TUGAS

MATA KULIAH PRAKTIKUM SISTEM OPERASI

MODUL 1 PENGENALAN SISTEM PENGEMBANGAN OS DENGAN PC SIMULATOR 'BOSCH'

Disusun Oleh :

M HAFIZ SAPUTRO

L200210224 Kelas

E

PROGRAM STUDI TEKNIK INFORMATIKA

FAKULTAS KOMUNIKASI DAN INFORMATIKA

UNIVERSITAS MUHAMMADIYAH SURAKARTA

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NIM : L200210224 Nama : M Hafiz S Dosen Pengampu : Heru Setiya Nugraha, S.T, M.Kom Tanggal Praktikum : 13 September 2022	Nilai Praktikum: Tanda Tangan :

LATIHAN MODUL 1

Menuju ke direktori ‘C:\OS’

```
C:\Users\hafiz>cd C:\OS

C:\OS>dir
 Volume in drive C is OS
 Volume Serial Number is B8F2-BA82

 Directory of C:\OS
```

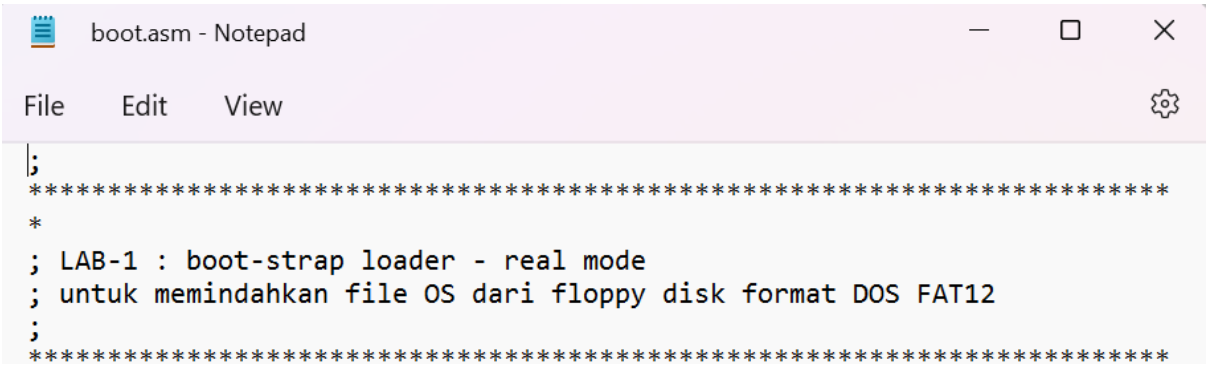
Menjalankan file setpath.

```
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>
```

Membuka file boot.asm dari direktori ‘C:\OS\LAB\LAB1’

```
C:\OS\LAB\LAB1>Notepad boot.asm
```



Membuka file *Makefile*

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

Makefile - Notepad

File Edit View

```
#
# LAB01 - Makefile
#

fp.disk: boot
	dd if=boot.bin of=floppya.img

boot: boot.asm
	nasm boot.asm -o boot.bin -f bin

kernel: kernel.asm
	nasm kernel.asm -o kernel.bin -f bin
clean:
	rm -f *.bin boot kernel
```

Menjalankan program ‘make fp.disk’ .

```
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
```

Membuat file floppya.img menggunakan program bximage

```
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
  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>
```

