

**LAPORAN PRAKTIKUM MODUL 1
PENGENALAN SISTEM PENGEMBANGAN OS DENGAN PC
SIMULATOR 'BOCHS'**



Dosen Pengampu

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Mata Kuliah

Praktikum Sistem Operasi

Disusun oleh

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TAHUN AJARAN 2020-2021**

```
Bochs for Windows - Console
Microsoft Windows [Version 10.0.18362.1082]
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C:\Users\62896>C:

C:\Users\62896>cd..

C:\Users>cd..

C:\>cd OS

C:\OS>dir
Volume in drive C is Windows
Volume Serial Number is 78B6-F6E9

Directory of C:\OS

09/12/2019  04:11 PM    <DIR>        .
09/12/2019  04:11 PM    <DIR>        ..
09/12/2019  04:11 PM    <DIR>        Bochs-2.3.5
09/12/2019  04:11 PM    <DIR>        Dev-Cpp
12/17/2008  12:08 AM             1,096,291  i386.pdf
09/12/2019  04:11 PM    <DIR>        LAB
12/17/2008  12:07 AM             846,920  pcasm-book.pdf
12/17/2008  01:44 AM                86  Setpath.bat
12/17/2008  02:12 PM             716,512  winima01.exe
                4 File(s)          2,659,809 bytes
                5 Dir(s)  334,954,946,560 bytes free

C:\OS>setpath
C:\OS>Path=C:\OS\Dev-Cpp\bin;C:\OS\Bochs-2.3.5;c:\OS\Perl1;C:\Windows;C:\Windows\System32
C:\OS>cd LAB

C:\OS\LAB>dir
Volume in drive C is Windows
Volume Serial Number is 78B6-F6E9

Directory of C:\OS\LAB

09/12/2019  04:11 PM    <DIR>        .
09/12/2019  04:11 PM    <DIR>        ..
09/12/2019  04:11 PM    <DIR>        LAB1
09/12/2019  04:11 PM    <DIR>        lab1_0
```

```
Bochs for Windows - Console

09/12/2019  04:11 PM    <DIR>        .
09/12/2019  04:11 PM    <DIR>        ..
09/12/2019  04:11 PM    <DIR>        LAB1
09/12/2019  04:11 PM    <DIR>        lab1_0
09/12/2019  04:11 PM    <DIR>        LAB2
09/12/2019  04:11 PM    <DIR>        lab2_org
09/12/2019  04:11 PM    <DIR>        LAB3
09/12/2019  04:11 PM    <DIR>        lab3_ORG
09/12/2019  04:11 PM    <DIR>        lab4
09/12/2019  04:11 PM    <DIR>        lab5
09/12/2019  04:11 PM    <DIR>        lab6
09/12/2019  04:11 PM    <DIR>        lab6b
                0 File(s)              0 bytes
                12 Dir(s)  334,953,697,280 bytes free

C:\OS\LAB>cd LAB1

C:\OS\LAB\LAB1>dir
Volume in drive C is Windows
Volume Serial Number is 78B6-F6E9

Directory of C:\OS\LAB\LAB1

09/12/2019  04:11 PM    <DIR>        .
09/12/2019  04:11 PM    <DIR>        ..
09/28/2020  08:01 PM             8,280  bochsout.txt
12/15/2008  04:17 PM             1,628  bochsrc.bxrc
12/14/2008  12:02 PM             14,365  boot.asm
09/07/2016  11:20 AM                512  boot.bin
09/28/2020  07:58 PM                512  boots.bin
12/15/2008  12:47 AM                78  dosfp.bat
09/28/2020  08:07 PM          1,474,560  floppy.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)          1,508,172 bytes
                2 Dir(s)  334,953,754,624 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 $
```

```
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] 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.a.img

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

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 Windows
Volume Serial Number is 78B6-F6E9

Directory of C:\OS\LAB\LAB1

09/12/2019  04:11 PM  <DIR>      .
09/12/2019  04:11 PM  <DIR>      ..

Type here to search
```

```
Bochs for Windows - Console
09/12/2019  04:11 PM  <DIR>      .
09/12/2019  04:11 PM  <DIR>      ..
09/28/2020  08:01 PM           8,280 bochsout.txt
12/15/2008  04:17 PM           1,628 bochsrc.bxrc
12/14/2008  12:02 PM          14,365 boot.asm
09/07/2016  11:20 AM           512 boot.bin
09/28/2020  07:58 PM           512 boots.bin
12/15/2008  12:47 AM           78 dosfp.bat
09/28/2020  08:25 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)          1,508,172 bytes
2 Dir(s)            334,956,154,880 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
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

Bochs for Windows - Display
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= 1F0 (Primary Channel), Slave IRQ= 14
Firmware version : ALPH

MSCDEx Version 2.23
Copyright (C) Microsoft Corp. 1986-1993. All rights reserved.
Drive R: = Driver OSLAB unit 0
A:\>_

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

