



杰普软件科技有限公司

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Briup High-End IT Training

Software Development in Unix Environment

Brighten Your Way And Raise You Up.

Course Objectives

- ◆ **Log in and out of a Solaris system**
- ◆ **Navigate the Solaris file system**
- ◆ **Create files and directories, and change their permissions**
- ◆ **Manipulate text files, and use the vi text editor**
- ◆ **Use commands to search directories and files**
- ◆ **Use basic network commands**
- ◆ **Identify and modify initialization files**



Environment and Duration

◆ Training Environment:

- SUN Ultra 10 Workstation with Solaris Operating System

◆ Expecting days:

- 2 days





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Module 1

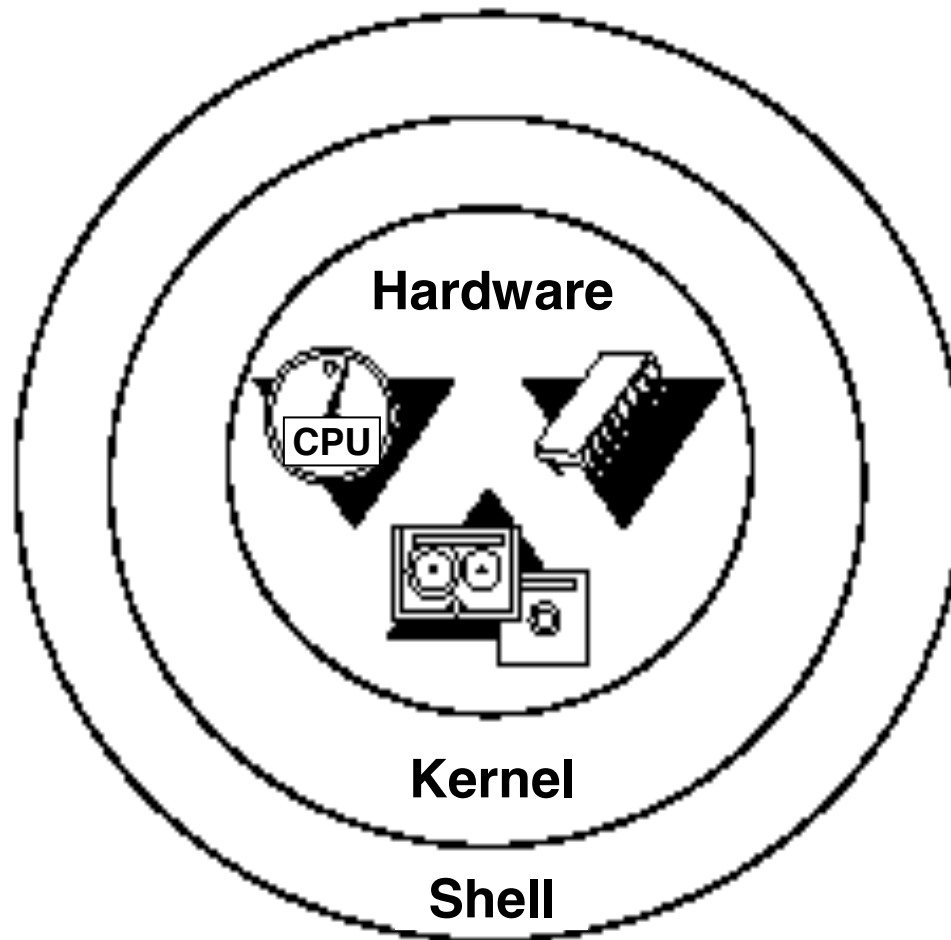
Solaris Computing Environment

Brighten Your Way And Raise You Up.

