

LAPORAN PRAKTIKUM

SISTEM OPERASI



Oleh:
Diyasti Fadilah Zahra
L200210231
Kelas E

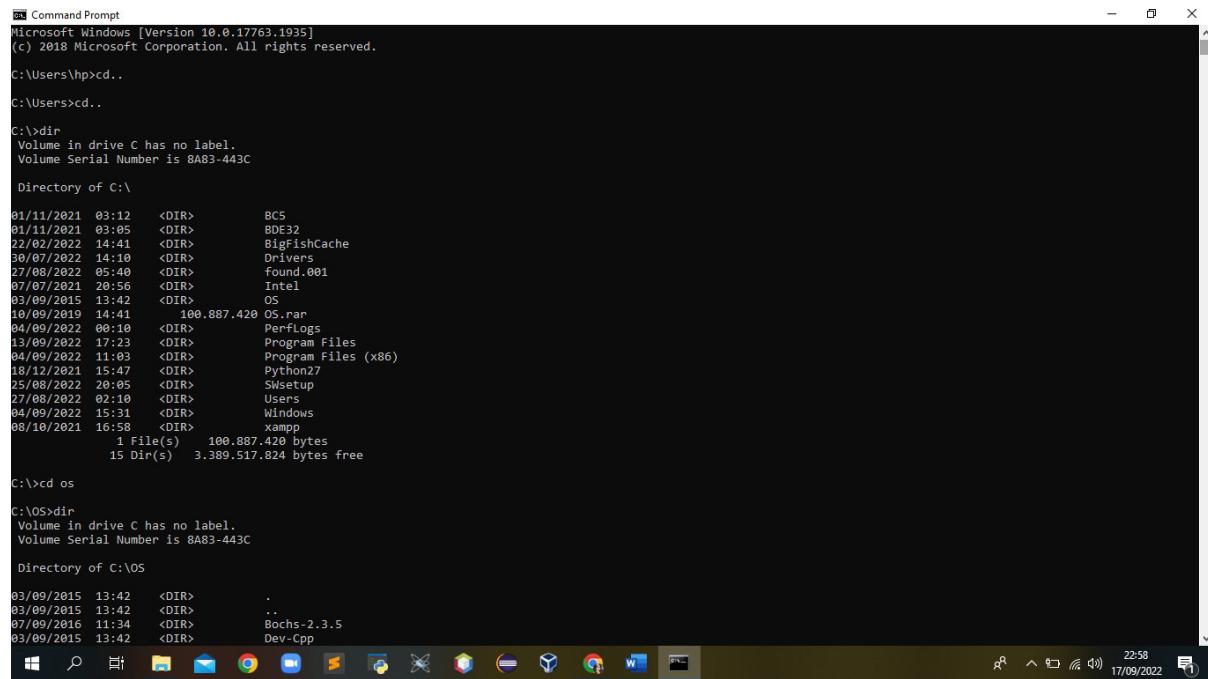
UNIVERSITAS MUHAMMADIYAH SURAKARTA
TAHUN
AJARAN 2021/2022

Lembar Kerja Praktikum

Pengenalan Sistem Pengembangan OS dengan PC Simulator 'Bochs'

Langkah - langkah:

1. Menuju ke direktori kerja



```
Command Prompt
Microsoft Windows [Version 10.0.17763.1935]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\hp>cd..
C:\Users>cd..

C:>dir
 Volume in drive C has no label.
 Volume Serial Number is 8A83-443C

 Directory of C:\

01/11/2021  03:12    <DIR>          BC5
01/11/2021  03:05    <DIR>          BDE32
22/02/2022  14:41    <DIR>          BigfishCache
30/07/2022  14:10    <DIR>          Drivers
27/08/2022  05:40    <DIR>          Found.001
07/07/2021  20:56    <DIR>          Intel
03/09/2015  13:42    <DIR>          OS
10/09/2019  14:41    100.887.420 OS.rar
04/09/2022  00:10    <DIR>          PerfLogs
13/09/2022  17:23    <DIR>          Program Files
04/09/2022  11:03    <DIR>          Program Files (x86)
18/12/2021  15:47    <DIR>          Python27
25/08/2022  20:05    <DIR>          SWSetup
27/08/2022  02:10    <DIR>          Users
04/09/2022  15:31    <DIR>          Windows
08/10/2021  16:58    <DIR>          xamp
               1 File(s)   100.887.420 bytes
              15 Dir(s)   3.389.517.824 bytes free

C:\>cd os
C:\OS>dir
 Volume in drive C has no label.
 Volume Serial Number is 8A83-443C

 Directory of C:\OS

03/09/2015  13:42    <DIR>          .
03/09/2015  13:42    <DIR>          ..
07/09/2016  11:34    <DIR>          Bochs-2.3.5
03/09/2015  13:42    <DIR>          Dev-Cpp
```



