

IKO31204
Pemrograman Sistem
Jilid 3: Kernel & Kompilasinya

Fakultas Ilmu Komputer - Universitas Indonesia
Sep 2011

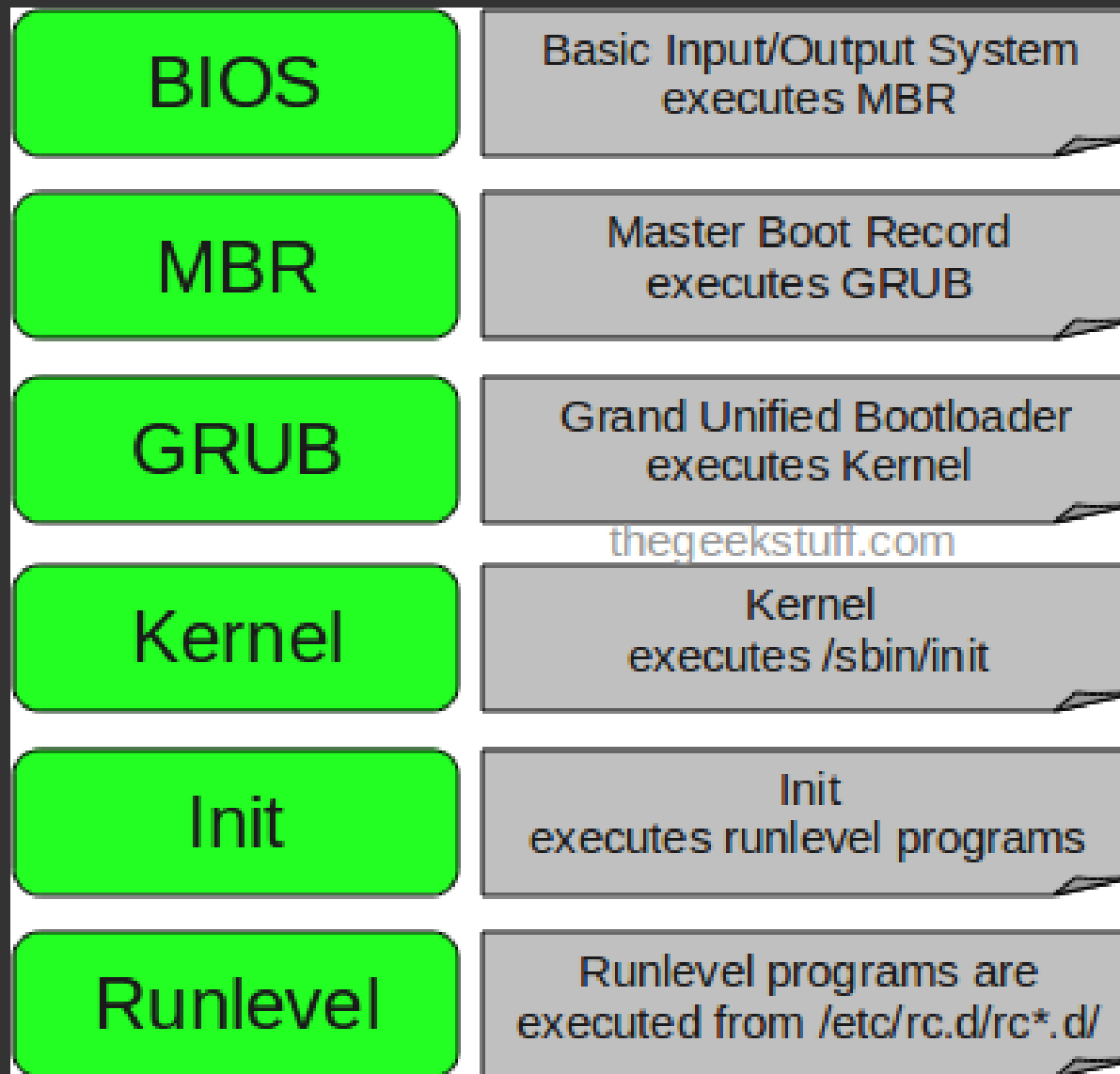
topik

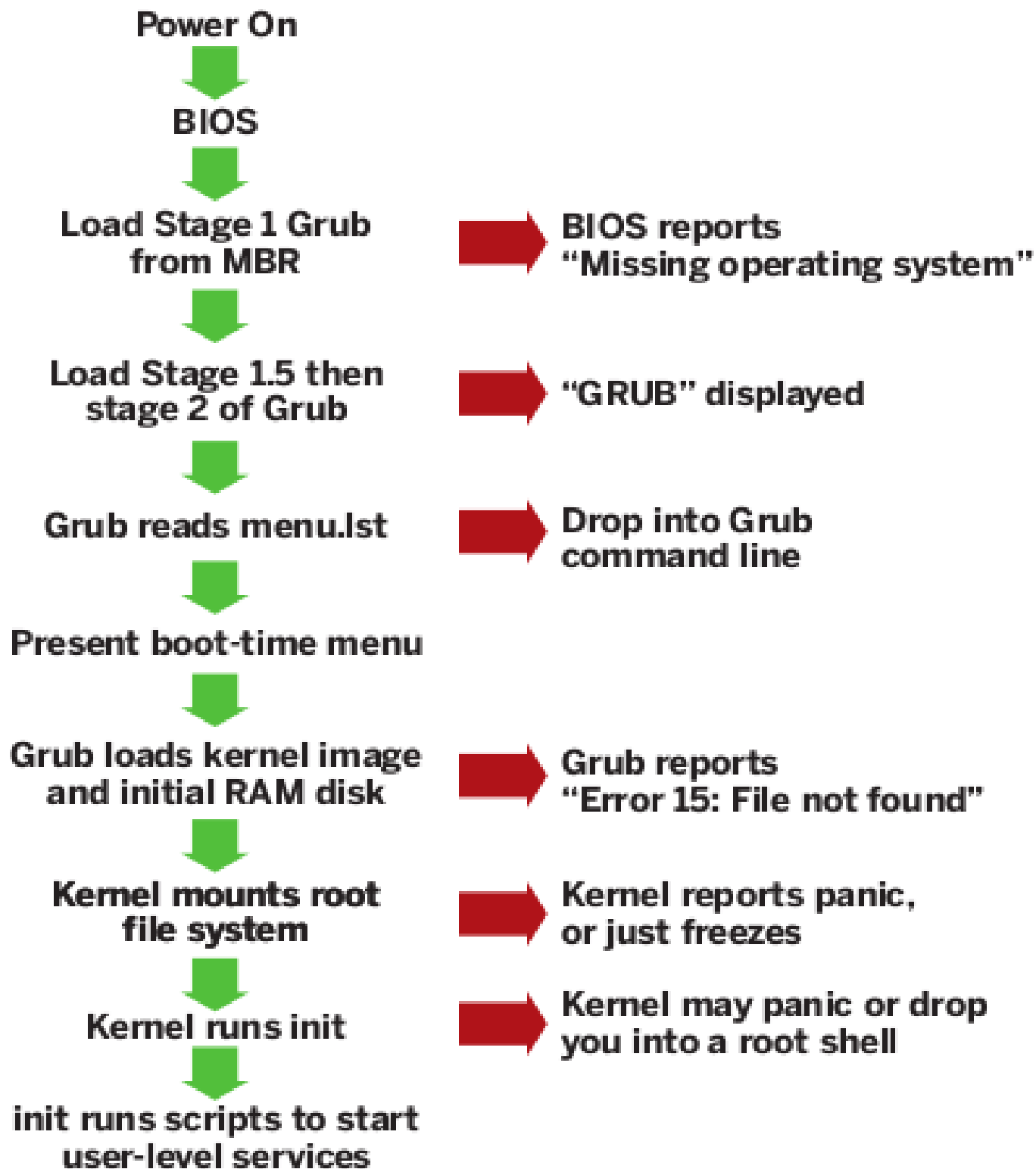
boot sequences
kernel compilation

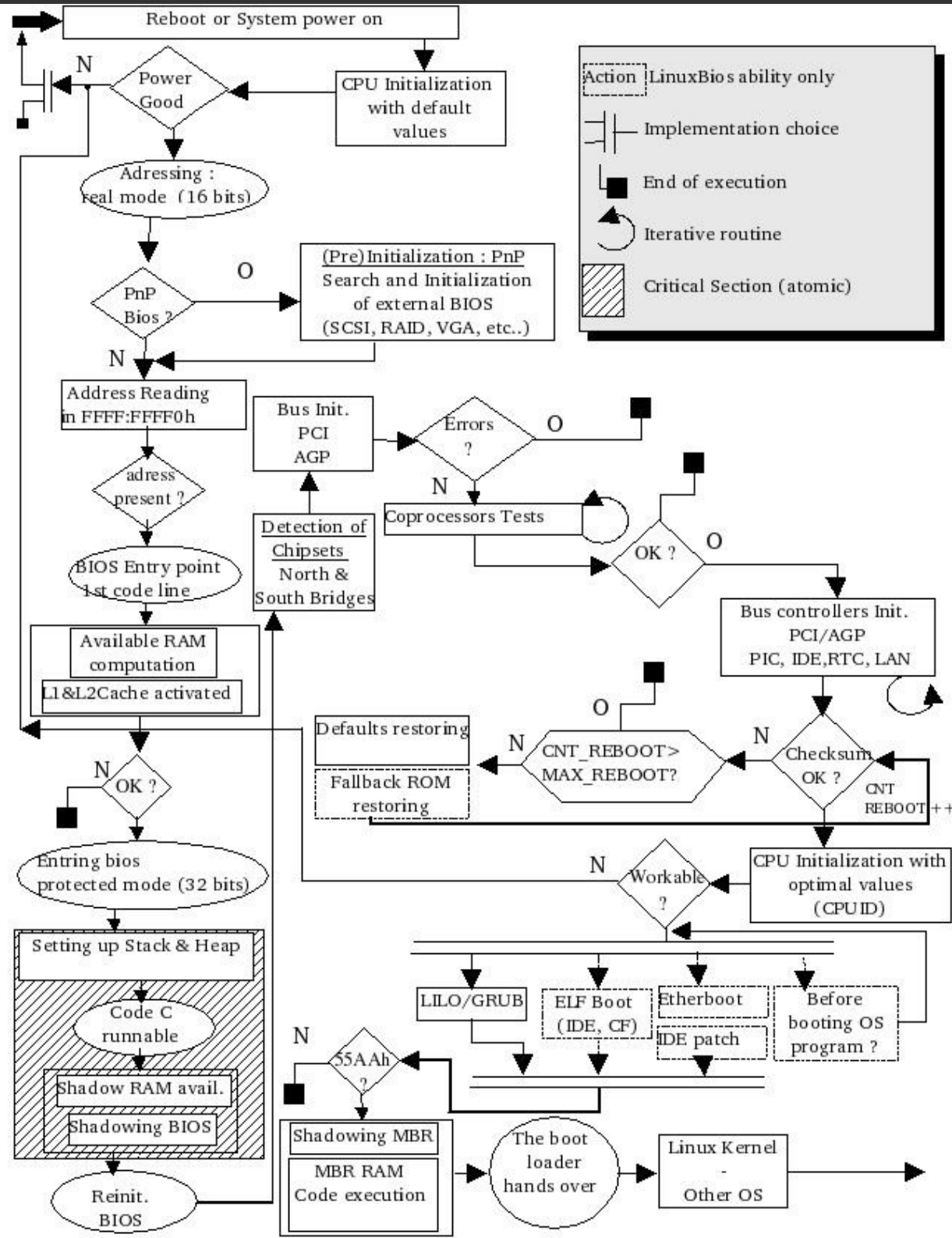
boot

sequence

linux boot sequence







basic MBR

BIOS loads and execute **the first 512 bytes** off the disk (/dev/hda)

