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Kelas : C

MODUL 2

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.18362.356]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\pasha>cd ../../

C:\>cd os

C:\OS>setpath

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

C:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is 5C05-6FAD

Directory of C:\OS\LAB\LAB2

03/09/2015  13:42    <DIR>        .
03/09/2015  13:42    <DIR>        ..
15/12/2008  16:18                1,625 bochsrc.bxrc
15/12/2008  17:57                15,923 boot.asm
15/12/2008  13:52                 78 dosfp.bat
15/12/2008  17:57                7,966 kernel.asm
15/12/2008  16:21                 228 Makefile
15/12/2008  12:20                 44 s.bat
               6 File(s)          25,864 bytes
               2 Dir(s)  53,172,404,224 bytes free

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

```
Command Prompt

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

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

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

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

Writing: [] Done.

I wrote 1474560 bytes to floppy.img.

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

Press any key to continue

C:\OS\LAB\LAB2>dir
Volume in drive C is OS
Volume Serial Number is F856-5902

Directory of C:\OS\LAB\LAB2

09/30/2019  01:04 PM    <DIR>        .
09/30/2019  01:04 PM    <DIR>        ..
12/15/2008  04:18 PM                1,625 bochsrc.bxrc
12/15/2008  05:57 PM                15,923 boot.asm
```

```
Command Prompt
C:\OS\LAB\LAB2>dir
Volume in drive C is OS
Volume Serial Number is F856-5902

Directory of C:\OS\LAB\LAB2

09/30/2019  01:04 PM  <DIR>          .
09/30/2019  01:04 PM  <DIR>          ..
12/15/2008  04:18 PM               1,625 bochsrc.bxrc
12/15/2008  05:57 PM               15,923 boot.asm
12/15/2008  01:52 PM                78 dosfp.bat
09/30/2019  01:04 PM          1,474,560 floppy.img
12/15/2008  05:57 PM             7,966 kernel.asm
12/15/2008  04:21 PM                228 Makefile
12/15/2008  12:20 PM                 44 s.bat
              7 File(s)          1,500,424 bytes
              2 Dir(s)          79,717,933,056 bytes free

C:\OS\LAB\LAB2>dos fp
'dos' is not recognized as an internal or external command,
operable program or batch file.

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"

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

```
Bochs for Windows - Console
09/30/2019  01:04 PM          1,474,560 floppy.img
12/15/2008  05:57 PM             7,966 kernel.asm
12/15/2008  04:21 PM                228 Makefile
12/15/2008  12:20 PM                 44 s.bat
              7 File(s)          1,500,424 bytes
              2 Dir(s)          79,717,933,056 bytes free

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operable program or batch file.

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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"

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
```

Bochs for Windows - Display

Plx06/Bochs UGA Bios 0.6a 19 Aug 2006
This UGA/UBE Bios is released under the GNU LGPL

Please visit :
 <http://bochs.sourceforge.net>
 <http://www.nongnu.org/ugabios>

Bochs UBE Display Adapter enabled

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

Booting from Floppy...
Starting BootCD.....

Microsoft(R) MS-DOS 7.1
(C)Copyright Microsoft Corp 1981-1999.

A:\>_

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

```
Command Prompt

C:\OS\LAB\LAB2>dos fp
'dos' is not recognized as an internal or external command,
operable program or batch file.

C:\OS\LAB\LAB2>dosfp

C:\OS\LAB\LAB2>cd "..\..\Bochs-2.3.5\dos"

C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
0000000000i[APIC?] local apic in  initializing
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0000000000i[      ] reading configuration from bochsrc2.txt
0000000000i[      ] installing win32 module as the Bochs GUI
0000000000i[      ] using log file bochsout.txt
# In bx_win32_gui_c::exit(void)!
=====
Bochs is exiting with the following message:
[WGUI ] POWER button turned off.
=====

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

C:\OS\LAB\LAB2>S

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

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

```
Bochs for Windows - Console

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

```
Bochs for Windows - Display

Flex86/Bochs VGABios 0.6a 19 Aug 2006
This UGA/VBE Bios is released under the GNU LGPL

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

Bochs VBE Display Adapter enabled

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

Booting from Floppy...

