

PRACTICUM REPORT
OPERATION SYSTEM



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```
Microsoft Windows [Version 10.0.18363.1082]
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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/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 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>dir
Volume in drive C is OS
Volume Serial Number is 4420-3B2C

Directory of C:\OS\LAB\LAB1

24/09/2020 16:48 <DIR>      .
24/09/2020 16:48 <DIR>      ..
24/09/2020 16:54           10,222 bochsout.txt
15/12/2008 16:17           1,628 bochsrc.bxrc
14/12/2008 12:02          14,365 boot.asm
24/09/2020 18:33           512 boot.bin
16/09/2015 07:51           512 boots.bin
15/12/2008 00:47           78 dosfp.bat
24/09/2020 18:33       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)              1,510,114 bytes
2 Dir(s)      78,870,523,904 bytes free

C:\OS\LAB\LAB1>del floppya.img
```

1. cd C:\OS = The first step to enter the working directory of C:\OS.
2. setpath = Set the work environment ('path'), which this session must be before starting practicum.
3. cd LAB/LAB1 = Step to enter the directory of LAB/LAB1.
4. make fp.disk = Create files to speed up the complication procces, by using 'make.exe' that is 'fp.disk'.
5. dir = See and make sure the contents of the file 'make fp.disk'.
6. del floppya.img = Delete the file named 'floppya.img'.

```
Microsoft Windows [Version 10.0.18363.1082]
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C:\OS\LAB\LAB1>del floppya.img

C:\OS\LAB\LAB1>bxiimage
=====
                    bxiimage
          Disk Image Creation Tool for Bochs
          $Id: bxiimage.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.

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 OS
Volume Serial Number is 4420-3B2C

Directory of C:\OS\LAB\LAB1
```

7. `bximage > fd > 1.44 > floppy.img` = Is a continuation of ‘`del floppy.img`’, which is when we’ve deleted the file named ‘`floppy.img`’, then we call `bximage` to make file `fd` (floppya image) with 1.44MB capacity and named ‘`floppy.img`’.

```
Command Prompt
C:\OS\LAB\LAB1>dir
Volume in drive C is OS
Volume Serial Number is 4420-3B2C

Directory of C:\OS\LAB\LAB1

24/09/2020  18:33    <DIR>          .
24/09/2020  18:33    <DIR>          ..
24/09/2020  16:54             10,222 bochsout.txt
15/12/2008  16:17             1,628 bochsrc.bxrc
14/12/2008  12:02             14,365 boot.asm
24/09/2020  18:33              512 boot.bin
16/09/2015  07:51              512 boots.bin
15/12/2008  00:47              78 dosfp.bat
24/09/2020  18:33          1,474,560 floppy.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)      1,510,114 bytes
               2 Dir(s)      78,870,523,904 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
# In bx_win32_gui_c::exit(void)|
=====
Bochs is exiting with the following message:
[MGUI ] POWER button turned off.
=====

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

8. `dir` = Ensure the file of ‘`floppy.img`’, which already in directory of `C:\OS`.

9. `dosfp` = Copy files to move to another location.

```
Bochs for Windows - Console
The
f1
(Th
A
CD
USER
Copy
Paste
Snapshot
Reset
Suspend
Power
CTRL + 3rd button enables mouse
A: B: 40-0-M CD-0-S NUM: CAPS: SCRL
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 bochsrc2.txt
000000000000i[ ] installing win32 module as the Bochs GUI
000000000000i[ ] using log file bochsout.txt
=====
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...
Dir
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 1136-1A0A
Format another (Y/N)?n
C:\OS\Bochs-2.3.5\dos>
A:\>
```

