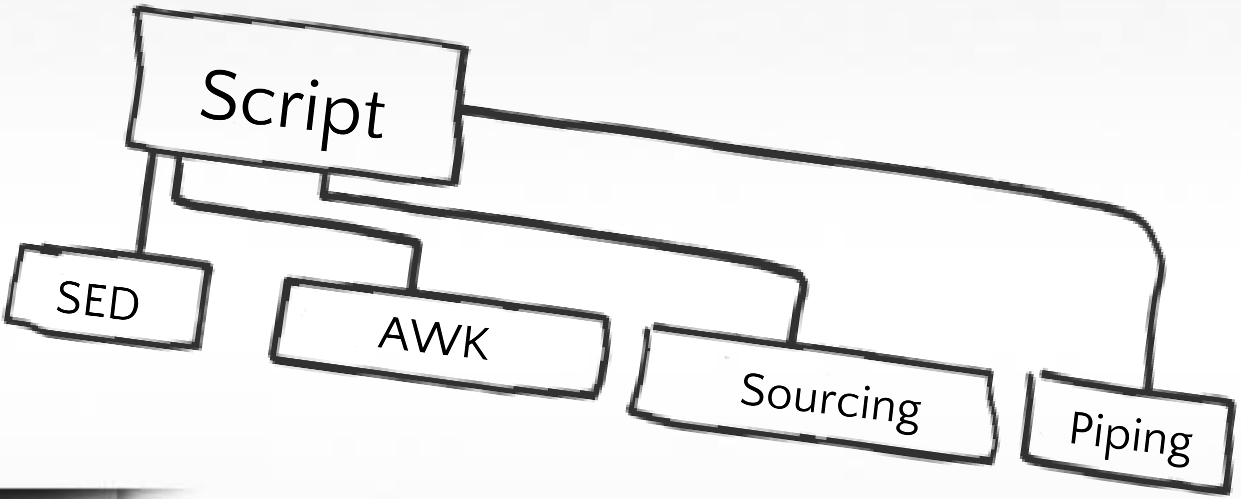
NOW

Bash Shell

Shell Scripting



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Course Materials

You can access the course materials via this link

https://tinyurl.com/3kaww77s

Day 3 Contents

- case
- Loops
- select
- shift
- break
- continue
- Arrays
- Functions
- Debugging

The case command

```
case variable in
value1)
            Command(s)
            ;;
value2)
            Command(s)
            ;;
*)
            Command(s)
            ;;
esac
```

ksh Sub Patterns

- ?(pattern(s))
  - Match one or zero occurrence of any of the patterns
- *(pattern(s))
  - Match zero or more occurrence of any of the patterns
- @(pattern(s))
  - Match exactly one occurrence of any of the patterns
- +(pattern(s))
  - Match one or more occurrence of any of the patterns
- !(patten(s))
  - Match all strings except any of the patterns

Example

```
#!/bin/ksh
case $var  in
+([a-z]) )    echo     " lower case "
                ;;
+([A-Z]) )   echo    " upper case "
                ;;
+([0-9]) )    echo     " integer "
                ;;
esac
```

Looping Commands

- The `while` command
- The `until` command
- The `for` command

The `while` command

```
while command
do
   … command …
done
```

- Examples

```
num=0
while [ $num -lt 10 ]
do
   echo $num
   let num=$num+1
done
```

Examples (cont.)

```
echo what is my name
read ans
while [ $ans != “sherine” ]
do
  echo Wrong Answer!
  echo Try Again
  read ans
done
echo You Got It ☺
```

The until command

```
until command
do
    command(s)
done
```

- Example

```
hour=1
until [ $hour -gt 24 ]
do
   case $hour in
     [0-9] | 1[0-1]) echo good morning ;;
     12) echo lunch time ;;
     1[3-7]) echo work time ;;
     *) echo Good Night ;;
   esac
   let hour=$hour+1
done
```

The `for` command

- It is used to execute commands a finite number of times on a list of items (files/usernames)

```
for variable in word list
do
  … commands …
done
```

The `for` command (cont.)

```
for pal in mona ahmed maha
do
   echo hi $pal
done

for person in `cat mylist`
do
   mailx $person < letter
   echo mail to $person was sent
done
```

The `select` command and Menus

- The `select` loop is an easy way for creating menus.
- The `PS3` prompt is used to prompt the user for an input.
- The input should be one of the numbers in the menu list.
- The input is stored in the special variable `RELPY`.
- The `case` command is used with the `select` command to make it possible for the user to make a select from the menu.