Edit dengan WPS Office

```
Command Prompt
01/11/2021 03:12    <DIR>      BCS
01/11/2021 03:05    <DIR>      BDE32
22/02/2022 14:41    <DIR>      BigFishCache
30/07/2022 14:10    <DIR>      Drivers
27/08/2022 05:40    <DIR>      found.001
07/07/2021 20:56    <DIR>      Intel
03/09/2015 13:42    <DIR>      OS
10/09/2019 14:41    100.887.420 OS.rar
04/09/2022 00:10    <DIR>      PerfLogs
13/09/2022 17:23    <DIR>      Program Files
04/09/2022 11:03    <DIR>      Program Files (x86)
18/12/2021 15:47    <DIR>      Python27
25/08/2022 20:05    <DIR>      SWSetup
27/08/2022 02:10    <DIR>      Users
04/09/2022 15:31    <DIR>      Windows
08/10/2021 16:58    <DIR>      xamp
               1 File(s)   100.887.420 bytes
              15 Dir(s)  3.389.517.824 bytes free

C:\>cd os

C:\OS>dir
Volume in drive C has no label.
Volume Serial Number is 8A83-443C

Directory of C:\OS

03/09/2015 13:42    <DIR>      .
03/09/2015 13:42    <DIR>      ..
07/09/2016 11:34    <DIR>      Bochs-2.3.5
03/09/2015 13:42    <DIR>      Dev-Cpp
17/12/2008 00:08    1.096.291 i386.pdf
03/09/2015 13:42    <DIR>      LAB
17/12/2008 00:07    846.920 pcasm-book.pdf
17/12/2008 01:44    86 Setpath.bat
13/12/2008 14:12    716.512 winim81.exe
               4 File(s)   2.659.809 bytes
              5 Dir(s)  3.389.517.824 bytes free

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

22:59 17/09/2022
```

