Chapter 8

Special Variables

Overview

- Special parameters
- Command-line arguments
- Getting options

Lesson: Special parameters

Variable	Purpose
$	Procces ID (PID) of currently running shell
!	Process ID (PID) of the most recent background command executed from the current shell
?	Exit status of previous command
-	Currently enabled shell options

```
grep -l $1 * > /tmp/cleaner$$
num_found=`wc -l < /tmp/cleaner$$`
echo Found $num_found files with pattern $1
for file in `cat /tmp/cleaner$$`
do
  echo $file
done
rm /tmp/cleaner$$
```

Lesson: Command-line arguments

- Command line input
- Special parameters for positional parameters
- The `shift` command
- The `set` command

Command line input

- Command line

```
$ sh_program arg1 arg2 ... argX
       $0       $1   $2  ... ${X}
```

- Example

```
$ cat color3
echo You are now running program: $0
echo The value of command line argument \#1 is: $1
echo The value of command line argument \#2 is: $2

$ ./color3 red green
You are now running program: ./color3
The value of command line argument #1 is: red
The value of command line argument #2 is: green
```

Special parameters for command-line arguments

Variable	Purpose
#	Number of command-line arguments
*	All command-line arguments starting from 1, all arguments as one (quoted) field.
@	All command-line arguments starting from 1, every argument as separate (quoted) field. Preserves mutli-word arguments
0	Name of script

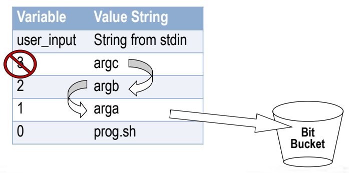
```
echo "The script name: $0"
echo "The total number of parameters: $#"
echo "All of the parameters as individual words: $*"
echo "All of the parameters as originally quoted: $@"
```

Shifting Parameters

- **Syntax:**

```
shift [n]
```

  - shift positional parameters by n places



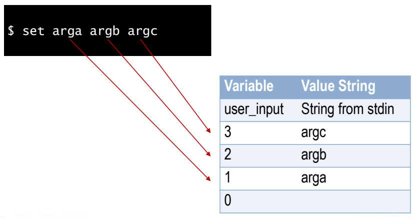
Variable	Value String
user_input	String from stdin
3	argc
2	argb
1	arga
0	prog.sh

Creating Positional Parameters

- **Syntax:**

```
set word ...
```

```
$ set arga argb argc
```

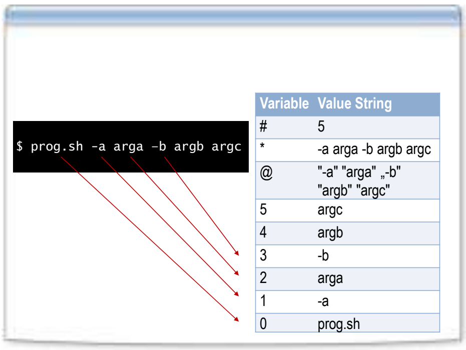


Variable	Value String
user_input	String from stdin
3	argc
2	argb
1	arga
0	

Lesson: Getting options

- **Processing Options and Arguments**
- **The `getopts` Command**
- **The `OPTARG` Variable**
- **The `OPTIND` Variable**

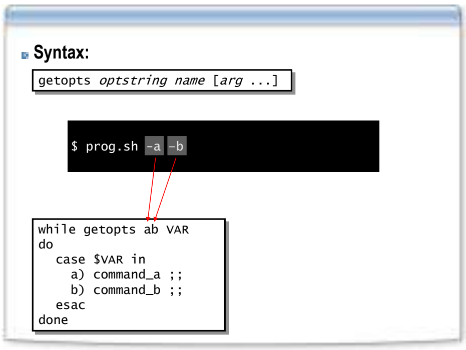
Processing Options and Arguments



```
$ prog.sh -a arga -b argb argc
```

Variable	Value String
#	5
*	-a arga -b argb argc
@	"-a" "arga" „-b" "argb" "argc"
5	argc
4	argb
3	-b
2	arga
1	-a
0	prog.sh

The `getopts` Command



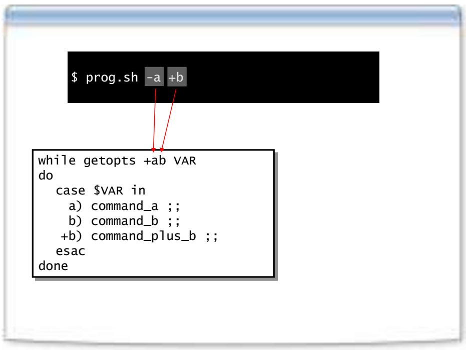
- **Syntax:**

```
getopts optstring name [arg ...]
```

```
$ prog.sh -a -b
```

```
while getopts ab VAR
do
   case $VAR in
     a) command_a ;;
     b) command_b ;;
   esac
done
```