Unix Version History

Release Date	SunOS version	Solaris version	HP-UX version	AIX version	Windows version	Redhat Linux version
1983	1		1			
1985					1	
1986				1		
1987				2		
1989	4.0.2			3		
1990	4.1.3	1.1A				
1991						
1992	5	2	9		3.1	
1993				4		
1994	5.4	2.4				Halloween
1995			10		95,NT	2.0
1996	5.5.1	2.5.1	10.2	4.2		
1997	5.6	2.6	11	4.3		5.0
1998	5.7	7		4.3.1	98	
1999						6.0,6.1
2000	5.8	8	11i	5L	Me,2000	7.0
2002	5.9	9		5L(5.2)	XP	8.0
2004				5L(5.3)		
2005	5.10	10				

- ❖ Kernel
- ❖ Shell
- ❖ File System



- ◆ **Manages devices, memory, and processes**
- ◆ **Controls the functions between the system programs/utilities and the system hardware**
- ◆ **Manages swap space, daemons, file systems, and other functions**



- ◆ **A shell is an interface between the user and the kernel, which acts as an interpreter or translator**
- ◆ **Shells are available in the Solaris environment:**
 - **Bourne shell (sh)**
 - **Korn shell (ksh)**
 - **C shell (csh)**
 - **Bourne-again shell (bash)**

◆ **A hierarchy of directories, subdirectories, and files grouped together for a specific purpose.**

- **Directory – A location for other files and directories. The directory structure enables you to create files and directories accessed through a hierarchy of directories.**
- **Subdirectory – Any directory below another directory. For example, some of the subdirectories under the / directory are /usr, /etc, and /kernel.**



Pathnames

◆ A pathname uniquely identifies a particular file or directory by specifying its location

◆ A slash (/) between each directory name in the path to indicate different directories

◆ A slash in the first position represents the / directory

◆ Absolute Pathname

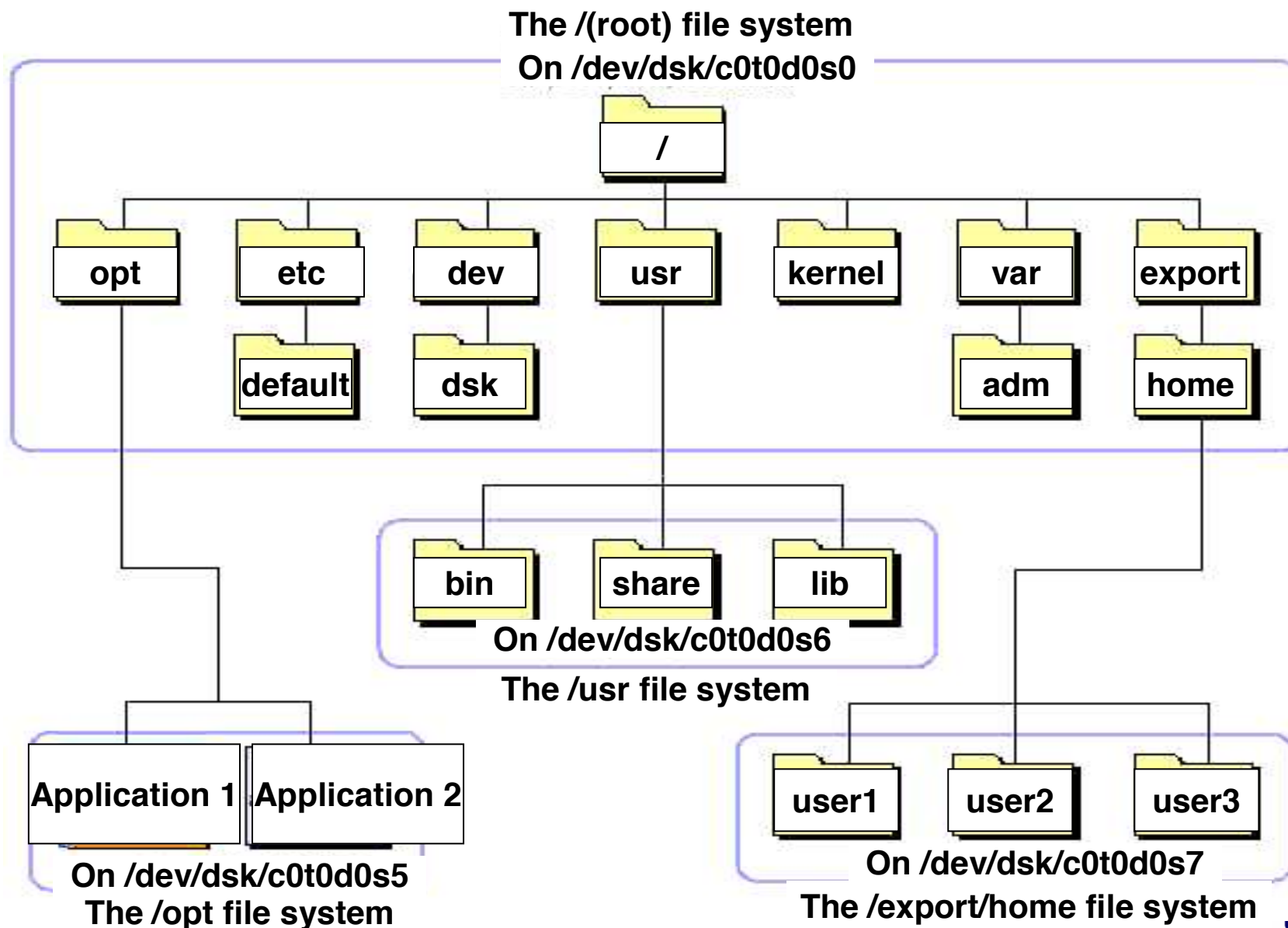
- Specifies a file or directory in relation to the / directory
- Begin with a slash

