


Pengenalan Sistem Pengembangan OS dengan PC Simulator 'Boschs'

Langkah Kerja:

- 1) Menjalankan program command prompt
- 2) Mereset direktori dan masuk ke direktori 'C:\OS' menggunakan perintah 'cd ../../' dan 'cd os'
- 3) Menjalankan file setpath (digunakan untuk mengatur lengkungan kerja praktikum 'path')



```
Bochs for Windows - Console
Microsoft Windows [Version 10.0.19041.508]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\dpgrad>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
```

- 4) Menjalankan program makefile pada file fp.disk menggunakan perintah 'make fp.disk' (dengan menjalankan perintah tersebut berarti kita akan melakukan kompilasi terhadap source code program 'boot.asm', sebagai outputnya file 'boot.bin' dan isinya disalin ke dalam bootsector file image floppy 'floppya.img')
- 5) Melakukan pengecekan direktori menggunakan perintah 'dir'



```
C:\OS>cd lab/lab1
C:\OS\LAB\LAB1>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 Newbiggin <jn@it.swin.edu.au>
This program is covered by the GPL. See copying.txt for details
140 records in
140 records out

C:\OS\LAB\LAB1>dir
Volume in drive C has no label.
Volume Serial Number is AC68-81B2

Directory of C:\OS\LAB\LAB1

09/12/2019  04:11 PM    <DIR>          .
09/12/2019  04:11 PM    <DIR>          ..
09/10/2019  04:19 PM             10,235 bochsout.txt
12/15/2008  04:17 PM             1,628 bochsrc.bsrc
12/14/2008  12:02 PM             14,365 boot.asm
09/23/2020  07:24 PM              512 boot.bin
09/16/2015  07:51 AM              512 boot.bin
12/15/2008  12:47 AM               78 dosfp.bat
09/23/2020  07:24 PM      1,474,560 floppya.img
12/14/2008  11:45 AM             7,966 kernel.asm
12/15/2008  04:21 PM              227 Makefile
12/15/2008  12:20 PM               44 s.bat

               10 File(s)      1,510,127 bytes
                2 Dir(s)      402,026,156,032 bytes free

7:28 PM
09/23/2020
```

- 6) Menghapus image floppy menggunakan perintah 'del floppya.img'
- 7) Memanggil 'bximage', kemudian pilih tipe fd, dan file diberi nama 'floppya.img' dengan pilihan kapasitas default (bximage berguna untuk membuat file image berbasis floppy disk)