2. Melihat isi direktori kerja

```
Command Prompt - bximage
C:\OS\LAB>cd lab1
C:\OS\LAB\LAB1>dir
Volume in drive C has no label.
Volume Serial Number is 8A83-443C

Directory of C:\OS\LAB\LAB1

17/09/2022 20:10    <DIR>      .
17/09/2022 20:10    <DIR>      10.233 bochsout.txt
15/12/2008 16:17    1.628 bochsrc.bxrc
14/12/2008 12:02    14.365 boot.asm
07/09/2016 11:20    512 boot.bin
16/09/2015 07:51    512 boots.bin
15/12/2008 00:47    78 dosfp.bat
17/09/2022 20:16    1.474.560 floppya.img
14/12/2008 11:45    7.066 kernel.asm
15/12/2008 16:21    227 Makefile
15/12/2008 12:20    44 s.bat
               10 File(s)   1.510.125 bytes
              2 Dir(s)  3.390.984.192 bytes free

C:\OS\LAB\LAB1>del floppya.img
C:\OS\LAB\LAB1>dir
Volume in drive C has no label.
Volume Serial Number is 8A83-443C

Directory of C:\OS\LAB\LAB1

17/09/2022 22:59    <DIR>      .
17/09/2022 22:59    <DIR>      10.233 bochsout.txt
15/12/2008 16:17    1.628 bochsrc.bxrc
14/12/2008 12:02    14.365 boot.asm
07/09/2016 11:20    512 boot.bin
16/09/2015 07:51    512 boots.bin
15/12/2008 00:47    78 dosfp.bat
14/12/2008 11:45    7.966 kernel.asm
15/12/2008 16:21    227 Makefile
15/12/2008 12:20    44 s.bat
               9 File(s)   35.565 bytes
23:00 17/09/2022
```



```
Bochs for Windows - Console

Directory of C:\OS\LAB\LAB1

17/09/2022 22:59    <DIR>        .
17/09/2022 22:59    <DIR>        ..
17/09/2022 20:16          10.233 bochsout.txt
15/12/2008 16:17          1.628 bochsrc.brcx
14/12/2008 12:02          14.365 boot.asm
07/09/2016 11:20          512 boot.bin
16/09/2015 07:51          512 boots.bin
15/12/2008 00:47          78 dosfp.bat
14/12/2008 11:45          7.966 kernel.asm
15/12/2008 16:21          227 Makefile
15/12/2008 12:20          44 s.bat
                           35.565 bytes
   9 File(s)   3.389.190.144 bytes free
  2 Dir(s)

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] 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.

23-12 17/09/2022
```

```
Bochs for Windows - Console
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 it)

Press any key to continue

C:\OS\LAB\LAB1>dir
Volume in drive C has no label.
Volume Serial Number is 8A83-443C

Directory of C:\OS\LAB\LAB1

17/09/2022 23:01 <DIR> .
17/09/2022 23:01 <DIR> ..
17/09/2022 20:16 19.233 bochsout.txt
15/12/2008 16:17 1.628 bochsrc.brcx
14/12/2008 12:02 14.365 boot.asm
07/09/2016 11:20 512 boot.BIN
16/09/2015 07:51 512 boots.BIN
15/12/2008 00:47 78 dosfp.BAT
17/09/2022 23:01 1.474.560 floppya.IMG
14/12/2008 11:45 7.966 kernel.ASM
15/12/2008 16:21 227 Makefile
15/12/2008 12:20 44 s.BAT
          10 File(s)   1.510.125 bytes free
          2 Dir(s)   3.383.943.168 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[APIC2] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000001[ ] reading configuration from bochssrc2.txt
000000000001[ ] installing win32 module as the Bochs GUI
000000000001[ ] using log file bochsout.txt

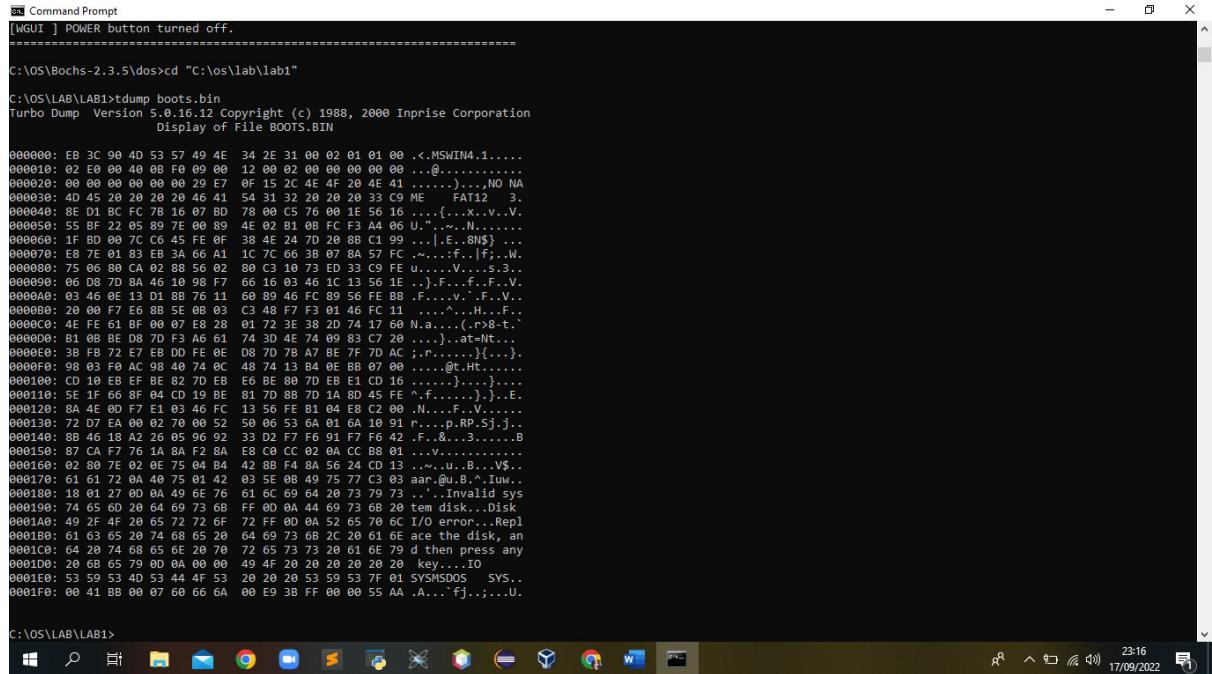
Bochs for Windows - Display
[ A: B: C: D: E: F: G: H: I: J: K: L: M: N: O: P: Q: R: S: T: U: V: W: X: Y: Z: ] [ Copy | Paste | Snapshot | Reset | suspend | Power | ]
CD-ROM Device Driver for IDE (Four Channels Supported)
(C)Copyright Oak Technology Inc. 1993-1996
Driver Version : U340
Device Name : OSLAB
Transfer Mode : Programmed I/O
Drive 0: Port: 1FO (Primary Channel), Slave IRQ= 14
Firmware version : ALPH

MSCODEX Version 2.23
Copyright (C) Microsoft Corp. 1986-1993. All rights reserved.
Drive B: = Driver OSLAB unit 0
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)? _
```

