Proses Boot dan Manajemen Service

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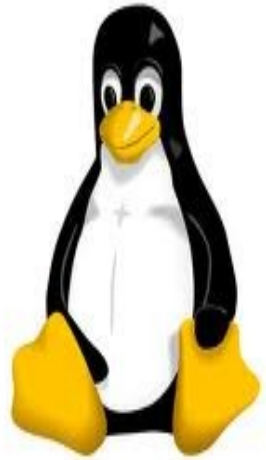
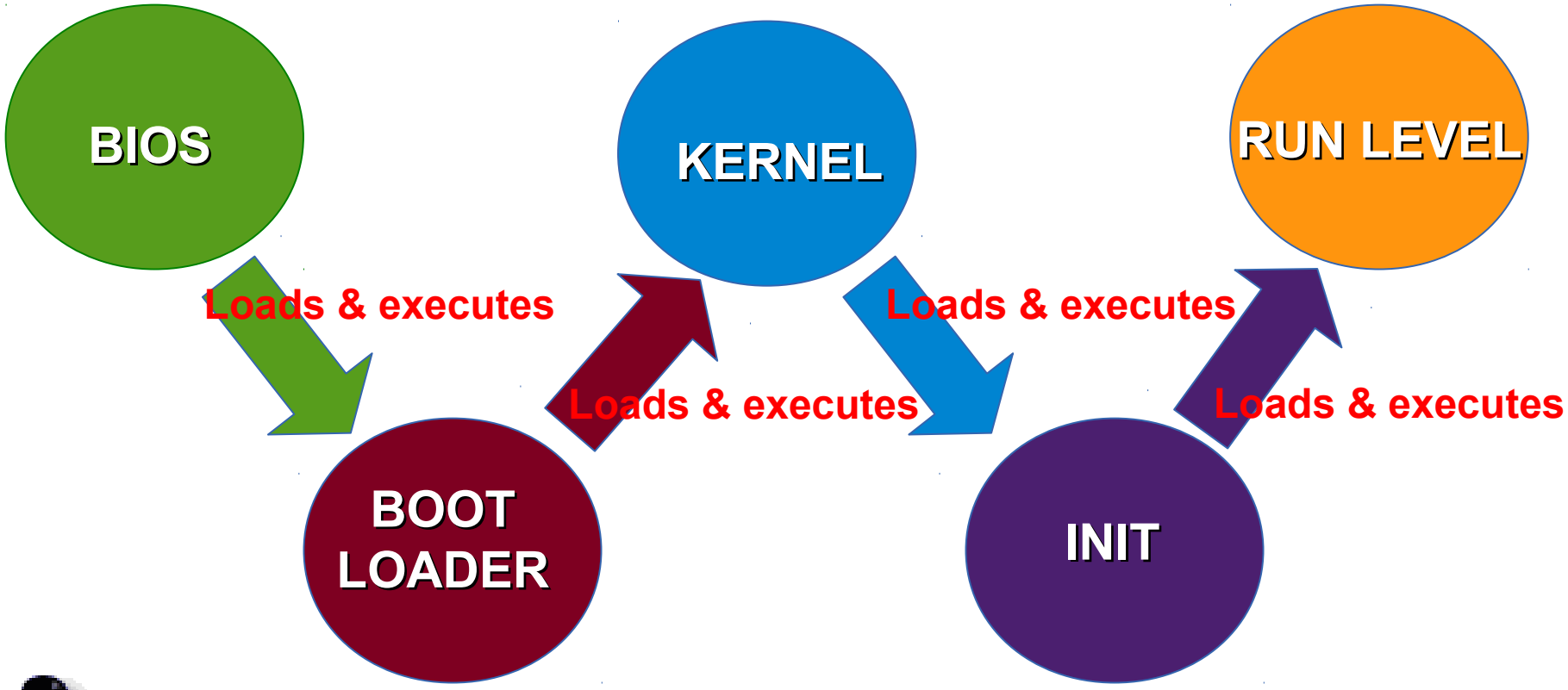
STT TERPADU NURUL FIKRI



