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1 Sysvinit 项目测试案例分析

1.1 测试 sysvinit 项目编译安装

1.1.1 wget下载源码包

```
$ wget http://download.savannah.gnu.org/releases/sysvinit/
sysvinit-latest.tar.bz2
```

可以看到当前目录下有一个 sysvinit-latest.tar.bz2 的文件

1.1.2 tar解压源码包

```
$ tar jxvf sysvinit-latest.tar.bz2
```

可以看到当前目录下生成了一个 sysvinit-2.88dsf 的目录

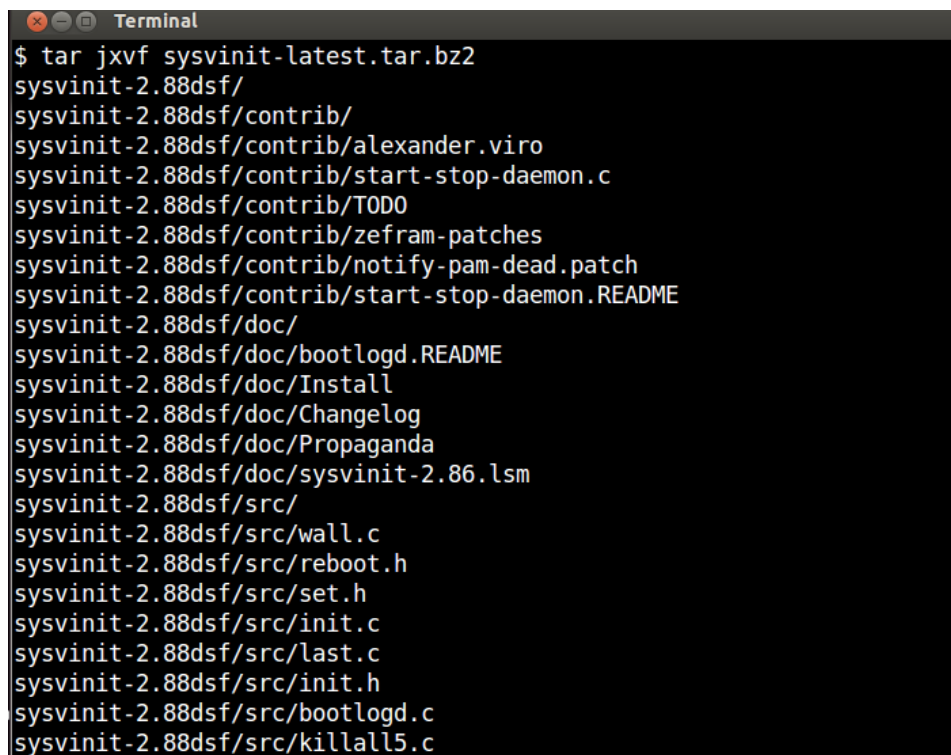
1.1.3 修改 Makefile

```
11 CC=gcc 13 14 CFLAGS
```

```
$ vi Makefile
```

```
Terminal
$ wget http://download.savannah.gnu.org/releases/sysvinit/sysvinit-latest.tar.bz2
--2013-06-22 13:18:30-- http://download.savannah.gnu.org/releases/sysvinit-latest.tar.bz2
Resolving download.savannah.gnu.org (download.savannah.gnu.org)... 140.110.123.9
Connecting to download.savannah.gnu.org (download.savannah.gnu.org)|140.110.123.9|:80... connected.
HTTP request sent, awaiting response... 302 Found
Location: http://download.savannah.gnu.org/releases-redirect/sysvinit-latest.tar.bz2 [following]
--2013-06-22 13:18:31-- http://download.savannah.gnu.org/releases-redirect/sysvinit-latest.tar.bz2
Reusing existing connection to download.savannah.gnu.org:80.
HTTP request sent, awaiting response... 302 Found
Location: http://ftp.twaren.net/Unix/NonGNU//sysvinit/sysvinit-latest.tar.bz2 [following]
--2013-06-22 13:18:32-- http://ftp.twaren.net/Unix/NonGNU//sysvinit/sysvinit-latest.tar.bz2
Resolving ftp.twaren.net (ftp.twaren.net)... 140.110.123.9, 2001:e10:5...
Connecting to ftp.twaren.net (ftp.twaren.net)|140.110.123.9|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 105551 (103K) [application/x-tar]
Saving to: `sysvinit-latest.tar.bz2'
```

Figure 1: wget 下载源码包

A terminal window titled "Terminal" with a dark background and light text. The window shows the output of a tar command. The first line is the command prompt "\$" followed by "tar jxvf sysvinit-latest.tar.bz2". The subsequent lines are the names of the files and directories extracted from the archive, listed one per line. The files include various source code files, headers, and documentation files for the sysvinit project.

```
$ tar jxvf sysvinit-latest.tar.bz2
sysvinit-2.88dsf/
sysvinit-2.88dsf/contrib/
sysvinit-2.88dsf/contrib/alexander.viro
sysvinit-2.88dsf/contrib/start-stop-daemon.c
sysvinit-2.88dsf/contrib/TODO
sysvinit-2.88dsf/contrib/zefram-patches
sysvinit-2.88dsf/contrib/notify-pam-dead.patch
sysvinit-2.88dsf/contrib/start-stop-daemon.README
sysvinit-2.88dsf/doc/
sysvinit-2.88dsf/doc/bootlogd.README
sysvinit-2.88dsf/doc/Install
sysvinit-2.88dsf/doc/Changelog
sysvinit-2.88dsf/doc/Propaganda
sysvinit-2.88dsf/doc/sysvinit-2.86.lsm
sysvinit-2.88dsf/src/
sysvinit-2.88dsf/src/wall.c
sysvinit-2.88dsf/src/reboot.h
sysvinit-2.88dsf/src/set.h
sysvinit-2.88dsf/src/init.c
sysvinit-2.88dsf/src/last.c
sysvinit-2.88dsf/src/init.h
sysvinit-2.88dsf/src/bootlogd.c
sysvinit-2.88dsf/src/killall5.c
```

