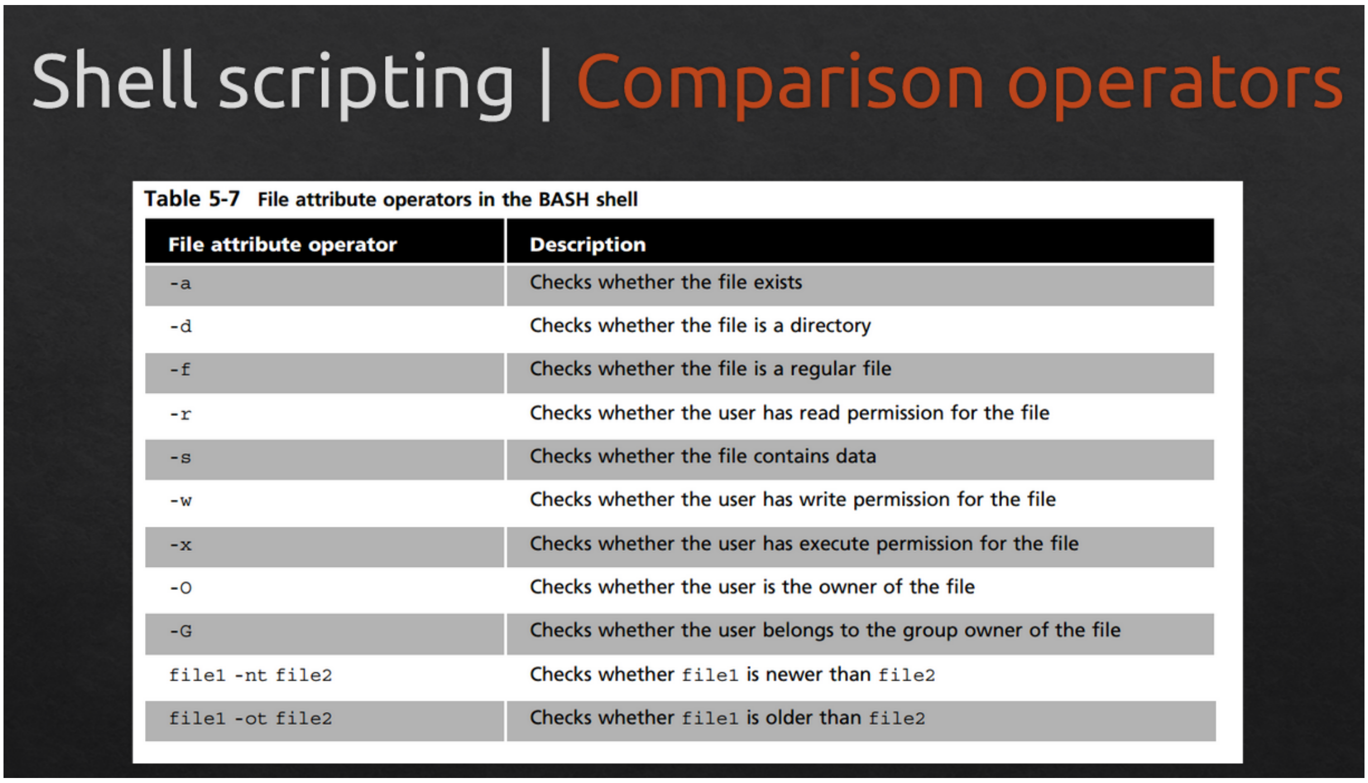
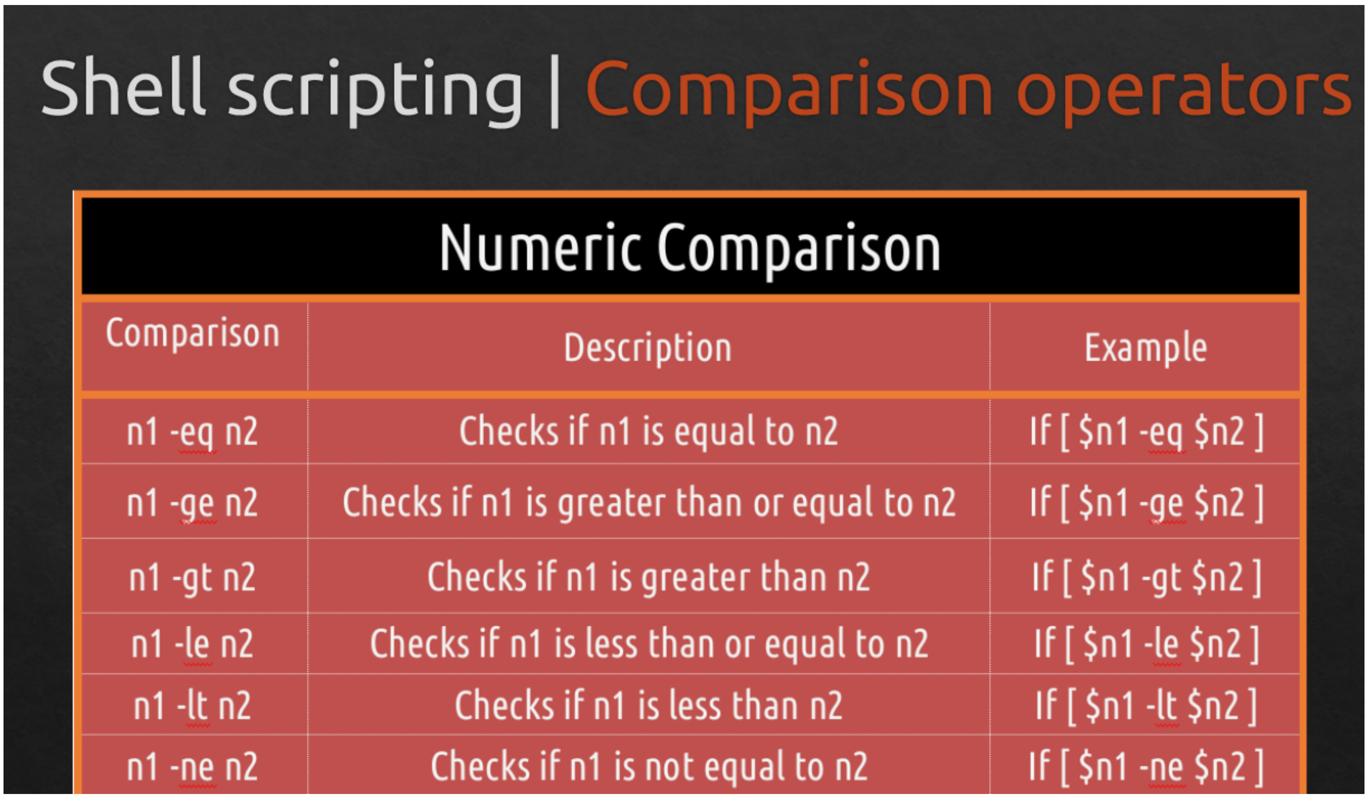
Note 8