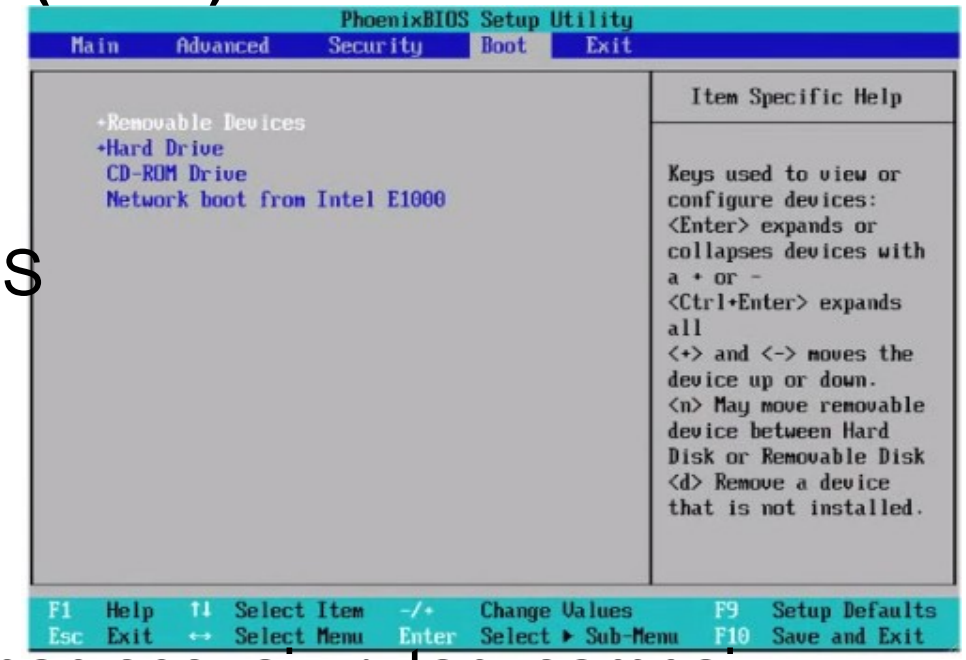
LINUX BOOT PROCESS

Proses Boot Linux

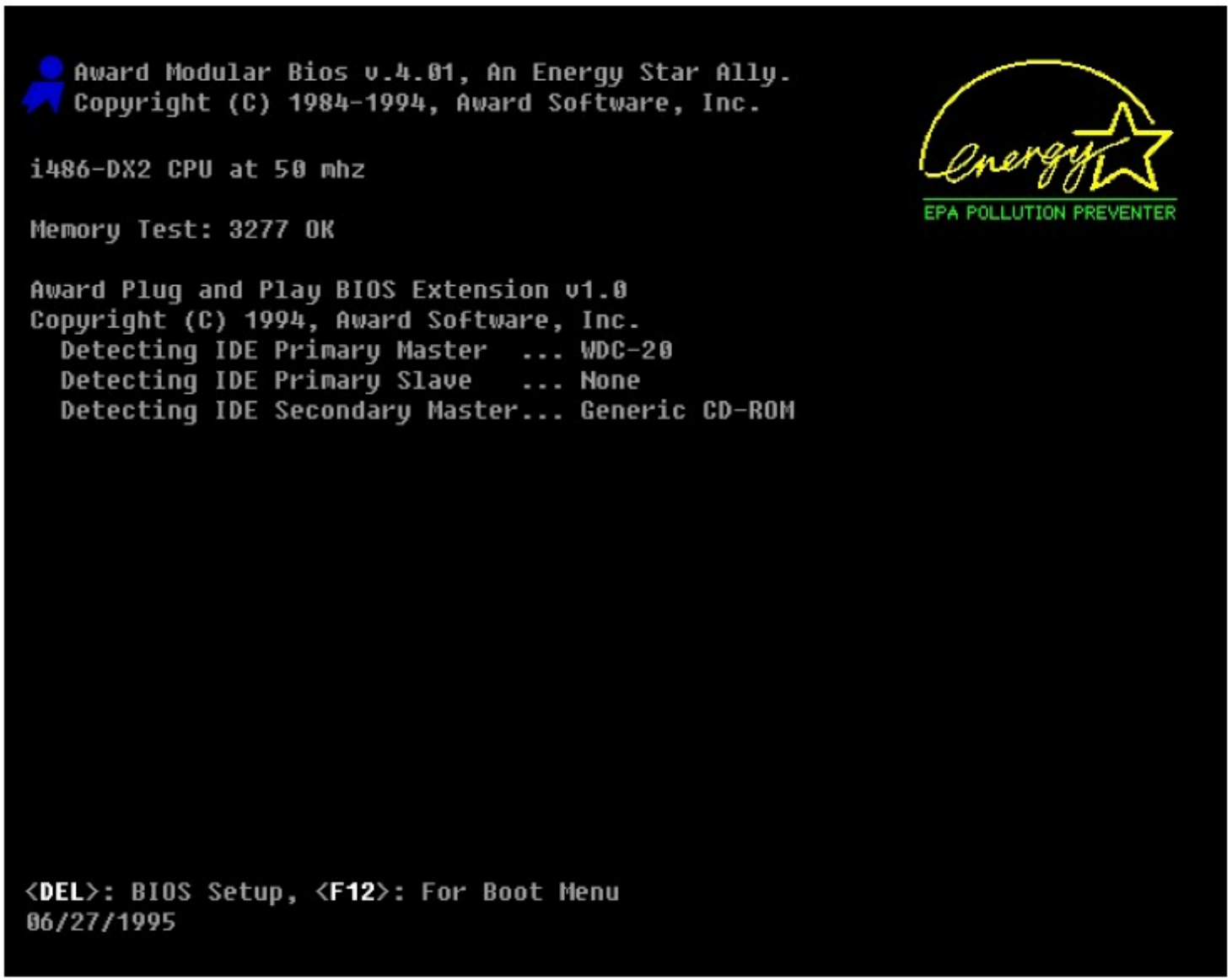


BIOS

- **Basic Input Output System (BIOS)**
  - Program pertama
  - Dijalankan dari ROM
  - Independen terhadap OS
- **POST**
  - Power On Self Test
- **Menjalankan OS dari**
  - Daftar media penyimpanan sesuai urutan, sampai menemukan sebuah **MBR** (Master Boot Record)



BIOS Screen

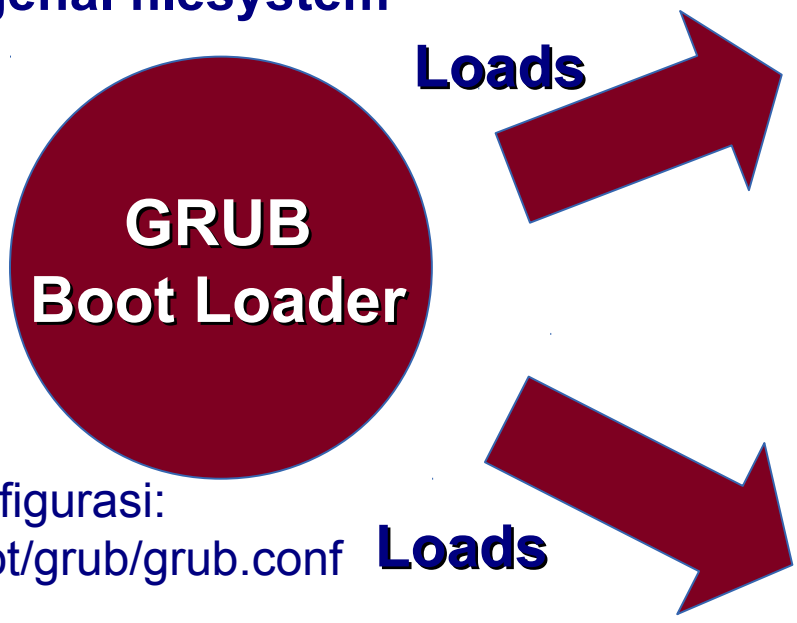

Award Modular Bios v.4.01, An Energy Star Ally.
Copyright (C) 1984-1994, Award Software, Inc.
i486-DX2 CPU at 50 mhz
Memory Test: 3277 OK
Award Plug and Play BIOS Extension v1.0
Copyright (C) 1994, Award Software, Inc.
Detecting IDE Primary Master ... WDC-20
Detecting IDE Primary Slave ... None
Detecting IDE Secondary Master... Generic CD-ROM
energy
EPA POLLUTION PREVENTER
<DEL>: BIOS Setup, <F12>: For Boot Menu
06/27/1995