Figure 2: tar解压源码包

```

10
11 CC=gcc
12 CPPFLAGS =
13 #CFLAGS ?= -ansi -O2 -fomit-frame-pointer
14 #override CFLAGS += -W -Wall -D_GNU_SOURCE -DDEBUG
15 override CFLAGS += -D_GNU_SOURCE -DDEBUG
16 STATIC =
17
...

80 83      -lcrypt

80 SULONGINLIBS      += -lcrypt
81 # Additional libs for GNU libc.
82 ifneq ($(wildcard /usr/lib*/libcrypt.a),)
83     SULONGINLIBS      += -lcrypt
84 endif
85
86 all:              $(BIN) $(SBIN) $(USRBIN)
87
88 #%.o: %.o
89 #      $(CC) $(CFLAGS) $(LDFLAGS) -o $@ $^ $(LDLIBS)
90 #%.o: %.c
91 #      $(CC) $(CFLAGS) $(CPPFLAGS) -c $^ -o $@

```

1.1.4 编译项目源码

```

$ cd sysvinit-2.88dsf/
$ make

```

编译无警告和错误信息。

1.1.5 查看生成的可执行文件

```

$ ls -l | grep "x "

```

在 src 目录下生成了十几个可执行文件，包括 init, halt, shutdown, killall15, runlevel, mesg 等。

```
Terminal
$ make
gcc -D_GNU_SOURCE -DDEBUG -c -o mountpoint.o mountpoint.c
gcc mountpoint.o -o mountpoint
gcc -D_GNU_SOURCE -DDEBUG -c -o init.o init.c
gcc -D_GNU_SOURCE -DDEBUG -DINIT MAIN -c -o init_utm.o utmp.c
gcc init.o init_utm.o -o init
gcc -D_GNU_SOURCE -DDEBUG -c -o halt.o halt.c
gcc -D_GNU_SOURCE -DDEBUG -c -o ifdown.o ifdown.c
gcc -D_GNU_SOURCE -DDEBUG -c -o hddown.o hddown.c
gcc -D_GNU_SOURCE -DDEBUG -c -o utmp.o utmp.c
gcc halt.o ifdown.o hddown.o utmp.o reboot.h -o halt
gcc -D_GNU_SOURCE -DDEBUG -c -o shutdown.o shutdown.c
gcc -D_GNU_SOURCE -DDEBUG -c -o dowall.o dowall.c
gcc shutdown.o dowall.o utmp.o reboot.h -o shutdown
gcc -D_GNU_SOURCE -DDEBUG -c -o runlevel.o runlevel.c
gcc runlevel.o -o runlevel
gcc -D_GNU_SOURCE -DDEBUG -c -o sulogin.o sulogin.c
gcc sulogin.o -lcrypt -o sulogin
gcc -D_GNU_SOURCE -DDEBUG -c -o bootlogd.o bootlogd.c
gcc bootlogd.o -lutil -o bootlogd
gcc -D_GNU_SOURCE -DDEBUG -c -o last.o last.c
gcc last.o oldutmp.h -o last
gcc -D_GNU_SOURCE -DDEBUG -c -o mesg.o mesg.c
gcc mesg.o -o mesg
gcc -D_GNU_SOURCE -DDEBUG -c -o utmpdump.o utmpdump.c
gcc utmpdump.o -o utmpdump
gcc -D_GNU_SOURCE -DDEBUG -c -o wall.o wall.c
gcc wall.o dowall.o -o wall
$
```

Figure 3: 编译项目源码

```
Terminal
$ ls -l | grep "x "
-rwxrwxr-x 1 akaedu akaedu 17677 Jun 22 13:28 a.out
-rwxrwxr-x 1 akaedu akaedu 18162 Jun 22 13:36 bootlogd
-rwxrwxr-x 1 akaedu akaedu 7402 Jun 22 13:27 fstab-decode
-rwxrwxr-x 1 akaedu akaedu 17625 Jun 22 13:30 halt
-rwxrwxr-x 1 akaedu akaedu 42121 Jun 22 13:30 init
-rwxr-xr-x 1 akaedu akaedu 706 Sep 10 2009 initscript.sample
-rwxrwxr-x 1 akaedu akaedu 22259 Jun 22 13:27 killall5
-rwxrwxr-x 1 akaedu akaedu 22117 Jun 22 13:36 last
-rwxrwxr-x 1 akaedu akaedu 7730 Jun 22 13:36 mesg
-rwxrwxr-x 1 akaedu akaedu 7708 Jun 22 13:30 mountpoint
-rwxrwxr-x 1 akaedu akaedu 7368 Jun 22 13:30 runlevel
-rwxrwxr-x 1 akaedu akaedu 27547 Jun 22 13:30 shutdown
-rwxrwxr-x 1 akaedu akaedu 17677 Jun 22 13:36 sulogin
-rwxrwxr-x 1 akaedu akaedu 12638 Jun 22 13:36 utmpdump
-rwxrwxr-x 1 akaedu akaedu 13243 Jun 22 13:36 wall
$
```

Figure 4: 查看生成的可执行文件

1.2 测试 init 0 进入关机模式

1.2.1 运行 runlevel 命令查看当前级别

```
$ runlevel  
N 2
```

N 表示之前的运行级别未知，2 是当前运行级别

```
$ runlevel  
N 2  
$ sudo init 2  
[sudo] password for akaedu:  
$ sudo init 2  
$ -
```