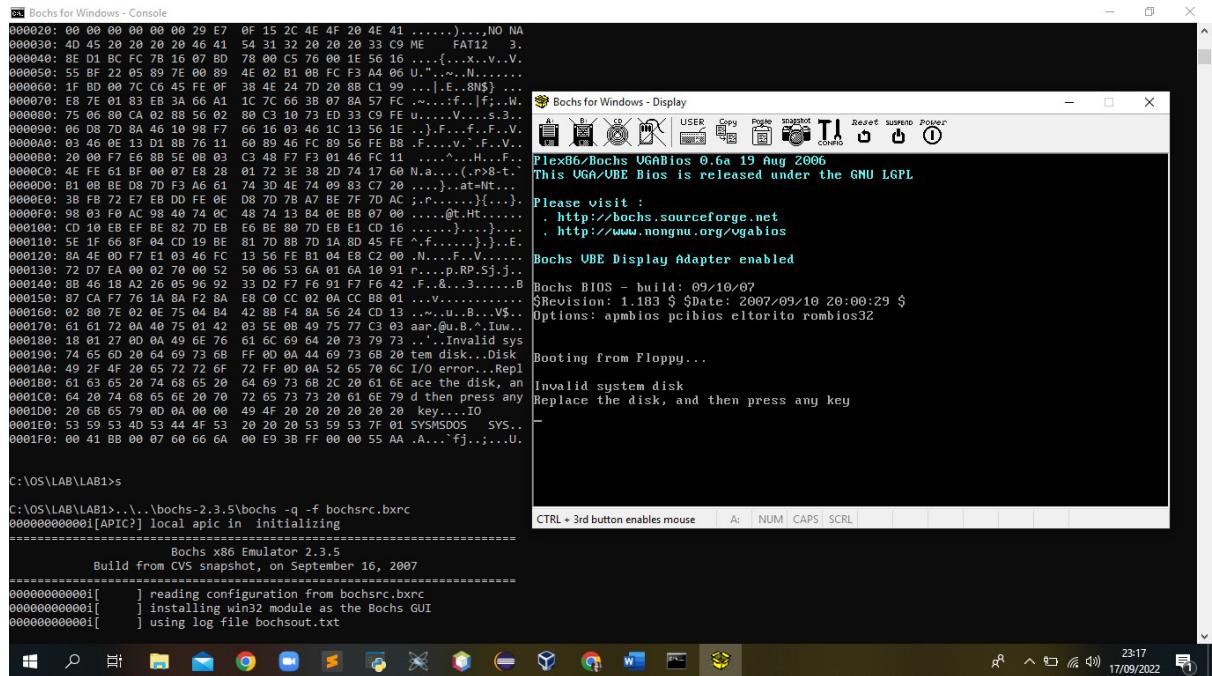
3. Melihat data dalam boot sector



```
[WGU1] POWER button turned off.
=====
C:\OS\Bochs-2.3.5\dos>cd "C:\OS\lab\lab1"
C:\OS\LAB\LAB1>tdump boots.bin
Turbo Dump Version 5.0.16.12 Copyright (c) 1988, 2000 Inprise Corporation
Display of File BOOTS.BIN

000000: EB 3C 90 4D 53 57 49 4E 34 2E 31 00 02 01 01 00 .<.MSWIN4.1.....
000010: 02 E0 00 40 0B F0 09 00 12 00 02 00 00 00 00 00 ...@......
000020: 00 00 00 00 00 29 E7 0F 15 2C 4E 4F 20 4E 41 .....).NO 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..V.
000050: 55 BF 22 05 89 7E 00 89 4E 02 B1 0B FC F3 A4 06 U."~.N.....
000060: 1F BD 00 7C C6 45 FE 0F 38 4E 24 7D 20 88 C1 99 ...|E..8NS}...
000070: E8 7E 01 83 EB 3A 66 A1 1C 7C 66 3B 07 8A 57 FC ~.~.f..[f..W.
000080: 75 06 88 CA 02 88 56 02 80 C3 10 73 ED 33 C9 FE u....V...s.3..
000090: 06 D8 7D 8A 46 10 98 F7 66 16 03 46 10 13 56 1E ..).F..f..F..V.
0000A0: 03 46 0E 13 D1 88 76 11 60 89 4F FC 89 56 FE BB .F..v..F..V..
0000B0: 20 00 F7 E6 8B 5E 0B 03 C3 48 F7 F3 01 46 FC 11 .....^..H..F..
0000C0: 4E FE 61 BF 00 07 EB 28 01 72 3E 38 2D 74 17 68 N.a....(r>8-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 01 7B 7F 7D AC ;r.....}{.HT...
0000F0: 98 03 F0 AC 98 40 74 0C 48 74 13 84 0E BB 07 00 .....@.HT....
000100: CD 10 EB EF BE 82 7D EB E6 BE 89 7D EB E1 C0 16 .....}....}.
000110: 5E 1F 66 8F 04 CD 19 BE 81 7D 88 7D 1A 8D 45 FE ^..f..{.}.E.
000120: 8A 4E 0D F7 E1 03 46 FC 13 56 FE B1 04 E8 C2 00 .N....F..V....
000130: 72 D7 EA 00 02 70 00 52 50 06 53 6A 01 6A 19 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.....
000150: 87 CA F7 76 1A 8A F2 8A E8 C0 CC 02 0A CC B8 01 ...v.....
000160: 02 80 7E 02 09 75 04 8A 42 88 FA 5A 24 CD 13 ...~.u..B..V$..
000170: 61 61 72 0A 48 75 01 42 03 5E 00 49 75 77 C3 03 aar:@u.B..^Iuw..
000180: 18 01 27 0D AA 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 20 tem 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 20 88 C1 99 ace the disk, an
0001C0: 64 20 74 68 65 20 70 72 65 73 73 20 61 6E 79 d then press any
0001D0: 20 68 65 79 0D 0A 00 00 49 4F 20 20 20 20 20 20 key...IO
0001E0: 53 59 53 4D 53 44 4F 53 20 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.
```