10. format B: > n > power = The name of the location chosen to accommodate the file that has been moved by 'dosfp'. Then enter the answer 'n' to make sure no other format is chosen again. And close it by clicking the power button.

```
Command Prompt
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 00 29 E7 0F 15 2C 4E 4F 20 4E 41 .....).NO NA
000030: 40 45 20 20 20 20 46 A1 54 31 32 20 20 20 33 C9 ME FAT12 3.
000040: 8E D1 BC FC 78 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 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$} ...
000070: E8 7E 01 83 E8 3A 66 A1 1C 7C 66 38 07 8A 57 FC .~.f..f;..W.
000080: 75 06 80 CA 02 88 56 02 80 C3 10 73 ED 33 C9 FE u....V....s.3.
000090: 06 D8 7D 8A 46 10 98 F7 66 16 03 46 1C 13 56 1E ..}.F..f..F..V.
0000A0: 03 46 0E 13 D1 8B 76 11 60 89 46 FC 89 56 FE B8 .F....v..F..V..
0000B0: 20 00 F7 E6 8B 5E 0B 03 C3 48 F7 F3 01 46 FC 11 ....^..H..F..
0000C0: 4E FE 61 BF 00 07 E8 28 01 72 3E 38 2D 74 17 60 N.a....(r>8-t.
0000D0: B1 0B BE D8 7D F3 A6 61 74 3D 4E 74 09 83 C7 20 ....}.at=Nt....
0000E0: 3B FB 72 E7 EB DD FE 0E D8 7D 7B A7 BE 7F 7D AC ;r.....}{...}.
0000F0: 98 03 F0 AC 98 40 74 0C 48 74 13 B4 0E BB 07 00 ....@t.Ht.....
000100: CD 10 EB EF BE 82 7D EB E6 BE 80 7D EB E1 CD 16 .....}.....
000110: 5E 1F 66 8F 04 CD 19 BE 81 7D 8B 7D 1A 8D 45 FE ^f.....}.E.
000120: 8A 4E 00 F7 E1 03 46 FC 13 56 FE B1 04 E8 C2 00 .N....F..V.....
000130: 72 D7 EA 00 02 70 00 52 50 06 53 6A 01 6A 10 91 n....p.RP.Sj..j.
000140: 8B 46 18 A2 26 05 96 92 33 D2 F7 F6 91 F7 F6 42 .F.&...3.....B
000150: 87 CA F7 76 1A 8A F2 8A E8 C0 CC 02 0A CC B8 01 ...V.....
000160: 02 80 7E 02 0E 75 04 B4 42 8B F4 8A 56 24 CD 13 .~.u..B...V$..
000170: 61 61 72 0A 40 75 01 42 03 5E 0B 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 6B FF 0D 0A 44 69 73 6B 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 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 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.
```

11. tdump boots.bin = Move the data from 'boots.bin' to 'tdump', according to the data address to be display from file floppy.Img'.

```
Command Prompt

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 ] POWER button turned off.
=====

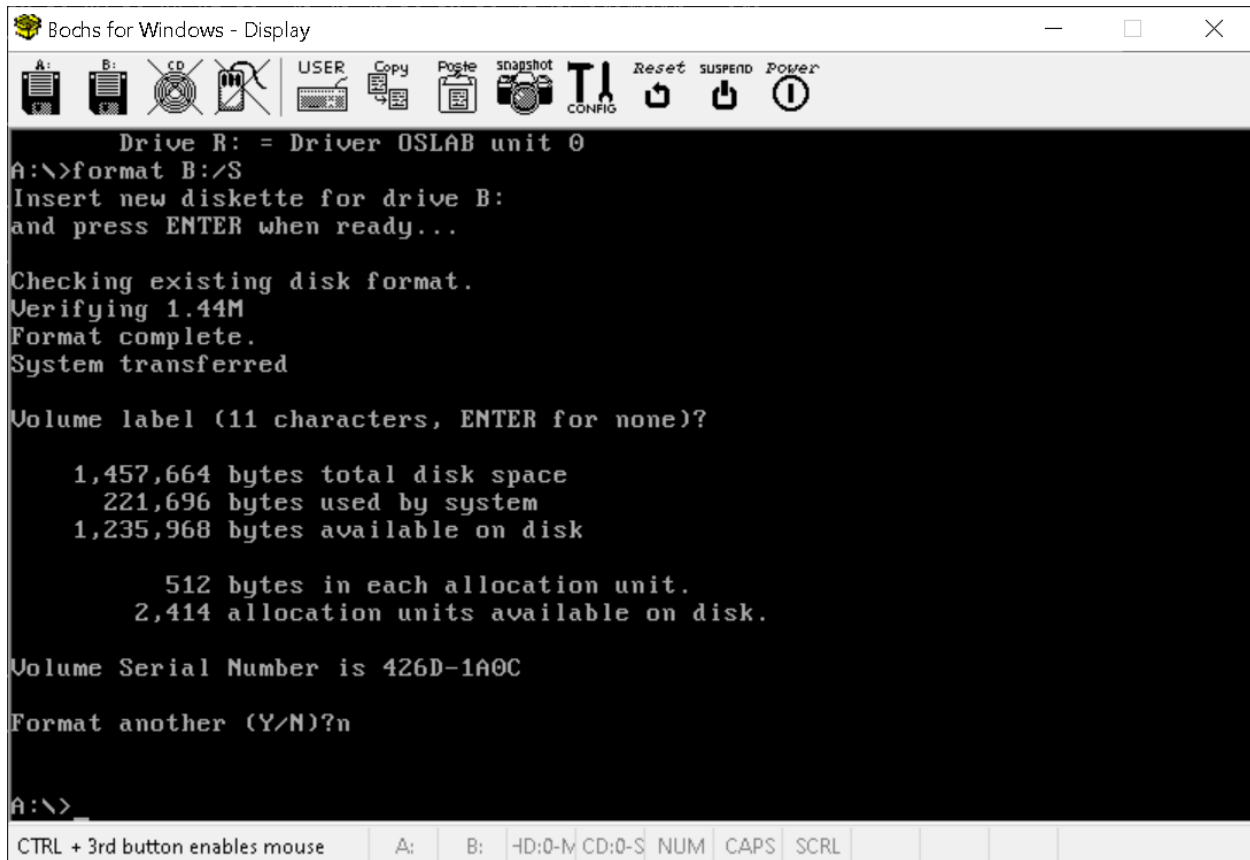
C:\OS\LAB\LAB1>dosfp

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.
=====
```

12. type s.bat = Calling the PC-Simulator ‘bochs’ with the configuration file name ‘bochsrc.bxrc’.