Figure 5: init 2 命令运行显示

1.2.2 执行切换运行级别到同样的级别

```
$ sudo init 2  
$
```

如果切换的是相同的运行级别，则不做任何工作。

1.2.3 切换到 0 级别，表示要关闭系统

```
$ sudo init 0
```

运行结束时，显示 * will now halt

```

$ runlevel
N 2
$ init 0
init: Need to be root
$ sudo init 0
[sudo] password for akaedu:
$ acpid: exiting
* Stopping web server apache2
apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
[ OK ]
Checking for running unattended-upgrades:
* Stopping landscape-client daemon
[fail]
* Saved ALSA mixer settings detected; aumix will not touch mixer.
Stopping icecast2: icecast2.
Stopping nginx: nginx.
speech-dispatcher disabled; edit /etc/default/speech-dispatcher
* Stopping Open Sound System:
[ OK ]
* Stopping NFS kernel daemon
[ OK ]
* Unexporting directories for NFS kernel daemon...
[ OK ]
* Asking all remaining processes to terminate...
[ OK ]

```

Figure 6: init 0 命令运行启动显示

```

* Stopping web server apache2
apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
[ OK ]
Checking for running unattended-upgrades:
* Stopping landscape-client daemon
[fail]
* Saved ALSA mixer settings detected; aumix will not touch mixer.
Stopping icecast2: icecast2.
Stopping nginx: nginx.
speech-dispatcher disabled; edit /etc/default/speech-dispatcher
* Stopping Open Sound System:
[ OK ]
* Stopping NFS kernel daemon
[ OK ]
* Unexporting directories for NFS kernel daemon...
[ OK ]
* Asking all remaining processes to terminate...
[ OK ]
* All processes ended within 1 seconds....
[ OK ]
rpcbind: rpcbind terminating on signal. Restart with "rpcbind -w"
modem-manager[866]: <info> Caught signal 15, shutting down...
nm-dispatcher.action: Caught signal 15, shutting down...
* Deconfiguring network interfaces...
[ OK ]
* Deactivating swap...
[ OK ]
umount: /run/lock: not mounted
umount: /run/shm: not mounted
* Will now halt

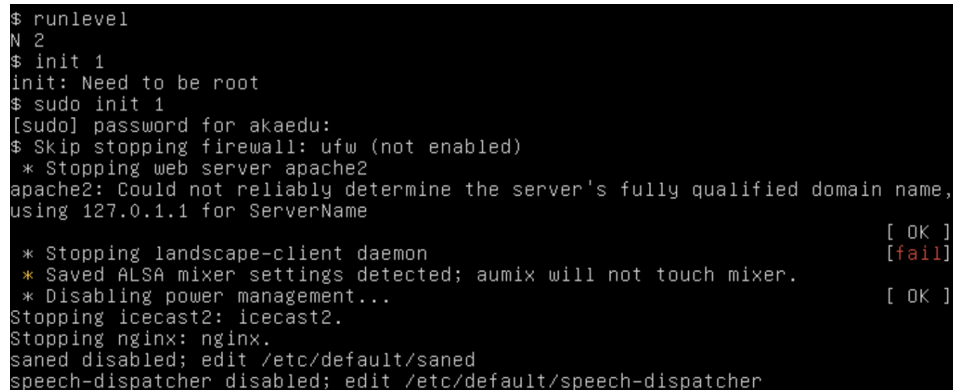
```

Figure 7: init 0 命令运行结束显示

1.3 测试 init 1 进入单用户模式

1.3.1 切换到 1 级别，表示要进入单用户模式

```
$ sudo init 0
```



```
$ runlevel
N 2
$ init 1
init: Need to be root
$ sudo init 1
[sudo] password for akaedu:
$ Skip stopping firewall: ufw (not enabled)
* Stopping web server apache2
apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
[ OK ]
* Stopping landscape-client daemon
[fail]
* Saved ALSA mixer settings detected; aumix will not touch mixer.
* Disabling power management...
[ OK ]
Stopping icecast2: icecast2.
Stopping nginx: nginx.
saned disabled; edit /etc/default/saned
speech-dispatcher disabled; edit /etc/default/speech-dispatcher
```

Figure 8: init 1 命令运行启动显示

运行结束时，显示要求输入 root 密码来进行维护

```
Give root password for maintenance
(or type Control-D to continues):
```

此时输入密码，可以进入到单用户模式

```
root@ubuntu:~#
```

```
root@ubuntu:~# pwd
/root
```

此时查看用户所在的主目录，已经变成是 /root 目录

此时输入 whoami 命令，显示当前登录用户

```
root@ubuntu:~# whoami
root
```

查看当前用户，可以看到是 root 用户

```

speech-dispatcher disabled; edit /etc/default/speech-dispatcher
* Stopping Open Sound System: [ OK ]
* Stopping NFS kernel daemon [ OK ]
* Unexporting directories for NFS kernel daemon... [ OK ]
* Asking all remaining processes to terminate... [ OK ]
modem-manager[2652]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2652]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
modem-manager[2666]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2666]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
modem-manager[2674]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2674]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory

* Killing all remaining processes... [fail]
* Will now switch to single-user mode
Give root password for maintenance
(or type Control-D to continue): _

```

Figure 9: init 1 命令运行结束显示

```

modem-manager[2652]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2652]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
modem-manager[2666]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2666]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
modem-manager[2674]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2674]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory

* Killing all remaining processes... [fail]
* Will now switch to single-user mode
Give root password for maintenance
(or type Control-D to continue):
root@ubuntu:~# pwd
/root
root@ubuntu:~# ls
Desktop Documents Downloads Music Pictures Public Templates Videos
root@ubuntu:~# _

```

Figure 10: init 1 命令运行登录显示

```

mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
modem-manager[2666]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2666]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
modem-manager[2674]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2674]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory

* Killing all remaining processes... [fail]
* Will now switch to single-user mode
Give root password for maintenance
(or type Control-D to continue):
root@ubuntu:~# pwd
/root
root@ubuntu:~# ls
Desktop Documents Downloads Music Pictures Public Templates Videos
root@ubuntu:~# who
root@ubuntu:~# whoami
root
root@ubuntu:~# _

