

PRAKTIKUM SISTEM OPERASI

MODUL 2 : MENGENAL PROSES PEMBUATAN ‘DISK BOOT’



Disusun oleh:

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LANGKAH KERJA :

1. Membuka command prompt dengan menekan tombol windows kemudian search “cmd”, lalu ketikkan cd c:\os kemudian “setpath”, lalu ketikkan cd lab/lab2. Lalu periksa isi folder dengan mengetikkan dir, untuk memastikan apakah file floppy.img ada di dalam folder lab2, dan ternyata belum ada.

```
C:\Users\Ghaisani>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/lab2
c:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is 5046-14FD

Directory of c:\OS\LAB\LAB2

12/09/2019  16:11    <DIR>          .
12/09/2019  16:11    <DIR>          ..
15/12/2008  16:18                1.625 bochsrc.bxrc
15/12/2008  17:57               15.923 boot.asm
15/12/2008  13:52                78 dosfp.bat
15/12/2008  17:57               7.966 kernel.asm
15/12/2008  16:21                228 Makefile
15/12/2008  12:20                44 s.bat
               6 File(s)              25.864 bytes
               2 Dir(s)  22.720.790.528 bytes free
```

2. Ketikkan bximage dan menjawab pertanyaan dengan “fd”, “1.44” dan “floppya.img”

```
c:\OS\LAB\LAB2>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.

The following line should appear in your bochsrc:
  floppya: image="floppya.img", status=inserted
<The line is stored in your windows clipboard, use CTRL-U to paste>

Press any key to continue
```

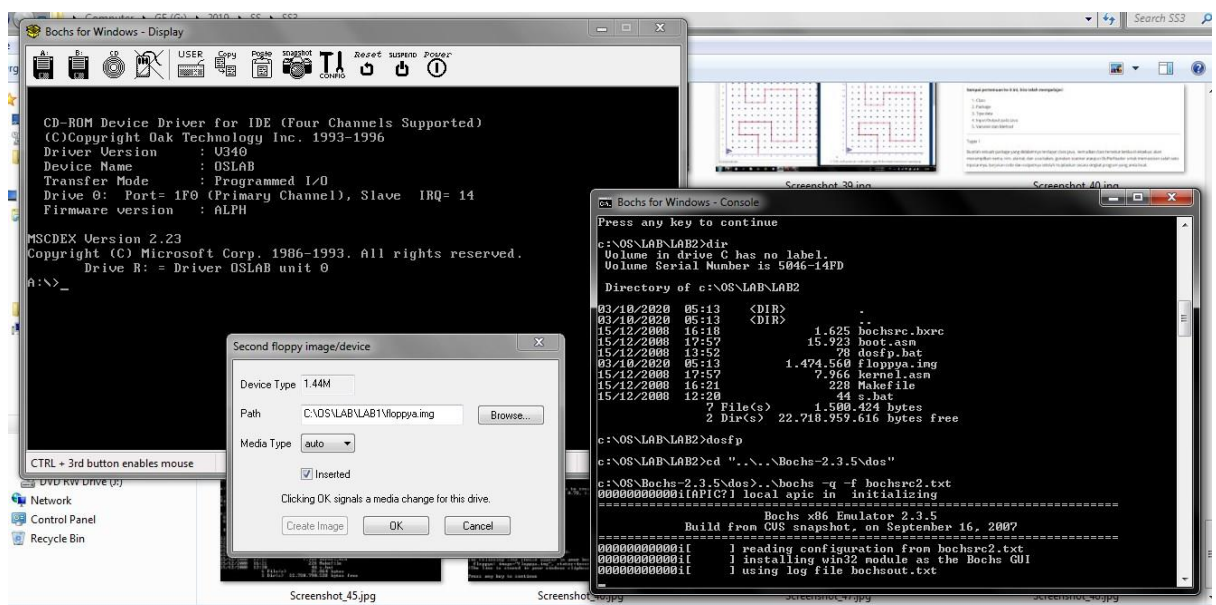
3. Memeriksa kembali isi folder apakah floppy.img sudah ada.

```
c:\OS\LAB\LAB2>dir
Volume in drive C has no label.
Volume Serial Number is 5046-14FD

Directory of c:\OS\LAB\LAB2

03/10/2020  05:13    <DIR>          .
03/10/2020  05:13    <DIR>          ..
15/12/2008  16:18                1.625 bochsrc.bxrc
15/12/2008  17:57               15.923 boot.asm
15/12/2008  13:52                78 dosfp.bat
03/10/2020  05:13           1.474.560 floppy.img
15/12/2008  17:57                7.966 kernel.asm
15/12/2008  16:21                228 Makefile
15/12/2008  12:20                44 s.bat
               7 File(s)          1.500.424 bytes
               2 Dir(s)  22.718.959.616 bytes free
```