Memformat file floppya.img menggunakan PC-Simulator

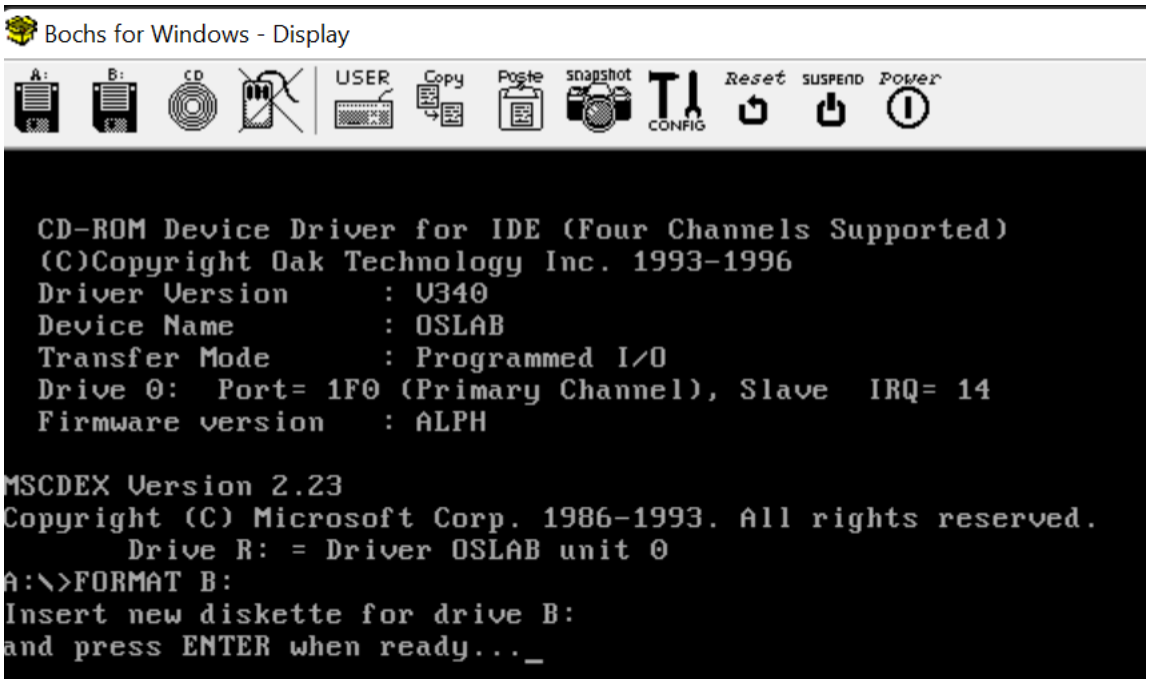
(CMD)

```
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
```

{PC-Simulator)



Menggunakan program tdump

Command Prompt

```
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 EF  1D 4E 2A 4E 4F 20 4E 41 ......)..N*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 8B C1 99 ...|.E..8N$} ...
000070: E8 7E 01 83 EB 3A 66 A1  1C 7C 66 3B 07 8A 57 FC .~...:f..|f;..W.
000080: 75 06 80 CA 02 88 56 02  80 C3 10 73 ED 33 C9 FE u.....V....s.3..
000090: 06 D8 7D 8A 46 10 98 F7  66 16 03 46 1C 13 56 1E ..}.F...f..F..V.
0000A0: 03 46 0E 13 D1 8B 76 11  60 89 46 FC 89 56 FE B8 .F....v.`.F..V..
0000B0: 20 00 F7 E6 8B 5E 0B 03  C3 48 F7 F3 01 46 FC 11  ....^...H...F..
0000C0: 4E FE 61 BF 00 07 E8 28  01 72 3E 38 2D 74 17 60 N.a....(.r>8-t.`
0000D0: B1 0B BE D8 7D F3 A6 61  74 3D 4E 74 09 83 C7 20 ....}..at=Nt...
0000E0: 3B FB 72 E7 EB DD FE 0E  D8 7D 7B A7 BE 7F 7D AC ;.r......}{...}.
0000F0: 98 03 F0 AC 98 40 74 0C  48 74 13 B4 0E BB 07 00 .....@t.Ht......
000100: CD 10 EB EF BE 82 7D EB  E6 BE 80 7D EB E1 CD 16 ......}....}....
000110: 5E 1F 66 8F 04 CD 19 BE  81 7D 8B 7D 1A 8D 45 FE ^.f......}.}..E.
000120: 8A 4E 0D F7 E1 03 46 FC  13 56 FE B1 04 E8 C2 00 .N....F..V......
000130: 72 D7 EA 00 02 70 00 52  50 06 53 6A 01 6A 10 91 r....p.RP.Sj.j..
000140: 8B 46 18 A2 26 05 96 92  33 D2 F7 F6 91 F7 F6 42 .F..&...3......B
000150: 87 CA F7 76 1A 8A F2 8A  E8 C0 CC 02 0A CC B8 01 ...v............
000160: 02 80 7E 02 0E 75 04 B4  42 8B F4 8A 56 24 CD 13 ..~..u..B...V$..
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 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 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 6B 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.
```