Examples

```
select choice in Ahmed Adel Tamer
do
case $choice in
Ahmed) print Ahmed is good boy
;;
Adel) print Adel is the best
;;
Tamer) print Tamer is a bad boy
;;
*) print $REPLY is not one of the choices.
;;
esac
done
```

Examples

```
Output:
1)Ahmed
2)Adel
3)Tamer
#? 1
Ahmed is a good boy
1)Ahmed
2)Adel
3)Tamer
#?5
5 is not one of the choices
1)Ahmed
2)Adel
3)Tamer
```

Examples (cont.)

```
print Choose from the following:
select choice in Ahmed Adel Tamer
do
case $choice in
Ahmed) print Ahmed is good boy
   break;;
Adel) print Adel is the best
   break;;
Tamer) print Tamer is a bad boy
   break;;
*) print $REPLY is not one of the choices.
   print Try again
;;
esac
done
```

The `shift` command

- It shifts the parameter list to the left a specified number of times.
- The `shift` without arguments shifts the parameter list once to the left.
- Once the list is shifted, the parameter is removed permanently.
- It is often used in `while` loops.

Examples

```
While (($#>0))
do
print $*
shift
done
:wq doit

$./doit a b c d e
a b c d e
b c d e
c d e
d e
e
```

The break command

- The break command is used to force immediate exit from the loop, but not from the program.

- Example

```
while true
do
echo "Are you ready to move on?"
read answer
if [ [ $answer =[Yy]* ]] # the new test command
then
break
else
  …commands..
done
echo "Here are you?"
```

The `continue` command

- The `continue` command is used to starts back at the top of the loop

- Example

```
for name in `cat names`
do
if [ $name = sherine ]
then
continue
else
mailx $name <memo
fi
done
```

Example for Nested Loops

```
while true
do
   for user in Ahmed Tamer Samy
   do
     if [[ $user = [Tt]* ]]
     then
               echo A Hi from Tamer
               continue
     fi
     while true
     do
                if [[ $user = [S]* ]]
               then
                         echo A Hi from Samy
                         break 3
               fi
               echo A Hi from Ahmed
               continue 2
               done
   done
done
echo Out of the Loop
```

Substitutions

```
$ echo $(date)
  Thu Jan 9 13:38:21 EET 2003
$ var=$(date)
$ print var
  var
$ echo $var
   Thu Jan 9 13:38:49 EET 2003
$ cat x
  abc
$ var=`cat x`
$ echo $var
  abc
```

Arrays

- `korn/bash` shells are one-dimensional arrays that contain up to 1024 elements consisting of words or integers.
- Index starts with zero.
- Each element can be set and unset individual.
- Values do not have to be set in any particular order.

Examples

- To set the value of array element

```
$array[0]=ahmed
$array[1]=ali
$array[2]=mohamed
$array=("ahmed" "ali" "mohamed")
```

- To print the values of the array elements

```
$echo ${array[0]}
ahmed
$echo ${array[1]}
ali
$echo ${array[2]}
mohamed
```

Examples (cont.)

- To declare a 2 integer elements array

```
$typeset -i ele[2]
$ele[0]=50
$ele[1]=happy
ksh:happy:bad number

$ele[1]=6
```

- To display all the elements in the array

```
$print ${ele[*]}
50 6
$print ${ele[@]}
50 6
```

- To display the number of elements in the array

```
$print ${#ele[@]}
2
```

Functions

- Functions are used to modularize programs.
- A Function is a collection of commands that can be executed simply by entering the function's name.
- `ksh` executes `aliases`, built-in commands, functions and then executables.
- Functions must be defined before it is used.

Functions (cont.)

- Functions are run in the current environment ; it shares variables.
- Local variables can be declared in the function using `typeset`.
- Functions can be exported to sub-shells
- To list functions and definitions use the alias functions.
- Functions can be recursive

Functions (cont.)

- Format

```
function function-name {commands; commands;}
```

- Example

```
function pr
{print $0 must take arg; exit 1; }
```

Example

```
#! /usr/bin/bash
function increment {
  typeset sum
(( sum = $1 + 1 ))
return $sum
}
echo The sum is
increment 5
echo $?
echo $sum
```

Handling Errors and Debuggers

- If you need to know the way your scripts runs , and the values of such variables during execution ; you can use either one of 2 options:
  - Write `set -x` inside your script before the part you want to debug, and `set +x` at the end of the part.
  - Run the script using command `bash -x script-name` so that it is equal to `set -x` but for the whole script.
- Using these ways let the shell write each command before executing it and also but the values of the variables. So you can test the sequence of the execution and check if variable is expanded correctly.

Thanks ☺

SBAHADER@GMAIL.COM