4. 'Boot' PC-Simulator dengan file image 'floppya.img'



```
[Bochs for Windows - Console
000020: 00 00 00 00 00 00 29 E7 0F 15 2C 4E 4F 20 4E 41 .....).NO NA
000030: AD 45 20 20 20 20 46 41 54 31 32 20 20 20 33 C9 ME FAT12 3.
000040: 8E D1 BC FC 7B 16 07 BD 78 00 C5 76 00 1E 56 16 ....{...x.v..V.
000050: 55 BF 22 05 89 7E 00 89 4E 02 B1 0B FC F3 A4 06 U."~.N.....
000060: 1F BD 00 7C C6 45 FE 0F 38 4E 24 7D 20 88 C1 99 ...|E..8NS}...
000070: E8 7E 01 83 EB 3A 66 A1 1C 7C 66 3B 07 8A 57 FC ~.~.f..[f..W.
000080: 75 06 88 CA 02 88 56 02 80 C3 10 73 ED 33 C9 FE u....V...s.3..
000090: 06 D8 7D 8A 46 10 98 F7 66 16 03 46 10 13 56 1E ..).F..f..V..
0000A0: 03 46 1F 66 8F 04 CD 19 BE 81 7D 88 7D 1A 8D 45 FE ^..f..{.}.E.
0000B0: 20 00 F7 E6 8B 5E 0B 03 C3 48 F7 F3 01 46 FC 11 .....^..H..F..
0000C0: 4E FE 61 BF 00 07 EB 28 01 72 3E 38 2D 74 17 68 N.a....(r>8-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 01 7B 7F 7D AC ;r.....}{.HT...
0000F0: 98 03 F0 AC 98 40 74 0C 48 74 13 84 0E BB 07 00 .....@.HT....
000100: CD 10 EB EF BE 82 7D EB E6 BE 89 7D EB E1 C0 16 .....}....}.
000110: 5E 1F 66 8F 04 CD 19 BE 81 7D 88 7D 1A 8D 45 FE ^..f..{.}.E.
000120: 8A 4E 0D F7 E1 03 46 FC 13 56 FE B1 00 E8 C2 00 .N....F..V....
000130: 72 D7 EA 00 02 70 00 52 50 06 53 6A 01 6A 19 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.....
000150: 87 CA F7 76 1A 8A F2 8A E8 C0 CC 02 0A CC B8 01 ...v.....
000160: 02 80 7E 02 09 75 04 8A 42 88 FA 5A 24 CD 13 ...~.u..B..V$..
000170: 61 61 72 0A 48 75 01 42 03 5E 00 49 75 77 C3 03 aar:@u.B..^Iuw..
000180: 18 01 27 0D AA 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 20 tem 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 20 88 C1 99 ace the disk, an
0001C0: 64 20 74 68 65 20 70 72 65 73 73 20 61 6E 79 d then press any
0001D0: 20 68 65 79 0D 0A 00 00 49 4F 20 20 20 20 20 20 key...IO
0001E0: 53 59 53 4D 53 44 4F 53 20 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.
```