Melihat file s.bat

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

Memformat file floppya.img dan menambah system file didalamnya

```
A:\>dir B:

 Volume in drive B is DOS
 Volume Serial Number is 3C6E-18EE
 Directory of B:\

File not found
                        1,457,664 bytes free

A:\>_
```

TUGAS

1. **Apa yang dimaksud dengan kode 'ASCII', buatlah tabel kode ASCII lengkap cukup kode ASCII yang standar tidak perlu extended, tuliskan kode ASCII dalam format angka desimal, binary, dan hexadecimal serta karakter dan symbol yang dikodekan.**

   (ASCII) singkatan dari *American Standard Code for Information Interchange* atau Kode Standar Amerika untuk Pertukaran Informasi ,adalah standar pengkodean karakter untuk alat komunikasi.

Des	Hex	Biner	Karakter
0	00	00000000	NUL
1	01	00000001	SOH
2	02	00000010	STX
3	03	00000011	ETX
4	04	00000100	EOT
5	05	00000101	ENQ
6	06	00000110	ACK
7	07	00000111	BEL
8	08	00001000	BS
9	09	00001001	HT
10	0A	00001010	LF
11	0B	00001011	VT
12	0C	00001100	FF
13	0D	00001101	CR
14	0E	00001110	JADI

15	0F	00001111	SI
16	10	00010000	DLE
17	11	00010001	DC1
18	12	00010010	DC2
19	13	00010011	DC3
20	14	00010100	DC4
21	15	00010101	NAK
22	16	00010110	SYN
23	17	00010111	ETB
24	18	00011000	BISA

Des	Hex	Biner	Karakter
25	19	00011001	EM
26	1A	00011010	SUB
27	1B	00011011	ESC
28	1C	00011100	FS
29	1D	00011101	GS
30	1E	00011110	RS
31	1F	00011111	AS
32	20	00100000	ruang
33	21	00100001	!
34	22	00100010	"
35	23	00100011	#
36	24	00100100	$
37	25	00100101	%

38	26	00100110	&
39	27	00100111	'
40	28	00101000	(
41	29	00101001	)
42	2A	00101010	*
43	2B	00101011	+
44	2C	00101100	,
45	2D	00101101	-
46	2E	00101110	.
47	2F	00101111	/
48	30	00110000	0
49	31	00110001	1
50	32	00110010	2
51	33	00110011	3
52	34	00110100	4
53	35	00110101	5
54	36	00110110	6

Des	Hex	Biner	Karakter
55	37	00110111	7
56	38	00111000	8
57	39	00111001	9
58	3A	00111010	:
59	3B	00111011	;
60	3C	00111100	<

61	3D	00111101	=
62	3E	00111110	>
63	3F	00111111	?
64	40	01000000	@
65	41	01000001	A
66	42	01000010	B
67	43	01000011	C
68	44	01000100	D
69	45	01000101	E
70	46	01000110	F
71	47	01000111	G
72	48	01001000	H
73	49	01001001	I
74	4A	01001010	J
75	4B	01001011	K
76	4C	01001100	L
77	4D	01001101	M
78	4E	01001110	N
79	4F	01001111	O
80	50	01010000	P
81	51	01010001	Q
82	52	01010010	R
83	53	01010011	S
84	54	01010100	T