BOOT LOADER

- **MBR**
  - Sektor awal (pertama) dari Disk, berukuran 512 Byte
  - Terdiri dari 3 komponen: primary boot loader info, partition table info, MBR validation check
- **Boot loader biasanya berada dalam MBR**
  - Bisa juga berada di tempat lainnya dari disk
- **Boot loader dalam MBR dijalankan**
  - Boot loader memuat/menjalankan OS (kernel)
  - Otomatis ataupun meminta opsi
  - Contoh boot loader: LILO, GRUB
- **Menciptakan initrd image**
  - “initial ramdisk”
  - Sebuah file system berbasis RAM

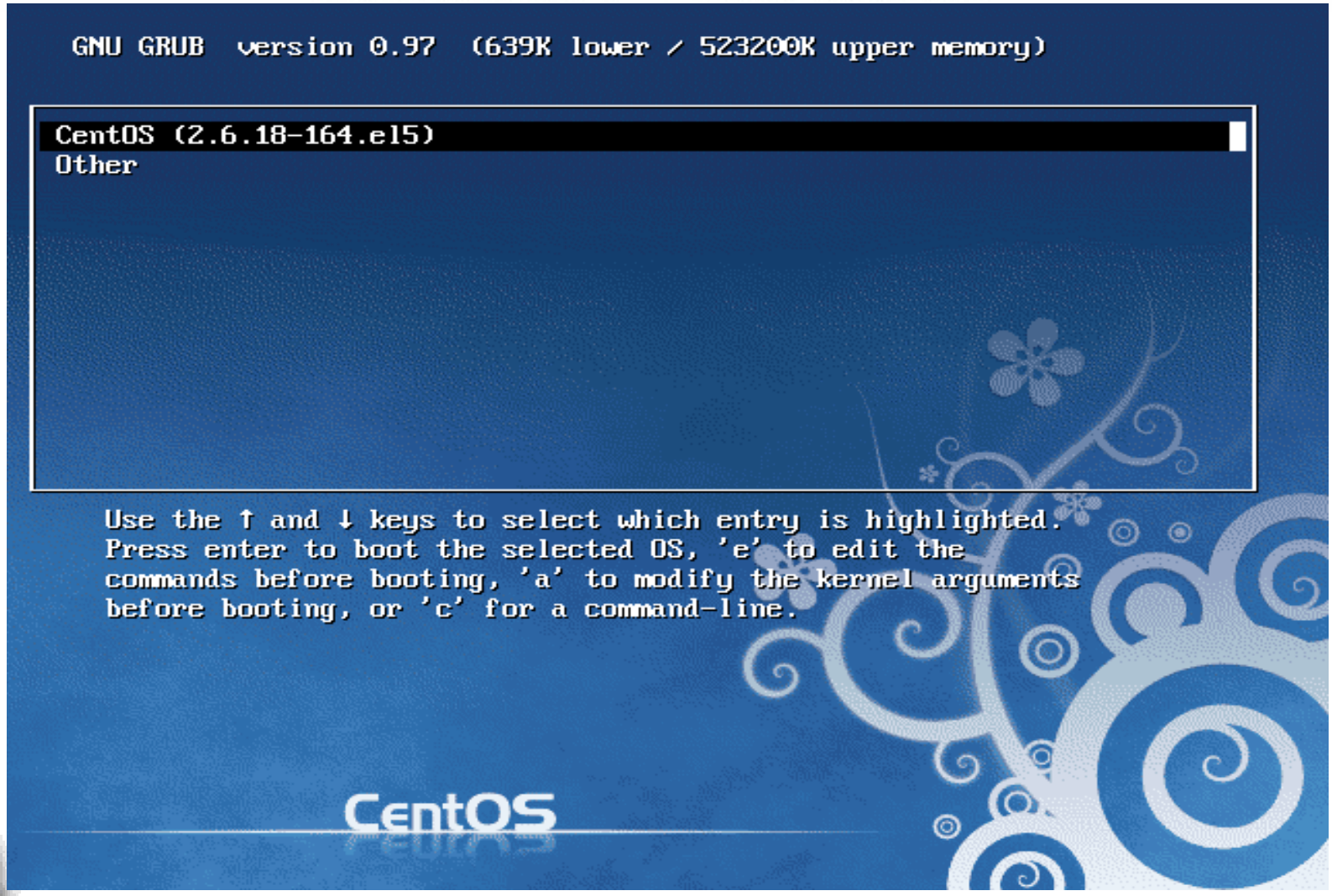
BOOT LOADER

Mengenal filesystem



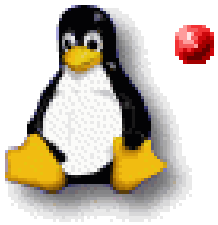
Konfigurasi:
/boot/grub/grub.conf

Grub Boot Loader Screen



KERNEL

- **Memastikan hardware berjalan**
- **Melakukan unmount initrd ramdisk**