Bochs for Windows - Display

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

Please visit :
 • <http://bochs.sourceforge.net>
 • <http://www.mongnu.org/vgabios>

Bochs VBE Display Adapter enabled

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

Booting from Floppy...

Invalid system disk
Replace the disk, and then press any key

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

Bochs for Windows - Console

```
000150: 87 CA F7 76 1A 8A F2 8A E8 C0 CC 02 0A CC B8 01 ...v.....$.
000160: 02 80 7E 02 0E 75 04 B4 42 88 F4 8A 56 24 CD 13 ...~..u.B..V$..
000170: 61 61 72 0A 48 75 01 42 03 5E 00 49 75 77 C3 03 aar.@u.B.^Iu.._
000180: 18 01 27 0D 0A 49 6E 76 61 6C 69 64 20 73 79 73 ...'..Invalid sys
000190: 74 65 6D 20 64 69 73 6B FF 0D 00 44 69 73 6B 20 tem 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 70 72 65 73 73 20 61 6E 79 d then press any
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 00 00 49 4F 20 20 20 20 20 key....IO
0001E0: 53 59 53 4D 53 44 4F 53 20 20 53 59 53 7F 01 SYMSDOS  SYS..
0001F0: 00 41 BB 00 07 60 66 6A 00 E9 3B FF 00 00 55 AA .A...fj..;...u.

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 bochfout.txt
# In bx_win32_gui.c:_exit(void)

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

C:\OS\LAB\LAB1>DosFp

C:\OS\LAB\LAB1>cd "..\Bochs-2.3.5\dos"

C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
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 bochfout.txt
MSCDEX Version 2.23
Copyright (C) Microsoft Corp. 1986-1993. All rights reserved.
Drive R: = Driver OSLAB unit 0
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)? _
```

