 4D 45 20 20 20 20 46 41 54 31 32 20 20 20 33 C0 ME .FAT12 3.
000040: 8E D1 BC F0 78 15 07 BD 78 00 C5 76 00 1E 56 16 ..{....v..V.
000050: 55 B7 22 05 89 7E 00 89 4F 02 B1 00 FC F3 A4 00 U.*.~.v...V.
000060: 1F BD 00 70 C6 45 FE 0F 38 4E 24 7D 20 88 C1 99 ...|.E...BNS} ...
000070: E0 7E 01 B3 EB 3A 66 A1 1C 7C 66 3B 07 8A 57 FC ~...:f.|f;.W.
000080: 75 06 80 CA 02 88 56 02 80 C3 10 73 ED 35 C9 FE U...V...s.3..
000090: 00 D8 7D 8A 46 10 98 F7 66 16 03 46 1C 13 56 1E ...).F...f..F..V.
0000A0: 00 48 0E 13 D1 89 76 11 68 89 40 FC 89 56 FE BB .F...V...F..V..
0000B0: 20 0F 7F E6 88 5E 0B 03 C3 48 F7 F3 01 46 FC 11 ..^..H..F..
0000C0: E6 F6 61 B1 00 07 E8 28 01 72 3E 38 2D 74 17 60 N.a...(.r8-t.
0000D0: B1 0B 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 AC ;.r...}{...}.
0000F0: 99 03 F0 AC 98 40 74 0C 48 74 13 84 BE BB 07 00 ...@.Ht..
000100: CD 18 EB EF BE 82 7D EB E1 CD 16 .....}....}.
000110: 50 1F 66 8F 04 CD 19 B8 81 70 88 7D 1A 8D 45 FE ^..f...}....}....E.
000120: 80 4E 00 F7 E1 03 46 FC 13 56 F0 B1 04 E8 C2 00 .N....F..V...
000130: 72 D7 EA 00 02 70 00 52 58 06 53 6A 01 6A 10 91 r...p.RP.Sj.j.
000140: 88 46 18 A2 26 05 96 92 33 D2 F7 F6 91 F7 F6 42 .F..&...3....B.
000150: 87 CA F7 76 1A 8A F2 8A E8 C8 C0 02 0A CC B8 01 ..v....
000160: 02 80 7E 02 0E 75 04 84 42 88 F4 8A 56 24 CD 13 ...~..u..B..VS..
000170: 61 61 72 0A 40 75 01 42 03 5E 00 49 75 77 C3 03 aar.~u..B.^..Iuw..
000180: 18 01 27 00 0A 49 6E 76 61 6C 69 64 20 73 79 73 ....Invalid sys
000190: 74 65 60 20 64 69 73 68 FF 0D 0A 44 69 73 6B 20 ten disk...Disk
0001A0: 49 2F 4F 20 65 72 72 6F 72 FF 0D 0A 52 65 70 6C I/O error...Rep1
0001B0: 61 63 65 20 74 68 65 20 64 69 73 6B 2C 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 6B 65 79 0D 0A 00 00 49 4F 20 20 20 20 20 20 key....IO
0001E0: 53 59 53 40 53 44 4F 53 20 20 20 53 59 53 7F 01 SYMSMDOS 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 bochscout.txt
# In bx_win32_gui ::exit(void)

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

C:\OS\LAB\LAB1>s
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 bochscout.txt
# In bx_win32_gui ::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 bochscout.txt

```

Activate Windows
Go to Settings to activate Windows.

15. Selesaikan proses format

Bochs for Windows - Console

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

Bochs for Windows - Display

A:>Format B:/S
Insert new diskette for drive B:
and press ENTER when ready...

Checking existing disk format.
Verifying 1.44M
Format complete.
System transferred

Volume label (11 characters, ENTER for none)?
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.
2,414 allocation units available on disk.

Volume Serial Number is 1B43-16E5

Format another (Y/N)?n

A:>

CTRL + 3rd button enables mouse A: B: HD:0-M CD:0-S NUM CAPS SCRL

Activate Windows
Go to Settings to activate Windows.

16. Lihat isi direktori

Bochs for Windows - Console

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

Bochs for Windows - Display

Volume Label (11 characters, ENTER for none)?

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.
2,414 allocation units available on disk.

Volume Serial Number is 1B43-16E5

Format another (Y/N)?n

A:>dir B:

Volume in drive B has no label
Volume Serial Number is 1B43-16E5
Directory of B:\

COMMAND	COM	94,292	05-05-03	21:22
	1 file(s)	94,292 bytes		
	0 dir(s)	1,235,968 bytes free		

A:>

CTRL + 3rd button enables mouse A: B: HD:0-M CD:0-S NUM CAPS SCRL

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
0	0	0		32	20	40	[space]	64	40	100	@
1	1	1	!	33	21	41	"	65	41	101	A
2	2	2	#	34	22	42	%	66	42	102	B
3	3	3	&	35	23	43	'	67	43	103	C
4	4	4	(36	24	44)	68	44	104	D
5	5	5	,	37	25	45	,	69	45	105	E
6	6	6	,	38	26	46	,	70	46	106	F
7	7	7	,	39	27	47	,	71	47	107	G
8	8	10	,	40	28	50	,	72	48	110	H
9	9	11	,	41	29	51	,	73	49	111	I
10	A	12	,	42	2A	52	,	74	4A	112	J
11	B	13	,	43	2B	53	,	75	4B	113	K
12	C	14	,	44	2C	54	,	76	4C	114	L
13	D	15	,	45	2D	55	,	77	4D	115	M
14	E	16	,	46	2E	56	,	78	4E	116	N
15	F	17	,	47	2F	57	,	79	4F	117	O
16	10	20	,	48	30	60	,	80	50	120	P
17	11	21	,	49	31	61	,	81	51	121	Q
18	12	22	,	50	32	62	,	82	52	122	R
19	13	23	,	51	33	63	,	83	53	123	S
20	14	24	,	52	34	64	,	84	54	124	T
21	15	25	,	53	35	65	,	85	55	125	U
22	16	26	,	54	36	66	,	86	56	126	V
23	17	27	,	55	37	67	,	87	57	127	W
24	18	30	,	56	38	70	,	88	58	130	X
25	19	31	,	57	39	71	,	89	59	131	Y
26	1A	32	,	58	3A	72	,	90	5A	132	Z
27	1B	33	,	59	3B	73	,	91	5B	133	[
28	1C	34	,	60	3C	74	,	92	5C	134	\
29	1D	35	,	61	3D	75	,	93	5D	135]
30	1E	36	,	62	3E	76	,	94	5E	136	^
31	1F	37	,	63	3F	77	,	95	5F	137	_

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. Menjumlah 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.

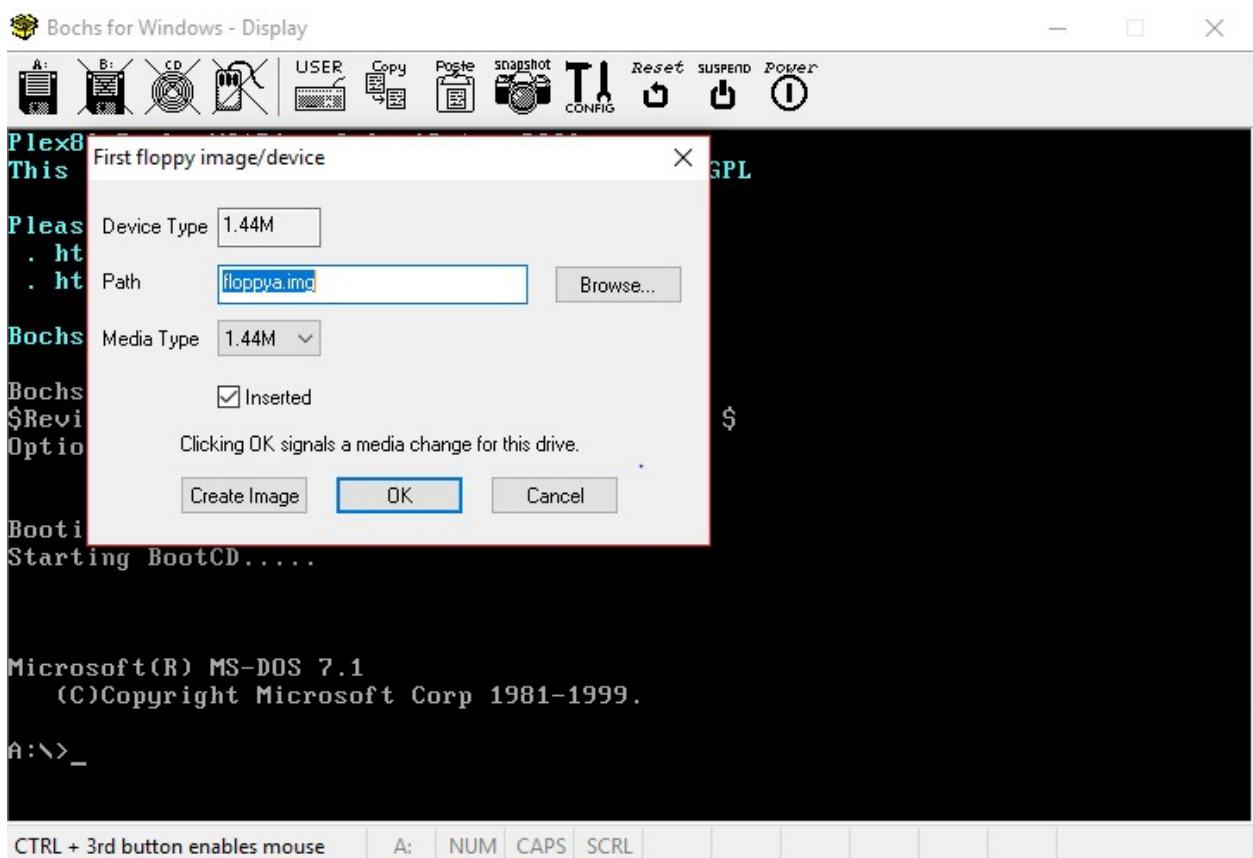
=====
c:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab2"

Bochs for Windows - Display
A: B: CD USER COPY Paste Snapshot T CONFIG Reset Suspend Power
Second floppy image/device
Device Type 1.44M
Path c:\os\lab\lab1\floppya.img
Media Type 1.44M
Supported
IRQ = 14
IRQ = 14
rights reserved.
A:>_ Create Image OK Cancel
CTRL + 3rd button enables mouse A: B: HD:0-M CD:0-S NUM CAPS SCRL
Bochs for Windows - Display
A: B: CD USER COPY Paste Snapshot T CONFIG Reset Suspend Power
Second floppy image/device
Device Type 1.44M
Path C:\OS\LAB\LAB2\floppya.img
Media Type auto
Supported
IRQ = 14
IRQ = 14
rights reserved.
A:>_ Create Image OK Cancel
CTRL + 3rd button enables mouse A: B: HD:0-M CD:0-S NUM CAPS SCRL

```

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



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

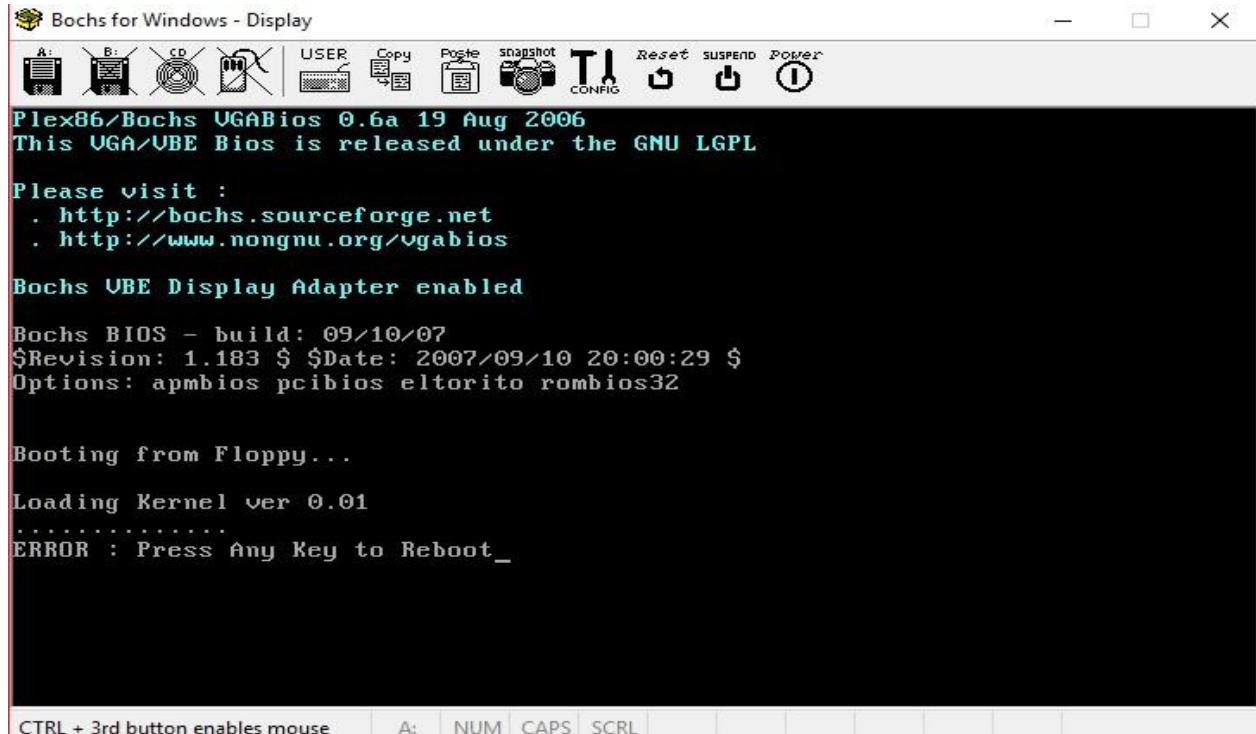
```
C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
dd if=boot.bin of=floppya.img
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
1+0 records in
1+0 records out

C:\OS\LAB\LAB2>s

C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
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)!

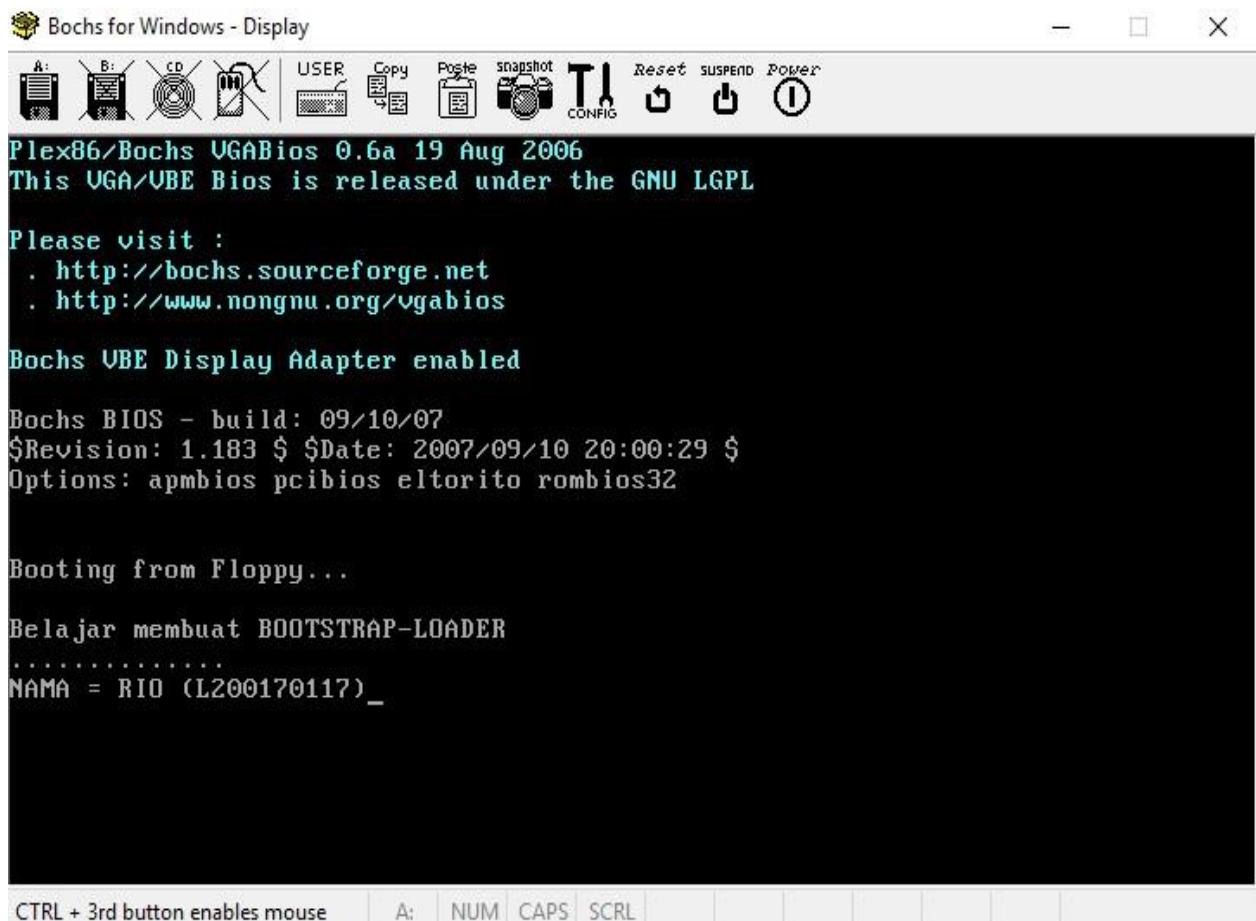
Bochs is exiting with the following message:
[WGUI ] POWER button turned off.
=====
```