- **Melakukan mounting “real” root file system**
- **Menjalankan program init (/sbin/init)**
  - init adalah program pertama yang dijalankan
  - init adalah proses induk



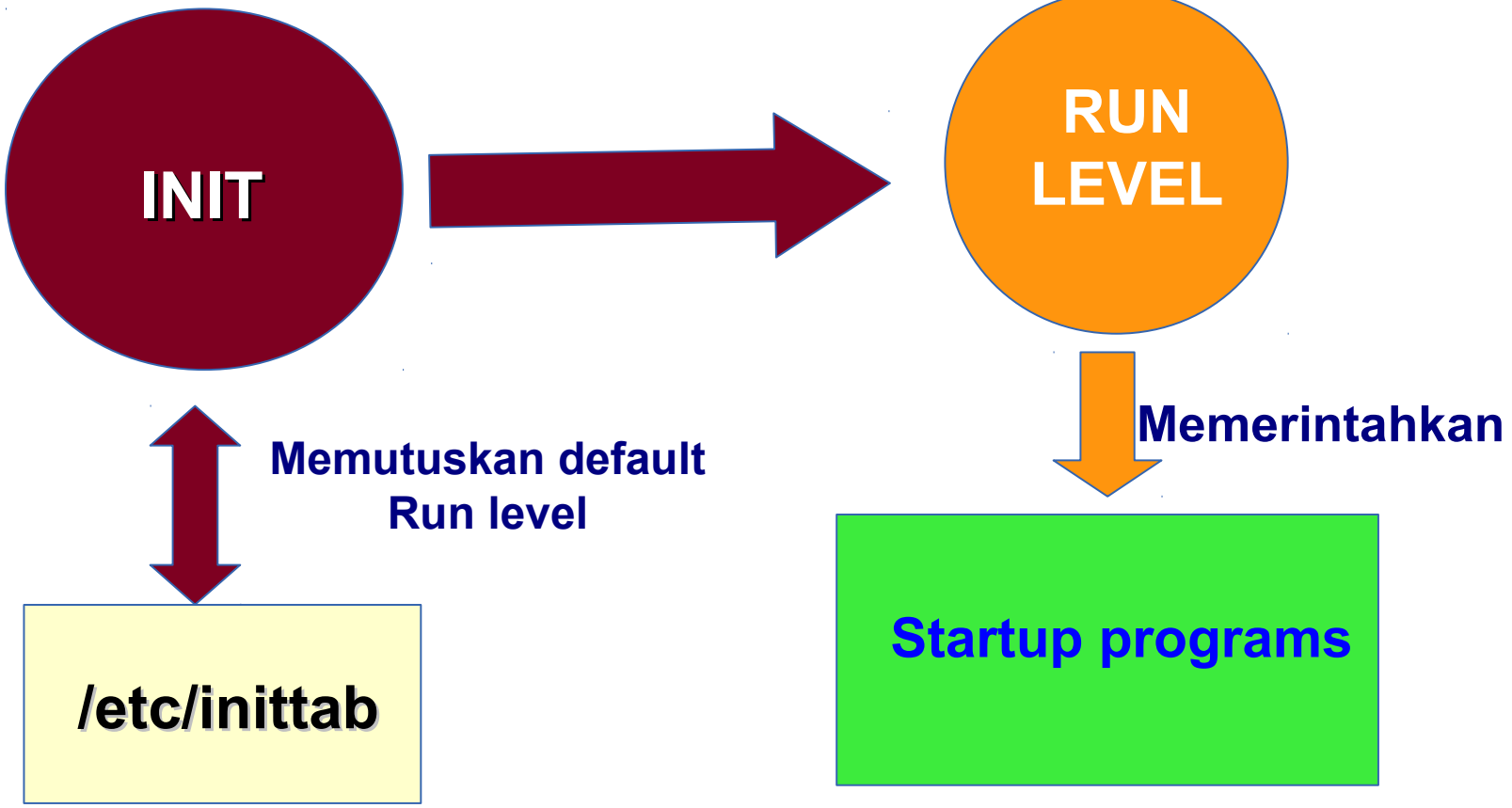
Loading Kernel

```
GNU GRUB  version 0.97  (639K lower / 1309632K upper memory)

root (hd0,0)
kernel /boot/vmlinuz-2.6.32-220.el6.x86_64 ro root=UUID=1239a910-f5e0→
initrd /boot/initramfs-2.6.32-220.el6.x86_64.img

   Use the ↑ and ↓ keys to select which entry is highlighted.
   Press 'b' to boot, 'e' to edit the selected command in the
   boot sequence, 'c' for a command-line, 'o' to open a new line
   after ('O' for before) the selected line, 'd' to remove the
   selected line, or escape to go back to the main menu.
```