```

Figure 11: init 1 命令运行登录显示

1.4 测试 init N 的其他模式

1.4.1 切换到 6 级别，表示要进入 reboot 模式

```
$ sudo init 6
```

可以看到最后打印输出的提示信息，显示 * Will now restart

1.4.2 切换到 S 级别，表示要进入单用户模式

```
$ sudo init S
```

可以看到最后打印输出的提示信息，要求输入 root 密码，登录后显示提示符：~#

1.4.3 切换到 5 级别，表示要进入其他模式

```
$ sudo init 5
```

可以发现运行到最后，其他模式暂时不支持，因此无法输入。

```

graphical environment to launch. Thank you.

*****
*****
ubuntu login: akaedu
Password:
Last login: Sun Jun 30 08:45:05 CST 2013 on tty2
Welcome to Ubuntu 12.04.2 LTS (GNU/Linux 3.2.0-29-generic-pae i686)

 * Documentation:  https://help.ubuntu.com/

System information disabled due to load higher than 1.0

$ runlevel
N 2
$ sudo init 6
[sudo] password for akaedu:
$ acpid: exiting
 * Stopping web server apache2
apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
[ OK ]
Checking for running unattended-upgrades:
 * Stopping landscape-client daemon
[fail]
_

```

Figure 12: init 6 命令运行启动显示

```

apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
[ OK ]
Checking for running unattended-upgrades:
 * Stopping landscape-client daemon
[fail]
 * Saved ALSA mixer settings detected; aumix will not touch mixer.
Stopping icecast2: icecast2.
Stopping nginx: nginx.
speech-dispatcher disabled; edit /etc/default/speech-dispatcher
 * Stopping Open Sound System:
[ OK ]
 * Stopping NFS kernel daemon
[ OK ]
 * Unexporting directories for NFS kernel daemon...
[ OK ]
 * Asking all remaining processes to terminate...
[ OK ]
 * All processes ended within 1 seconds....
[ OK ]
rpcbind: rpcbind terminating on signal. Restart with "rpcbind -w"
modem-manager[875]: <info> Caught signal 15, shutting down...

nm-dispatcher.action: Caught signal 15, shutting down...
 * Deconfiguring network interfaces...
[ OK ]
 * Deactivating swap...
[ OK ]
umount: /run/lock: not mounted
umount: /run/shm: not mounted
 * Will now restart
[ 70.885903] Restarting system.
_

```

Figure 13: init 6 命令运行结束显示

1.5 测试 shutdown 命令

1.5.1 测试 shutdown -k now 参数

```
$ sudo shutdown -k now
```

可以看到最后只是打印信息，并没有真正执行关机命令。

```
* Documentation:  https://help.ubuntu.com/

System information disabled due to load higher than 1.0

$ shutdown -k
shutdown: time expected
Try `shutdown --help' for more information.
$ shutdown -k now
shutdown: Need to be root
$ sudo shutdown -k now
[sudo] password for akaedu:
$
Broadcast message from akaedu@ubuntu
      (/dev/tty2) at 9:01 ...

The system is going down for maintenance NOW!

$ ls
comments      request       s.sh
core           request2      sysvinit-2.88dsf
diff.sysvinit-2.88dsf request2.bak  sysvinit-2.88dsf-subst
Makefile      request.bak   sysvinit-latest.tar.bz2
pdf           request.dat   uncmnt.log
README.md     request.dat.bak
$ _
```

Figure 16: shutdown -k now 命令运行启动显示

1.5.2 测试 shutdown -h now 参数

```
$ sudo shutdown -h now
```

可以看到立即关机命令，最后提示 * Will now halt

1.5.3 测试 shutdown -n now 参数

-n 不调用init程序关机，而是由shutdown自己进行(一般关机程序是由shutdown调用init来实现关机动作)，使用此参数将加快关机速度，但是不建议用户使用此种关机方式。

```
$ sudo shutdown -n now
```

可以看到立即关机命令，最后并没有关机，而是进入到系统维护模式下 (root单用户模式)。


```

$ sudo shutdown -h
shutdown: time expected
Try `shutdown --help' for more information.
$ sudo shutdown -H
shutdown: time expected
Try `shutdown --help' for more information.
$ sudo shutdown -h now
$
Broadcast message from akaedu@ubuntu
      (/dev/tty2) at 8:59 ...

The system is going down for halt NOW!
acpid: exiting
* Stopping web server apache2
apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
[ OK ]
Checking for running unattended-upgrades:
* Stopping landscape-client daemon
[fail]
* Saved ALSA mixer settings detected; aumix will not touch mixer.
Stopping icecast2: _

```

Figure 17: shutdown -h now 命令运行启动显示

```

acpid: exiting
* Stopping web server apache2
apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
[ OK ]
Checking for running unattended-upgrades:
* Stopping landscape-client daemon
[fail]
* Saved ALSA mixer settings detected; aumix will not touch mixer.
Stopping icecast2: icecast2.
Stopping nginx: nginx.
speech-dispatcher disabled; edit /etc/default/speech-dispatcher
* Stopping Open Sound System:
[ OK ]
* Stopping NFS kernel daemon
[ OK ]
* Unexporting directories for NFS kernel daemon...
[ OK ]
* Asking all remaining processes to terminate...
[ OK ]
* All processes ended within 1 seconds....
[ OK ]
rpcbind: rpcbind terminating on signal. Restart with "rpcbind -w"
modem-manager[865]: <info> Caught signal 15, shutting down...

* Deconfiguring network interfaces...
[ OK ]
* Deactivating swap...
[ OK ]
umount: /run/lock: not mounted
umount: /run/shm: not mounted
* Will now halt
_

```

Figure 18: shutdown -h now 命令运行结束显示

```

$ sudo shutdown -n now
$
Broadcast message from akaedu@ubuntu
      (/dev/tty2) at 9:01 ...

The system is going down for maintenance NOW!
Skip stopping firewall: ufw (not enabled)
* Stopping web server apache2
apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
[ OK ]
* Stopping landscape-client daemon
[fail]
* Saved ALSA mixer settings detected; aumix will not touch mixer.
* Disabling power management...
[ OK ]
Stopping icecast2: _