```
Bochs for Windows - Console
=====
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>cd "C:\os\lab\lab1"

C:\OS\LAB\LAB1>dd if=floppya.img of=boots.bin count=1
rawwrite dd for windows version 0.5.
Written by John 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>dosFp

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

C:\OS\Bochs-2.3.5>..\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>cd "C:\os\lab\lab1"

C:\OS\LAB\LAB1>
C:\OS\LAB\LAB1>dd if=floppya.img of=boots.bin count=1
rawwrite dd for windows version 0.5.
Written by John Newbigin <jn@it.swin.edu.au>
```

```
Bochs for Windows - Console
2 Dir(s) 334,956,154,880 bytes free

C:\OS\LAB\LAB1>dosFp

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

C:\OS\Bochs-2.3.5>..\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>cd "C:\os\lab\lab1"

C:\OS\LAB\LAB1>dd if=floppya.img of=boots.bin count=1
rawwrite dd for windows version 0.5.
Written by John 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>dosFp

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

C:\OS\Bochs-2.3.5>..\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
```

```
Bochs for Windows - Display
Drive 0: Port= 1F0 (Primary Channel), Slave  IRQ= 14
Firmware version : ALPH

MSCDEX Version 2.23
Copyright (C) Microsoft Corp. 1986-1993. All rights reserved.
Drive R: = 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.
2,047 allocation units available on disk.

Volume Serial Number is 266A-1C03

Format another (Y/N)?

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

```
Bochs for Windows - Console
C:\OS\LAB\LAB1>
C:\OS\LAB\LAB1>dd if=floppya.img of=boots.bin count=1
rawwrite dd for windows version 0.5.
Written by John 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>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 00 F0 09 00 12 00 02 00 00 00 00 00 ...@.....
000020: 00 00 00 00 00 00 29 03 1C 6A 26 4E 4F 20 4E 41 .....).j&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 81 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..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 80 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 1C 13 56 1E ..).F..f..F..V..
0000A0: 03 46 0E 13 D1 8B 76 11 60 89 46 FC 89 56 FE B8 .F....V..F..V..
0000B0: 20 00 F7 E6 8B 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)8-t..
0000D0: B1 0B BE D8 7D F3 A6 61 74 3D 4E 74 09 83 C7 20 ....).at=Nt....
0000E0: 3B F8 72 E7 EB DD FE 0E D8 7D 7B A7 BE 7F 7D AC ;r.....}(...).
0000F0: 98 03 F0 AC 98 40 74 0C 48 74 13 B4 0E BB 07 00 ....@t.Ht.....
000100: CD 10 E8 EF BE 82 7D E8 E6 BE 80 7D E8 E1 CD 16 .....}.....
000110: 5E 1F 66 8F 04 CD 19 BE 81 7D 8B 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 07 5A 00 02 70 00 52 50 06 53 6A 01 6A 10 91 r...p.RP.Sj.j..
000140: 80 46 10 02 26 05 06 92 33 D2 F7 F6 91 F7 F6 42 .F..B...B.....B
000150: 87 CA F7 76 1A 8A F2 8A E8 C0 CC 02 0A CC 88 01 ...V.....
000160: 02 80 7E 02 0E 75 04 B4 42 8B F4 8A 56 24 CD 13 ...u..B...VS..
000170: 61 61 72 0A 40 75 01 42 03 5E 08 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 6D 20 64 69 73 68 FF 0D 0A 44 69 73 68 20 tem disk...Disk
0001A0: 49 2F 4F 20 65 72 72 6F 72 FF 0D 0A 52 65 70 6C I/O error...Repl
0001B0: 61 63 65 20 74 68 65 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 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..
Type here to search
9:05 PM
9/28/2020
```

```
Bochs for Windows - Console
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 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 88 00 07 60 66 6A 00 E9 38 FF 00 00 55 AA .A....fj...;...U.

C:\OS\LAB\LAB1>..\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 bochsout.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
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

Bochs for Windows - Display
Drive B: = 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 092C-1C13
Format another (Y/N)?n
A:\>
CTRL + 3rd button enables mouse
A: B: HD:0-N CD:0-S NUM CAPS SCRL
8:42 PM
9/28/2020
```

```
Bochs for Windows - Console
=====
Bochs is exiting with the following message:
[VGUI ] 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
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:
[VGUI ] POWER button turned off.
=====

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab1"

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

C:\OS\LAB\LAB1>s

C:\OS\LAB\LAB1>..\..\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 bochsout.txt
# In bx_win32_gui_c::exit(void)!
=====
Bochs is exiting with the following message:
[VGUI ] Window closed, exiting!
```

```
Bochs for Windows - Console
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:
[VGUI ] 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
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:
[VGUI ] POWER button turned off.
=====

C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab1"

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

C:\OS\LAB\LAB1>s

C:\OS\LAB\LAB1>..\..\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 bochsout.txt
```

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 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