4. Jalankan perintah berikut: 'dosfp'. Pindah ke windows 'Bochs' (PC Simulator), klik menu gambar floppy disk nomor dua dari kanan. Selanjutnya atur lokasi file image sehingga menunjuk ke file 'floppy.img' yang terdapat pada direktori kerja 'LAB2', klik tombol 'BROWSE' lalu tekan OK.



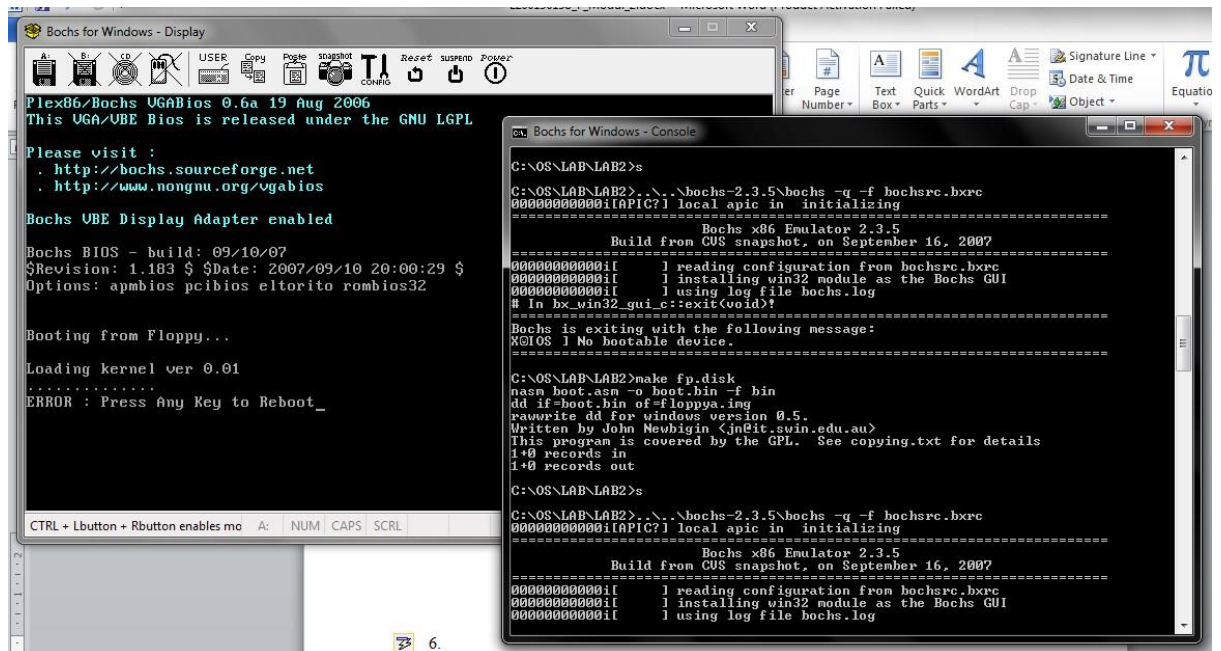
5. Pada prompt bosch ketikkan format B: /S lalu selesaikan prosesnya. Lalu tutup dengan menekan tombol Power.

```
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)? _
```

6. Jalankan perintah `make fp.disk` pada cmd, kemudian ketikkan “s” dan tekan enter hingga muncul windows bosch, kemudian klik tombol power.