Look for a primary partition (/dev/hda1-4) **marked as bootable**, load and **execute first 512 bytes** of this partition

GRUB

Memahami File System

konfigurasi ada di
`/boot/grub/menu.lst`

`# man grub`

kernel & initrd

1. inisialisasi devices
2. (optionally loads `initrd`)
3. mounts root filesystem
 - a. yg disebutkan pada `root=parameter`
 - b. kernel prints: `VFS: Mounted root`
4. execute `/sbin/init` (PID=1)
 - a. biasanya menampilkan:
INIT: version 2.76 booting
 - b. dapat dioverride dengan `boot=parameter`, cth:
`boot=/bin/bash`

initrd

Allows setup to be performed before "real" root FS is mounted

1. GRUB loads initrd ram disk image
2. kernel execute `/linuxrc`
 - load modules
 - initialise devices
 - `/linuxrc` exits
3. "real" root is mounted (`root=parameter`)
4. kernel execute `/sbin/init`

/sbin/init

`/sbin/init` membaca konfigurasi pada `/etc/inittab` (`man inittab`), yg fungsinya:

Run boot scripts:

1. debian: run `/etc/init.d/rcS` which runs:
`/etc/rcS.d/S*` scripts

2. switches to default runlevel cth: 2.

run scripts `/etc/rc2.d/S*`

run programs specified in `/etc/inittab`

kompilasi
kernel

referensi

http://www.howtoforge.com/howto_linux_kernel_2.4_compile_debian

<https://projects.ui.ac.id/attachments/1016/linux-2.4.27.tar.bz2>

toolchain

A toolchain is a complete collection of compiler and binutils programs and can be run either as a cross-compiler, or native on the target

toolchain

Install the **prerequisites** that we need to compile the new kernel

```
# apt-get install kernel-package  
ncurses-dev fakeroot wget bzip2
```

persiapan kernel source

```
# cd /usr/src
```

```
# wget
```

```
https://projects.ui.ac.id/attachme  
nts/1016/linux-2.4.27.tar.bz2
```