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:\VOS\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.
=====
```

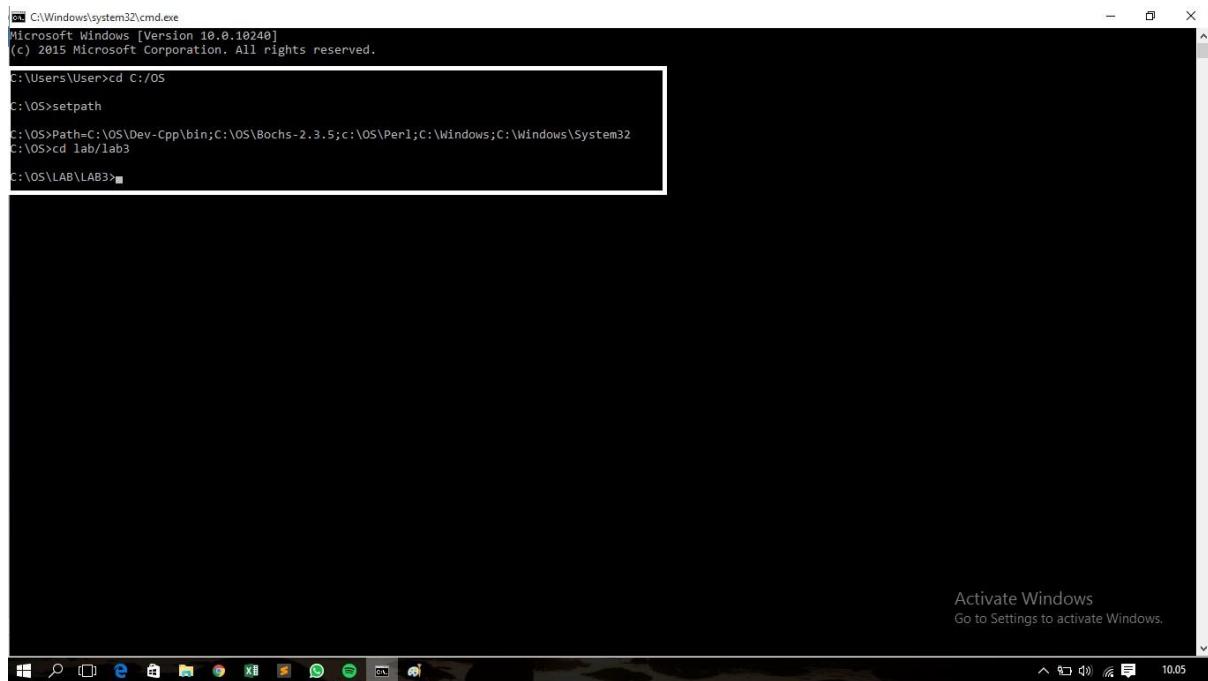
14.jalankan perintah ‘notepad kernel.asm’ lalu cari teks ‘welcome to my kernel’ pada notepad dan edit teks tersebut menjadi ‘belajar membuat kernel’ dan save.

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

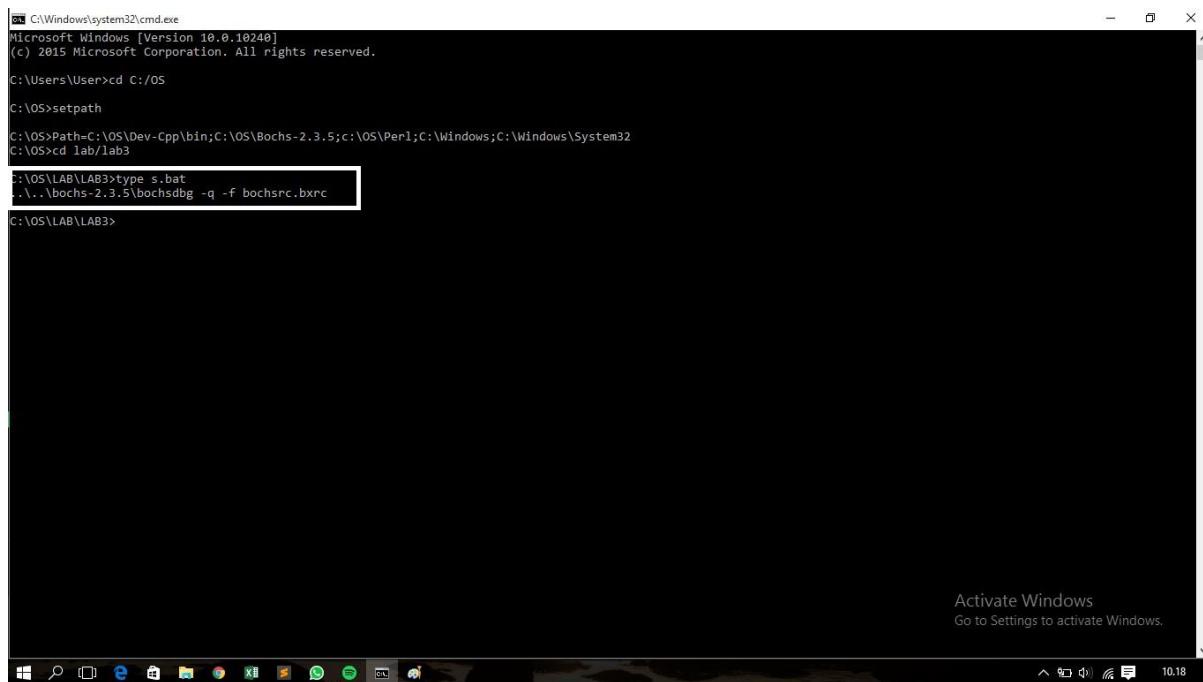
```
C:\OS\LAB\LAB2>s  
C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -q -f bochsrc.bxrc  
00000000000i[APIC?] local apic in initializing  
=====  
Bochs x86 Emulator 2.3.5  
Build from CVS snapshot, on September 16, 2007  
=====  
00000000000i[      ] reading configuration from bochsrc.bxrc  
00000000000i[      ] 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



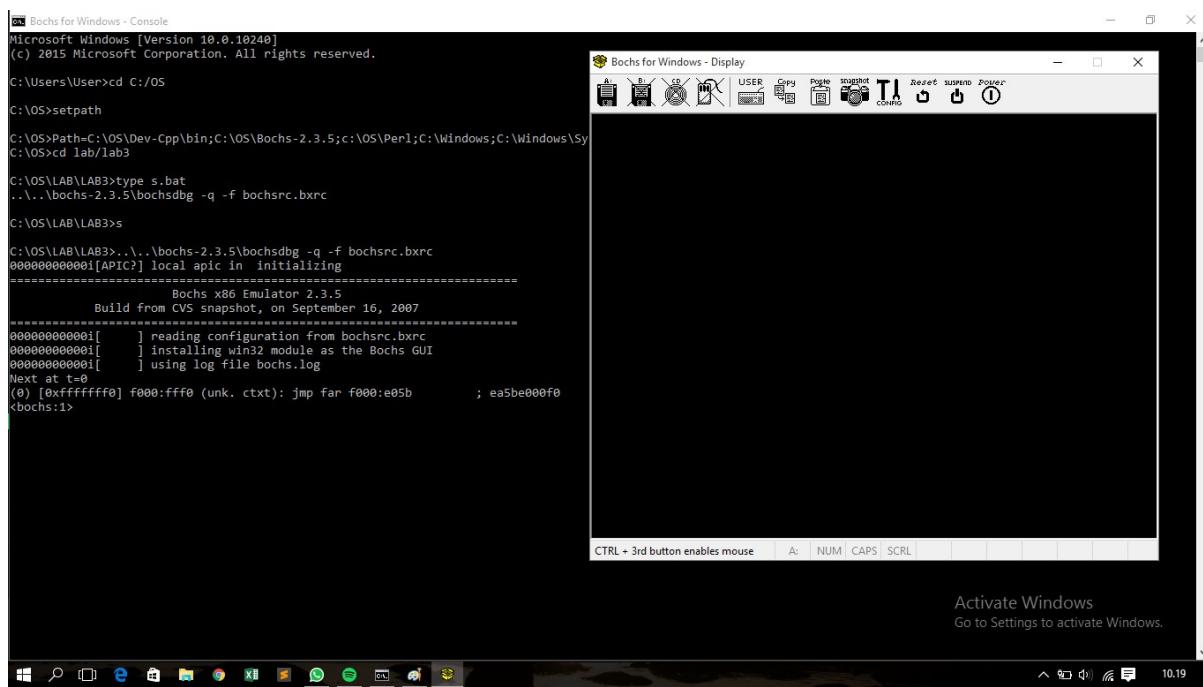
2. ketikkan type s.bat



```
cmd 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>
```

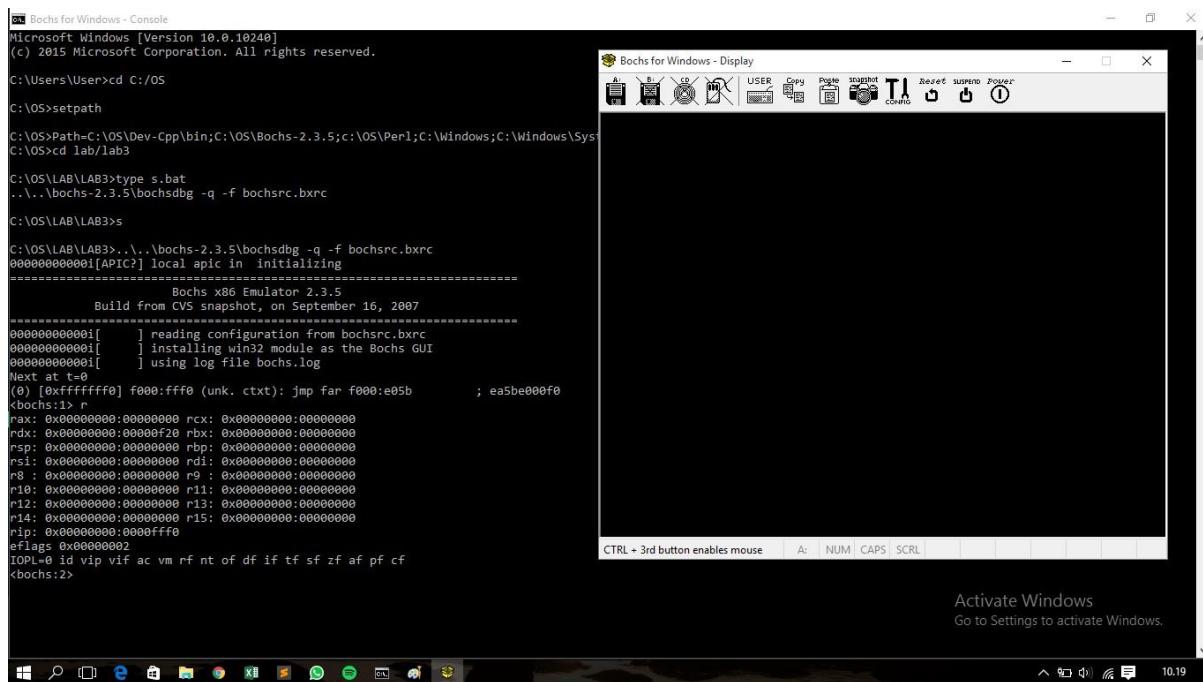
4. Lakukan debugging dengan cara ketik ‘S’



```
cmd 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\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>s
C:\OS\LAB\LAB3>..\..\bochs-2.3.5\bochsrc -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
Next at t=0
(0) [0xfffffffff0] f000:ffff0 (unk. ctxt): jmp far f000:e05b      ; ea5be000f0
<bochs:1>
```

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



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\Sys
C:\OS>cd lab/lab3

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

C:\OS\LAB\LAB3>s
C:\OS\LAB\LAB3..\\..\bochs-2.3.5\bochsrc.bxrc -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: 0x00000000:000000f0 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
IOPR=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:2>

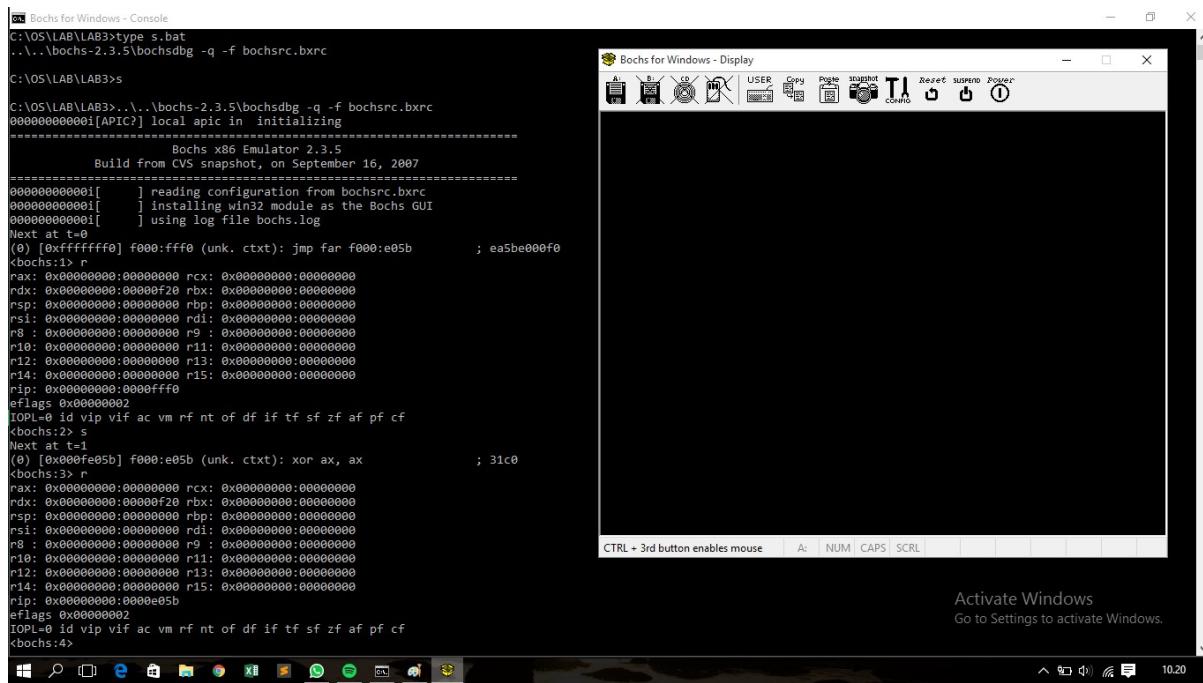
```

Bochs for Windows - Display

CTRL + 3rd button enables mouse A: NUM CAPS SCRL

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.bxrc -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: 0x00000000:000000f0 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
IOPR=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:2>
Next at t=1
(0) [0x000fe05b] f000:e05b (unk. ctxt): xor ax, ax ; 31c0
<bochs:3> r
rax: 0x00000000:00000000 rcx: 0x00000000:00000000
rdx: 0x00000000:000000f0 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
IOPR=0 id vip vif ac vm rf nt of df if tf sf zf af pf cf
<bochs:4>

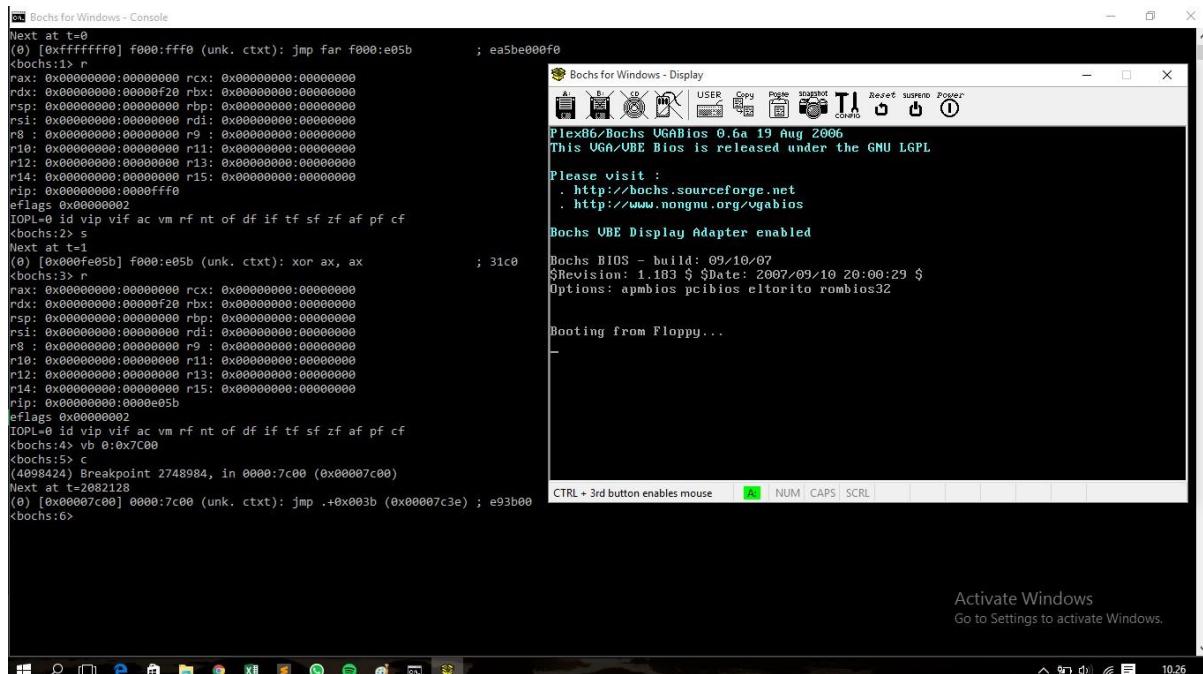
```

Bochs for Windows - Display

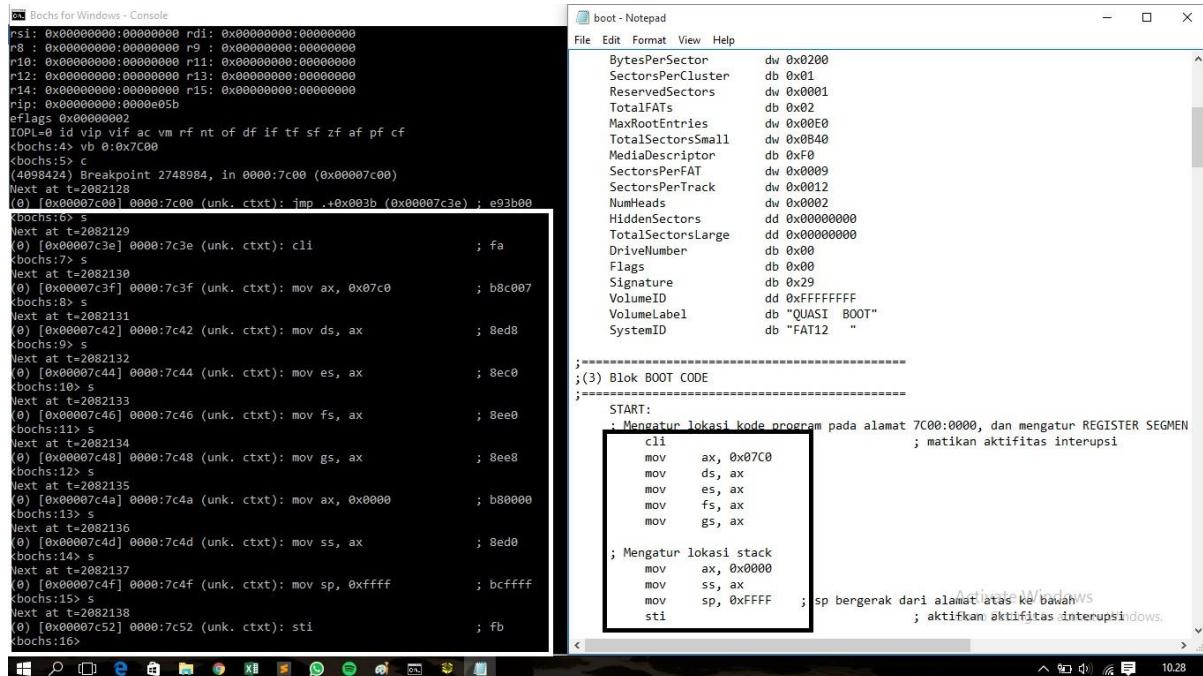
CTRL + 3rd button enables mouse A: NUM CAPS SCRL

Activate Windows
Go to Settings to activate Windows.