```

Figure 19: shutdown -n now 命令运行启动显示

```

mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
modem-manager[2665]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2665]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
modem-manager[2674]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2674]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
modem-manager[2679]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2679]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
* Killing all remaining processes...
[fail]
* Will now switch to single-user mode
rpcbind: Cannot open '/run/rpcbind/rpcbind.xdr' file for reading, errno 2 (No su
ch file or directory)
rpcbind: Cannot open '/run/rpcbind/portmap.xdr' file for reading, errno 2 (No su
ch file or directory)
Give root password for maintenance
(or type Control-D to continue): _

```

Figure 20: shutdown -n now 命令运行中间显示

```

mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
modem-manager[2674]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2674]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
modem-manager[2679]: <info> ModemManager (version 0.5.2.0) starting...

modem-manager[2679]: Could not get the system bus. Make sure the message bus dae
mon is running! Message: Failed to connect to socket /var/run/dbus/system_bus_so
cket: No such file or directory
* Killing all remaining processes... [fail]
* Will now switch to single-user mode
rpcbind: Cannot open '/run/rpcbind/rpcbind.xdr' file for reading, errno 2 (No su
ch file or directory)
rpcbind: Cannot open '/run/rpcbind/portmap.xdr' file for reading, errno 2 (No su
ch file or directory)
Give root password for maintenance
(or type Control-D to continue):
root@ubuntu:~# ls
Desktop Documents Downloads Music Pictures Public Templates Videos
root@ubuntu:~# whoami
root
root@ubuntu:~# _

```

Figure 21: shutdown -n now 命令运行结束显示

1.5.4 测试 shutdown -r now 参数

```
$ sudo shutdown -r now
```

可以看到 -r 参数表示 reboot ，系统重新启动。

1.6 测试 poweroff 命令

1.6.1 测试 poweroff 命令，不带参数

```
$ sudo poweroff
```

可以看到 poweroff 关机命令执行，最后系统关闭。

1.6.2 测试 poweroff -p 命令

```
$ sudo poweroff -p
```

可以看到 poweroff -p 关机命令执行，最后显示 Power down

```

$ shutdown
shutdown: time expected
Try `shutdown --help' for more information.
$ sudo shutdown -r now
[sudo] password for akaedu:
$
Broadcast message from akaedu@ubuntu
      (/dev/tty2) at 8:57 ...

The system is going down for reboot NOW!
acpid: exiting
* Stopping web server apache2
apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
Checking for running unattended-upgrades: [ OK ]
* Stopping landscape-client daemon [fail]
* Saved ALSA mixer settings detected; aumix will not touch mixer.
Stopping icecast2: icecast2.
Stopping nginx: nginx.
speech-dispatcher disabled; edit /etc/default/speech-dispatcher
-

```

Figure 22: shutdown -r now 命令运行启动显示

```

apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
Checking for running unattended-upgrades: [ OK ]
* Stopping landscape-client daemon [fail]
* Saved ALSA mixer settings detected; aumix will not touch mixer.
Stopping icecast2: icecast2.
Stopping nginx: nginx.
speech-dispatcher disabled; edit /etc/default/speech-dispatcher
* Stopping Open Sound System: [ OK ]
* Stopping NFS kernel daemon [ OK ]
* Unexporting directories for NFS kernel daemon... [ OK ]
* Asking all remaining processes to terminate... [ OK ]
* All processes ended within 1 seconds.... [ OK ]
rpcbind: rpcbind terminating on signal. Restart with "rpcbind -w"
modem-manager[868]: <info> Caught signal 15, shutting down...

nm-dispatcher.action: Caught signal 15, shutting down...
* Deconfiguring network interfaces... [ OK ]
* Deactivating swap... [ OK ]
umount: /run/lock: not mounted
umount: /run/shm: not mounted
* Will now restart
[ 63.781641] Restarting system.
-

```

Figure 23: shutdown -r now 命令运行结束显示

```

root@ubuntu:~# poweroff
root@ubuntu:~#
Broadcast message from root@ubuntu
(/dev/console) at 9:03 ...

The system is going down for power off NOW!
* Stopping web server apache2
apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
[ OK ]
Checking for running unattended-upgrades:
* Stopping landscape-client daemon [fail]
* Saved ALSA mixer settings detected; aumix will not touch mixer.
Stopping icecast2: icecast2.
Stopping nginx: nginx.
speech-dispatcher disabled; edit /etc/default/speech-dispatcher
* Stopping Open Sound System: [ OK ]
* Stopping NFS kernel daemon [ OK ]
* Unexporting directories for NFS kernel daemon... [ OK ]
* Asking all remaining processes to terminate... [ OK ]

```

Figure 24: poweroff 命令运行启动显示

```

$ sudo poweroff -p
$
Broadcast message from akaedu@ubuntu
(/dev/tty2) at 9:05 ...

The system is going down for power off NOW!
acpid: exiting
* Asking all remaining processes to terminate... [ OK ]
* All processes ended within 4 seconds.... [ OK ]
rpcbind: rpcbind terminating on signal. Restart with "rpcbind -w"
modem-manager[897]: <info> Caught signal 15, shutting down...

nm-dispatcher.action: Caught signal 15, shutting down...
* Deconfiguring network interfaces... [ OK ]
* Deactivating swap... [ OK ]
umount: /run/lock: not mounted
umount: /run/shm: not mounted
* Will now halt
[ 103.317467] Power down.