◆ Relative Pathname

- Specifies a file in relation to the current working directory
- Do not begin with a slash



File System for Solaris





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Module 2

Login/Logout

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Login

◆Login

telnet 192.168.0.23

login: (username)

password: (user's password)

•Logout

exit or logout



Password Requirements

- ◆ **Must be six to eight characters in length** 6-8位
- ◆ **Should contain at least two alphabetic characters and one numeric or special character**
- ◆ **Must differ from the login ID**
- ◆ **Must differ from the previous password by at least three characters**



Changing Your Password

- ◆ **Changing passwords frequently helps avoid unauthorized access**
- 1. **Type the passwd command**
- 2. **Type your current password and press Return**
- 3. **Type your new password and press Return**
- 4. **Retype the new password and press Return**

briup200% passwd

passwd: Changing password for briup

Enter existing login password:

New Password:

Re-enter new Password:

passwd: password successfully changed for briup



User Accounts

◆ /etc/passwd

root:x:0:1:Super User:./:/bin/sh

◆ /etc/shadow

root:daGaerRdafGEg:14321:::::::

◆ User name vs. UID

◆ User's home directory





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Module 3

Basic Unix Commands

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Command-Line Syntax

\$ Command [option(s)] [argument[s]]

- ◆ **A space must be used as a delimiter between each part of the command line**
- ◆ **Up to 256 characters can be entered on a single command line**
- ◆ **Different from DOS**
 - **Case sensitive**
 - **Different command prompt**



clear

◆ Clear the terminal screen

clear

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pwd

- ◆ **Display the absolute pathname of the current directory
(print working directory)**

pwd

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- ◆ **Change Directories**
- ◆ **Accept both absolute and relative pathnames**
- ◆ **Current directory.**

Parent directory ..

cd [directory_name]

cd /export/home/jerry

cd jerry/dir1

cd

cd ../..



ls

◆ Displaying a Listing of Files and Directories

- **ls -a** **Displaying hidden files**
Hidden file: a file started with a “.”
- **ls -R** **Displaying a recursive listing**
- **ls -t** **Sorts by time stamp instead of by name**
- **ls -l** **Displaying a long list**

```

d rwX r-x r-x  4  user  nobody 1024  Feb 22 09:20  a.txt
文 拥 同 其 链  拥      拥      大      最后一次  文
件 有 组 它 接  有      有      小      修改时间  件
类 者 人 人 号  者      组                      名
型 权 权 权
    限 限 限

```



d directory - normal file

◆ **file filename(s)**

- **Text, including ASCII text, English text, commands text and executable scripts**
- **Executable or Binary, including 32-bit executable and extensible linking format (ELF) code files and other dynamically linked executables**
- **Data, those created by an application running on the system**

◆ **ls -F Displaying file types**

目录文件	/
可执行文件	*
文本文件	(none)



- r** -读权限
- w** -写权限, 对目录来说, 可生成文件与子目录或删除文件与子目录
- x** -执行权限, 对目录来说, 可查找该目录下内容
- -没有权限