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



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



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 two windows. The left window is a terminal console titled 'Bochs for Windows - Console' showing assembly code execution. The right window is titled 'Bochs for Windows - Display' showing a graphical user interface with icons for floppy disk, CD/DVD, and other system components.

```

<bochs:11> s
Next at t=2082134
(0) [0x000007c48] 0000:7c48 (unk. ctxt): mov gs, ax ; 8ee8
<bochs:12> s
Next at t=2082135
(0) [0x000007c4a] 0000:7c4a (unk. ctxt): mov ax, 0x0000 ; b80000
<bochs:13> s
Next at t=2082136
(0) [0x000007c4d] 0000:7c4d (unk. ctxt): mov ss, ax ; 8ed0
<bochs:14> s
Next at t=2082137
(0) [0x000007c4f] 0000:7c4f (unk. ctxt): mov sp, 0xfffff ; bcffff
<bochs:15> s
Next at t=2082138
(0) [0x000007c52] 0000:7c52 (unk. ctxt): sti ; fb
<bochs:16> q
# In bx_win32_gui_c::exit(void)

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

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

C:\OS\LAB\LAB3>s
C:\OS\LAB\LAB3>..\bochs-2.3.5\bochsrc -q -f bochsrc.bxrc
000000000001[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochsrc.bxrc
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochs.log
Next at t=0
(0) [0xfffffffff0] f000:ffff (unk. ctxt): jmp far f000:e05b ; ea5be000f0
<bochs:1> vb 0x0100:0x0000
<bochs:2> c
(9537920) Breakpoint 2748984, in 0100:0000 (0x00001000)
Next at t=2945013
(0) [0x00001000] 0100:0000 (unk. ctxt): mov ax, 0x0100 ; b80001
<bochs:3>

```

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

The screenshot shows two windows. The left window is a terminal console titled 'Bochs for Windows - Console' showing assembly code execution. The right window is a Notepad titled 'kernel - Notepad' showing the assembly code of 'kernel.asm'.

```

<bochs:11> s
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) [0xfffffffff0] f000:ffff (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>

```

The Notepad window contains the assembly code for 'kernel.asm':

```

; Prototype SIMPLE KERNEL ver 0.01
; LAB-INFORMATIKA
=====
[org 0x000]
[bits 16]

[SEGMENT .text]

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

    push dx ;setup interrupt service
    push es ;untuk menampilkan karakter di layar
    xor ax, ax
    mov es, ax

    cli ;request service 0x01
    mov word [es:0x21*4], _int0x21 ; untuk menampilkan karakter di layar
    mov [es:0x21*4+2], cs ; int 0x21
    sti
    pop es
    pop dx

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

    call _shell ; call _shell

```

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.



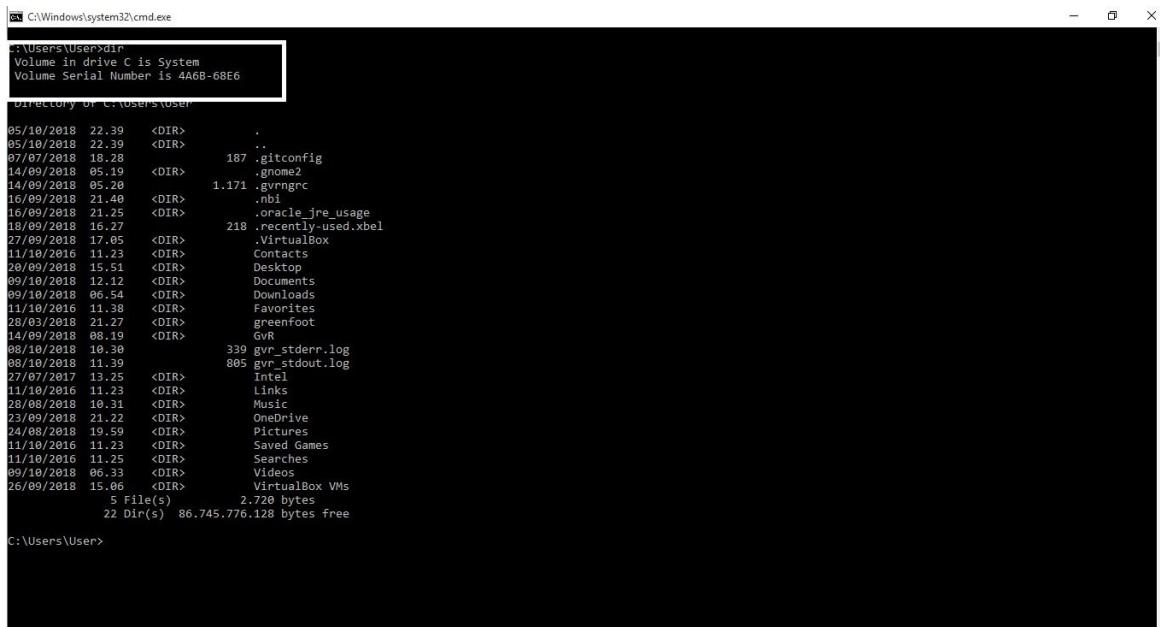
```
PS C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.10240]
(c) 2015 Microsoft Corporation. All rights reserved.

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.



```
PS 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

05/18/2018 22.39 <DIR> .
05/18/2018 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 21.48 <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
11/10/2018 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
11/10/2018 11.38 <DIR> Favorites
28/03/2018 21.27 <DIR> greenfoot
14/09/2018 08.19 <DIR> GVR
08/10/2018 10.38 339 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
24/09/2018 19.59 <DIR> Pictures
11/10/2016 11.23 <DIR> Played Games
11/10/2016 11.25 <DIR> Searches
09/10/2018 06.53 <DIR> Videos
26/09/2018 15.86 <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:

```
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

05/18/2018 22.39 <DIR> .
05/18/2018 22.39 <DIR> ..
07/07/2018 18.28 <DIR> 187 gitconfig
14/09/2018 05.19 <DIR> .gnome2
14/09/2018 05.20 1.171 gvrngrc
16/09/2018 21.49 <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 free
      22 Dir(s) 86.745.776.128 bytes free

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

C:\>
```

3. Melihat isi direktori C: dengan mengetikkan dir

```
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 free
      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 free
      9 Dir(s) 86.747.389.952 bytes free

C:\>
```

4. Ketikkan dir/p untuk menampilkan nama file perhalaman

```
cmd C:\Windows\system32\cmd.exe
      5 File(s)          2.728 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  11.48    <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  11.48    <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.

```
cmd 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  11.48    <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  11.48    <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/v
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)  86.746.095.010 bytes free

C:\>
```

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

```

C:\> 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:\

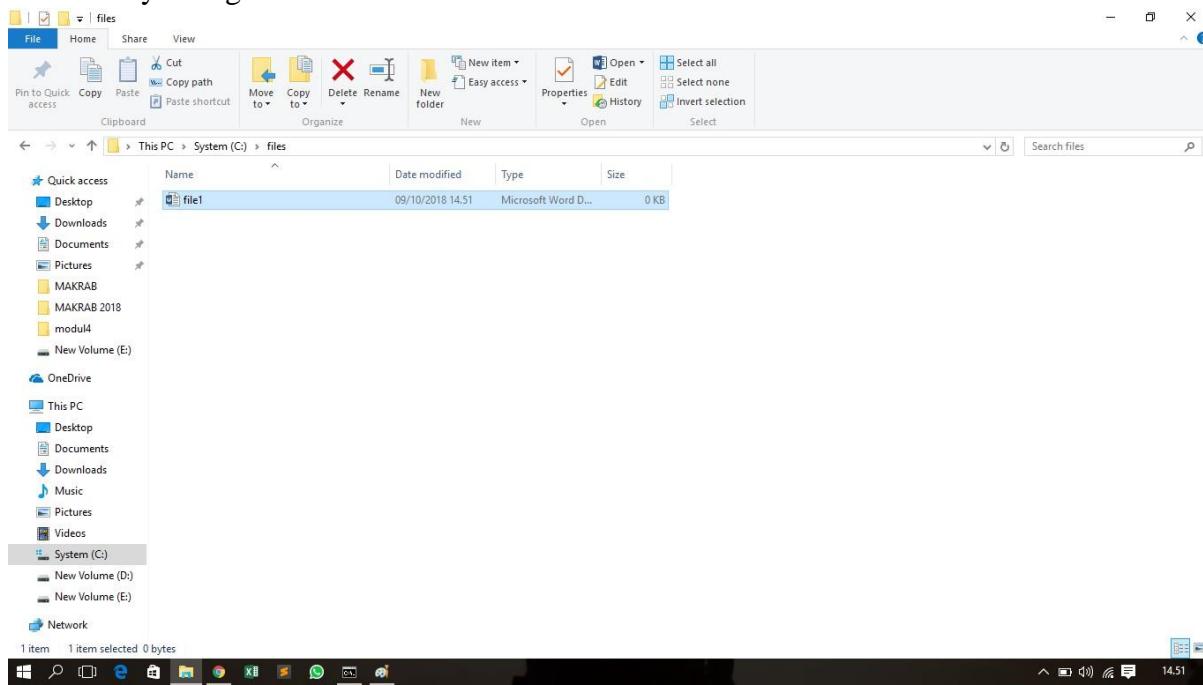
27/07/2017 13.22 <DIR> $Recycle.Bin
10/07/2015 18.00 395.268 bootmgr
10/07/2015 18.00 1 BOOTNXT
01/10/2018 14.08 <DIR> Config.Msi
10/07/2015 19.21 <JUNCTION> Documents and Settings [C:\Users]
09/10/2018 14.09 1.662.713.856 hiberfil.sys
27/07/2017 13.26 <DIR> Intel
11/10/2016 11.36 <DIR> MSOCache
14/09/2018 06.09 <DIR> OS
05/10/2018 07.41 1.006.632.966 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)
22/09/2018 12.58 <DIR> ProgramData
11/10/2018 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 11.49 <DIR> Transtool
11/10/2016 11.42 <DIR> Users
09/10/2018 07.28 <DIR> Windows
22/03/2018 21.34 <DIR> xampp
      5 File(s) 2.938.177.541 bytes free
     16 Dir(s) 86.746.828.800 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.

```
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>
    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

```
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>
    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:\

09/18/2018 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 11.49 <DIR>      Transtool
11/10/2016 11.42 <DIR>      Users
09/18/2018 07.20 <DIR>      Windows
22/03/2018 21.34 <DIR>     xampp
          0 File(s)           0 bytes free
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

09/18/2018 14.51 <DIR>      .
09/18/2018 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 derektori 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

09/18/2018 14.51 <DIR>      .
09/18/2018 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

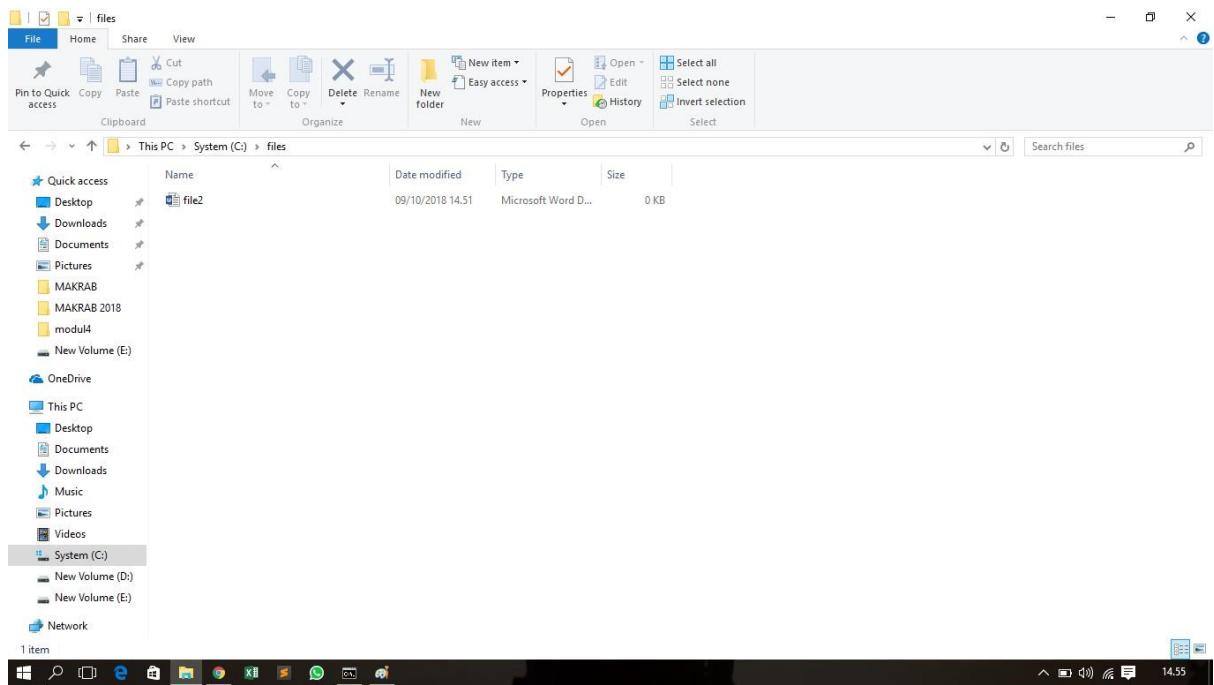
C:\files>ren file1.docx file.docx
C:\files>rename file.docx file2.docx
C:\files>dir
Volume in drive C is System
Volume Serial Number is 4A6B-68E6

Directory of C:\files

09/18/2018 14.54 <DIR>      .
09/18/2018 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.