13. s = Command to do the boot process, but file because diskboot was not found in the configuration file ‘bochsrc.bxrc’.



16. format B:/S = The name of the location and 'system file' is chosen to accommodate the file that has been moved by 'dosfp'. Then enter the answer 'n' to make sure no other format is chosen again. And close it by clicking the power button.

```
Command Prompt

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 bochsrc2.txt
000000000000i[      ] installing win32 module as the Bochs GUI
000000000000i[      ] using log file bochsout.txt
# In bx_win32_gui_c::exit(void)!
=====
Bochs is exiting with the following message:
[MGUI ] POWER button turned off.
=====

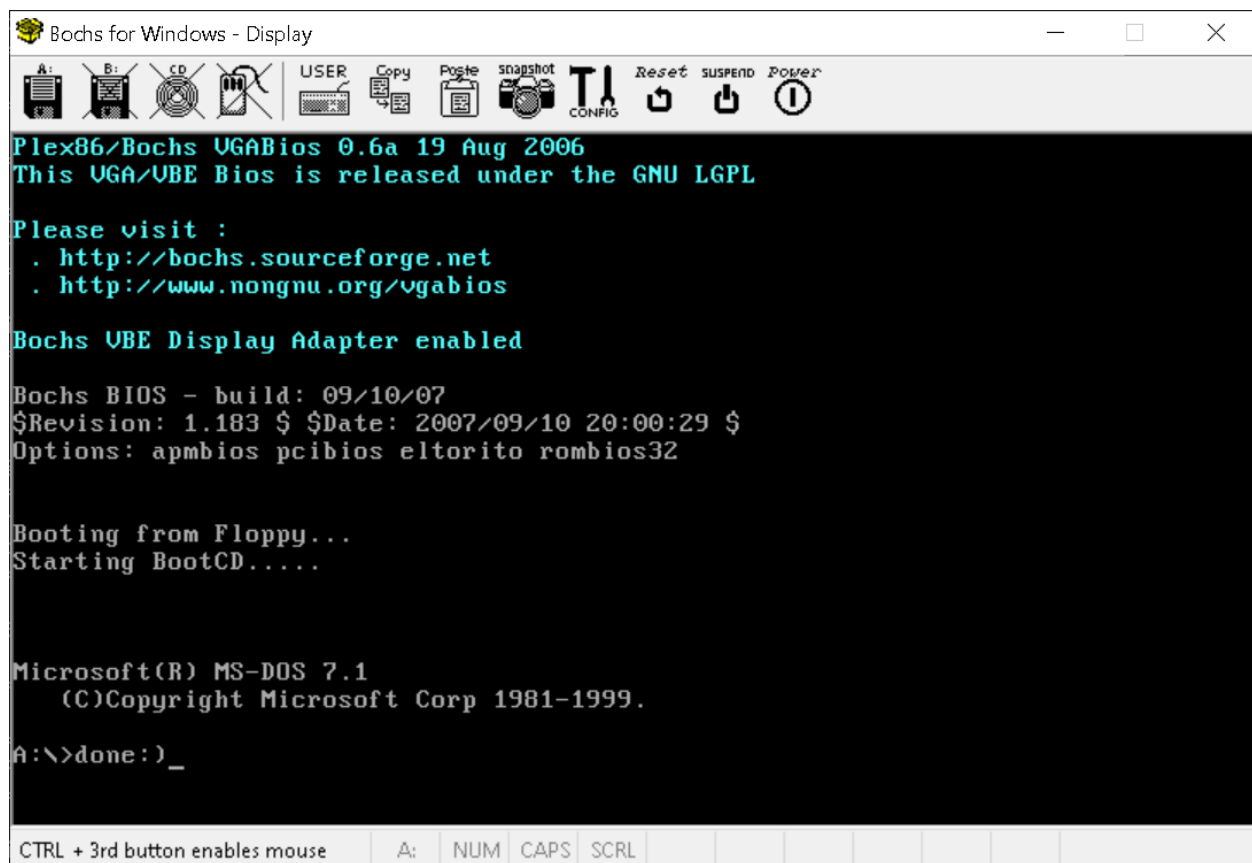
C:\OS\Bochs-2.3.5\dos>cd "C:\os\lab\lab1"

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 bochsout.txt
# In bx_win32_gui_c::exit(void)!
=====
Bochs is exiting with the following message:
[MGUI ] POWER button turned off.
=====

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

17. s = Command to booting file 'floppya.img'.



18. Done > power = When finish booting, then close it by clicking power button.