如 - **rw- r-- r--**

拥 同 其
有 组 它
者 人 人

其中	拥有者-生成文件时登录的人, 权限最高,	u	表示
	同组人-系统管理员分配的同组的一个或几个人,	g	表示
	其它人-除拥有者, 同组人外的人,	o	表示
	所有人-包括拥有者、同组人及其它人,	a	表示

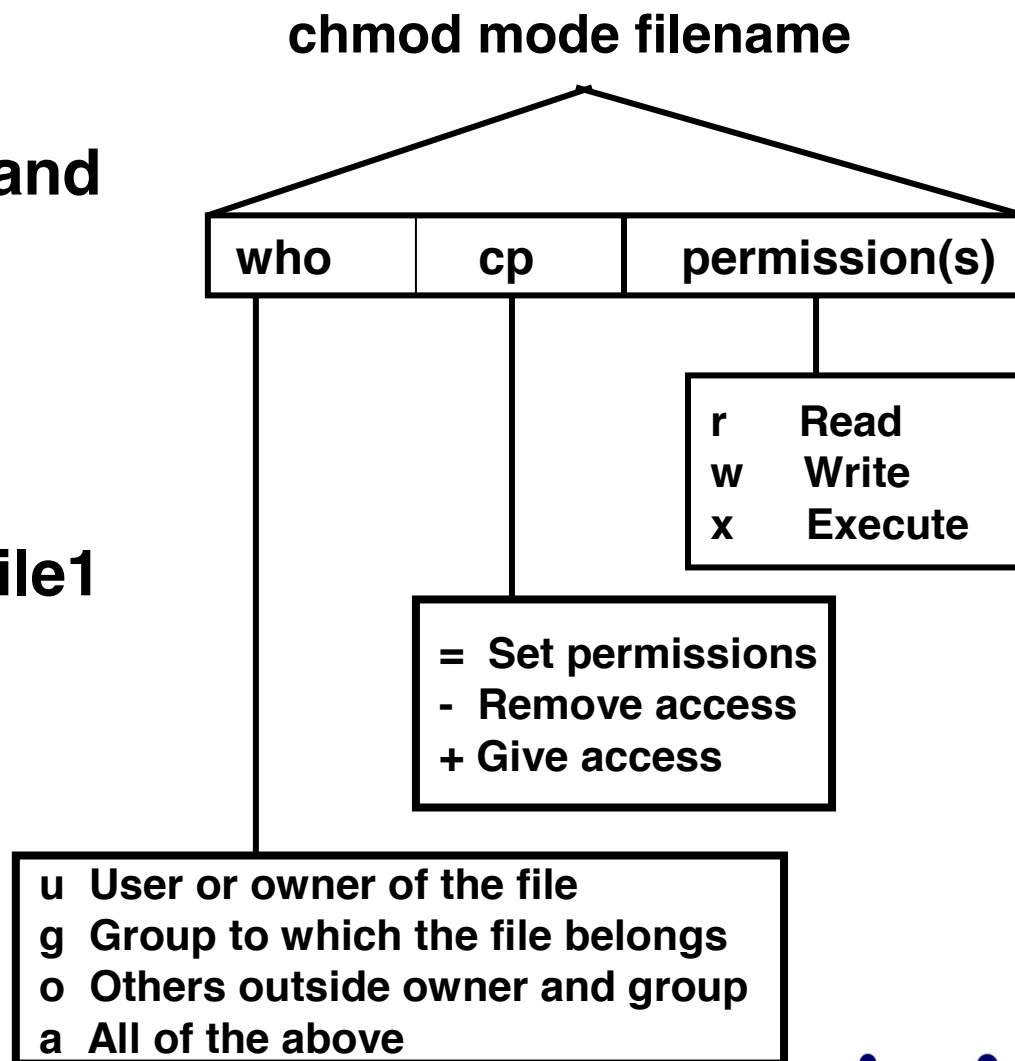


- ◆ **Change permissions**
- ◆ **Symbolic mode uses combinations of letters and symbols**

chmod g-r file1

chmod u+x,go+r file1

chmod a=rw file1



◆ Octal mode uses octal numbers

chmod 555 dante

chmod 644 dante

chmod 755 dante

Octal Value	Permissions
4	Read
2	Write
1	Execute

Octal Value	Permissions
7	r w x
6	r w -
5	r - x
4	r - -
3	- w x
2	- w -
1	- - x
0	- - -