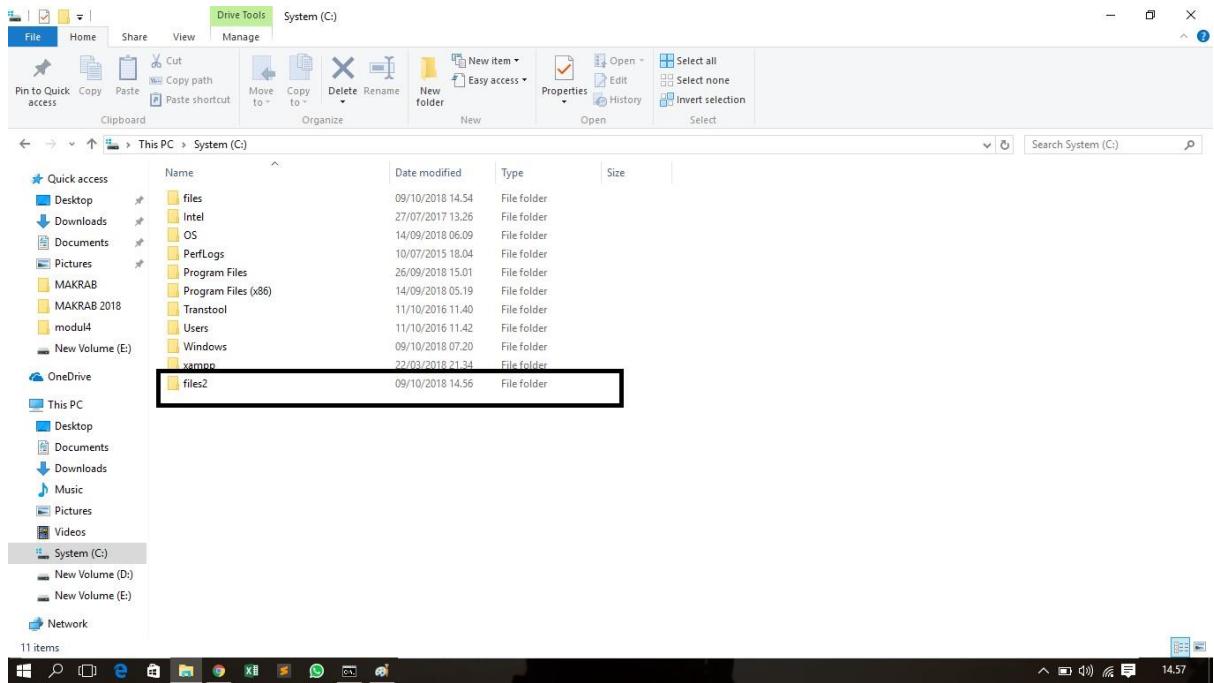


Percobaan keempat: Copy file dan menghapus file

1. Keluar dari direktori files dengan mengetikkan cd..

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

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



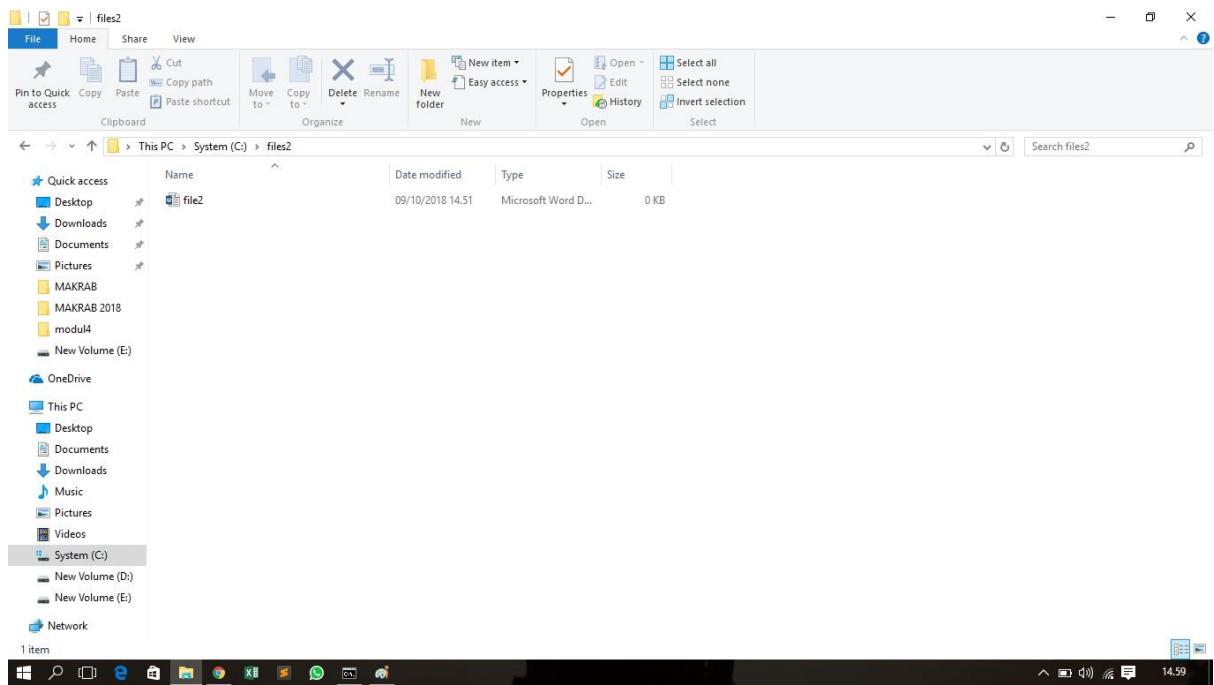
3. Menyalin semua isi file di suatu folder dengan cara mengetikkan copy direktori\nama_folder_awal direktori\ nama_folder_tujuan

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

C:\>
```

The screenshot shows a Windows Command Prompt window titled "C:\Windows\system32\cmd.exe". The user has entered the command "copy C:\files C:\file2". The output shows that "file2.docx" was copied from the "files" folder to the current directory. The command prompt then shows the path "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>.
```

```
on 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:\

C:\files>cd
C:\files
C:\files>cd..
C:>>D:
D:>
```

```
on 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:\

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
03/06/2018 06.57 <DIR>      Aplikasi
28/04/2018 15.17 <DIR>      CETAK
16/08/2018 10.21 <DIR>      DESAINKU
25/06/2018 12.06 <DIR>      Poutput
09/10/2018 14.51       6 file2.docx
20/07/2018 10.45 <DIR>      zia
18/07/2018 07.44 <DIR>      FOTO
11/04/2018 11.69 <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

```

C:\Windows\system32\cmd.exe
28/04/2018 15.17 <DIR> CETAK
16/08/2018 10.21 <DIR> DESAINKU
25/06/2018 12.06 <DIR> FFOutput
09/11/2018 14.51 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
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:>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

```

C:\Windows\system32\cmd.exe
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nvfbcdl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nvfbcd64.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwidia-smi.1pd_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwidia-smi.ex_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwiffr.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwiffr64.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwifropeng132.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwifropeng164.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwininfo.pb_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwinint.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwinntx.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwldmkm.sy_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwmcumd.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwml.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwg1shim32.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwg1shim64.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwg1v32.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwg1v64.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwpopencl32.dl_
Desktop\E5-475G\VA NEW Core IS\nVidia NVIDIA VGA N165-GT1\WDD001D00X500610000\Display.Driven\nwpopencl64.dl_

C:\Users\User>xcopy Desktop D:baru\ /s/e
Desktop\Adobe Premiere Pro CC 2017.lnk
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\GIMP.lnk
Desktop\Internet Download Manager.lnk
Desktop\KMPlayer.lnk
Desktop\LINE.lnk
Desktop\WPS Express.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.

```
C:\Windows\system32\cmd.exe
Desktop\GitHub Desktop.lnk
Desktop\Google Chrome.lnk
Desktop\Greenfoot.lnk
Desktop\GvRing.lnk
Desktop\Internet Download Manager.lnk
Desktop\KMPlayer.lnk
Desktop\LINE.lnk
Desktop\Nero Express.lnk
Desktop\PhotoScan.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
09/16/2018 15.15 <DIR>      Aplikasi
09/16/2018 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
09/16/2018 14.51       file2.docx
28/09/2018 10.39 <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:

```
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, kemudia 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  15.30    <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  06.09    <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)  91.190.657.024 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  15.30    <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  06.09    <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)  91.190.652.928 bytes free

C:>rd baru
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)  91.190.587.392 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>     xampp
                           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>     xampp
                           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>     xampp
                           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>     xampp
                           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
09/10/2018 15.34 <DIR>      komputer
09/10/2018 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 11.48 <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
09/10/2018 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 11.48 <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:\>
```

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

```
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
09/10/2018 15.34 <DIR>      komputer
09/10/2018 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 11.48 <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.

```
cmd C:\Windows\system32\cmd.exe
Directory of C:\
09/18/2018 15.05 <DIR>      files
09/18/2018 14.58 <DIR>      files2
27/07/2017 13.26 <DIR>      Intel
09/18/2018 15.34 <DIR>      komputer
14/09/2018 06.09 <DIR>      OS
10/07/2015 18.04 <DIR>      PenfLogs
26/09/2018 15.01 <DIR>      Program Files (x86)
14/09/2018 05.19 <DIR>      Transtool
11/10/2016 11.40 <DIR>      Users
09/18/2018 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:>cd files

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

Directory of C:\files
09/18/2018 15.35 <DIR>      .
09/18/2018 15.35 <DIR>      ..
09/18/2018 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.

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

C:\>*
```

```
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.

```
C:\Windows\system32\cmd.exe
27/07/2017 13.26 <DIR>      Intel
09/18/2018 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)
11/18/2016 11.40 <DIR>      Transtool
11/18/2016 11.42 <DIR>      Users
09/18/2018 07.28 <DIR>      Windows
22/03/2018 21.34 <DIR>      xampp
      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.txt
09/10/2018 15.38           0 bytes
      3 File(s)          0 bytes
      2 Dir(s)  91.189.350.400 bytes free
C:\files2>
```

3. Kemudian lihat hiararki pad suatu folder, seperti folder files dan windows.

```
on C:\Windows\system32\cmd.exe
09/18/2018 07.28 <DIR> Windows
22/03/2018 21.34 <DIR>xampp
    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

09/18/2018 15.39 <DIR> .
09/18/2018 15.39 <DIR> ..
09/18/2018 14.51 0 file2.docx
09/18/2018 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
```

```
on C:\Windows\system32\cmd.exe
    |-x86_system.enterpriseservices_b03f5f7f11d50a3a_4.0.10240.16384_none_2d294c34bec1feeb
    |-x86_system.printing_31bf3856ad364e35_4.0.10240.16384_none_21d09246a8470ced
    |-x86_system.transactions_b77a5c561934e089_4.0.10240.16384_none_6b8d6bdd79387619
    |-x86_system.web_b03f5f7f11d50a3a_4.0.10240.16384_none_4ea5924272e38ba
    |-x86_taskschedulersettings_resources_31bf3856ad364e35_10.0.10240.16384_en-us_9f4ae13110079c7f
    |-x86_wcf-m_smsvchost_exe_cmn_31bf3856ad364e35_10.0.10240.16384_none_a695d427fb5dc169
    |-x86_wcf-m_smsvchost_perf_c_reg_31bf3856ad364e35_10.0.10240.16384_none_dc2f7971f100d395
    |-x86_wcf-m_smsvchost_perf_c_vrg_31bf3856ad364e35_10.0.10240.16384_none_e1f2fa7ed4c74f4
    |-x86_wcf-m_sm_cfg_lnk_exe_31bf3856ad364e35_10.0.10240.16384_none_ac0323aff7c3d9
    |-x86_wcf-m_sm_evt_dll_vista_31bf3856ad364e35_10.0.10240.16384_none_244c070f7ab17a01
    |-x86_wcf-m_sm_im_rc_dll_31bf3856ad364e35_10.0.10240.16384_none_74de1b22c147c94
    |-x86_wcf-m_svc_mod_end_perf_reg_31bf3856ad364e35_10.0.10240.16384_none_72b67280722f6b0e
    |-x86_wcf-m_svc_mod_end_perf_vrg_31bf3856ad364e35_10.0.10240.16384_none_7879f4b66e7b06d
    |-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_74daedaae165a75
    |-x86_wcf-m_svc_mod_svc_perf_reg_31bf3856ad364e35_10.0.10240.16384_none_229ce83d718524d1
    |-x86_wcf-m_svc_mod_svc_perf_vrg_31bf3856ad364e35_10.0.10240.16384_none_28666a736d0c638
    |-x86_wcf-m_svc_mon_sup_dll_31bf3856ad364e35_10.0.10240.16384_none_51bffd782de444b
    |-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_2e3bb3c50f61315c
    |-x86_wcf-system_identitymodel_selector_b03f5f7f11d50a3a_10.0.10240.16384_none_f3b013bb591d44f
    |-x86_wcf-system_identitymodel_b03f5f7f11d50a3a_10.0.10240.16384_none_a87549103031a064
    |-x86_wcf-system_runtime_serialization_b03f5f7f11d50a3a_10.0.10240.16384_none_d485b0495c85ab6
    |-x86_wcf-system_servicemodel_b03f5f7f11d50a3a_10.0.10240.16384_none_e3006af060881868
    |-x86_windows_id-connecte_r-wlidnspc_resources_31bf3856ad364e35_10.0.10240.16384_en-us_13ed3a5c46fc8b567
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_de-de_670354ef881501c3
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_en-gb_086b6fcfa7bc59c3
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_en-us_0ff42ae876f30d88
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_es-es_0fbfb87cc7719f2d
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_es-mx_1f16757275ade28
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_fr-ca_aae4d48156ec47bb5
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_fr-fr_b276fdcb9e1c158f
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_it-it_9c9ef412411dfb0d
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_ja-jp_3ec4731f34390ce8
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_ko-kr_e22e4fd426a9d93fe
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_pt-br_1190616ce3a7b27
    |-x86_windows_media-speech-wlnrt_resources_31bf3856ad364e35_10.0.10240.16384_zh-cn_6f7a95565e14e79a
    |-x86_windowssearchcomponent_31bf3856ad364e35_10.0.10240.16384_none_859fde061599e1fd
    |-x86_wordbreaker-stemmer-neutral-legacy_31bf3856ad364e35_7.0.10240.16384_none_56754738860b73be
    |-x86_wpf-presentationhostexe_31bf3856ad364e35_10.0.10240.16384_none_1bd6097c826db7a7
    |-x86_wpf-presentationhostproxy_31bf3856ad364e35_10.0.10240.16384_none_d66cecd75c1ef6d9
```

TUGAS

1. Buat file multimedia pada drive D:

```
C:\Windows\system32\cmd.exe
-x86_windows-media-speech-winnt_resources_31bf3856ad364e35_10.0.10240.16384_es-es_0fbfb87cc7719ff2d
-x86_windows-media-speech-winnt_resources_31bf3856ad364e35_10.0.10240.16384_es-mx_11f6757275ade2d8
-x86_windows-media-speech-winnt_resources_31bf3856ad364e35_10.0.10240.16384_fr-fr_aae48156ec47bb5
-x86_windows-media-speech-winnt_resources_31bf3856ad364e35_10.0.10240.16384_it-it_9c0ef412411dfb0d
-x86_windows-media-speech-winnt_resources_31bf3856ad364e35_10.0.10240.16384_ja-jp_3ec4731f34390cc8
-x86_windows-media-speech-winnt_resources_31bf3856ad364e35_10.0.10240.16384_ko-kr_e22e4fd426a9d3fe
-x86_windows-media-speech-winnt_resources_31bf3856ad364e35_10.0.10240.16384_pt-pt_19061ce3a78b27
-x86_windows-searchcomponent_31bf3856ad364e35_10.0.10240.16384_zh-cn_67a95565e14e79a
-x86_wordbreakersummer-neutralLegacy_31bf3856ad364e35_7.0.10240.16384_none_859fde61599efdf
-x86_wpt-presentationhostexe_31bf3856ad364e35_10.0.10240.16384_none_1bd6097c82ed07a7
-x86_wpt-presentationhostproxy_31bf3856ad364e35_10.0.10240.16384_none_d66cc7d751ef6d9

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> bant
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 6 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 10.24 <DIR> leaves-and-wombats
09/10/2018 15.45 <DIR> multimedia
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) 392.181.448.784 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 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
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) 392.181.448.784 bytes free

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

Directory of D:\

12/05/2018 14.20 <DIR> ADOBE
02/05/2018 11.26 382.315 alun.jpg
09/01/2018 05.14 3.951.820 bahagia.mp3
09/01/2018 05.14 0 file2.docx
28/04/2018 15.17 <DIR> CETAK
16/08/2018 10.21 <DIR> DESAINKU
12/07/2018 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
10/08/2018 10.22 <DIR> TUTORIAL
09/10/2018 15.47 0 teks.txt
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.

```
cmd C:\Windows\system32\cmd.exe
09/10/2018 15.45 <DIR> multimedia
16/08/2018 09.22 <DIR> MUSIC
10/08/2018 16.22 <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 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
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:\>
```

```
cmd 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 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
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:\>
```

```
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  18.21    <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  28.24    <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  28.07    <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:\>
```

```
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  18.21    <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  28.24    <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  28.07    <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.

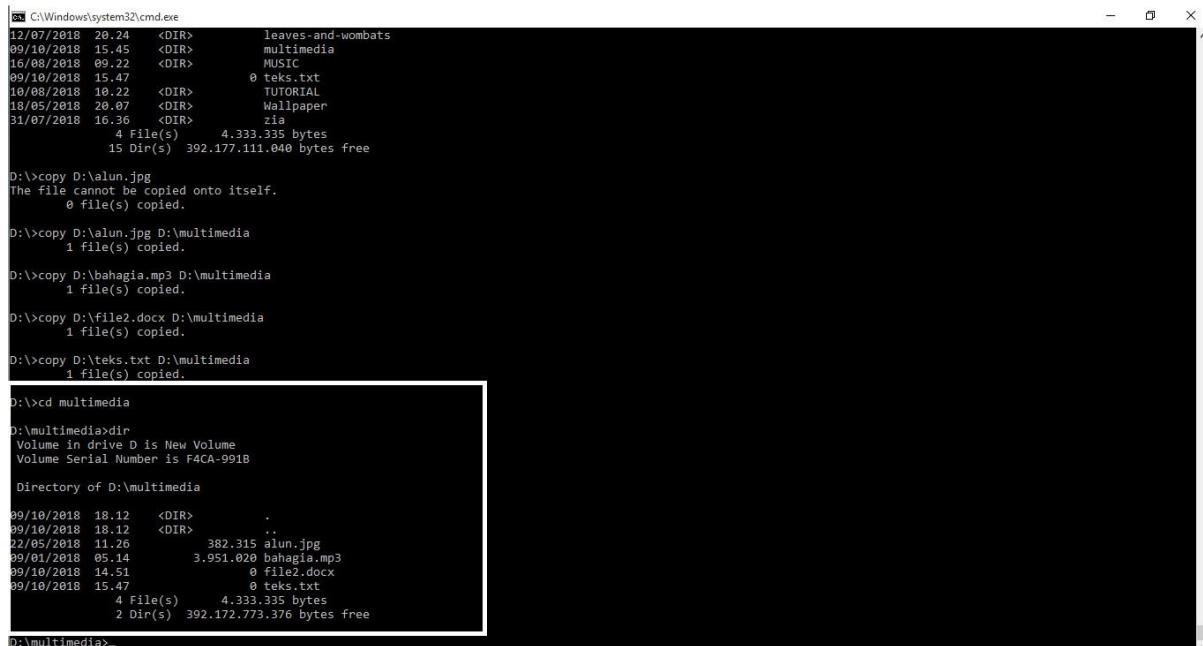
D:\>copy D:\bahagia.mp3 D:\multimedia
      1 file(s) copied.

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

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

D:\>
```

4. Lalu cek pada folder multimedia.



```
C:\Windows\system32\cmd.exe
12/07/2018 20.24 <DIR> leaves-and-wombats
09/16/2018 15.45 <DIR> multimedia
16/08/2018 09.22 <DIR> MUSIC
09/16/2018 15.47 6 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 superreliable. Oleh karena itu, distro ini sangat cocok digunakan untuk server. CentOS sendiri sangat jarang digunakan untuk pemakaian sehari-hari di PC desktop atau laptop pengguna.