Des	Hex	Biner	Karakter
85	55	01010101	U
86	56	01010110	V
87	57	01010111	W
88	58	01011000	X
89	59	01011001	Y
90	5A	01011010	Z
91	5B	01011011	[
92	5C	01011100	\
93	5D	01011101	]
94	5E	01011110	^
95	5F	01011111	_
96	60	01100000	`
97	61	01100001	a
98	62	01100010	b
99	63	01100011	c
100	64	01100100	d
101	65	01100101	e
102	66	01100110	f
103	67	01100111	g
104	68	01101000	h
105	69	01101001	i
106	6A	01101010	j
107	6B	01101011	k

108	6C	01101100	l
109	6D	01101101	m
110	6E	01101110	n
111	6F	01101111	o
112	70	01110000	p
113	71	01110001	q
114	72	01110010	r
Des	**Hex**	**Biner**	**Karakter**
115	73	01110011	s
116	74	01110100	t
117	75	01110101	u
118	76	01110110	v
119	77	01110111	w
120	78	01111000	x
121	79	01111001	y
122	7A	01111010	z
123	7B	01111011	{
124	7C	01111100	|
125	7D	01111101	}
126	7E	01111110	~
127	7F	01111111	DEL

2. Carilah daftar perintah bahasa assembly untuk mesin intel keluarga x86 lengkap (dari buku referensi atau internet). Daftar perintah ini dapat digunakan sebagai pedoman untuk memahami program ‘boot.asm’ dan ‘kernel.asm’.

Dalam program bahasa assembly terdapat 2 jenis yang ditulis dalam program : 1. Assembly Directive : merupakan kode yang menjadi arahan bagi assembler/compiler untuk menata program.

2. Instruksi : kode yang harus dieksekusi oleh CPU mikrokontroler dengan melakukan operasi tertentu sesuai dengan daftar yang sudah tertananm dalam CPU.

Assembly Directive

Assembly Directive	Keterangan
EQU	Pendefinisian konstanta
DB	Pendefinisian data dengan ukuran satuan 1 byte
DW	Pendefinisian data dengan ukuran satuan 1 word
DBIT	Pendefinisian data dengan ukuran satuan 1 bit
DS	Pemesanan tempat penyimpanan data di RAM
ORG	Inisialisasi alamat mulai program
END	Penanda akhir program
CSEG	Penanda penempatan di code segment
XSEG	Penanda penempatan di external data segment
DSEG	Penanda penempatan di internal direct data segment
ISEG	Penanda penempatan di internal indirect data segment
BSEG	Penanda penempatan di bit data segment
CODE	Penanda mulai pendefinisian program
XDATA	Pendefinisian external data
DATA	Pendefinisian internal direct data
IDATA	Pendefinisian internal indirect data
BIT	Pendefinisian data bit
#INCLUDE	Mengikutsertakan file program lain

Daftar Instruksi

Instruksi	Keterangan Singkatan
ACALL	Absolute Call
ADD	Add
ADDC	Add with Carry
AJMP	Absolute Jump

ANL	AND Logic
CJNE	Compare and Jump if Not Equal
CLR	Clear
CPL	Complement
DA	Decimal Adjust
DEC	Decrement
DIV	Divide
DJNZ	Decrement and Jump if Not Zero
INC	Increment
JB	Jump if Bit Set
JBC	Jump if Bit Set and Clear Bit
JC	Jump if Carry Set
JMP	Jump to Address
JNB	Jump if Not Bit Set
JNC	Jump if Carry Not Set
JNZ	Jump if Accumulator Not Zero
JZ	Jump if Accumulator Zero
LCALL	Long Call
LJMP	Long Jump
MOV	Move from Memory
MOVC	Move from Code Memory
MOVX	Move from Extended Memory
MUL	Multiply
NOP	No Operation
ORL	OR Logic
POP	Pop Value From Stack
PUSH	Push Value Onto Stack
RET	Return From Subroutine
RETI	Return From Interrupt
RL	Rotate Left
RLC	Rotate Left through Carry
RR	Rotate Right
RRC	Rotate Right through Carry

SETB	Set Bit
SJMP	Short Jump
SUBB	Subtract With Borrow
SWAP	Swap Nibbles
XCH	Exchange Bytes
XCHD	Exchange Digits
XRL	Exclusive OR Logic