```

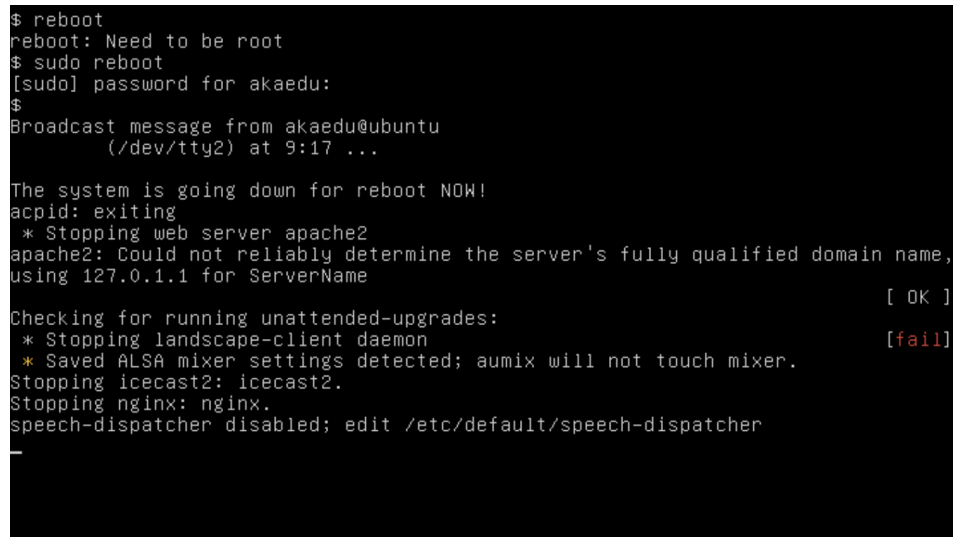
Figure 25: poweroff -p 命令运行显示

1.7 测试 reboot 命令

1.7.1 测试 reboot 命令，不带参数

```
$ sudo reboot
```

可以看到 reboot 命令执行，最后显示 * Will now restart 系统完成重启。



```
$ reboot
reboot: Need to be root
$ sudo reboot
[sudo] password for akaedu:
$
Broadcast message from akaedu@ubuntu
      (/dev/tty2) at 9:17 ...

The system is going down for reboot NOW!
acpid: exiting
 * Stopping web server apache2
apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
Checking for running unattended-upgrades: [ OK ]
 * Stopping landscape-client daemon [fail]
 * Saved ALSA mixer settings detected; aumix will not touch mixer.
Stopping icecast2: icecast2.
Stopping nginx: nginx.
speech-dispatcher disabled; edit /etc/default/speech-dispatcher
-
```

Figure 26: reboot 命令运行启动显示

1.8 测试 wall 命令

1.8.1 编译 sysvinit 项目获得可执行文件 wall

```
$ cd sysvinit-2.88dsf/
$ make
make -C src all
make[1]: Entering directory `/home/akaedu/Github/sysvinit/
sysvinit-2.88dsf/src'
make[1]: Nothing to be done for `all'.
make[1]: Leaving directory `/home/akaedu/Github/sysvinit/
sysvinit-2.88dsf/src'
$ ls src/wall -l
-rwxrwxr-x 1 akaedu akaedu 13243 Jun 22 14:49 src/wall
$
```

查看 src 目录下已经生成 wall 命令。

```

apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName                                     [ OK ]
Checking for running unattended-upgrades:                         [ OK ]
* Stopping landscape-client daemon                                [fail]
* Saved ALSA mixer settings detected; aumix will not touch mixer.
Stopping icecast2: icecast2.
Stopping nginx: nginx.
speech-dispatcher disabled; edit /etc/default/speech-dispatcher
* Stopping Open Sound System:                                     [ OK ]
* Stopping NFS kernel daemon                                     [ OK ]
* Unexporting directories for NFS kernel daemon...              [ OK ]
* Asking all remaining processes to terminate...                 [ OK ]
* All processes ended within 1 seconds....                       [ OK ]
rpcbind: rpcbind terminating on signal. Restart with "rpcbind -w"
modem-manager[868]: <info> Caught signal 15, shutting down...
nm-dispatcher.action: Caught signal 15, shutting down...
* Deconfiguring network interfaces...                             [ OK ]
* Deactivating swap...                                           [ OK ]
umount: /run/lock: not mounted
umount: /run/shm: not mounted
* Will now restart
[ 63.781641] Restarting system.

```

Figure 27: reboot 命令运行结束显示

1.8.2 执行 wall 命令加消息参数

```

$ src/wall "hello msg"
$
Broadcast message from akaedu@ubuntu (pts/1) (Sun Jun 23 08:59:32 2013):

hello msg

```

能够看到有广播的消息显示在终端窗口。

1.8.3 打开新的 Terminal 窗口，再次执行该命令

```

$
Broadcast message from akaedu@ubuntu (pts/1) (Sun Jun 23 09:00:36 2013):

hello msg

```

此时，新打开的终端窗口也能够看到有广播的消息显示出来。

1.9 测试 msg 命令

1.9.1 使用 tty 命令查看终端名称 tty

```

$ tty

```

```
/dev/pts/1  
$
```

获得终端名称 pts/1

1.9.2 使用 who 命令查看当前登录用户名 user

```
$ who  
akaedu    tty2          2013-06-22 18:44  
akaedu    pts/1          2013-06-22 18:45 (:0.0)  
$
```

1.9.3 使用 write 命令给当前终端发消息

```
$ write akaedu pts/1  
  
Message from akaedu@ubuntu on pts/1 at 09:13 ...  
hello msg  
hello msg  
test write cmd  
test write cmd  
EOF  
$
```

可以看到 write 命令能够实现自己给自己当前的终端发消息。按 ctrl+d 结束输入。

1.9.4 使用 mesg n 禁止消息接收功能

```
$ mesg n  
$ write akaedu pts/1  
write: write: you have write permission turned off.  
  
write: akaedu has messages disabled on pts/1
```

可以看到当前终端如果使用 mesg n 命令之后，就不再接收 write 发来的消息。但如果用 wall 命令发送仍然可以接收。

write 也支持给其他终端发消息，做法是打开新的 Terminal 窗口，同样需要查看登录用户名和终端名称。

1.10 测试 killall5 命令

1.10.1 打开3个终端窗口

```
$ (ctrl+alt+f1)
```

```
$ (ctrl+alt+f2)
```

```
$ (ctrl+alt+f3)
```