- **openSUSE**

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

2. 20 Perintah Dasar Linux

- ls = melihat isi direktori
- mkdir = menciptakan direktori
- cd = mengubah direktori
- rmdir = menghapus direktori
- cat = Menampilkan isi file dan menciptakan file
- cp = Menyalin file
- rm = menghapus file
- mv = mengganti nama file/direktori dan memindahkan file ke direktori lain
- ln = link ke file lain
- lp = Mencetak isi file
- find = mencari file

- chmod = untuk mengubah model akses terhadap file atau direktori
- chgrp = mengubah grup file
- chown = mengubah kepemilikan dari file
- echo = Menampilkan tulisan yang di buat setelah perintah echo dan itu tidak disimpan.
- sort = Mengurutkan suatu file teks menurut abjad.
- cut = Mengambil kolom tertentu dari baris-baris masukannya yang ditentukan pada option -c.
- uniq = Menghilangkan baris – baris berurutan yang mengalami duplikasi.
- locate = Mencari suatu file pada direktori lain yang sedang tidak dikunjungi.
- finger = Melihat informasi user yang telah ditambahkan oleh perintah chfn.

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

1. Init 0 => Digunakan utk maintenance, diagnostic hardware, booting selain dari disk misal dari cdrom. command : init 0, shutdown -i0
2. Init 1 => Single user mode, digunakan utk menambahkan patches, backup/restore system. di level ini kita bisa menjalankan/access semua file tapi user lain tidak bisa login ke dalam 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 diterapakan per user atau per group. jika diterapkan per user maka quota yang diterapkan mutlak milik user tersebut. misal : user Ical memiliki disk quota 5 MB, maka total 5MB tersebut adalah mutlak milik user Ical. jika disk quota diterapkan per group maka kapasitas yang ditetapkan adalah milik bersama group tersebut. misal : user Ical dan RedHat adalah anggota group Linux's. Jika group Linux's diberi quota sebesar 10 MB maka kapasitas tersebut adalah milik user Ical dan RedHat. Jadi misalkan user Ical menggunakan sebanyak 6MB maka masih terdapat 4MB untuk digunakan oleh user RedHat.

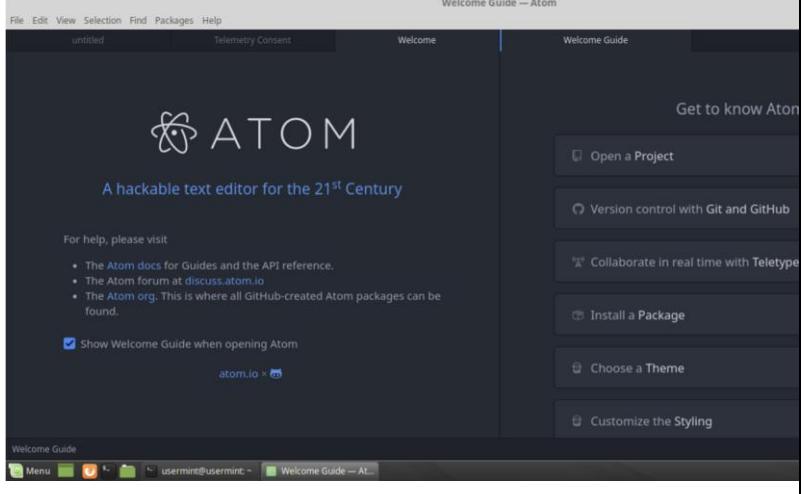
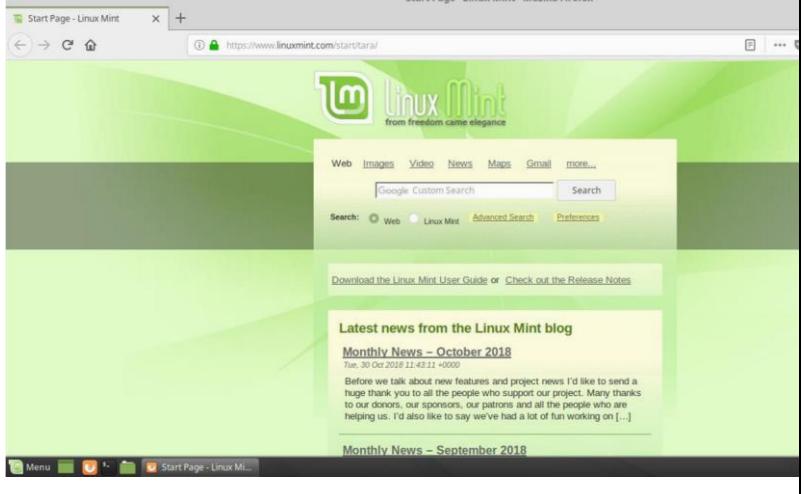
Pembatasan disk quota ditentukan oleh dua kategori yaitu hard limit dan soft limit:

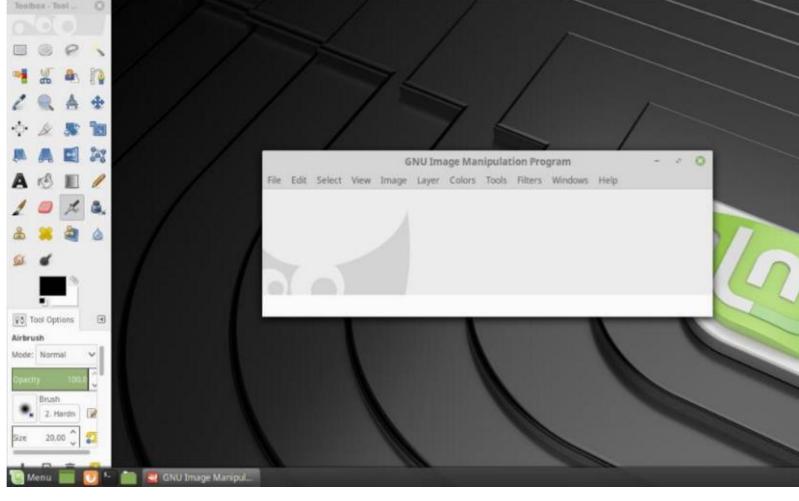
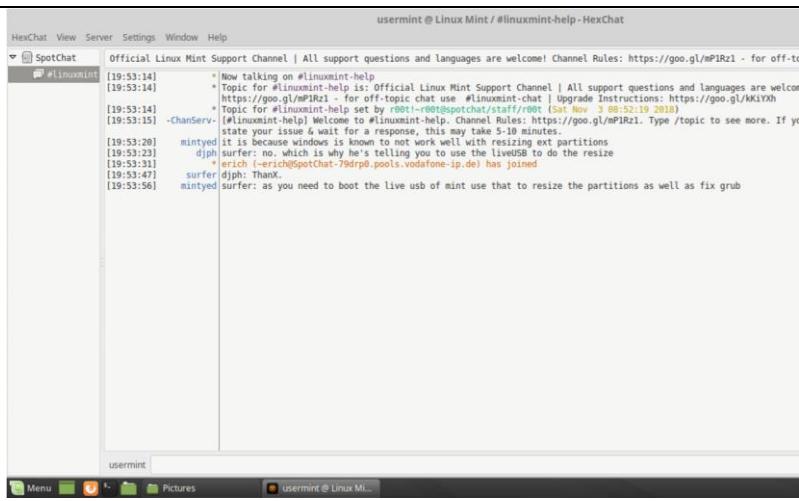
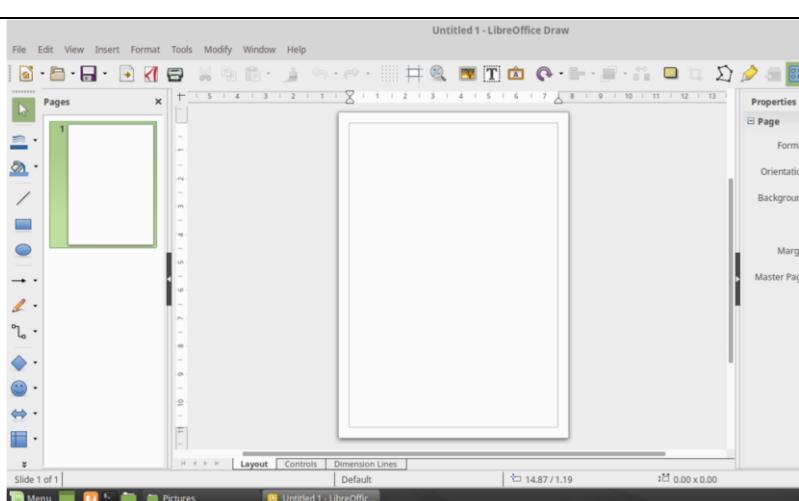
Hard Limit adalah batas yang tidak dapat dilewati. jika user telah mencapai batas hard limit maka user tersebut tidak dapat memasukkan data lagi ke hard disk. Contoh jika user Ical memiliki quota 5 MB dan sudah digunakan 4.9 MB dengan demikian sisanya tinggal 0.1 MB jika kemudian dia mencoba untuk menyimpan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

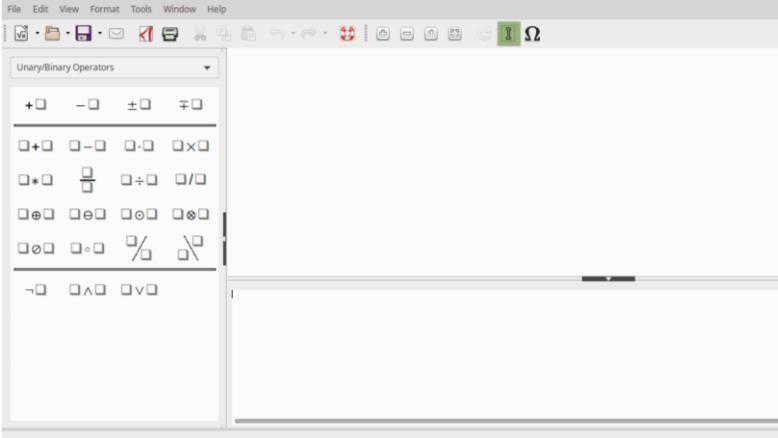
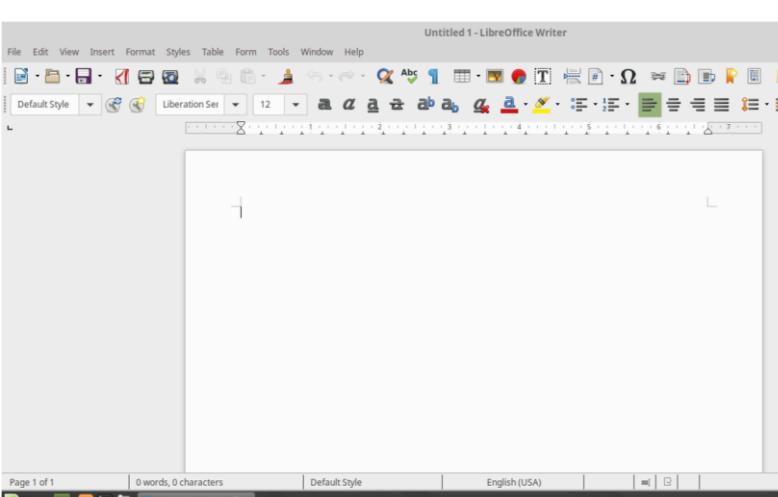
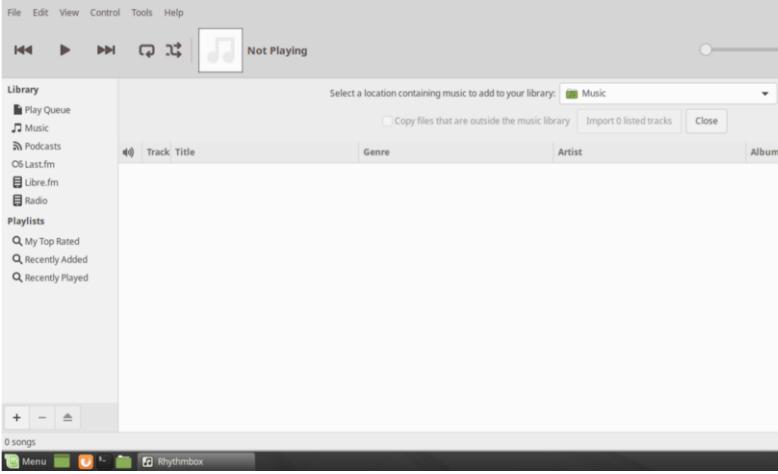
Soft Limit adalah batas yang bisa dilewati. Namun hanya dalam periode tertentu, periode tersebut disebut dengan grace period. Default nilai grace period adalah 7 hari. Umumnya nilai hard limit lebih besar dari soft limit. Untuk lebih jelas perhatikan contoh berikut, misalkan user Ical diberikan soft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

1	Atom		Berfungsi sebagai teks editor.
2	Firefox Web Browser		Sebagai webbrowser atau penjelajah web.
3	Gimp		Berfungsi sebagai aplikasi pengolah gambar.

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

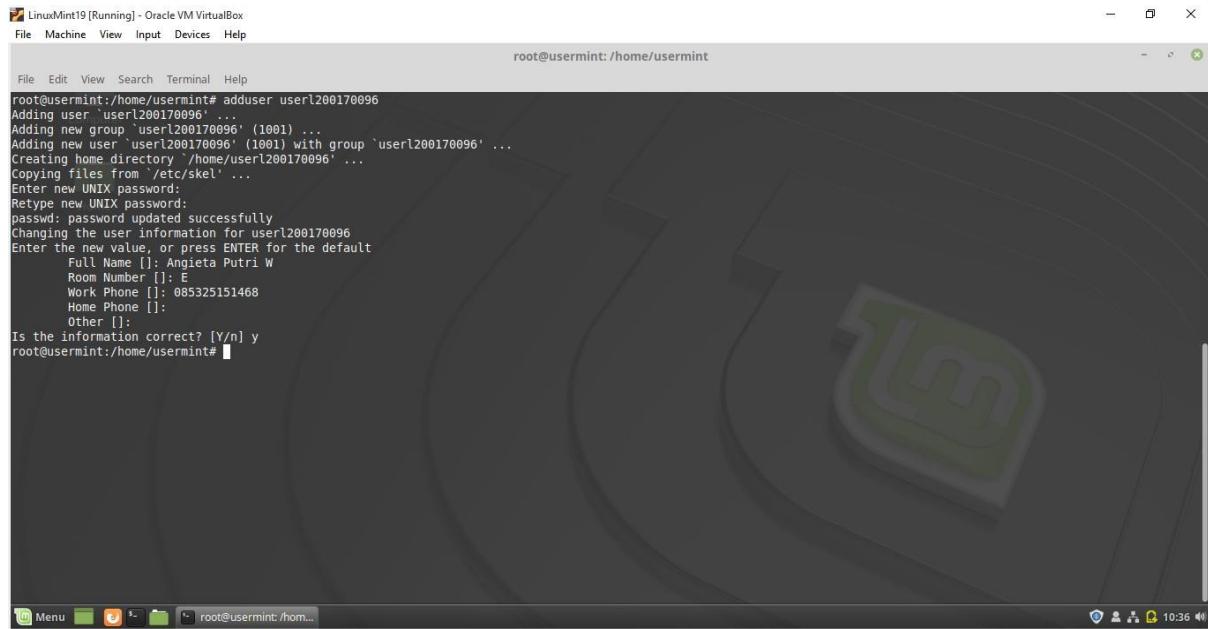
6	LibreOffice Math		<p>Berfungsi sebagai penyunting rumus atau persamaan pada dokumen teks seperti LibreOffice Writer.</p>
7	LibreOffice Writer		<p>Berfungsi sebagai aplikasi pengolah kata.</p>
8	Rhythmbox		<p>Berfungsi sebagai aplikasi pemutar lagu.</p>
9	Thunderbird		<p>Berfungsi sebagai aplikasi klien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

10	VLC Media Player		Berfungsi sebagai aplikasi pemutar berkas multimedia.

MODUL 7

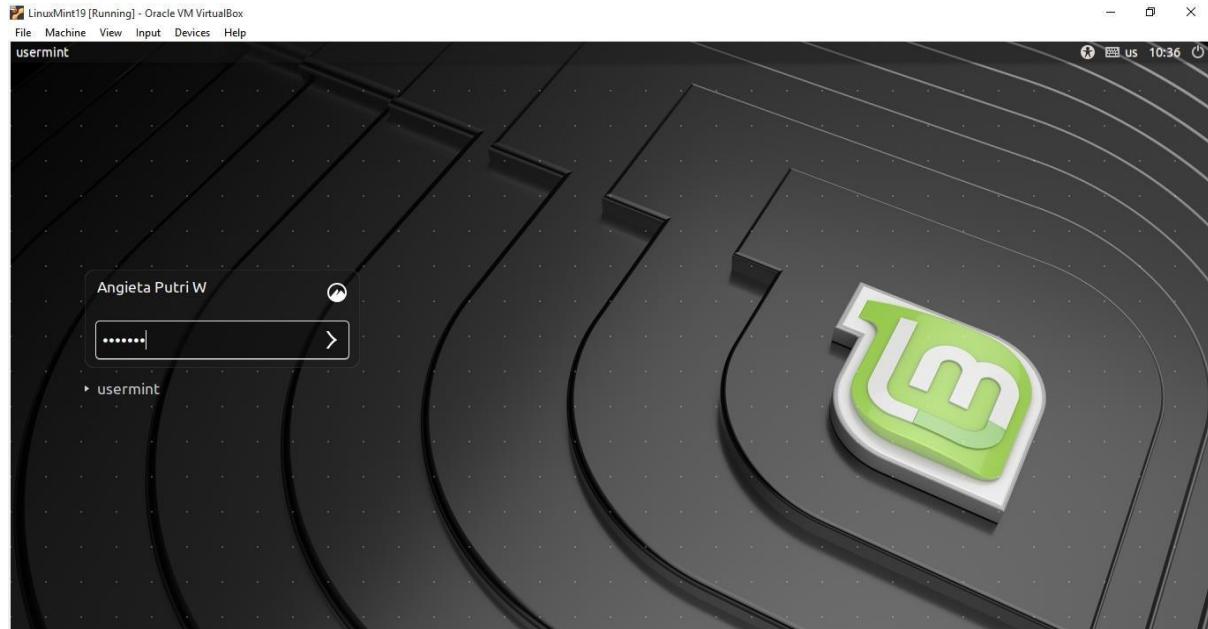
Praktikum 1:

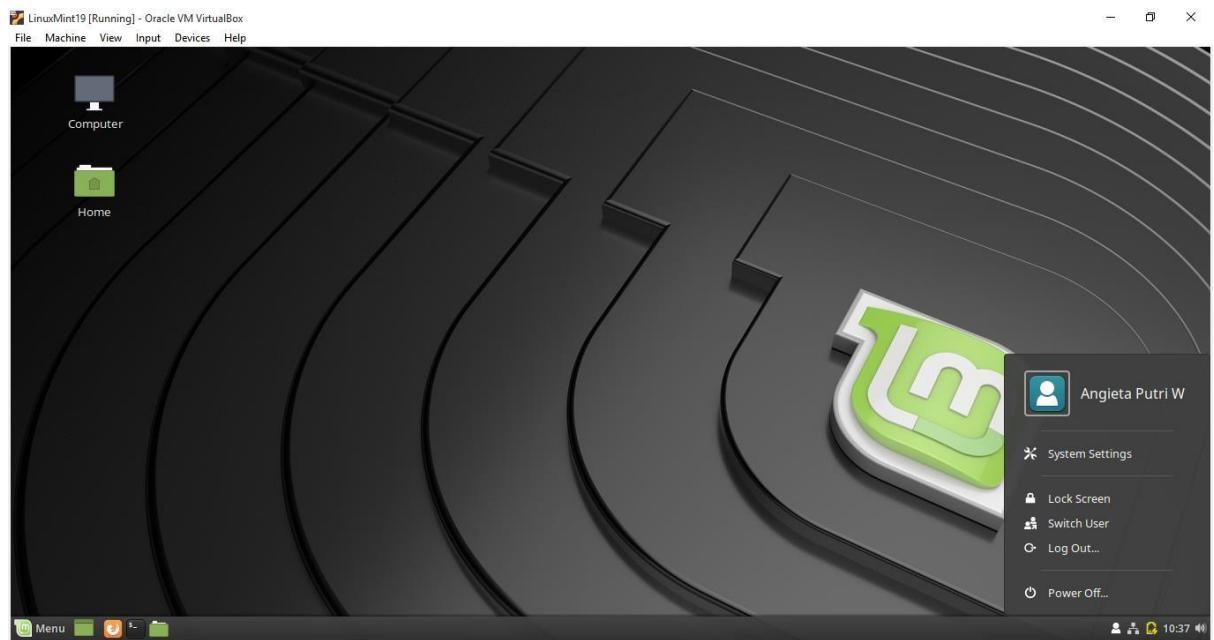
1. Membuat user baru



```
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



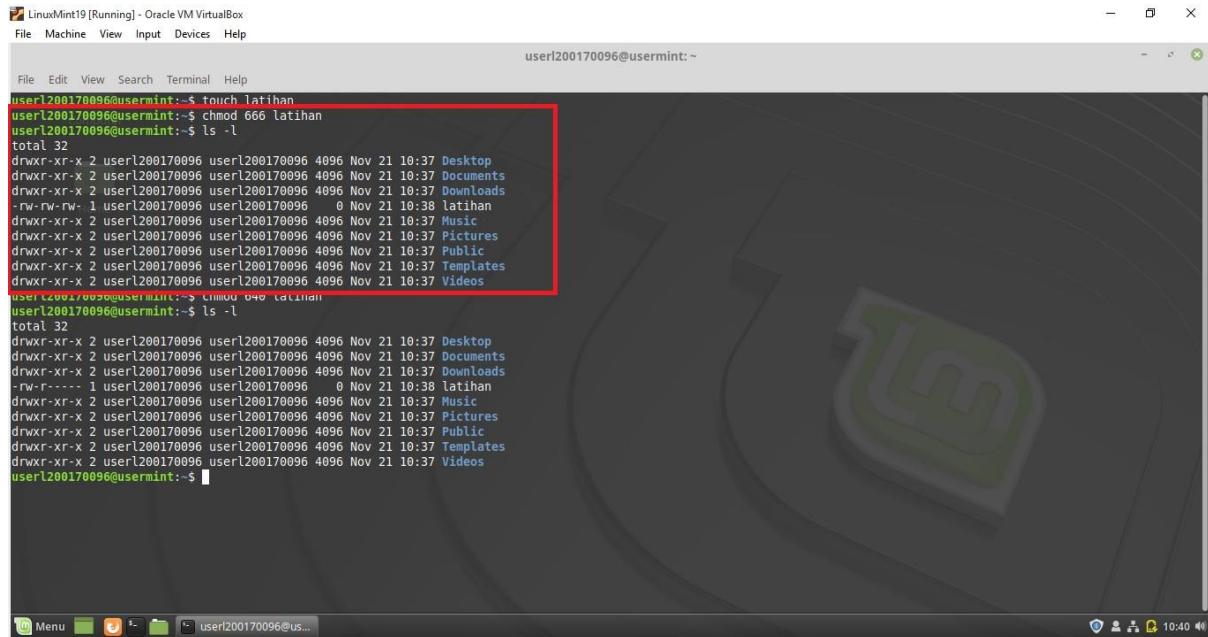


Praktikum 2:

1. Membuat file baru

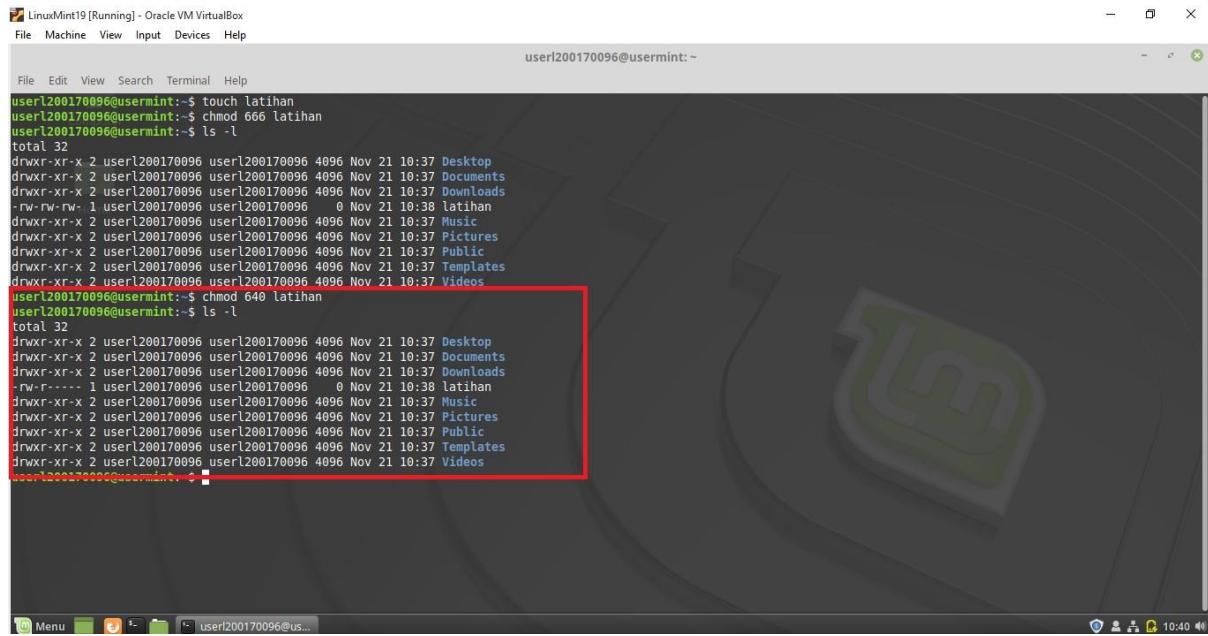
A screenshot of a terminal window titled 'userl200170096@usermint:~'. The window shows the command 'touch latihan' being typed into the input field, which is highlighted with a red rectangle. The terminal also displays the user's name and session information at the top.

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



```
user1@200170096:~$ touch latihan
user1@200170096:~$ chmod 666 latihan
user1@200170096:~$ ls -l
total 32
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Downloads
-rw-rw-rw- 1 user1@200170096 user1@200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Videos
user1@200170096:~$ chmod 644 latihan
user1@200170096:~$ ls -l
total 32
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Downloads
-rw-r--r-- 1 user1@200170096 user1@200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Videos
user1@200170096:~$
```

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



```
user1@200170096:~$ touch latihan
user1@200170096:~$ chmod 660 latihan
user1@200170096:~$ ls -l
total 32
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Downloads
-rw-rw-rw- 1 user1@200170096 user1@200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Videos
user1@200170096:~$ chmod 640 latihan
user1@200170096:~$ ls -l
total 32
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Downloads
-rw-r--r-- 1 user1@200170096 user1@200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user1@200170096 user1@200170096 4096 Nov 21 10:37 Videos
user1@200170096:~$
```

4. Membuat izin akses menjadi execute untuk semua pengguna

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

user@200170096:~

```
File Edit View Search Terminal Help

drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Downloads
drwxr-wr- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Videos
user@200170096:~$ chmod 640 latihan
user@200170096:~$ ls -l
total 32
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Downloads
-rw-r----- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Videos
user@200170096:~$ chmod 111 latihan
user@200170096:~$ ls -l
total 32
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Downloads
drwxr-xr-x 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 userl200170096 userl200170096 4096 Nov 21 10:37 Videos
user@200170096:~$
```

5. Membuat izin akses menjadi write untuk semua pengguna

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

user200170096@usermint: ~

File Edit View Search Terminal Help

```
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Downloads
-rw-r----- 1 user200170096 user200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Videos
user200170096@usermint: $ chmod 111 latihan
user200170096@usermint: $ ls -l
total 32
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Downloads
--x--x--x 1 user200170096 user200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Videos
user200170096@usermint: $ chmod 222 latihan
user200170096@usermint: $ ls -l
total 32
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Desktop
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Documents
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Downloads
--w--w--w 1 user200170096 user200170096 0 Nov 21 10:38 latihan
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Music
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Pictures
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Public
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Templates
drwxr-xr-x 2 user200170096 user200170096 4096 Nov 21 10:37 Videos
user200170096@usermint: ~
```

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
user1200170096@usermint: ~

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
--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: ~
```

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: ~

user1200170096@usermint: ~ chmod 000 latihan
user1200170096@usermint: ~ ls -l latihan
----- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint: ~
```

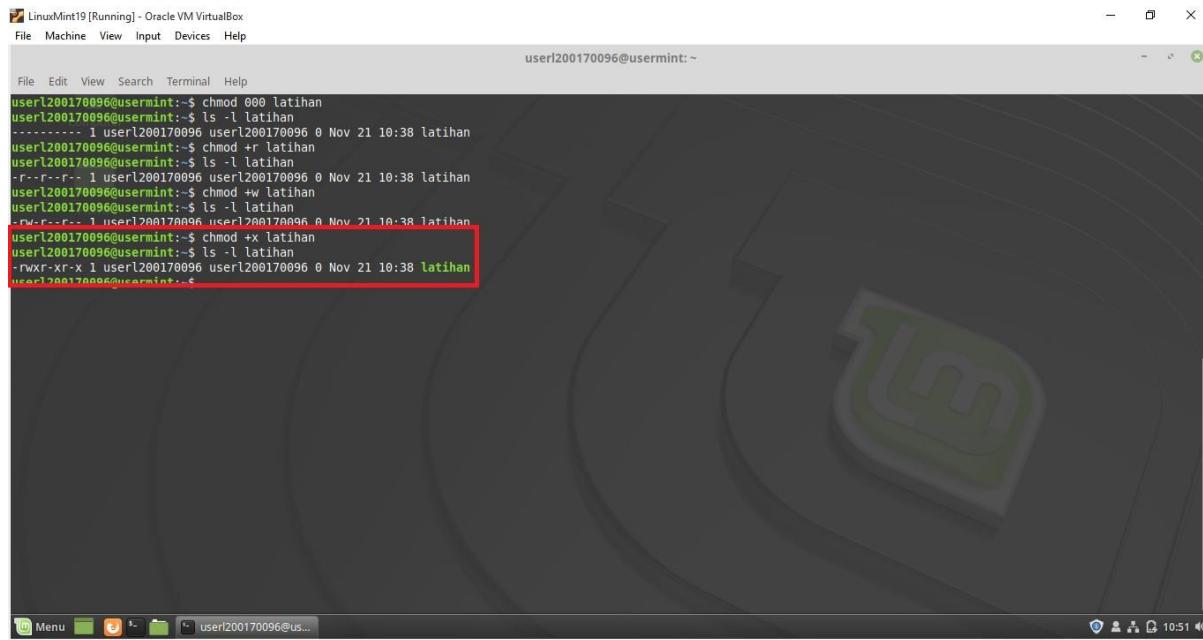
2. Menambah hak akses read

```
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:~$
```

3. Menambahkan hak akses write

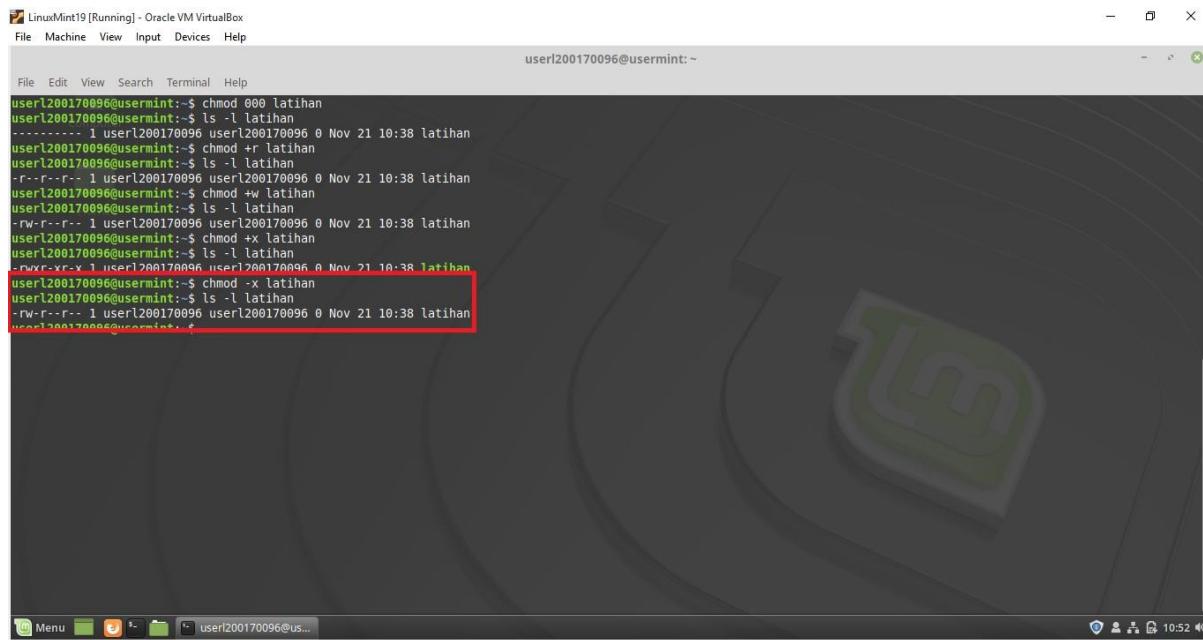
```
userl200170096@usermint:~$ chmod 000 latihan
userl200170096@usermint:~$ ls -l latihan
----- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint:~$ chmod +r latihan
userl200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan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