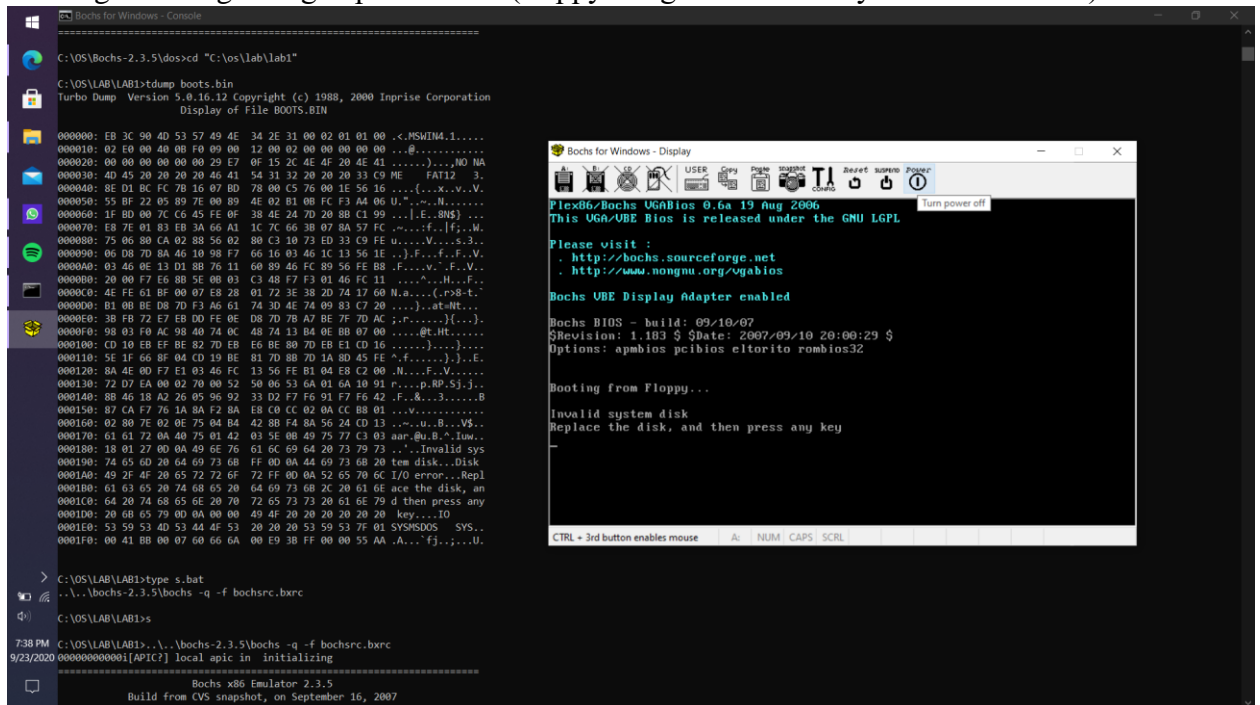
```
Bochs for Windows - Console
C:\OS\LAB\LAB1>bximage
=====
bximage
Disk Image Creation Tool for Bochs.
$Id: bximage.c,v 1.32 2006/06/16 07:29:33 vruppert Exp $
=====
Do you want to create a floppy disk image or a hard disk image?
Please type hd or fd. [hd] fd
Choose the size of floppy disk image to 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
  cyls=80
  heads=2
  sectors per track=18
  total sectors=2880
  total bytes=1474560
What should I name the image?
[a.img] floppy.a.img
Writing: [] Done.
I wrote 1474560 bytes to floppy.a.img.
The following line should appear in your bochsrc:
  floppy: image="floppy.a.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 has no label.
Volume Serial Number is AC68-B1B2
Directory of C:\OS\LAB\LAB1
09/23/2020  07:27 PM    <DIR>          .
09/23/2020  07:27 PM    <DIR>          ..
09/10/2015  04:10 PM             10,235 bochsout.txt
12/15/2008  04:17 PM             1,628 bochsrc.brc
12/14/2008 12:02 PM             14,365 boot.asm
09/23/2020  07:24 PM              512 boot.bin
09/16/2015  07:51 AM              512 boots.bin
12/15/2008 12:47 AM               78 dosfp.bat
09/23/2020  07:27 PM          1,474,560 floppy.a.img
12/14/2008 11:45 AM             7,966 kernel.asm
9/23/2020 12/15/2008  04:21 PM              227 Makefile
12/15/2008 12:20 PM               44 s.bat
               10 File(s)          1,510,127 bytes
```

- 8) Menjalankan perintah dosfp (digunakan untuk memformat file image yang tadi dibuat)
- 9) Ketik 'format B:' kemudian enter 2x, lalu tutup pc simulator dengan mengklik tombol power

```
Bochs for Windows - Console
10 File(s)          1,510,127 bytes
2 Dir(s)  482,826,987,520 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
000000000000[APIC?] local apic in  initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000[ ] reading configuration from bochsrc2.txt
000000000000[ ] installing win32 module as the Bochs GUI
000000000000[ ] using log file bochsout.txt
=====
Bochs for Windows - Display
MSCDEx 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)?
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 3962-1C0F
Format another (Y/N)?n
A:\>
CTRL + 3rd button enables mouse
```

- 10) Untuk melihat data bootsector, digunakan perintah 'tdump boots.bin'
- 11) Melihat isi file 's.bat' dengan perintah 'type s.bat'