Loading Kernel (cont)

```
ahci 0000:00:0d.0: flags: 64bit ncq stag only ccc
scsi2 : ahci
ata3: SATA max UDMA/133 abar m8192@0xf0806000 port 0xf0806100 irq 5
ata3: SATA link up 3.0 Gbps (SStatus 123 SControl 300)
ata3.00: ATA-6: VBOX HARDDISK, 1.0, max UDMA/133
ata3.00: 12582912 sectors, multi 128: LBA48 NCQ (depth 31/32)
ata3.00: configured for UDMA/133
scsi 2:0:0:0: Direct-Access     ATA      VBOX HARDDISK    1.0  PQ: 0 ANSI: 5
sr0: scsi3-mmc drive: 32x/32x xa/form2 tray
Uniform CD-ROM driver Revision: 3.20
sd 2:0:0:0: [sda] 12582912 512-byte logical blocks: (6.44 GB/6.00 GiB)
sd 2:0:0:0: [sda] Write Protect is off
sd 2:0:0:0: [sda] Write cache: enabled, read cache: enabled, doesn't support DPO
 or FUA
 sda: sda1 sda2
sd 2:0:0:0: [sda] Attached SCSI disk
EXT4-fs (sda1): mounted filesystem with ordered data mode. Opts:
dracut: Mounted root filesystem /dev/sda1
dracut: Loading SELinux policy
type=1404 audit(1393315373.071:2): enforcing=1 old_enforcing=0 auid=4294967295 s
es=4294967295
type=1403 audit(1393315376.075:3): policy loaded auid=4294967295 ses=4294967295
dracut:
dracut: Switching root
_
```

INIT


INIT
RUN LEVEL
Memutuskan default Run level
Memerintahkan
/etc/inittab
Startup programs

