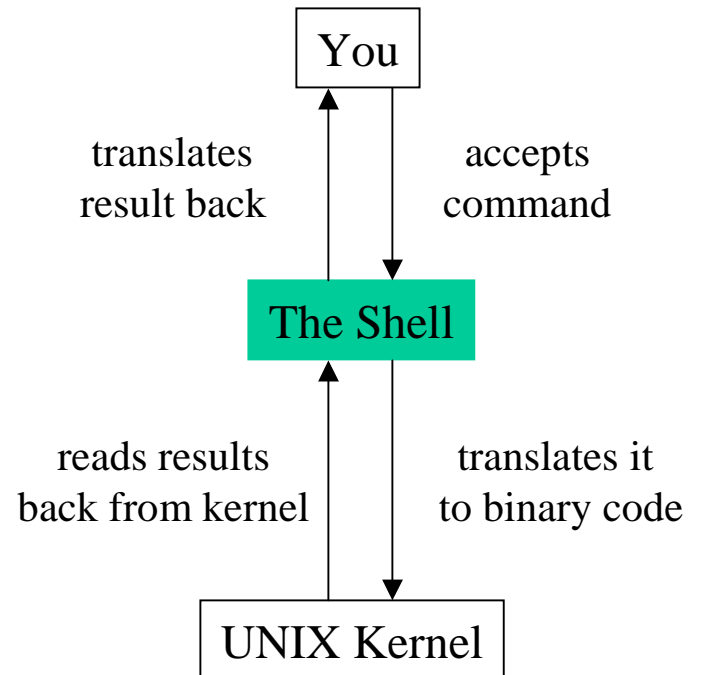


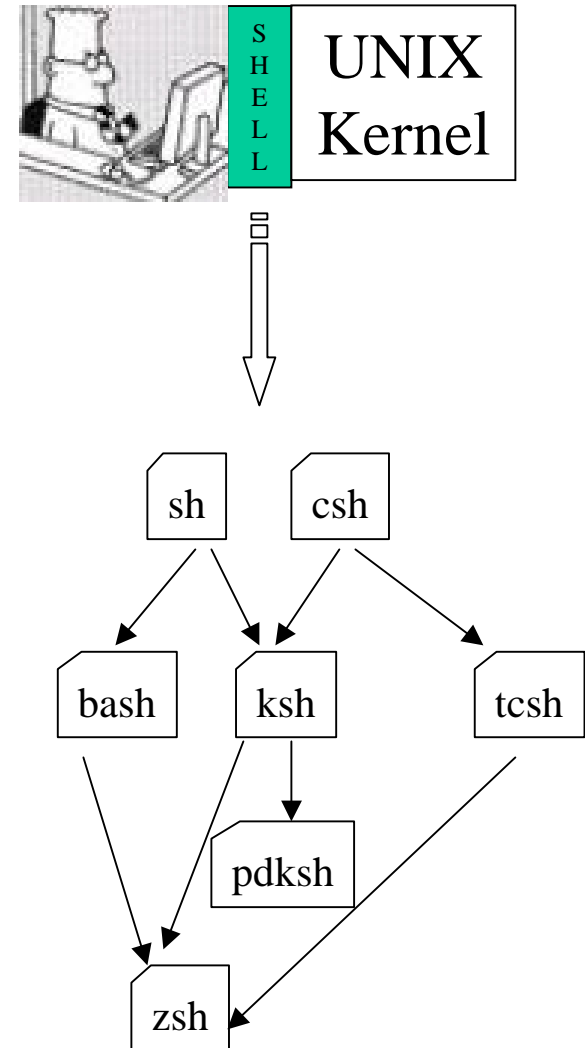
# Unix Shell

- A user interface to the UNIX OS
  - as a command-line interpreter (processing commands at prompt)
  - as a high-level programming language (processing commands stored in Shell script)
- The power of shell: productivity



# Shell Flavors

- Independent of the underlying UNIX kernel
- A number of shells:
  - sh - Bourne shell
  - csh - C shell
  - ksh - Korn shell
  - tcsh - Enhanced C shell
  - bash - GNU Bourne-Again Shell
  - zsh - Extension to bash, ksh, tcsh
  - pdksh - Extension to ksh