12) Booting file image dengan perintah 's' (floppya.img belum terisi system file / kernel)



```
C:\OS\Bochs-2.3.5>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 .C..MSWIM1.1....
000010: 02 E0 00 40 08 F0 09 00 12 00 02 00 00 00 00 00 ...@.....NO NA
000020: 00 00 00 00 00 29 E7 0F 15 2C 4E 4F 20 4E 41 ....)...FA12 3.
000030: 4D 45 20 20 20 20 46 41 54 31 32 20 20 20 33 C9 ME
000040: BE D1 BC FC 78 16 87 BD 78 00 C5 76 00 1E 56 16 ...[...x.v..V.
000050: 55 BF 22 05 89 7E 00 89 4E 02 01 08 FC F3 A4 06 U"...N.....
000060: 1F BD 00 7C C6 45 FE 0F 38 4E 24 7D 20 88 C1 99 ...[...E..BNS) ...
000070: E8 7E 01 83 EB 3A 66 A1 1C 7C 66 38 07 8A 57 FC ...f..[f..M.
000080: 75 06 80 CA 02 88 56 82 80 C3 10 73 ED 33 C9 FE u....V....s..
000090: 06 D0 7A 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 60 89 46 FC 89 56 FE B8 .F...v..f..V..
0000B0: 20 00 F7 E6 88 5E 08 03 C3 48 F7 F3 01 46 FC 11 ....H..F..
0000C0: 4E FE 61 BF 00 07 E8 28 01 72 3E 38 2D 74 17 60 N.a....(r)s-t..
0000D0: 51 08 BE D9 70 F3 A6 61 7A 3D 4E 74 09 83 C7 20 ...[...at=tt...
0000E0: 3B FB 72 E7 E8 D0 FE 0E 08 7D 70 A7 8E 76 7D AC ...[...[...[...[...
0000F0: 98 03 F8 AC 98 40 74 0C 48 74 13 84 0E 88 07 00 ...[...[...[...[...
000100: CD 10 EB EF BE 82 7D EB E6 BE 80 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 0D F7 E1 03 46 FC 13 56 FE B1 04 E8 C2 00 .N...f..V....
000130: 72 D7 1A 00 02 70 00 52 50 00 53 6A 01 6A 10 01 P...p..MP..Sj..
000140: 88 46 18 A2 26 05 96 92 33 D2 F7 F6 91 F7 F6 42 .F..[...[...[...[...
000150: 87 CA F7 76 1A 8A F2 BA E8 C0 C2 02 0A C8 B8 01 ...v.....B...
000160: 02 80 7E 02 0E 75 04 84 42 8B F4 8A 56 24 CD 13 ...u..B...V$..
000170: 61 61 72 0A 48 75 01 42 03 5E 08 49 75 77 C3 03 aar..u.B..Iuu..
000180: 18 01 27 00 0A 40 5E 76 61 65 69 64 20 73 79 73 ...Invalid sys
000190: 74 65 6D 20 64 69 73 68 FF 00 0A 44 69 73 68 20 ten 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 ace the disk, an
0001C0: 64 20 74 68 65 6E 20 70 72 65 73 73 20 61 6E 79 d then press any
0001D0: 20 68 65 79 00 0A 00 00 49 4F 20 20 20 20 20 key...IO