INIT RUN LEVEL

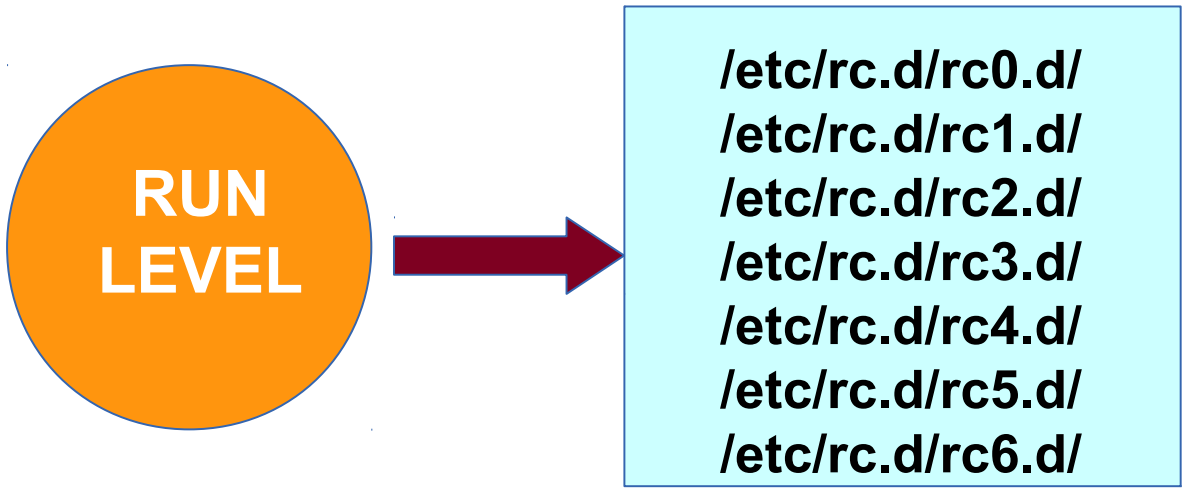
0 – halt
1 – Single user mode
2 – Multiuser, without NFS
3 – Full multiuser mode
4 – unused
5 – X11
6 – reboot

INIT

```
[henry@www ~]$ pstree |more
init-+-abrt-dump-oops
     |-abrtd
     |-acpid
     |-atd
     |-auditd---{auditd}
     |-avahi-daemon---avahi-daemon
     |-bonobo-activati---{bonobo-activat}
     |-clock-applet
     |-console-kit-dae---63*[{console-kit-da}]
     |-crond
     |-2*[dbus-daemon---{dbus-daemon}]
     |-2*[dbus-launch]
     |-devkit-power-da
     |-gconfd-2
     |-gdm-binary---gdm-simple-slav-+-Xorg
     |                              `-gdm-session-wor---gnome-session-+-bluetooth-apple
     |                                                                |-gdu-notificatio
     |                                                                |-gnome-panel
     |                                                                |-gnome-power-man
     |                                                                |-gnome-volume-co
     |                                                                |-gpk-update-icon
     |                                                                |-metacity---{metacity}
     |                                                                |-nautilus
     |                                                                |-nm-applet
     |                                                                |-polkit-gnome-au
     |                                                                |-python
```

RUN LEVEL

- Mengeksekusi program program (tasks, daemons or services) sesuai dengan current runlevel.



Startup program process

```
Starting portreserve:                                      [  OK  ]
Starting system logger:                                    [  OK  ]
Starting irqbalance:                                       [  OK  ]
Starting named:                                            [  OK  ]
Starting rpcbind:                                          [  OK  ]
Starting NFS statd:                                        [  OK  ]
Starting RPC idmapd: RPC: Registered udp transport module.
RPC: Registered tcp transport module.
RPC: Registered tcp NFSv4.1 backchannel transport module.
                                                           [  OK  ]
Starting system message bus:                               [  OK  ]
Starting Avahi daemon...                                   [  OK  ]
Mounting other filesystems:                                [  OK  ]
Starting acpi daemon:                                      [  OK  ]
Starting HAL daemon:                                       [  OK  ]
Retrigger failed udev events                               [  OK  ]
Enabling Bluetooth devices:
Starting sshd:                                             [  OK  ]
Starting xinetd:                                           [  OK  ]
Starting postfix:                                          [  OK  ]
Starting abrt daemon:                                      [  OK  ]
Starting ksm:                                              [  OK  ]
Starting ksmtuned:                                         [  OK  ]
Starting Qpid AMQP daemon:                                 [  OK  ]
```