7. Ketikkan “notepad boot.asm” untuk mengedit isi file.

```
C:\OS\LAB\LAB2>notepad boot.asm
```

8. Maka akan muncul file notepad, kemudian tekan CTRL+F lalu cari dengan kata kunci “loading kernel”, lalu rubah menjadi “Belajar membuat BOOTSTRAP-LOADER”

```

boot.asm - Notepad
File Edit Format View Help

;-- 0x0D akhir baris
;-- 0x0A baris baru
;-- 0x00 Karakter 'NULL' pembatas dengan data di bawahnya
;=====
msgLoading db 0x0D, 0x0A, "Belajar membuat BOOTSTRAP-LOADER", 0x0D, 0x0A, 0x00
msgCRLF db 0x0D, 0x0A, 0x00
msgProgress db ".", 0x00

;=====
; Teks yang di tampilkan saat terjadi kesalahan BOOT
;=====

msgFailure db 0x0D, 0x0A, "ERROR : Press Any Key to Reboot", 0x00

;=====
;(4) BLOK BOOT SIGNATURE
;=====

TIMES 510-($-$$) DB 0
DW 0xAA55

;*****

```

9. Jalankan perintah “make kernel” untuk membuat file KERNEL.BIN

The screenshot shows two windows from the Bochs for Windows application. The 'Display' window on the left shows the BIOS boot screen with the message 'Belajar membuat BOOTSTRAP-LOADER' and an error message 'ERROR : Press Any Key to Reboot_'. The 'Console' window on the right shows the command prompt where the user has entered the command 'make fn.disk' and the output of the command, which includes the creation of the 'boot.bin' file and the writing of the floppy image 'floppya.img'.

