Chapter 10

Functions

Overview

- Shell Functions
- Passing Arguments to Functions
- Returning Values from Functions
- Function Libraries

Lesson: Shell Functions

- Syntax:

```
fname() compound-command [redirection ...]
function fname { compound-command ; }
```

  - Defines named compound command (can be list)
- Functions run like . -scripts, in caller's context.
- Functions run when called, not when defined.
- Functions will not be exported to subshells.
- Example:

```
day() date +'%A, %B %e'
function holder {
  echo "\nPRESS RETURN TO CONTINUE"
  read anything
}
```

Displaying Current Shell Functions

- To display the contents of declared functions:

```
$ typeset -f
function function_name
{
    command_lines
}
day() date +'%A, %B %e'
```

- To display the names of declared functions:

```
$ typeset -F
function_name1
function_name2
```

Declaring Functions in a Shell Script

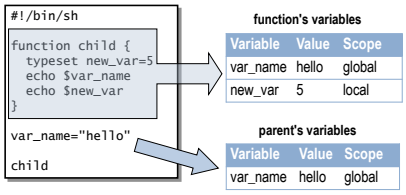
- It is good practice to declare all functions at the start of the script file.
- You can also dot-source them from another file.

```
$ cat funclib
func1() ...
func2() ...

$ cat myscript
#!/bin/sh -x
. ~/funclib
func3() {
  ...
}
...
commands
...
```

Local Variables

- Korn shell family shells can define local variables in function



Lesson: Passing Arguments to Functions

- Functions have their own positional parameters.
- You can pass parameters to function when calling it:

```
Shifter() {
  echo "$# parameters passed to $0"
  while [ $# -gt 0 ]
  do
    echo "$*"
    shift
  done
}
             # MAIN BODY OF THE SCRIPT
echo "Please type a list of five words: "
read varlist
set $varlist # creates positional parameters
shifter $*   # pass arguments to function
echo "$# parameters in the parent"
echo "Parameters: $*"
```

Lesson: Returning Values from Functions

- The `return` Command
- Function Output

The `return` Command

- Syntax:

```
return [n]
```

  - Stops executing current function or dot-script and returns *n* as exit code.
- Example:

```
$ sqr1() { return $(($1 * $1)); }
sqr1 5
echo $?
25
```

- Exit code is 1-byte number, so only small integers (less than 256) can be returned

Function Output

- Function output will go to `stdout` and can be redirected, piped or captured (command substitution)

```
#!/bin/sh
function child {
  typeset new_var=5
  echo $var_name
  echo $new_var
}
var_name="hello"
fun_data=$(child)
echo "$fun_data"
```

function's variables

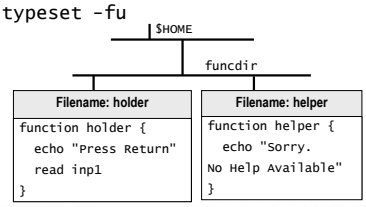
Variable	Value	Scope
var_name	hello	global
new_var	5	local

parent's variables

Variable	Value	Scope
var_name	hello	global
fun_data	hello 5	global

Lesson: Function Libraries

- Use dot-sourcing
- Korn shell family can use function autoloading
  - Define FPATH environment variable
  - Use `typeset -fu`



Filename: holder

```
function holder {
  echo "Press Return"
  read inp1
}
```

Filename: helper

```
function helper {
  echo "Sorry.
No Help Available"
}
```

Review Exercises

- Complete the exercises from the Learning Guide

Topics for Review