Startup Scripts

S – Start up
K – Sopped/Kill

```
[henry@www ~]$ ls  /etc/rc.d/rc3.d
(01matahari-host       K35dovecot          K84wpa_supplicant  S13irqbalance    S56xinetd
(01matahari-network    K36mysqld           K86cgred           S13named         S80postfix
(01matahari-service    K50dnsmasq          K87restorecond     S13rpcbind       S82abrt-ccpp
(01matahari-sysconfig  K50netconsole       K89rdisc           S14nfslock       S82abrtd
(01smartd              K50snmpd            K95cgconfig        S15mdmonitor     S82abrt-oops
(05wdaemon             K50snmptrapd        K95firstboot       S18rpcidmapd     S84ksm
(10cups                K50vsftpd           K99sysstat         S19rpcgssd       S85ksmtuned
(10psacct              K60nfs              S02lvm2-monitor    S22messagebus    S85qpidd
(10saslauthd           K69rpcsvcgssd       S08ip6tables       S24avahi-daemon  S90crond
(15htcacheclean        K74ipsec            S08iptables        S25netfs         S95atd
(15httpd               K74ntpd             S10network         S26acpid         S99libvirt-guests
(15matahari-broker     K75ntpdate          S11auditd          S26haldaemon     S99local
(25squid               K75quota_nld        S11portreserve     S26udev-post     S99webmin
(30spamassassin        K80kdump            S12rsyslog         S50bluetooth
(30spice-vdagentd      K84NetworkManager   S13cpuspeed        S55sshd
[henry@www ~]$ ls  /etc/rc.d/rc5.d
(01matahari-host       K36mysqld           K86cgred           S13named         S70spice-vdagentd
(01matahari-network    K50dnsmasq          K87restorecond     S13rpcbind       S80postfix
(01matahari-service    K50netconsole       K89rdisc           S14nfslock       S82abrt-ccpp
(01matahari-sysconfig  K50snmpd            K95cgconfig        S15mdmonitor     S82abrtd
(01smartd              K50snmptrapd        K95firstboot       S18rpcidmapd     S82abrt-oops
(05wdaemon             K50vsftpd           K99sysstat         S19rpcgssd       S84ksm
(10cups                K60nfs              S02lvm2-monitor    S22messagebus    S85ksmtuned
(10psacct              K69rpcsvcgssd       S08ip6tables       S24avahi-daemon  S85qpidd
(10saslauthd           K74ipsec            S08iptables        S25netfs         S90crond
(15htcacheclean        K74ntpd             S10network         S26acpid         S95atd
(15httpd               K75ntpdate          S11auditd          S26haldaemon     S99libvirt-guests
(15matahari-broker     K75quota_nld        S11portreserve     S26udev-post     S99local
(25squid               K80kdump            S12rsyslog         S50bluetooth     S99webmin
(30spamassassin        K84NetworkManager   S13cpuspeed        S55sshd
```

Linux Boot Log

Kernel ring buffer

- **Sebuah ring buffer**
  - Sebuah buffer berukuran tetap untuk logs
  - Jika buffer penus, data baru akan menimpa yang lama
  - Tidak akan menyebabkan out-of-space
- **Kernel ring buffer**
  - dmesg, menampilkan pesan / log kernel dan pesan driver
  - /var/log/dmesg

Managing Services

Apa itu service

- **Services adalah program yang berjalan di belakang layar (background process)**
  - Berjalan terus menerus
  - Biasanya dijalankan sebagai startup program
  - Menyediakan layanan (service) untuk local system ataupun jaringan
  - Kadang juga disebut 'daemon'

Tools

- chkconfig command (chkconfig)
- service command (initscripts)
- initctl command (upstart)
- start, stop, status, restart (upstart)

List services

- chkconfig –list
- initctl list

Start, Stop, Status, Restart services

- service <name> start | stop | status | restart
- Initctl start | stop | status | restart <name>

Lokasi start up script

- **Lokasi start up scripts**
  - **Sys V → /etc/rc.d/init.d**
  - **Upstart → /etc/init**