4. Menambahkan hak akses execute



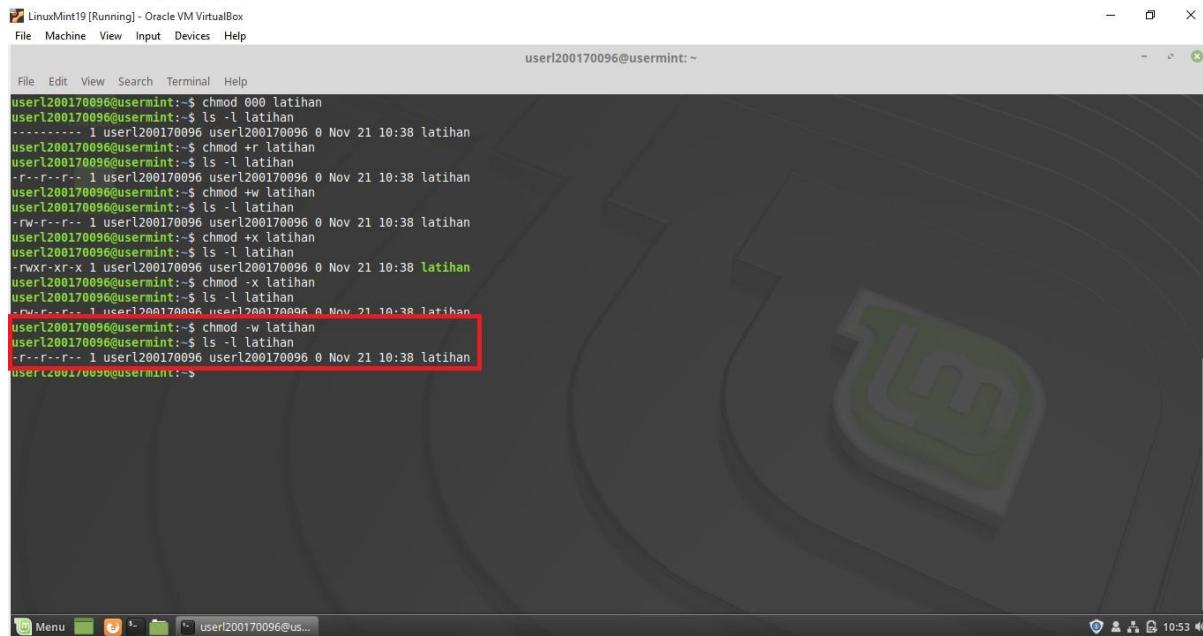
```
LinuxMint19 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
userl200170096@usermint: ~
File Edit View Search Terminal Help
userl200170096@usermint: $ chmod 000 latihan
userl200170096@usermint: $ ls -l latihan
----- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint: $ 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



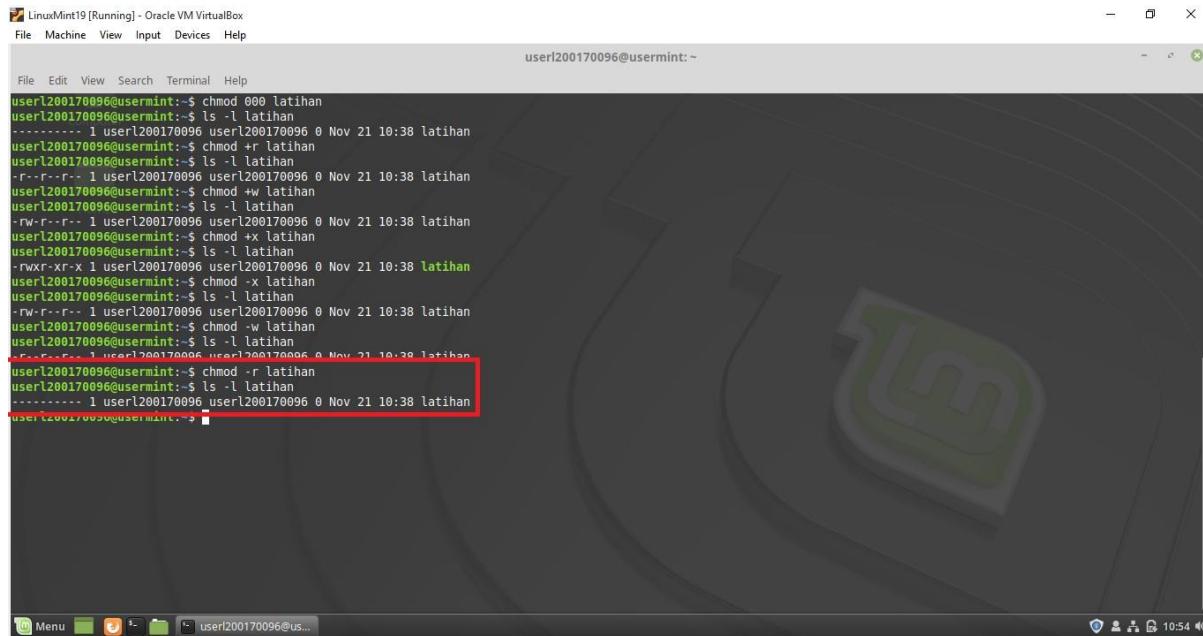
```
LinuxMint19 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
userl200170096@usermint: ~
File Edit View Search Terminal Help
userl200170096@usermint: $ chmod 000 latihan
userl200170096@usermint: $ ls -l latihan
----- 1 userl200170096 userl200170096 0 Nov 21 10:38 latihan
userl200170096@usermint: $ 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



```
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:~$ chmod +r latihan
user1200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$ chmod +w latihan
user1200170096@usermint:~$ ls -l latihan
-rw--r--r-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$ chmod +x latihan
user1200170096@usermint:~$ ls -l latihan
-rwxr-xr-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$ chmod -x latihan
user1200170096@usermint:~$ ls -l latihan
-rw-r--r-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$ chmod -w latihan
user1200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$ chmod -r latihan
user1200170096@usermint:~$ ls -l latihan
----- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$
```

7. Menghilangkan hak akses read



```
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:~$ chmod +r latihan
user1200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$ chmod +w latihan
user1200170096@usermint:~$ ls -l latihan
-rw--r--r-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$ chmod +x latihan
user1200170096@usermint:~$ ls -l latihan
-rwxr-xr-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$ chmod -x latihan
user1200170096@usermint:~$ ls -l latihan
-rw-r--r-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$ chmod -w latihan
user1200170096@usermint:~$ ls -l latihan
-r--r--r-- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$ chmod -r latihan
user1200170096@usermint:~$ ls -l latihan
----- 1 user1200170096 user1200170096 0 Nov 21 10:38 latihan
user1200170096@usermint:~$
```

Praktikum 4

1. Masuk ke bin

A screenshot of a Linux Mint 19 terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The window shows a root shell prompt at "root@usermint: /bin". The command "cd /bin" is entered and highlighted with a red box. The desktop background features the Linux Mint logo.

```
root@usermint:/home/usermint# cd /bin
root@usermint:/bin#
```

2. Membuat file dan sekaligus ketik isi

A screenshot of a Linux Mint 19 terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The window shows a root shell prompt at "root@usermint: /bin". The command "nano infol200170096.sh" is entered and highlighted with a red box. The desktop background features the Linux Mint logo.

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

A screenshot of a Linux Mint 19 terminal window titled "root@usermint:/bin". The window shows the command "infol200170096.sh" being edited with nano 2.9.3. The script contains the following code:

```
#!/bin/sh
WAKTU="Tanggal dan Jam saat ini :\c"
JMLUSER="Jumlah user :\c"
AKU="Status personal :\c"
echo -e "$WAKTU"
date
echo -e "$JMLUSER"
who | wc -l
echo -e "$SAKU"
whoami
exit 0
```

The terminal window has a dark background with a green logo in the center. The bottom bar shows various keyboard shortcuts for text editing.

3. Masukkan perintah logininfo.sh

A screenshot of a Linux Mint 19 terminal window titled "root@usermint:/bin". The window shows the command "infol200170096.sh" being run. The output shows a permission denied error:

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

The error message "Permission denied" is highlighted with a red box. The terminal window has a dark background with a green logo in the center. The bottom bar shows various icons and the time as 11:07.

5. Ubah hak akses

A screenshot of a Linux Mint 19 terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The terminal shows the following command being run:

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

The last line, "bash: /bin/infol200170096.sh: Permission denied", is highlighted with a red box.

6. Lihat hasilnya

A screenshot of a Linux Mint 19 terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The terminal shows the following command being run:

```
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# chmod 777 infol200170096.sh  
root@usermint:/bin# infol200170096.sh  
-etanggal dan Jam saat ini :Wed Nov 21 11:09:31 WIB 2018  
-esJMLUSER come  
2  
-estatus personal :root  
root@usermint:/bin# nano infol200170096.sh  
root@usermint:/bin#
```

The entire command and its output are highlighted with a red box.

MODUL 8

Fork.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 fork.c

```
#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("\nChild process:");
        printf("\nProcess id is %d", getpid());
        printf("\nValue of x is %d", x);
        printf("\nProcess id of parent is %d\n\n", getppid());
    }
    else{
        printf("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());
    }
}
```

[Read 25 lines]

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

root@usermint:/home... 20:38

Menu Right Ctrl

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

root@usermint:/home/usermint#

20:39

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

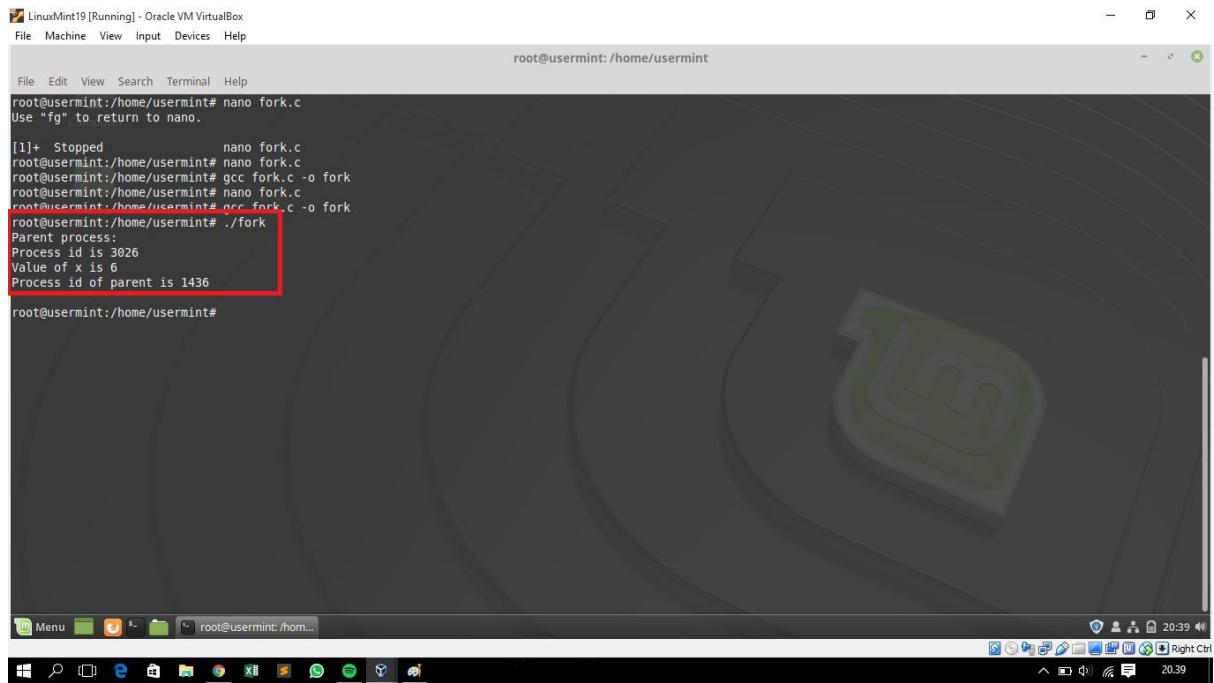
root@usermint:/home/usermint

```
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#
```

root@usermint:/home/usermint#



Wait.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          wait.c

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

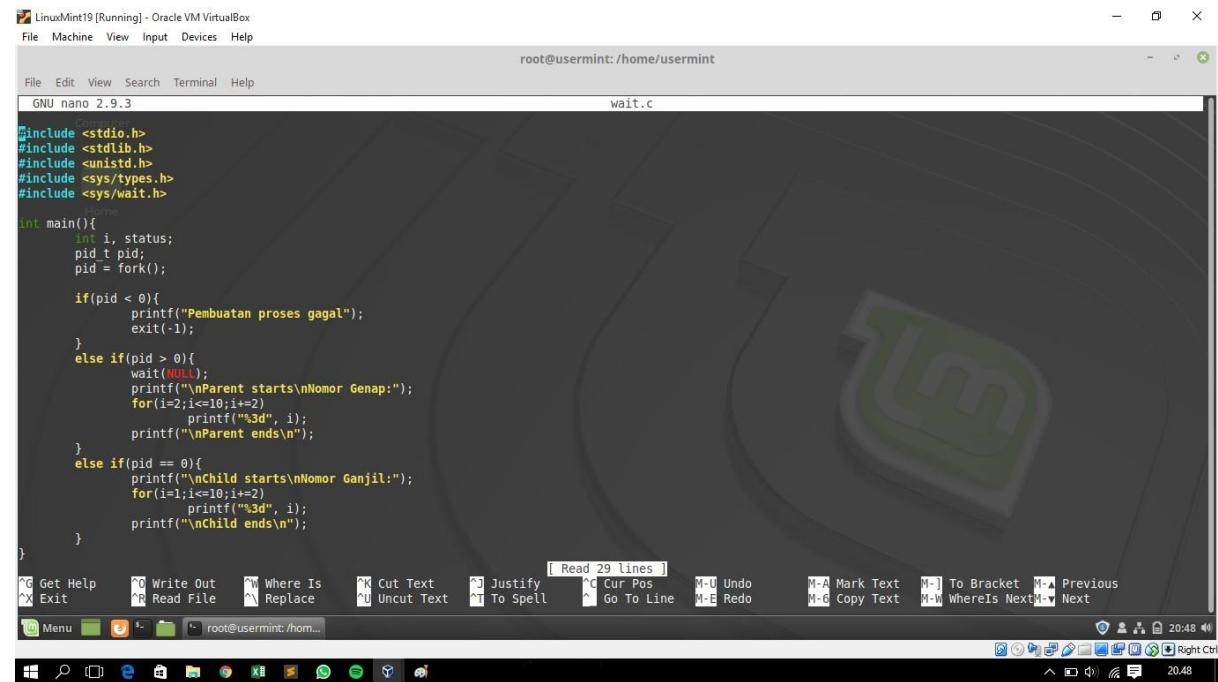
int main(){
    int i, status;
    pid_t pid;
    pid = fork();

    if(pid < 0){
        printf("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");
    }
}
```

[Read 29 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 Next

root@usermint:/home/usermint#



```
[1] 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# gcc wait.c -o wait
root@usermint:/home/usermint# ./wait
root@usermint:/home/usermint# gcc wait.c -o wait
root@usermint:/home/usermint# ./wait
root@usermint:/home/usermint#
```

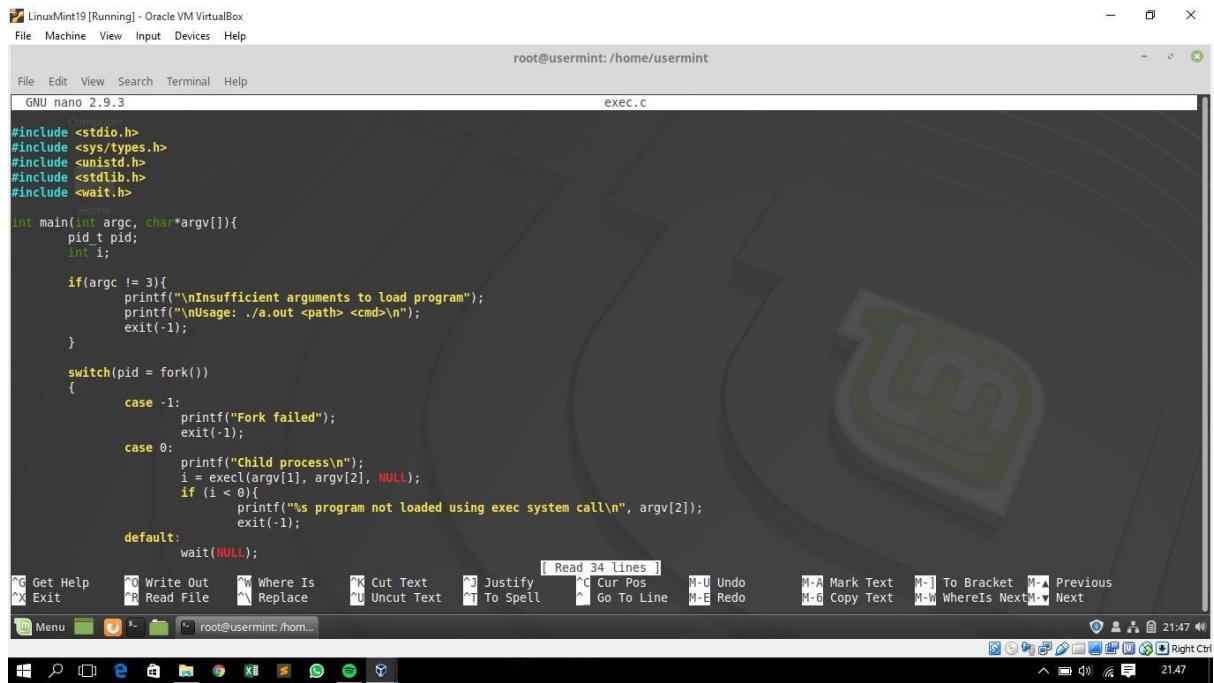
```
[1] LinuxMint19 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@usermint:/home/usermint
File Edit View Search Terminal Help
root@usermint:/home/usermint# ./fork
Parent process:
Process id is 3026
Value of x is 6
Process id of parent is 1436

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
root@usermint:/home/usermint# ./wait
root@usermint:/home/usermint# ./wait
root@usermint:/home/usermint# ./wait
root@usermint:/home/usermint# ./wait

Child starts
Nomor Ganjil: 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 <sys/wait.h>

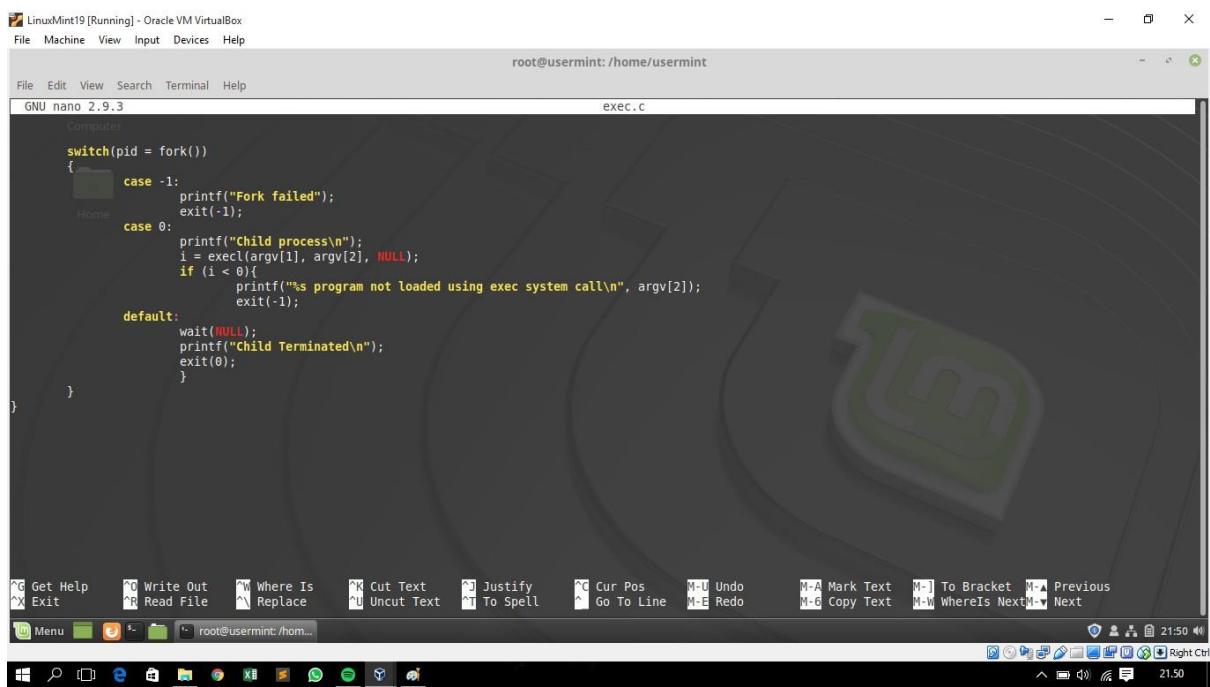
int main(int argc, char*argv[]){
    pid_t pid;
    int i;