0001E0: 53 59 53 4D 53 44 4E 53 20 20 20 53 59 53 7F 01 SYSMSDOS SYS...
0001F0: 00 41 0B 00 07 60 66 6A 00 E9 3B FF 00 00 55 AA .A..fj...U.

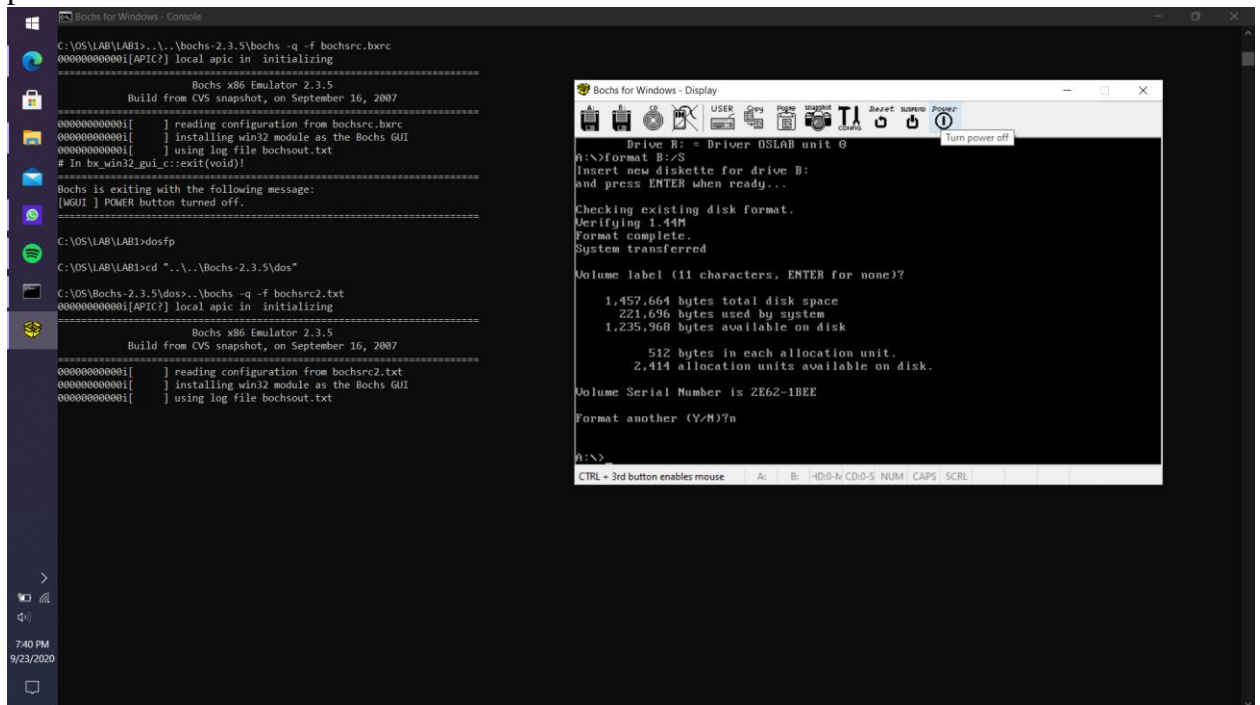
C:\OS\LAB\LAB1>type s.bat
..\..\bochs-2.3.5\bochs -q -f bochsrc.bxrc

C:\OS\LAB\LAB1>s
7:38 PM C:\OS\LAB\LAB1>..\..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
9/23/2020 000000000000[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000[ ] reading configuration from bochsrc.bxrc
000000000000[ ] installing win32 module as the Bochs GUI
000000000000[ ] using log file bochsout.txt
# In bx.win32_gui.c::exit(void)!
Bochs is exiting with the following message:
[GUI ] POWER button turned off.
=====
C:\OS\LAB\LAB1>dosfp
C:\OS\LAB\LAB1>cd "C:\os\lab\lab1"
C:\OS\Bochs-2.3.5>tdump boots2.txt
Turbo Dump Version 5.0.16.12 Copyright (c) 1988, 2000 Inprise Corporation
Display of File BOOTS2.BIN

000000000000[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000[ ] reading configuration from bochsrc2.txt
000000000000[ ] installing win32 module as the Bochs GUI
000000000000[ ] using log file bochsout.txt
```

13) Untuk mengisi system file, dipanggilah 'dosfp'

14) Melakukan format dengan perintah 'format B:/S' kemudian tutup menggunakan tombol power



```
C:\OS\LAB\LAB1>..\..\bochs-2.3.5\bochs -q -f bochsrc.bxrc
000000000000[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000[ ] reading configuration from bochsrc.bxrc
000000000000[ ] installing win32 module as the Bochs GUI
000000000000[ ] using log file bochsout.txt
# In bx.win32_gui.c::exit(void)!
Bochs is exiting with the following message:
[GUI ] POWER button turned off.
=====
C:\OS\LAB\LAB1>dosfp
C:\OS\LAB\LAB1>cd "C:\os\lab\lab1"
C:\OS\Bochs-2.3.5>tdump boots2.txt
Turbo Dump Version 5.0.16.12 Copyright (c) 1988, 2000 Inprise Corporation
Display of File BOOTS2.BIN

000000000000[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
=====
000000000000[ ] reading configuration from bochsrc2.txt
000000000000[ ] installing win32 module as the Bochs GUI
000000000000[ ] using log file bochsout.txt
```

15) Melakukan pengecekan ulang dengan perintah 's'