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

23:20 17/09/2022

Bochs for Windows - Console

```
000150: 87 CA F7 76 1A 8A F2 8A E8 C0 CC 02 0A CC B8 01 ...v.....$.
000160: 02 80 7E 02 0E 75 04 B4 42 88 F4 8A 56 24 CD 13 ...~..u.B..V$..
000170: 61 61 72 0A 48 75 01 42 03 5E 00 49 75 77 C3 03 aar.@u.B.^Iu.._
000180: 18 01 27 0D 0A 49 6E 76 61 6C 69 64 20 73 79 73 ...'..Invalid sys
000190: 74 65 6D 20 64 69 73 6B FF 0D 00 44 69 73 6B 20 tem 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 70 72 65 73 73 20 61 6E 79 d then press any
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 00 00 49 4F 20 20 20 20 20 key....IO
0001E0: 53 59 53 4D 53 44 4F 53 20 20 53 59 53 7F 01 SYMSDOS  SYS..
0001F0: 00 41 BB 00 07 60 66 6A 00 E9 3B FF 00 00 55 AA .A...fj..;...u.

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 bochfout.txt
# In bx_win32_gui.c:_exit(void)

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

C:\OS\LAB\LAB1>DosFp

C:\OS\LAB\LAB1>cd "..\Bochs-2.3.5\dos"

C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
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 bochfout.txt
MSCDEX Version 2.23
Copyright (C) Microsoft Corp. 1986-1993. All rights reserved.
Drive R: = Driver OSLAB unit 0
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 103C-1F02
Format another (Y/N)?
```

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

23:20 17/09/2022

Bochs for Windows - Console

```
Build from CVS snapshot, on September 16, 2007
=====
000000000000i[ ] reading configuration from bochsrc.bxrc
000000000000i[ ] installing win32 module as the Bochs GUI
000000000000i[ ] 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\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
000000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000i[ ] reading configuration from bochsrc.bxrc
000000000000i[ ] installing win32 module as the Bochs GUI
000000000000i[ ] 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>S

C:\OS\LAB\LAB1>..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
000000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000i[ ] reading configuration from bochsrc.bxrc
000000000000i[ ] installing win32 module as the Bochs GUI
000000000000i[ ] 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>S

C:\OS\LAB\LAB1>..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
000000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000i[ ] reading configuration from bochsrc.bxrc
000000000000i[ ] installing win32 module as the Bochs GUI
000000000000i[ ] 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\LAB\LAB1>
```

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

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

C:\OS\LAB\LAB1>cd "..\..\Bochs-2.3.5\dos"

C:\OS\Bochs-2.3.5\dos>..\bochs -q -f bochsrc2.txt
000000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000i[ ] reading configuration from bochsrc.bxrc
000000000000i[ ] installing win32 module as the Bochs GUI
000000000000i[ ] 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>S