    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);
    }
}

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

```



```

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);
}

```

A screenshot of a Linux Mint 19 terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The terminal session is running as root at the command prompt "root@usermint: /home/usermint". The user has entered the following commands:

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

The last command, "gcc exec.c -o exec", is highlighted with a red rectangle.

A screenshot of a Linux Mint 19 terminal window titled "LinuxMint19 [Running] - Oracle VM VirtualBox". The terminal session is running as root at the command prompt "root@usermint: /home/usermint". The user has entered the following commands:

```
usermint@usermint:~$ sudo su
[sudo] password for usermint:
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
```

The command "./a.out /bin/ls" is highlighted with a red rectangle.

Stat.c

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint:/home/usermint

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: %d\n", file.st_blksize);
    printf("Blocks Allocated: %d\n", file.st_blocks);
    printf("Inode no.: %d\n", file.st_ino);
    printf("Last Access: %s", ctime(&(file.st_atime)));
    printf("Last Modified: %s", ctime(&(file.st_mtime)));
    printf("File Size: %d 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( [ Read 43 lines ]
```

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

root@usermint:/hom... 21:52

Menu Right Ctrl

Windows Taskbar: 21:52

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

root@usermint:/home/usermint

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: %d\n", file.st_blksize);
    printf("Blocks Allocated: %d\n", file.st_blocks);
    printf("Inode no.: %d\n", file.st_ino);
    printf("Last Access: %s", ctime(&(file.st_atime)));
    printf("Last Modified: %s", ctime(&(file.st_mtime)));
    printf("File Size: %d 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_IRGRP) ? "r" : "-");
    printf( (file.st_mode & S_IWGRP) ? "w" : "-");
    printf( (file.st_mode & S_IXGRP) ? "x" : "-");
    printf( (file.st_mode & S_IROTH) ? "r" : "-");
    printf( (file.st_mode & S_IWOTH) ? "w" : "-");
    printf( (file.st_mode & S_IXOTH) ? "x" : "-");
    printf("\n");
    if(file.st_mode & S_IFREG)
        printf("File type: Regular\n");
    if(file.st_mode & S_IFDIR)
        printf("File type: Directory\n");
}
```

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

root@usermint:/hom... 21:52

Windows Taskbar: 21:52

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#
```

21:53

Menu Right Ctrl

Windows 21:53

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#
```

21:56

Menu Right Ctrl

Windows 21:56

Dirlist.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 dirlist.c

```
#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);
}
```

[Read 22 lines]

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

root@usermint:/hom... 21:43

Menu Right Ctrl

LinuxMint19 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

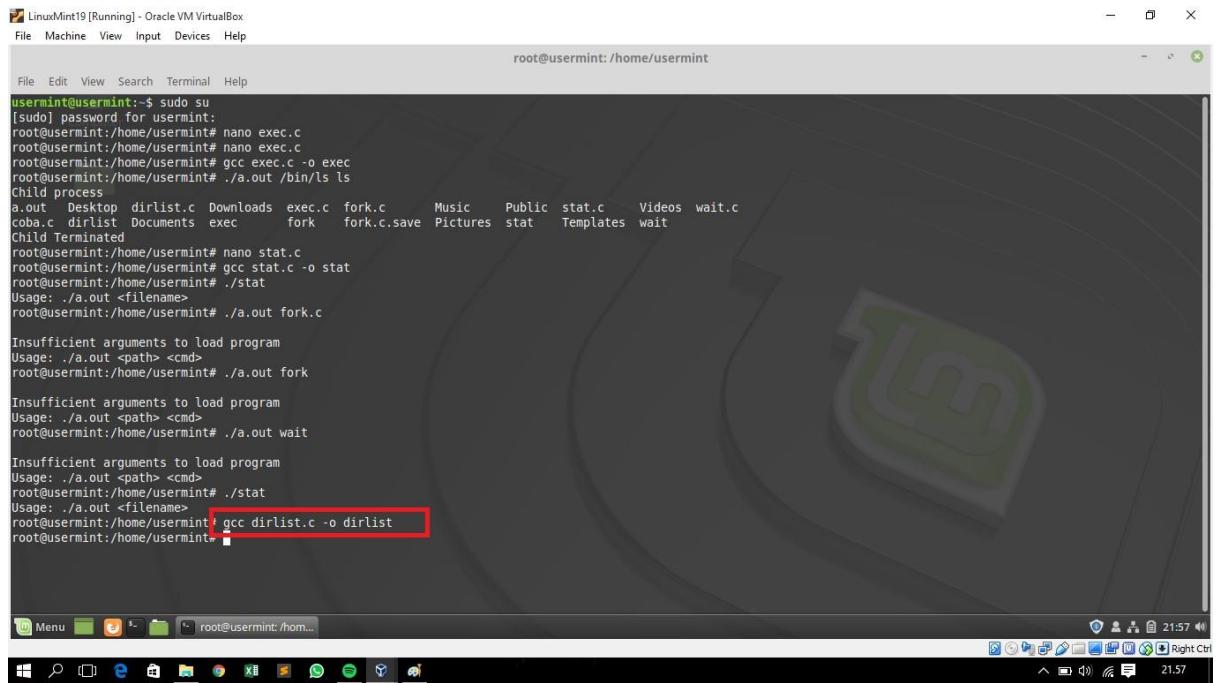
root@usermint:/home/usermint

File Edit View Search Terminal Help

```
exec.c:23:3: warning: missing sentinel in function call [-Wformat=]
    i = exec(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 = exec(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 = exec(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 = exec(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# nano dirlist.c
root@usermint:/home/usermint# gcc dirlist.c -o dirlist
root@usermint:/home/usermint#
```

root@usermint:/hom... 21:43

Menu Right Ctrl



```
root@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# ./exec /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#
```

MODUL 9

FCREATE :

The screenshot shows a terminal window titled "File: fcreate.c" with the following content:

```
#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);
}
```

Below the code, there is a series of keyboard shortcuts:

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

The screenshot shows a terminal window with the following session:

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

FREAD :

The screenshot shows a terminal window titled "File: fread.c". The window title bar includes the date and time: "Wed, 28 Nov 2018 13:56". The menu bar has options: File, Edit, View, Search, Terminal, Help. The status bar at the bottom right says "jarkom@lab-jarkom: ~". The main area contains the C code for a file reading program:

```
#include <unistd.h>
#include <stdio.h>
#include <stdlib.h>
#include <fncl.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);
}
```

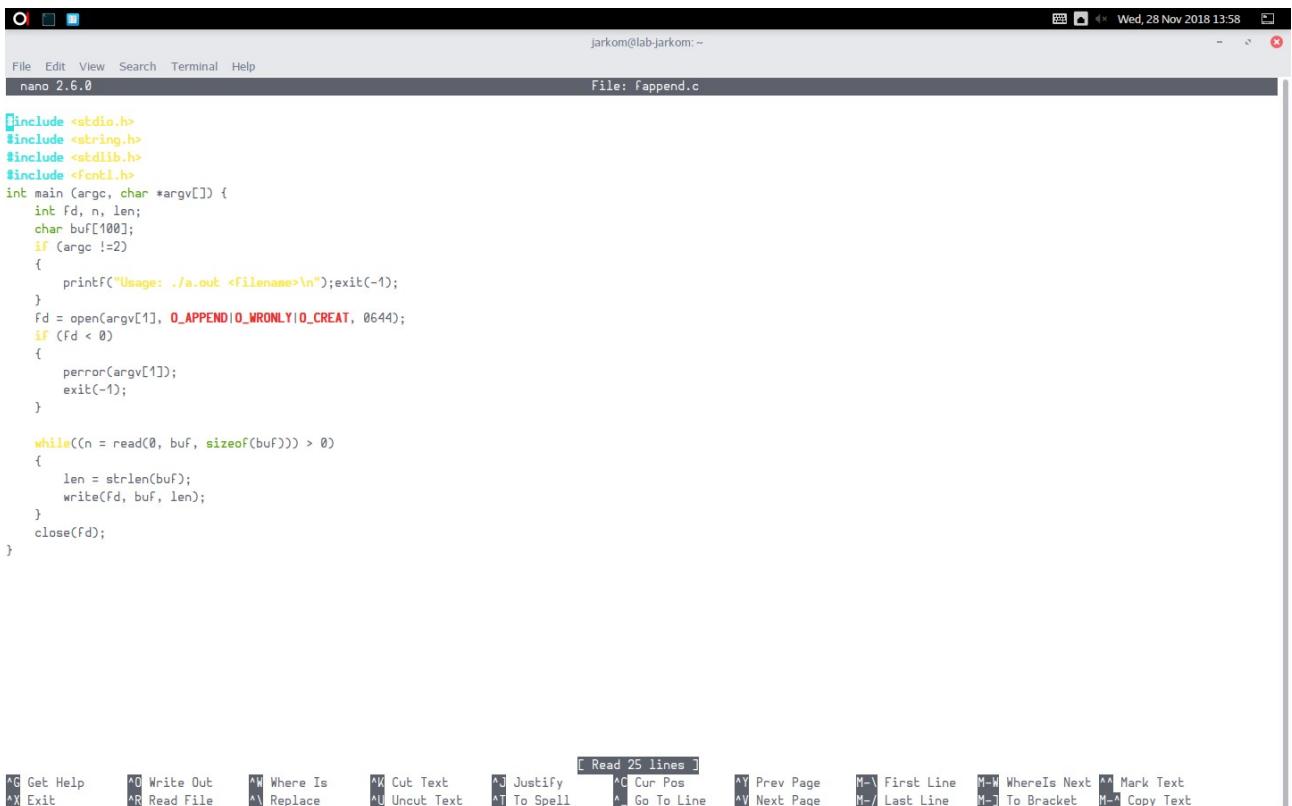
Below the code, a series of keyboard shortcuts are listed:

- ^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
- ^A Mark Text
- ^X Exit
- ^R Read File
- ^X Replace
- ^U Uncut Text
- ^T To Spell
- ^L Go To Line
- ^V Next Page
- M-/ Last Line
- M-] To Bracket
- M-H Copy Text

The screenshot shows a terminal window with the command "jarkom@lab-jarkom:~\$./fread test.txt" entered. The output is "Isi dari file test.txt adalah : HELLO WORD". The status bar at the bottom right says "jarkom@lab-jarkom: ~".

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

FAPPEND:



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

^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 **^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-]** To Bracket **M-H** Copy Text

MODUL 10

1. List.c

GNU nano 2.9.3

```
#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]->name[0] != '.')
                printf("%-20s", nameList[i]->name);
}
```

Get Help Write Out Where Is Cut Text Justify Cur Pos Undo Mark Text To Bracket Previous
X Exit Read File Replace Uncut Text To Spell Go To Line Redo Copy Text WhereIs Next Next
Menu root@usermint:/home/... 15:48

```
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
Desktop Documents Downloads Music Pictures Public Templates Videos a.out
exec angjeta.txt coba.c copy copy.c fork del fork.c fork.c.dirlist fork.c.save list dirlist.c list
.c mygrep mygrep.c stat stat.c wait wait.c
total 172
-rw-r--r-- 1 root root 15 Dec 5 09:26 angjeta.txt
-rw-r--r-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
-rwxrwxrwx 1 usermint usermint 316 Dec 4 23:08 del.c
drwxr-xr-x 2 usermint usermint 4096 Nov 13 19:32 Desktop
-rw-r--r-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--r-x 1 root root 7340 Nov 27 21:58 exec
-rw-r--r-- 1 root root 626 Nov 27 09:20 exec.c
-rw-r--r-x 1 root root 7466 Dec 5 09:24 fcreate
-rw-r--r-- 1 root root 514 Dec 5 09:22 fcreate.c
-rw-r--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-xr-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[30];

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

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

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

Get Help   W Write Out   W Where Is   W Cut Text   J Justify   C Cur Pos   M-U Undo   M-A Mark Text   M-J To Bracket   M-P Previous
X Exit   R Read File   R Replace   U Uncut Text   T To Spell   G Go To Line   M-E Redo   M-C Copy Text   M-W WhereIs Next...   M-N Next
Menu   root@usermint:/home...
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:~$ ls
Desktop  Documents  Downloads  exec  fcreate  fork  fork.c  fork.c.save  list  list.c  Music  Templates  Untitled Document'  Videos  wait  wait.c
Desktop  Documents  Downloads  exec  fcreate  fork  fork.c  fork.c.save  list  list.c  Music  Templates  Untitled Document'  Videos  wait  wait.c
drwxrwxrwx 1 usermint usermint 316 Dec  4 23:08 del.c
drwxr-xr-x 2 usermint usermint 4096 Nov 13 19:32 Desktop
drwxr-xr-x 1 root      root    7352 Nov 27 21:57 dirlist
drwxr-xr-x 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
drwxr-xr-x 1 root      root    7348 Nov 27 21:50 exec
drwxr-xr-x 1 root      root    620 Nov 27 09:20 exec.c
drwxr-xr-x 1 root      root    7460 Dec  5 09:24 fcreate
drwxr-xr-x 1 root      root    514 Dec  3 09:22 fcreate.c
drwxr-xr-x 1 root      root    7288 Nov 26 20:39 fork
drwxr-xr-x 1 root      root    589 Nov 26 20:37 fork.c
drwxr-xr-x 1 root      root    377 Nov 26 22:11 fork.c.save
drwxr-xr-x 1 root      root    7400 Dec 11 15:49 list
drwxrwxrwx 1 usermint usermint 314 Dec  4 23:08 list.c
drwxr-xr-x 2 usermint usermint 4096 Nov 13 19:32 Music
drwxr-xr-x 1 root      root    7496 Dec 11 15:51 mygrep
drwxrwxrwx 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
drwxr-xr-x 1 root      root    7504 Nov 27 21:53 stat
drwxr-xr-x 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    7368 Nov 26 20:48 wait
-rw-r-r-- 1 root      root    586 Nov 26 20:48 wait.c
root@usermint:/home/usermint# ./mygrep
Usage: gcc mygrep.c -o 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# 
```

3.

Copy.c

```
GNU nano 2.9.3
[ Read 31 lines ]
copy.c

#include <Computer.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);
}
M-A Mark Text M-B To Bracket M-C Previous
M-G Get Help M-D Write Out M-W Where Is M-E Undo
^X Exit M-R Read File M-U Uncut Text M-C Cur Pos M-F Redo
M-Z Replace M-T To Spell M-G Go To Line M-V Next
[ Read 31 lines ]
[ Read 31 lines ]
```

```
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);
    ^
    pclose
root@usermint:/home/usermint#
```

```
usermint@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 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 176
-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
-rw-r--r-- 1 root      root      734 Nov 27 09:31 coba.c
-rwxr-xr-x 1 root      root      7492 Dec 11 15:53 copy
-rwxrwxrwx 1 usermint usermint 619 Dec  4 23:08 copy.c
-rwxr-xr-x 1 root      root      7344 Dec 11 15:55 del
-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

```
GNU nano 2.9.3                                     del.c
#include <stdio.h>
#include <stdlib.h>
#include <fcntl.h>

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

[G Get Help   W Write Out   W Where Is   C Cut Text   J Justify   C Cur Pos   M-U Undo
X Exit      R Read File   Replace   Uncut Text   T To Spell   G Go To Line   M-E Redo
M-A Mark Text   M-J To Bracket   M-P Previous
M-C Copy Text   M-W WhereIs Next   M-V Next
Menu   root@usermint:/home...
File Edit View Search terminal Help
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: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# [redacted]
File Edit view Search terminal Help
-rw-r--r-- 1 root root 586 Nov 26 20:48 wait.c
root@usermint:/home/usermint# ./del
Usage: gcc del.c -o del
Usage: ./del filename
root@usermint:/home/usermint# ./del angietabaru.txt
root@usermint:/home/usermint# ls -l
ls: command not found
root@usermint:/home/usermint# ls -l
total 172
-r--r--r-- 1 root root 15 Dec 5 09:26 angietabaru.txt
-rw-r--r-- 1 root root 7340 Nov 27 09:21 a.out
-rw-r--r-- 1 root root 279 Nov 27 09:21 coal.c
-rwxr-xr-x 1 root root 7492 Dec 11 15:53 copy
-rwxrwxrwx 1 usermint usermint 619 Dec 4 23:08 copy.c
-rwxr-xr-x 1 root root 7344 Dec 11 15:55 del
-rwxrwxrwx 1 usermint usermint 316 Dec 4 23:08 del.c
drwxr-xr-x 2 usermint usermint 409 Nov 13 19:32 Desktop
-rwxr-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 409 Nov 13 19:32 Documents
drwxr-xr-x 2 usermint usermint 409 Nov 13 19:32 Downloads
-rwxr-xr-x 1 root root 7340 Nov 27 21:50 exec
-rw-r--r-- 1 root root 620 Nov 27 09:20 exec.c
-rwxr-xr-x 1 root root 7466 Dec 5 09:24 fcreate
-rw-r--r-- 1 root root 514 Dec 5 09:22 fcreate.c
-rwxr-xr-x 1 root root 7280 Nov 26 20:39 fork
```

5.