◆ **Create new, empty files or update access and modification times**

touch filename(s)

mkdir

- ◆ Create directories using either an absolute or a relative pathname
- ◆ Must have the appropriate permissions to create a directory

mkdir [-p] directory_name

mkdir dir1/dir2

mkdir dir3 dir4 dir5

mkdir ~/games

mkdir -p dir6/dir7/dir8



cp

◆ Copy files

cp [-i] source_file destination_file

cp [-i] source_file(s) destination_directory

cp beans apple

cp beans apple dir2

cp -i beans apple

◆ Copy a directory and its contents to another directory

cp -r[i] source_directory(s) destination_directory

cp -r dir3 dir4

cp -r dir3 dir4 /tmp



◆ Move or rename files and directories

mv [-i] source target_file

mv [-i] source target_directory

mv nuts beans

mv /export/home/jerry/brands ~

mv dir5 dir6

◆ Remove files

rm [-i] filename(s)

rm file1 file2 file3

rm -i file4

◆ Removing Directories

rmdir directory_name(s)

rm -r[i] directory_name(s)

rmdir empty_dir

rm -r dir6

rm -ir ~/dir7



-
- ◆ **The UNIX Manpages describes information about the system's on-line commands, system calls, file formats, and system maintenance**

man name

man –k keyword

- ◆ **Scrolling in Manpages**

Spacebar Scroll through a manual page one screen at a time

Return Scroll through a manual page one line at a time

b Move back one screen

f Move forward one screen

q Quit the man command

/string Search forward for information

n Find the next occurrence of string





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Module 4

Metacharacters

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Concept

- ◆ **Are keyboard characters with special meaning to the shell**
- ◆ **Examples: ; \$ % > ! ~ * ? [] < > |**
 - **Except The dot (.) and underscore (_)**



◆ Represents zero or more characters

ls d*

◆ Represents any single character

ls d?

ls z?.txt

◆ Match a set or range of characters to a single character position

Is [b-f]b*

Is [fF]f*a?c

◆ Enter multiple commands on a command line

cd;ls

date;cal;pwd



- ◆ **Use (>) to redirect the output of a command to a file rather than to the screen**
- ◆ **Use (<) to redirect the input to a command from a file rather than from the keyboard**
- ◆ **Use (>>) to append the output of a command to an existing file**

```
cal 10 2004 > a.txt
```

```
cal 11 2004 >> a.txt
```

```
cat < f1.txt > f2.txt
```



◆ Takes the output of one command and passes it as input into a following command

```
cal 7 2003 | lp
```

```
ls -l /etc | more
```





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Module 5

Text viewers

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- ◆ Displays the contents of a text file on screen
- ◆ Is often used to join two or more files into one large file

cat filename(s)

cat /dev/null > ~/b.txt

**cat /etc/passwd | awk -F: '{print \$1 "\t" \$6}' \
| sort > ~/userinfo**

◆ **Displays the contents of a text file one screen at a time**

more filename(s)

Spacebar Scroll to the next screen

Return Scroll one line at a time

b Move back one screen

f Move forward one screen

h Display a Help menu of more features

q Quit and return to the shell prompt

/string Search forward for string

n Find next occurrence of string



- ◆ **Displays the first or last n lines of one or more files**
- ◆ **Displays first or last 10 lines by default**

head [-n] filename(s)

tail [-n] filename(s)