```

Bochs for Windows - Display
Plex86/Bochs UGABios 0.6a 19 Aug 2006
This UGA/UBE Bios is released under the GNU LGPL.

Please visit :
. http://bochs.sourceforge.net
. http://www.nongnu.org/vgabios

Bochs UBE 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...

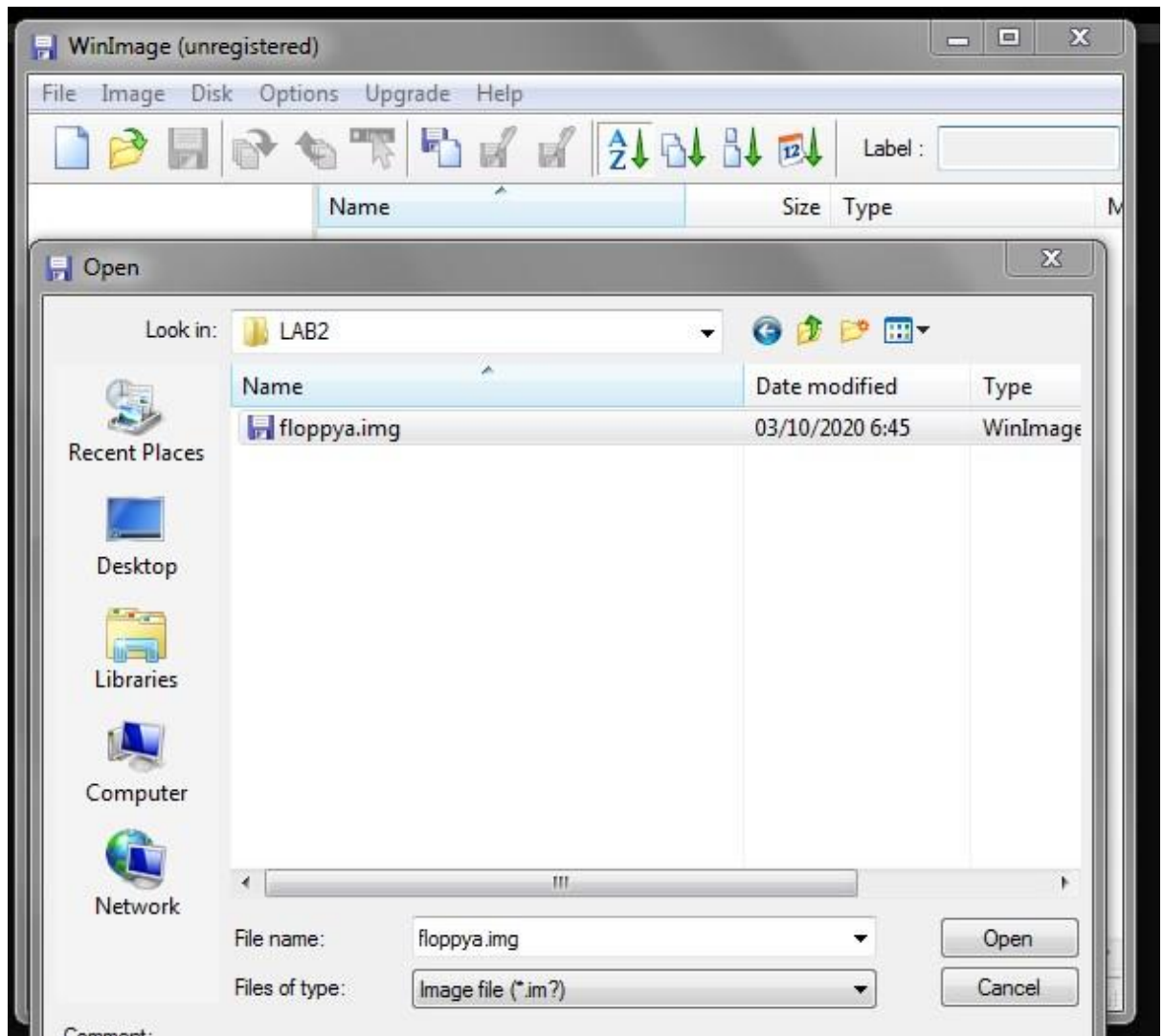
Belajar membuat BOOTSTRAP-LOADER
.....
ERROR : Press Any Key to Reboot_

CTRL + Lbutton + Rbutton enables mo  A: NUM CAPS SCRL

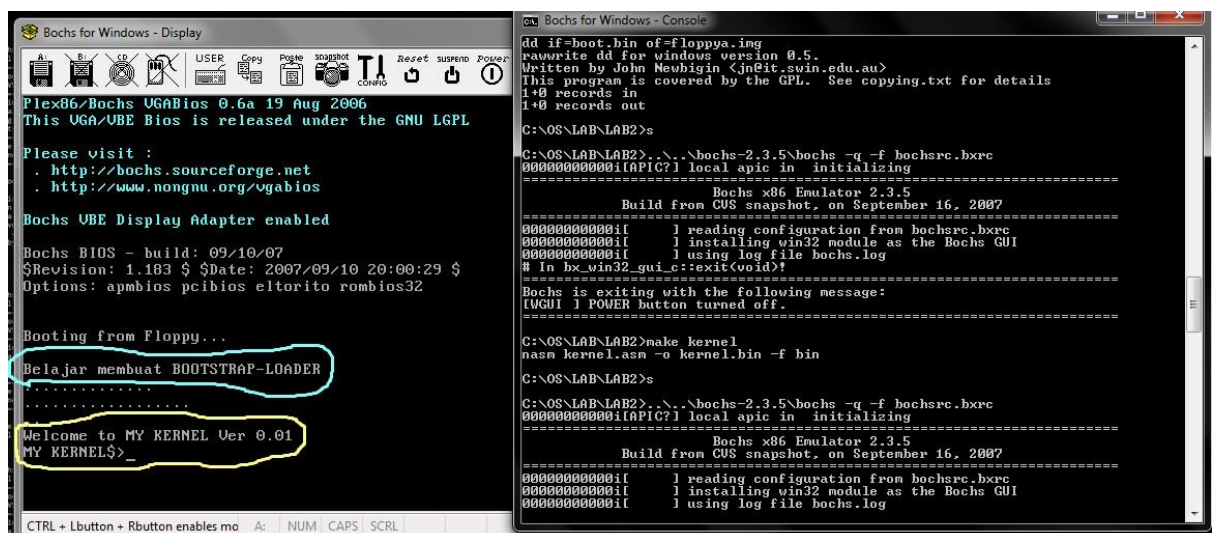
Bochs for Windows - Console
C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -q -f bochs.rc.bxrc
000000000000i[APIC?] local apic in initializing
=====
Bochs x86 Emulator 2.3.5
Build from CVS snapshot, on September 16, 2007
000000000000i[ reading configuration from bochs.rc.bxrc
000000000000i[ installing win32 module as the Bochs GUI
000000000000i[ using log file bochs.log
# In bx_win32_gui.c:exit(void)!
=====
Bochs is exiting with the following message:
[VGUI] POWER button turned off.
=====
C:\OS\LAB\LAB2>notepad boot.asm
C:\OS\LAB\LAB2>make fn.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\LAB2>s
C:\OS\LAB\LAB2>..\..\bochs-2.3.5\bochs -q -f bochs.rc.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 bochs.rc.bxrc
000000000000i[ installing win32 module as the Bochs GUI
000000000000i[ using log file bochs.log