1.10.2 选择第2个和第3个输入某个命令

```
(ctrl+alt+f2 2 )
```

```
$ ls
```

```
(ctrl+alt+f3 3 )
```

```
$ cat
```

1.10.3 切换到第1个窗口，运行 killall5 命令

```
$ ./src/killall5
```

此时切换回刚才的两个窗口，发现都已经退出，重新回到登录界面，等待输入用户名和密码。

其他进程收到 kill 命令后，都被杀死，只有当前终端窗口仍然可以工作。

注：不能在 X 窗口的终端里面测试该命令，会造成黑屏，无法恢复。

1.10.4 测试 -o 选项

```
$ ./src/killall5 -o 2640
```

1.11 测试 pidof 命令

1.11.1 pidof 命令直接跟进程名称

```
$ pidof bash
```

```
3023 2213
```

```
$ ps aux | grep bash
```

```
akaedu 2213 0.1 0.1 11412 972 tty2 S 16:11 0:01 -  
bash
```

```

akaedu  3023  0.0  0.8  8192  4276 pts/2    Ss  16:12   0:00 bash
akaedu      3383    0.0    0.1    4388    840 pts/2      S
+  16:23   0:00 grep --color=auto bash
$

```

1.11.2 pidof 命令加 -s 参数

```

$ pidof -s bash
3023
$

```

1.11.3 pidof 命令和 kill 联合使用杀死进程

```

$      Terminal      vim
$      pidof
$ pidof vim
3471
$ pidof vim | xargs kill

```

切换到刚才的新窗口，查看 vim 进程已经被杀死

```

$ vim
Vim: Caught deadly signal TERM
Vim: Finished.

```

```

Terminated
$

```

1.12 测试 mountpoint 命令

1.12.1 查看一个目录是否为一个挂载点

```

$ df

```

| Filesystem | 1K-blocks | Used | Available | Use% | Mounted on |
|------------|-----------|---------|-----------|------|------------|
| /dev/sda1 | 9928244 | 8427228 | 1002996 | 90% | / |
| udev | 245968 | 4 | 245964 | 1% | /dev |
| tmpfs | 101416 | 976 | 100440 | 1% | /run |
| none | 5120 | 0 | 5120 | 0% | /run/lock |
| none | 253536 | 260 | 253276 | 1% | /run/shm |

```

$ src/mountpoint /

```

```

/ is a mountpoint
$ src/mountpoint /dev
/dev is a mountpoint
$ src/mountpoint /bin
/bin is not a mountpoint
$ src/mountpoint /home
/home is not a mountpoint
$

```

1.12.2 查看某个文件系统的主/从设备号：

```

$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
/dev/sda1        9928244 8427232    1002992  90% /
udev             245968      4      245964   1% /dev
tmpfs            101416     976     100440   1% /run
none              5120        0        5120   0% /run/lock
none             253536     260     253276   1% /run/shm
$ src/mountpoint -d /
8:1
$ ls -l /dev/sda1
brw-rw---- 1 root disk 8, 1 Jun 24 16:10 /dev/sda1
$

```

1.12.3 不打印输出任何信息

```

$ src/mountpoint -q /
$

```

1.13 测试 runlevel 命令

1.13.1 查看当前运行级别

```

$ runlevel -v
N 2
$

```

1.14 测试 sulogin 命令

1.14.1 以超级用户登录

```

$ sulogin

```

```

sulogin: only root can run sulogin.
$ sudo sulogin
[sudo] password for akaedu:
root@ubuntu:~# ls
Desktop Documents Downloads Music Pictures Public Templates Videos
root@ubuntu:~# pwd
/root
root@ubuntu:~#

```

1.15 测试 /proc 文件系统命令

1.15.1 查看 smbd 的进程号

```

$ ps aux |grep smb
root      845  0.0  0.2 21404 1156 ?        Ss   Jun27   0:02 smbd -
F
root      859  0.0  0.0 21508  156 ?        S    Jun27   0:00 smbd -
F
akaedu    32393   0.0   0.1   4388    840 pts/1      S
+ 08:54   0:00 grep --color=auto smb

```

1.15.2 查看 proc 文件系统中相关进程信息

```

$ sudo cat /proc/845/stat
845 (smbd) S 1 845 845 0 -1 4202752 22500 308803 1868 2976 60 237 105 662 20 0 1 0 652 2191769
$

```

```

$ sudo cat /proc/845/cmdline
smbd-F$

```

1.15.3 使用 stat 查看文件节点信息

```

$ stat /proc/845/exe
  File: `/proc/845/exe':stat: cannot read symbolic link `/proc/
845/exe': Permission denied
  Size: 0          Blocks: 0          IO Block: 1024   symbolic link
Device: 3h/3d    Inode: 209481       Links: 1
Access: (0777/lrwxrwxrwx)  Uid: (  0/   root)   Gid: (  0/   root)
Access: 2013-06-28 08:54:40.836988876 +0800
Modify: 2013-06-28 08:54:28.644988994 +0800
Change: 2013-06-28 08:54:28.644988994 +0800
 Birth: -

```

```
$
```

1.16 测试 pidof 命令

1.16.1 使用 pidof 查看进程号

```
$ pidof smbd
859 845
$
```

1.16.2 使用 -o omitpid 过滤进程

```
$ pidof -o 845 smbd
859
$
```

1.16.3 使用完整路径名

```
$ ps aux | grep smbd
root      845  0.0  0.2 21404 1212 ?        Ss   Jun27   0:03 smbd -
F
root      859  0.0  0.0 21508  376 ?        S    Jun27   0:00 smbd -
F
akaedu    2356   0.0   0.1   4388   836 pts/0    S
+ 14:58   0:00 grep --color=auto smbd
$
```

```
$ pidof /bin/smbd
859 845
$ pidof /sbin/smbd
859 845
$ pidof /etc/smbd
859 845
$
```