tail -30 /usr/dict/words





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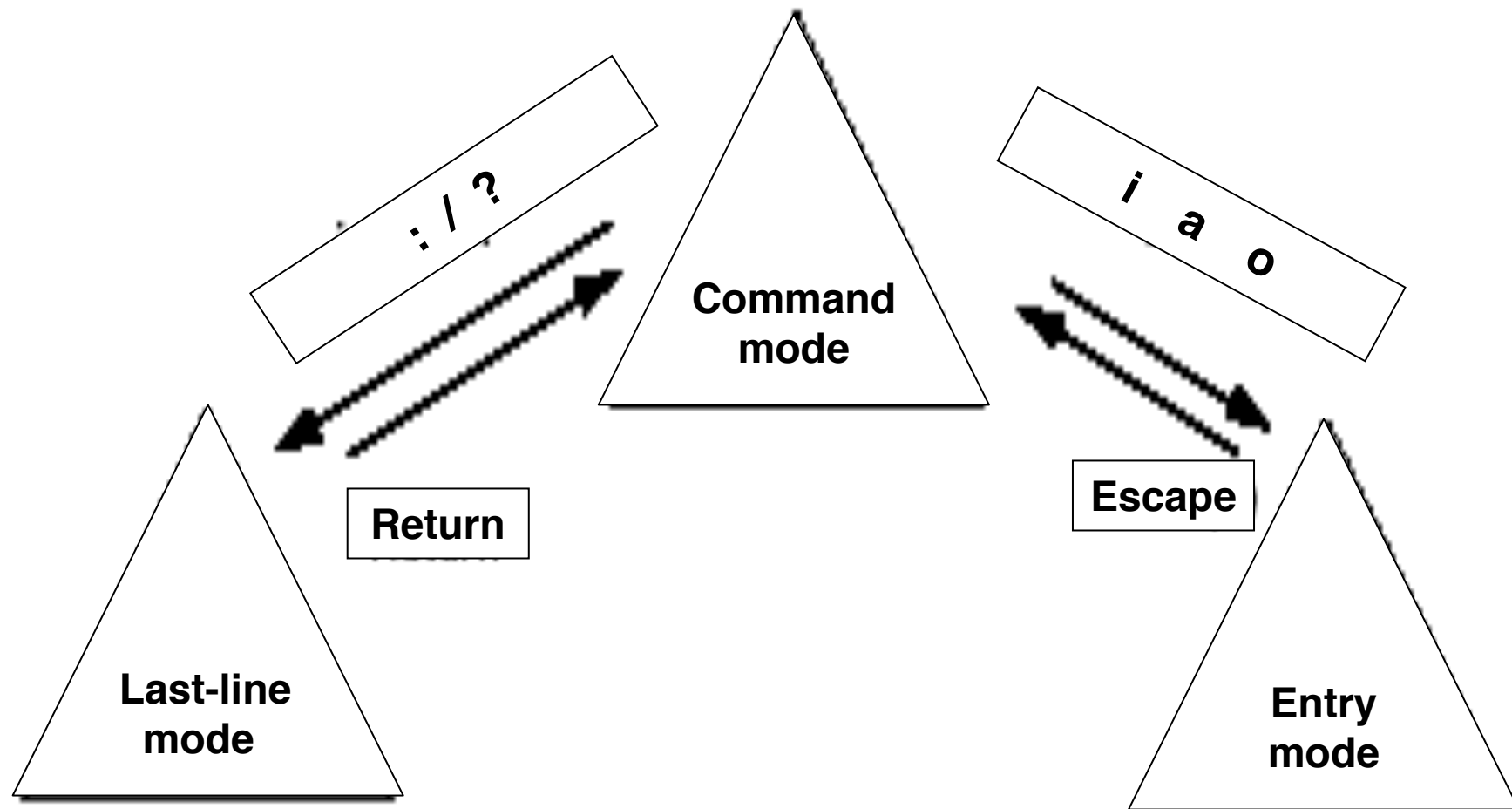
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Module 6