```

10. Memindahkan file kernel.bin ke dalam image floppya.img menggunakan software winimage.

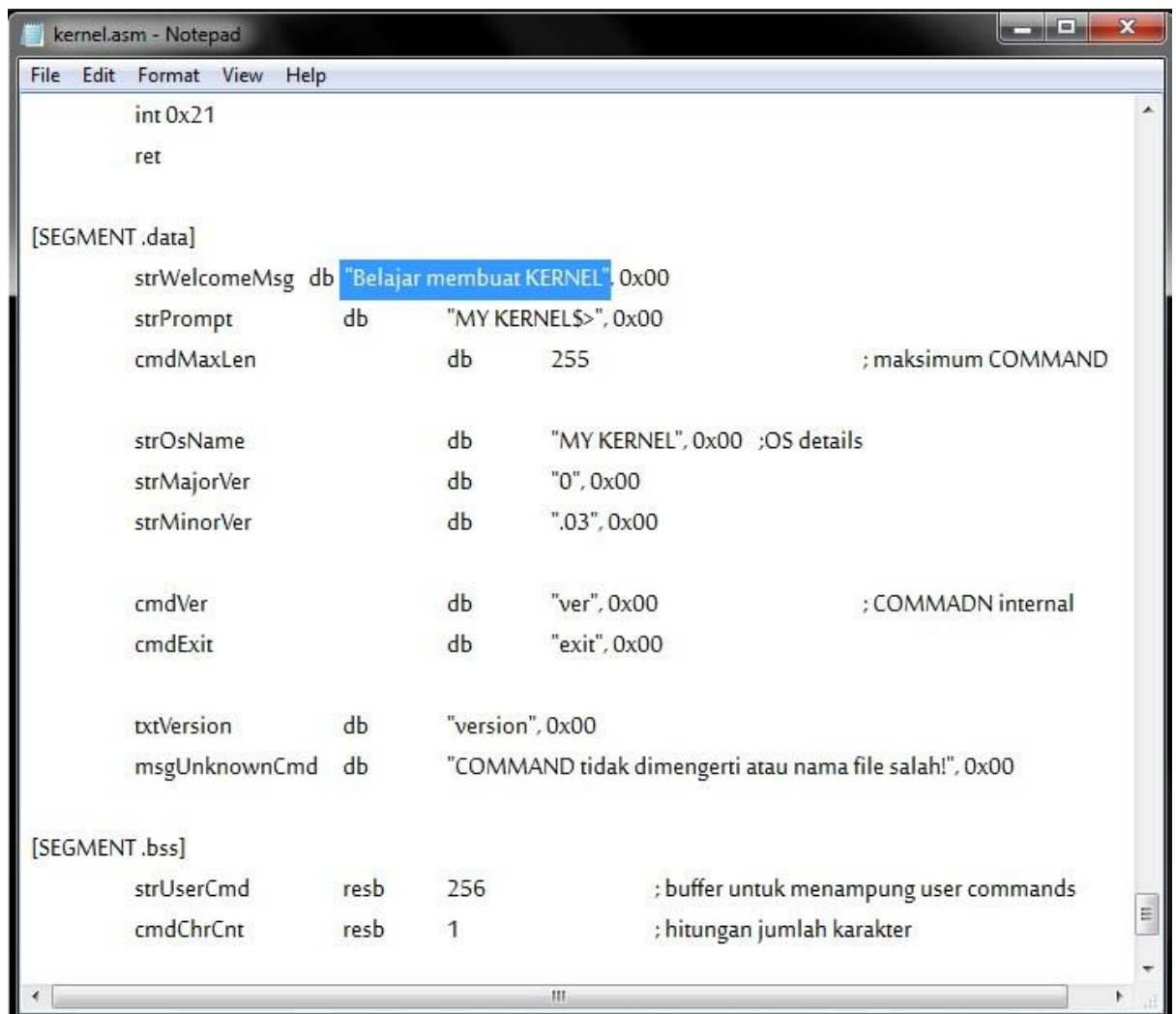


11. Siap melakukan proses boot pada PC Simulator dengan menggunakan 'floppya.img' yang sudah diberi tambahan file 'kernel.bin'. Kembali ke Windows 'Command Prompt' direktori kerja, jalankan PC-Simulator dengan memasukan perintah 'S'.



12. Memodifikasi file 'kernel.asm' dengan mencari tulisan "Welcome to MY KERNEL", ganti dengan "Belajar membuat KERNEL"

```
C:\OS\LAB\LAB2>notepad kernel.asm
C:\OS\LAB\LAB2>make kernel
nasm kernel.asm -o kernel.bin -f bin
C:\OS\LAB\LAB2>s
C:\OS\LAB\LAB2>..\..\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 bochs.log
# In bx_win32_gui_c::exit(void)?
=====
Bochs is exiting with the following message:
[VGUI ] POWER button turned off.
=====
```



```
kernel.asm - Notepad
File Edit Format View Help

int 0x21
ret

[SEGMENT .data]
strWelcomeMsg db "Belajar membuat KERNEL", 0x00
strPrompt     db "MY KERNEL$>", 0x00
cmdMaxLen     db 255 ; maksimum COMMAND

strOsName     db "MY KERNEL", 0x00 ;OS details
strMajorVer   db "0", 0x00
strMinorVer   db ".03", 0x00

cmdVer        db "ver", 0x00 ; COMMADN internal
cmdExit       db "exit", 0x00

txtVersion    db "version", 0x00
msgUnknownCmd db "COMMAND tidak dimengerti atau nama file salah!", 0x00

[SEGMENT .bss]
strUserCmd    resb 256 ; buffer untuk menampung user commands
cmdChrCnt     resb 1 ; hitungan jumlah karakter
```

Ini hasil akhirnya

```
Belajar membuat BOOTSTRAP-LOADER
.....
.....
..
Belajar membuat KERNEL
MY KERNEL$>_
```