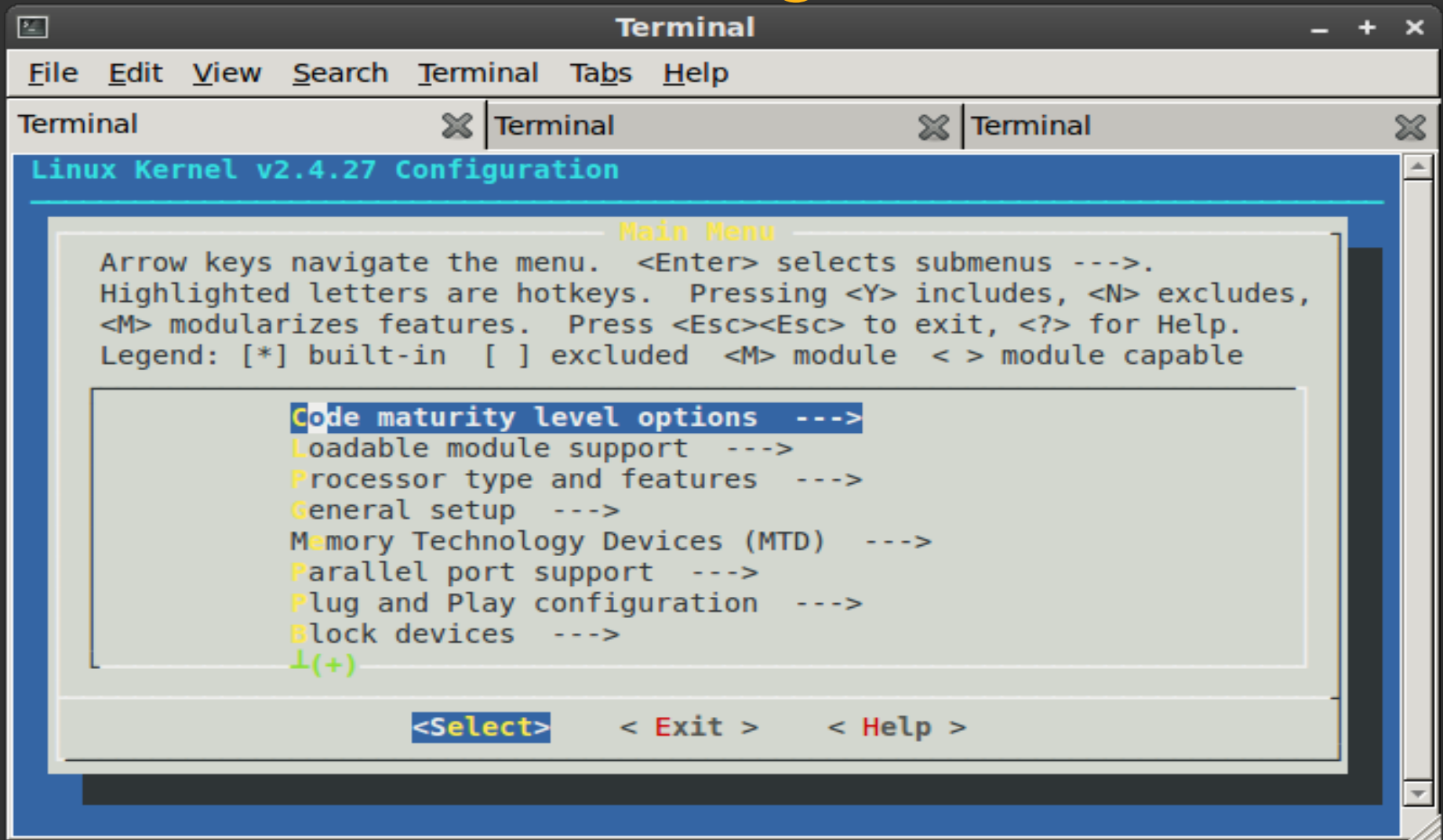
```
# tar -xvjf linux-2.4.27.tar.bz2
```

```
# cd linux-2.4.27/
```

```
# cp /boot/config-2.4.27-2-386  
.config
```


memilih driver & spesifikasi

make menuconfig



The image shows a terminal window titled "Terminal" with a menu for "Linux Kernel v2.4.27 Configuration". The menu is titled "Main Menu" and provides instructions on how to navigate and select options. The current selection is "Code maturity level options".

```
Linux Kernel v2.4.27 Configuration

Main Menu
Arrow keys navigate the menu.  <Enter> selects submenus --->.
Highlighted letters are hotkeys.  Pressing <Y> includes, <N> excludes,
<M> modularizes features.  Press <Esc><Esc> to exit, <?> for Help.
Legend: [*] built-in  [ ] excluded  <M> module  < > module capable

Code maturity level options --->
Loadable module support --->
Processor type and features --->
General setup --->
Memory Technology Devices (MTD) --->
Parallel port support --->
Plug and Play configuration --->
Block devices --->
↑(+)
```

Navigation options at the bottom:

```
<Select>  < Exit >  < Help >
```

kompilasi kernel (1)

```
# make dep
```

```
# make-kpkg clean
```

```
# fakeroot make-kpkg
```

```
--revision=versiSaya1.0 kernel_image
```

kompilasi kernel (2)

Apabila kompilasi error, keluarkan **driver/fitur** yang mnrt Anda membuat gagal kompilasi, lakukan:

```
# make clean
```

```
# make menuconfig
```

kemudian lakukan langkah **kompilasi kernel (1)**

install kernel baru

```
# cd ../
```

```
# dpkg -i kernel-image-
```

```
2.4.23_versiSaya1.0_i386.deb
```

pastikan pada `/boot/grub/menu.lst`
kernel baru Anda telah masuk
dalam `list Kernel` yg siap di-boot

tanya jawab