Full-screen Text Editor

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vi filename

Open or create a file

vi

Open a new file to be named later



- i** 在光标当前位置插入
- a** 在光标所在位置后插入
- o** 在光标所在行下插入一空行

<Esc>退出插入状态



x 删除一个字符

dw 删除当前词

3dw 删除三个词

dd 删除当前行

5dd 删除五行

:5, 10d



- r 替换一个字符
- cw 替换一个单词
- cc 替换一行
- C 替换从光标至行尾



yw	拷贝词
yy	拷贝行(或Y)
p	当前行下粘贴
:1,2co3	拷贝行1, 行2在行3之后
:4,5m6	移动行4, 行5在行6之后

:w	存盘
:w newfile	存成新文件
:wq	存盘退出Vi (或ZZ, 或:x)
:q!	强行退出不存盘

~	改变大小写
J	把当前行和下一行连起来
u	废除刚才的编辑操作(undo)
:set nu	显示行代码 (:set nonu)
:21	光标停在指定行
21G	光标停在指定行 (G 到文件尾, 1G 到文件头)
/串	从当前行往下查找
?串	从当前行往上查找
n	查找继续
:r file2	在光标所在位置插入另一个文件
:1,\$s/旧串/新串/g	替换全文(或 :%s/旧串/新串/g)

Systems Testing Technicians:

Systems testing technicians execute test plans to evaluate the performance of software applications and information and telecommunications systems. They are employed in information technology units throughout the private and public sectors.

Example Titles:

application tester

application testing technician

software test coordinator

software tester

systems tester

systems testing technician





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Module 9

Setup Initialization Files

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Environment Variables

- ◆ **The SunOS 5.x system software provides several default environment variables whose values can be customized**
- ◆ **Temporarily change the environment variables at the command line, affecting only the current shell**
- ◆ **Permanently changes it by modifying the initialization files**



Features of Initialization Files

◆ **Initialization files contain commands and variable settings that are executed when a shell is started**

◆ **Two levels:**

- **System-wide – Reside in the /etc directory**
- **User-specific – Reside in a user's home directory**

Shell	System-Wide (Read First)	User-Specific (Read Second)
Bourne	/etc/profile	\$HOME/.profile
C	/etc/.login	\$HOME/.login \$HOME/.cshrc \$HOME/.logout



Templates of The Initialization Files

◆ **/etc/skel/local.profile, local.login, local.cshrc**

→ **\$HOME/local.profile, local.login, local.cshrc**



Contents of The Initialization Files

- ◆ **Set the default file creation permissions**
- ◆ **Set environment variables**
- ◆ **Set the default prompt**
- ◆ **Set the command path for the default command path**
- ◆ **Set the variable TERM for the default terminal type**
- ◆ **Set up custom commands**



ksh	Invoking Korn Shell
sh	Invoking Bourne Shell
csh	Invoking C Shell
bash	Invoking Bourne-again Shell

setenv variable value

setenv OPENWINHOME /usr/openwin



Quoting in Shells

% echo \$PATH

% setenv WTO `uname -n`

% echo \$WTO

% echo “\$WTO”

% echo ‘\$WTO’

% echo \ \$WTO



path

set path=(... ..)

set path=\$(path pathname ...)

◆ which

- Displays the pathname leading to an accessible command based on your search path
- which vi

◆ whereis

- Displays all directories where desired command is located, including appropriate man page
- /usr/ucb/whereis vi

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- ◆ **Displays previously entered commands typed in the C shell to the screen**

set history=30

% history

% history 5

% !n

% !!



- ◆ **Substitute a short command for a long one**
- ◆ **Create a single command for a series of commands**
- ◆ **Create alternate forms of existing commands**
- ◆ **Change a command set**

alias alias-name value

% alias h history

% alias c clear

% alias home 'cd;ls'

% alias ls 'ls -l'

% alias copy 'cp -i'

% alias

% unalias copy



set prompt= value

set prompt="`hostname` : \$cwd %"



An .cshrc Example

```
# !/bin/csh
umask 022
setenv CC /usr/local/bin/gcc
setenv CCC /usr/local/bin/g++
setenv ORACLE_BASE /u1/app/oracle
setenv ORACLE_HOME ${ORACLE_BASE}/software/9.0.1
setenv ORACLE_SID briupdb
setenv JAVA_HOME /usr/j2se
setenv MANPATH /usr/share/man:/usr/man:/usr/share/catman:/usr/catman
setenv LD_LIBRARY_PATH /usr/lib:/usr/dt/lib:${ORACLE_HOME}/lib
setenv EDITOR vi
set path=(/usr/j2se/bin /usr/bin /usr/local/bin /usr/ucb /usr/ccs/bin /etc .)
set history=100
set prompt="`hostname` ! % "
alias ll "ls -l | more"
alias make /usr/bin/make
```





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