Loading kernel ver 0.01
.....
ERROR : Press Any Key to Reboot_

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

```
Command Prompt
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 cop
1+0 records in
1+0 records out

C:\OS\LAB\LAB2>S

C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -q -f
00000000000i[APIC?] local apic in initializ
=====
Bochs x86 Emulator 2.
Build from CVS snapshot, on Sept
=====
00000000000i[ ] reading configuration fr
00000000000i[ ] installing win32 module
00000000000i[ ] using log file bochs.log
# In bx_win32_gui c::exit(void)!
=====
Bochs is exiting with the following message:
[VGUI ] POWER button turned off.
=====

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

boot.asm - Notepad
File Edit Format View Help
; perintah 'dir' akan menampilkan 'KERNEL.BIN'
;=====
ImageName db "KERNEL BIN"
;=====
; Teks yang akan ditampilkan saat mulai proses
; BOOT : Loading kernel ver 0.01
; Di awali dan diakhiri dengan tanda :
; -- 0x0D akhir baris
; -- 0x0A baris baru
; -- 0x00 Karakter 'NULL' pembatas dengan data di bawahnya
;=====
msgLoading db 0x0D, 0x0A, "Belajar membuat BOOTSTRAP-
LOADER", 0x0D, 0x0A, 0x00
msgCRLF db 0x0D, 0x0A, 0x00
msgProgress db ".", 0x00
;=====
; Teks yang di tampilkan saat terjadi kesalahan BOOT
;=====
msgFailure db 0x0D, 0x0A, "ERROR : Press Any Key to Reboot", 0x00
;=====
```

```
Command Prompt
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:
[VGUI ] POWER button turned off.
=====

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

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

C:\OS\LAB\LAB2>Make fp.disk
nasm boot.asm -o boot.bin -f bin
boot.asm:331: error: TIMES value -13 is negative
Make: *** [boot] Error 1

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
boot.asm:331: error: TIMES value -13 is negative
make: *** [boot] Error 1

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
boot.asm:331: error: TIMES value -13 is negative
```

```
Command Prompt

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

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

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

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
boot.asm:318: warning: unterminated string
boot.asm:318: error: expression syntax error
boot.asm:319: warning: unterminated string
boot.asm:319: error: parser: instruction expected
make: *** [boot] Error 1

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>
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1+0 records in
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C:\OS\LAB\LAB2>
```

```
Bochs for Windows - Console

0000000000i[      ] reading configuration from bochsrc.bxrc
0000000000i[      ] installing win32 module as the Bochs GUI
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# In bx_win32_gui_c::exit(void)!
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Bochs is exiting with the following message:
[VGUI ] POWER button turned off.
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C:\OS\LAB\LAB2>notepad boot.asm

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

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
boot.asm:318: warning: unterminated string
boot.asm:318: error: expression syntax error
boot.asm:319: warning: unterminated string
boot.asm:319: error: parser: instruction expected
make: *** [boot] Error 1

C:\OS\LAB\LAB2>make fp.disk
nasm boot.asm -o boot.bin -f bin
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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>boot.asm

C:\OS\LAB\LAB2>s

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

Bochs for Windows - Display

Flex86/Bochs VGABios 0.6a 19 Aug 2006
This VGA/VE Bios is released under the GNU LGPL

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

Bochs VBE Display Adapter enabled

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

Booting from Floppy...

Belajar membuat BOOTSTAP-LOADER
.....
Ulang Ulang!_

CTRL + 3rd button enables mouse Alt NUM CAPS SCRL


```
Command Prompt
C:\OS\LAB\LAB2>boot.asm

C:\OS\LAB\LAB2>s

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

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

C:\OS\LAB\LAB2>dir
Volume in drive C is OS
Volume Serial Number is F856-5902

Directory of C:\OS\LAB\LAB2

09/30/2019  02:37 PM  <DIR>          .
09/30/2019  02:37 PM  <DIR>          ..
09/30/2019  02:37 PM                10,192 bochs.log
12/15/2008  04:18 PM                1,625 bochsrc.bxrc
09/30/2019  02:35 PM                15,911 boot.asm
09/30/2019  02:35 PM                 512 boot.bin
12/15/2008  01:52 PM                 78 dosfp.bat
09/30/2019  02:35 PM            1,474,560 floppy.img
12/15/2008  05:57 PM                 7,966 kernel.asm
09/30/2019  02:37 PM                 611 kernel.bin
12/15/2008  04:21 PM                 228 Makefile
12/15/2008  12:20 PM                  44 s.bat
               10 File(s)            1,511,727 bytes
               2 Dir(s)          79,701,372,928 bytes free

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

```
Bochs for Windows - Console
09/30/2019  02:37 PM  <DIR>          .
09/30/2019  02:37 PM  <DIR>          ..
09/30/2019  02:37 PM                10,192 bochs.log
12/15/2008  04:18 PM                1,625 bochsrc.bxrc
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C:\OS\LAB\LAB2>s

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Bochs for Windows - Display

Plex06/Bochs VGABios 0.6a 19 Aug 2006
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Please visit :
. <http://bochs.sourceforge.net>
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Bochs VBE Display Adapter enabled

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

Booting from Floppy...

Belajar membuat BOOTSTAP-LOADER

.....

..

Welcome to MY KERNEL Ver 0.01

MY KERNEL>_

CTRL + 3rd button enables mouse Alt NUM CAPS SCRL

Bochs for Windows - Console

```
=====
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:
[VGUI ] POWER button turned off.
=====

C:\OS\LAB\LAB2>s

C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
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=====
                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:
[VGUI ] POWER button turned off.
=====

C:\OS\LAB\LAB2>Notepad kernel.asm

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

C:\OS\LAB\LAB2>s

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

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\$Revision: 1.183 \$ \$Date: 2007/09/10 20:00:29 \$
Options: apmbios pcibios eltorito rombios32

Booting from Floppy...

Belajar membuat BOOTSTAP-LOADER
.....
.....

Belajar membuat KERNEL
MY KERNEL\$>_

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