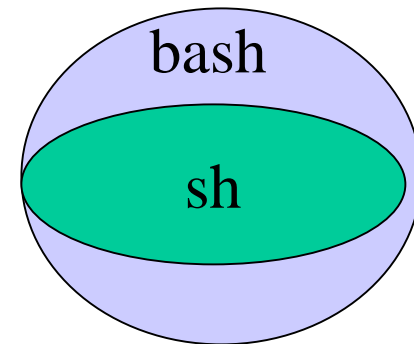


# Unix Shells: Comparison

Shell	Roots	Default shell	Facts	Status in ESD
sh		<ul style="list-style-type: none"> <li>• on all UNIX</li> <li>• standard</li> </ul>	<ul style="list-style-type: none"> <li>• the most popular</li> <li>• simple and robust</li> <li>• <u>best for shell prog.</u></li> <li>• system utilities in sh</li> </ul>	<ul style="list-style-type: none"> <li>• all system utilities in sh</li> <li>• all admin tools in sh</li> <li>• most app. scripts in sh</li> </ul>
csh		<ul style="list-style-type: none"> <li>• almost on all</li> </ul>	<ul style="list-style-type: none"> <li>• a syntax similar to C</li> <li>• good for interactive</li> <li>• buggy for shell prog.</li> </ul>	<ul style="list-style-type: none"> <li>• some app scripts in csh</li> </ul>
tcsh	csh		<ul style="list-style-type: none"> <li>• <u>best for interactive</u></li> <li>• login shell in SLAC</li> <li>• less in shell prog.</li> </ul>	<ul style="list-style-type: none"> <li>• default interactive shell</li> <li>• all UNIX systems</li> </ul>
bash	sh	<ul style="list-style-type: none"> <li>• on Linux</li> </ul>	<ul style="list-style-type: none"> <li>• <u>best for both</u></li> <li>• less popular</li> </ul>	<ul style="list-style-type: none"> <li>• some system utilities in bash, others in sh</li> </ul>
ksh	sh and csh		<ul style="list-style-type: none"> <li>• good for shell prog.</li> <li>• less popular</li> </ul>	
zsh	tcsh, ksh, bash		<ul style="list-style-type: none"> <li>• great for UNIX gurus</li> </ul>	

# The choice of a scripting language

- sh
  - Distributed as standard shell in Solaris
  - System shell programs in sh
  - A large number of utilities, tools, libraries and examples in sh
  - Robust
- bash
  - GNU version of sh, free!
  - Extended: better for interactive use as well
  - Fully sh-compatible
  - Distributed as standard shell in Linux
  - Yet, most system shell programs still in sh
  - Sh -> bash: scripts in sh run on both Linux and Solaris.
  - Script in Bash may not always run on Solaris, unless Bash ported
- perl
  - Best for sophisticated task



# sh v.s bash

```
jingchen@noric06 $ ls -all /bin/sh
```

```
lrwxrwxrwx    1 root    root
```

```
4 Dec 14 08:40 /bin/sh -> bash*
```

```
jingchen@noric06 $ ls /etc/rc.d/init.d
```

afs*	gpm*	kudzu*	nscd*	rwhod*	xntpd*
amd*	halt*	lbcd*	pcmcia*	sendmail*	ypbind*
amd~*	identd*	linuxconf@	portmap*	single*	ypbind~*
anacron*	inet*	lpd*	post.install*	snapserv*	yppasswdd*
apmd*	ipchains*	lsf*	random*	snmpd*	ypserv*
arpwatch*	irda*	netfs*	routed*	sshd*	
atd*	kdcrotate*	network*	rstatd*	syslog*	
crond*	keytable*	nfs*	rusersd*	taylor*	
functions*	killall*	nfslock*	rwalld*	xfs*	

```
jingchen@noric06 $ more /etc/rc.d/init.d/afs
```

```
#!/bin/sh
```

```
#
```

```
# AFS      Start and stop AFS components
```

```
#
```

```
#
```

```
# chkconfig: 345 60 20
```

```
# description:  AFS is a distributed file system which provides location  
#                transparency, caching and secure authentication.
```

```
#                Additional configuration can be done in the /etc/sysconfig/afs  
#                file. Read the documentation in that file for more information.
```

```
#
```

```
# Note that AFS does not use a pid file in /var/run. It is turned off by  
# unmounting /afs.
```

```
# Gather up options and post startup script name, if present
```

```
if [ -f /etc/sysconfig/afs ]; then
```

```
    . /etc/sysconfig/afs
```

```
fi
```

# Recommendation

- The rules of game:
  - use sh shell for shell programming;
  - use tcsh shell for interactive use;
  - use perl for sophisticated tasks.
- Standalization:
  - generating a template for shell programming