C:\OS\LAB\LAB1>..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
000000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000i[ ] reading configuration from bochsrc.bxrc
000000000000i[ ] installing win32 module as the Bochs GUI
000000000000i[ ] 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\LAB\LAB1>
```

Tugas:

1. Kode 'ASCII' adalah singkatan dari American Standard Code for Information Interchange atau Kode Standar Amerika untuk pertukaran informasi, adalah standar pengkodean karakter untuk alat komunikasi. Kode ASCII mewakili teks dalam komputer, peralatan telekomunikasi, dan perangkat lainnya.

Contohnya, karakter "a" memiliki kode ASCII 97, dan karakter "A" memiliki kode ASCII 65.

Tabel kode ASCII:

Binary	Oct	Dec	Hex	Chr
010 0000	040	32	20	sp
010 0001	041	33	21	!
010 0010	042	34	22	"
010 0011	043	35	23	#
010 0100	044	36	24	\$
010 0101	045	37	25	%
010 0110	046	38	26	&
010 0111	047	39	27	'
010 1000	050	40	28	(
010 1001	051	41	29)
010 1010	052	42	2A	*
010 1011	053	43	2B	+
010 1100	054	44	2C	,
010 1101	055	45	2D	-
010 1110	056	46	2E	.
010 1111	057	47	2F	/
011 0000	060	48	30	0
011 0001	061	49	31	1
011 0010	062	50	32	2
011 0011	063	51	33	3
011 0100	064	52	34	4
011 0101	065	53	35	5
011 0110	066	54	36	6
011 0111	067	55	37	7
011 1000	070	56	38	8
011 1001	071	57	39	9
011 1010	072	58	3A	:
011 1011	073	59	3B	:
011 1100	074	60	3C	<
011 1101	075	61	3D	=
011 1110	076	62	3E	>
011 1111	077	63	3F	?

Binary	Oct	Dec	Hex	Chr
100 0000	100	64	40	@
100 0001	101	65	41	A
100 0010	102	66	42	B
100 0011	103	67	43	C
100 0100	104	68	44	D
100 0101	105	69	45	E
100 0110	106	70	46	F
100 0111	107	71	47	G
100 1000	110	72	48	H
100 1001	111	73	49	I
100 1010	112	74	4A	J
100 1011	113	75	4B	K
100 1100	114	76	4C	L
100 1101	115	77	4D	M
100 1110	116	78	4E	N
100 1111	117	79	4F	O
101 0000	120	80	50	P
101 0001	121	81	51	Q
101 0010	122	82	52	R
101 0011	123	83	53	S
101 0100	124	84	54	T
101 0101	125	85	55	U
101 0110	126	86	56	V
101 0111	127	87	57	W
101 1000	130	88	58	X
101 1001	131	89	59	Y
101 1010	132	90	5A	Z
101 1011	133	91	5B	[
101 1100	134	92	5C	\
101 1101	135	93	5D]
101 1110	136	94	5E	^
101 1111	137	95	5F	-

Binary	Oct	Dec	Hex	Chr
110 0000	140	96	60	
110 0001	141	97	61	a
110 0010	142	98	62	b
110 0011	143	99	63	c
110 0100	144	100	64	d
110 0101	145	101	65	e
110 0110	146	102	66	f
110 0111	147	103	67	g
110 1000	150	104	68	h
110 1001	151	105	69	i
110 1010	152	106	6A	j
110 1011	153	107	6B	k
110 1100	154	108	6C	l
110 1101	155	109	6D	m
110 1110	156	110	6E	n
110 1111	157	111	6F	o
111 0000	160	112	70	p
111 0001	161	113	71	q
111 0010	162	114	72	r
111 0011	163	115	73	s
111 0100	164	116	74	t
111 0101	165	117	75	u
111 0110	166	118	76	v
111 0111	167	119	77	w
111 1000	170	120	78	x
111 1001	171	121	79	y
111 1010	172	122	7A	z
111 1011	173	123	7B	{
111 1100	174	124	7C	
111 1101	175	125	7D	}
111 1110	176	126	7E	~

2. Daftar perintah Bahasa Assembly untuk mesin intel keluarga x86

Perintah	Arti	Syarat	Kasus	Keterangan	Ikut CMP?
JA	jump if above	CF = 0 A		Lompat bila op 1 > op 2	
JNBE	jump if not below or equal	ZF = 0	Unsingned		ya
JB	jump if below	CF = 1 A		Lompat bila op 1 < op 2	
JNAE	jump if not above or equal	ZF = 0	Unsingned		ya
JAE	jump if above or equal	CF = 0 V ZF = 1	Unsingned	Lompat bila op 1 \geq op 2	ya
JNB	jump if not below				
JBE	jump is below or equal	CF = 1 VZF = 1	Unsingned	Lompat bila op 1 \leq op 2	ya
JNA	jump is not above				
JG	jump if greater	OF = 0 A		Lompat bila op 1 > op 2	
JNLE	jump if not less or equal	ZF = 0	Signed		ya
JGE	jump if greater or equal	OF = 0 V		Lompat bila op 1 \geq op 2	ya
JNL	jump if not less than	ZF = 1	Signed		
JL	jump if less than	OF = 1 A		Lompat bila op 1 < op 2	
JNGE	jump if not greater or equal	ZF = 0	Signed		ya

Keterangan:

"op" = operand