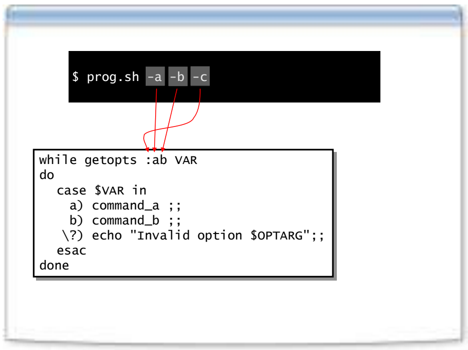
The `getopts` Command (Continued)



```
$ prog.sh -a +b
```

```
while getopts +ab VAR
do
   case $VAR in
     a) command_a ;;
     b) command_b ;;
    +b) command_plus_b ;;
   esac
done
```

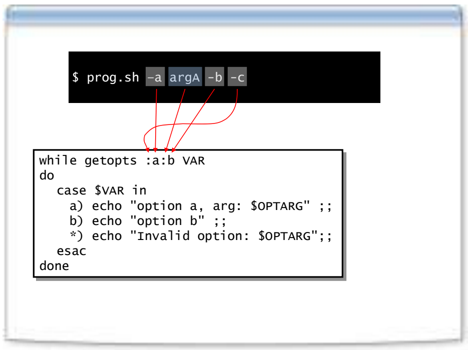
The OPTARG Variable



```
$ prog.sh -a -b -c
```

```
while getopts :ab VAR
do
   case $VAR in
     a) command_a ;;
     b) command_b ;;
    \?) echo "Invalid option $OPTARG";;
   esac
done
```

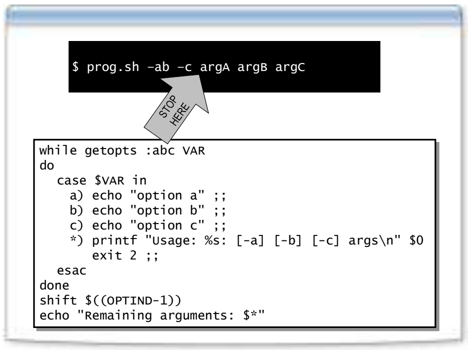
The OPTARG Variable (Continued)



```
$ prog.sh -a argA -b -c
```

```
while getopts :a:b VAR
do
   case $VAR in
     a) echo "option a, arg: $OPTARG" ;;
     b) echo "option b" ;;
     *) echo "Invalid option: $OPTARG";;
   esac
done
```

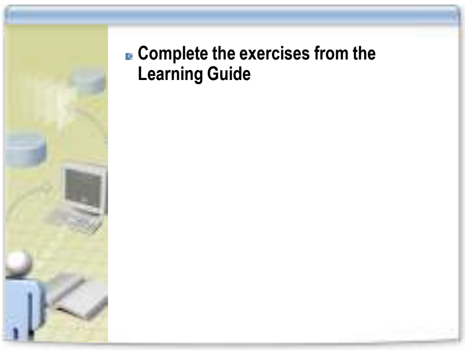
The OPTIND Variable



```
$ prog.sh -ab -c argA argB argC
```

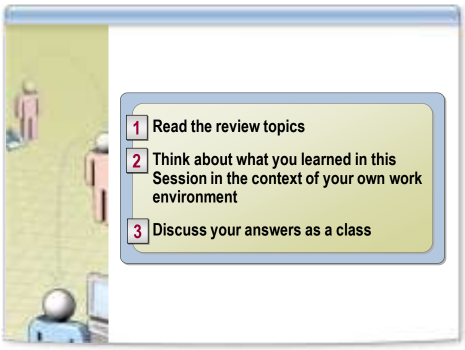
```
while getopts :abc VAR
do
   case $VAR in
     a) echo "option a" ;;
     b) echo "option b" ;;
     c) echo "option c" ;;
     *) printf "Usage: %s: [-a] [-b] [-c] args\n" $0
        exit 2 ;;
   esac
done
shift $((OPTIND-1))
echo "Remaining arguments: $*"
```

Review Exercises



- Complete the exercises from the Learning Guide

Topics for Review



1. Read the review topics
2. Think about what you learned in this Session in the context of your own work environment
3. Discuss your answers as a class