可以看到 即使传入参数中有路径，也不影响输出结果，都能够实现匹配

1.16.4 测试进程名称中有路径的情况

```
$ ps aux | grep sh
```

```

akaedu 16768 0.0 0.0 2232 4 tty2 S+ Jun27 0:00 /
bin/sh /usr/bin/startx
akaedu 16818 0.0 0.0 0 0 tty2 Z Jun27 0:00 [sh] <defunct>

$ pidof sh
16818 16768
$ pidof /sbin/sh
16818
$

```

可以看到，如果进程名称中有路径，则只能匹配一个。

1.17 测试 last 命令

1.17.1 直接运行 last 命令

```

$ last | head
akaedu pts/4 :0.0 Sat Jun 29 18:13 still logged in
reboot system boot 3.2.0-29-generic Sat Jun 29 16:43 - 16:43 (00:00)
reboot system boot 3.2.0-29-generic Sat Jun 29 16:36 - 16:36 (00:00)
reboot system boot 3.2.0-29-generic Sat Jun 29 16:33 - 16:33 (00:00)
reboot system boot 3.2.0-29-generic Sat Jun 29 16:32 - 16:32 (00:00)
reboot system boot 3.2.0-29-generic Sat Jun 29 16:31 - 16:31 (00:00)
reboot system boot 3.2.0-29-generic Sat Jun 29 16:25 - 16:25 (00:00)
reboot system boot 3.2.0-29-generic Sat Jun 29 16:17 - 16:17 (00:00)
reboot system boot 3.2.0-29-generic Sat Jun 29 16:05 - 16:05 (00:00)
akaedu pts/3 :0.0 Sat Jun 29 13:46 - crash (02:18)
...
akaedu pts/2 :0.0 Sun Jun 9 19:05 - 14:03 (1+18:57)
akaedu pts/1 :0.0 Sun Jun 9 17:54 - 11:49 (1+17:55)

```

wtmp begins Tue Jun 4 07:38:37 2013

1.17.2 查看最后10条记录

```

$ last -10
akaedu pts/4 :0.0 Sat Jun 29 18:13 still logged in
reboot system boot 3.2.0-29-generic Sat Jun 29 16:43 - 16:43 (00:00)
reboot system boot 3.2.0-29-generic Sat Jun 29 16:36 - 16:36 (00:00)
reboot system boot 3.2.0-29-generic Sat Jun 29 16:33 - 16:33 (00:00)
reboot system boot 3.2.0-29-generic Sat Jun 29 16:32 - 16:32 (00:00)
reboot system boot 3.2.0-29-generic Sat Jun 29 16:31 - 16:31 (00:00)

```

```
reboot  system boot  3.2.0-29-generic Sat Jun 29 16:25 - 16:25 (00:00)
reboot  system boot  3.2.0-29-generic Sat Jun 29 16:17 - 16:17 (00:00)
reboot  system boot  3.2.0-29-generic Sat Jun 29 16:05 - 16:05 (00:00)
akaedu  pts/3        :0.0           Sat Jun 29 13:46 - crash (02:18)
```

```
wtmp begins Tue Jun  4 07:38:37 2013
$
```

1.17.3 查看最后5条记录在 tty2 终端的活动记录

```
$ last tty2 -5
akaedu  tty2                Fri Jun 28 17:56 - crash (01:48)
akaedu  tty2                Fri Jun 28 17:56 - 17:56 (00:00)
akaedu  tty2                Fri Jun 28 17:53 - down (00:02)
akaedu  tty2                Fri Jun 28 17:53 - 17:53 (00:00)
akaedu  tty2                Fri Jun 28 15:56 - 17:48 (01:52)
```

```
wtmp begins Tue Jun  4 07:38:37 2013
$
```

1.18 测试 fstab-decode 命令

1.18.1 查看 /etc/fstab 文件内容

```
$ cat /etc/fstab
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options>      <dump> <pass>
proc            /proc            proc    nodev,noexec,nosuid 0      0
# / was on /dev/sda1 during installation
UUID=2f2c4281-25b4-445b-b2c0-ef9cdf01ce13 /                ext4    errors=remount-
ro 0            1
# swap was on /dev/sda5 during installation
UUID=a931fe75-bda1-45ed-b3d6-357c9e84a983 none              swap    sw              0      0
/dev/fd0        /media/floppy0    auto    rw,user,noauto,exec,utf8 0      0
$
```

1.18.2 使用 awk 命令解析找出 ext4 文件系统

```
$ awk '$3 == "ext4" { print $0 }' /etc/fstab
UUID=2f2c4281-25b4-445b-b2c0-ef9cdf01ce13 /          ext4    errors=remount-
ro 0          1
$

$ awk '$3 == "ext4" { print $2 }' /etc/fstab
/
```

1.18.3 使用 umount 命令卸载 /etc/fstab 中的 ext4 文件系统

```
$ umount $(awk '$3 == "ext4" { print $2 }' /etc/fstab)
umount: only root can unmount UUID=2f2c4281-25b4-445b-b2c0-
ef9cdf01ce13 from /

$ sudo umount $(awk '$3 == "ext4" { print $2 }' /etc/fstab)
[sudo] password for akaedu:
umount: /: device is busy.
(In some cases useful info about processes that use
the device is found by lsof(8) or fuser(1))
$
```

1.18.4 使用 fstab-decode 命令

```
$ fstab-decode umount $(awk '$3 == "ext4" { print $2 }' /etc/
fstab)
umount: only root can unmount UUID=2f2c4281-25b4-445b-b2c0-
ef9cdf01ce13 from /
$ sudo fstab-decode umount $(awk '$3 == "ext4" { print $2 }' /
etc/fstab)
umount: /: device is busy.
(In some cases useful info about processes that use
the device is found by lsof(8) or fuser(1))
$ sudo fstab-decode umount $(awk '$3 == "ext4" { print $2 }' /
etc/fstab)
```