Shell scripting | Comparison operators

Table 5-7 File attribute operators in the BASH shell

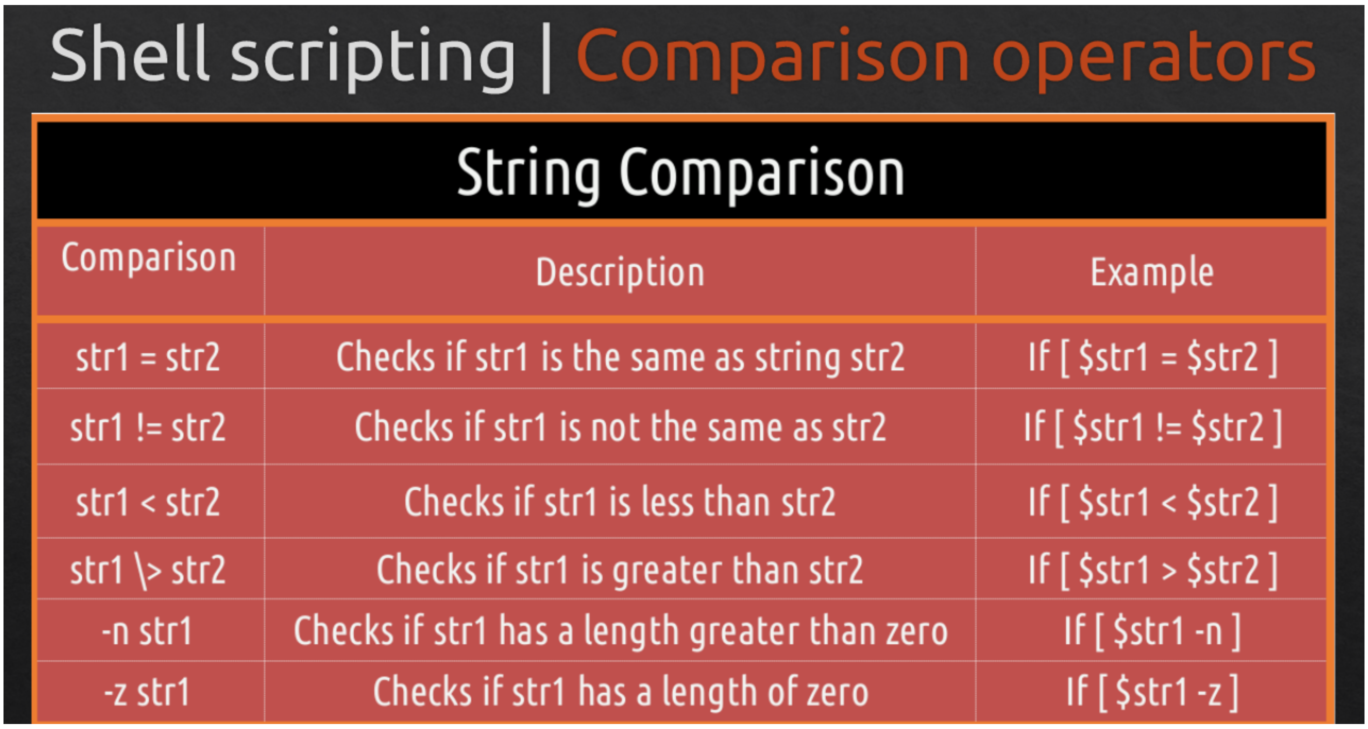
File attribute operator	Description
`-a`	Checks whether the file exists
`-d`	Checks whether the file is a directory
`-f`	Checks whether the file is a regular file
`-r`	Checks whether the user has read permission for the file
`-s`	Checks whether the file contains data
`-w`	Checks whether the user has write permission for the file
`-x`	Checks whether the user has execute permission for the file
`-O`	Checks whether the user is the owner of the file
`-G`	Checks whether the user belongs to the group owner of the file
`file1 -nt file2`	Checks whether `file1` is newer than `file2`
`file1 -ot file2`	Checks whether `file1` is older than `file2`



Shell scripting | Comparison operators

Numeric Comparison

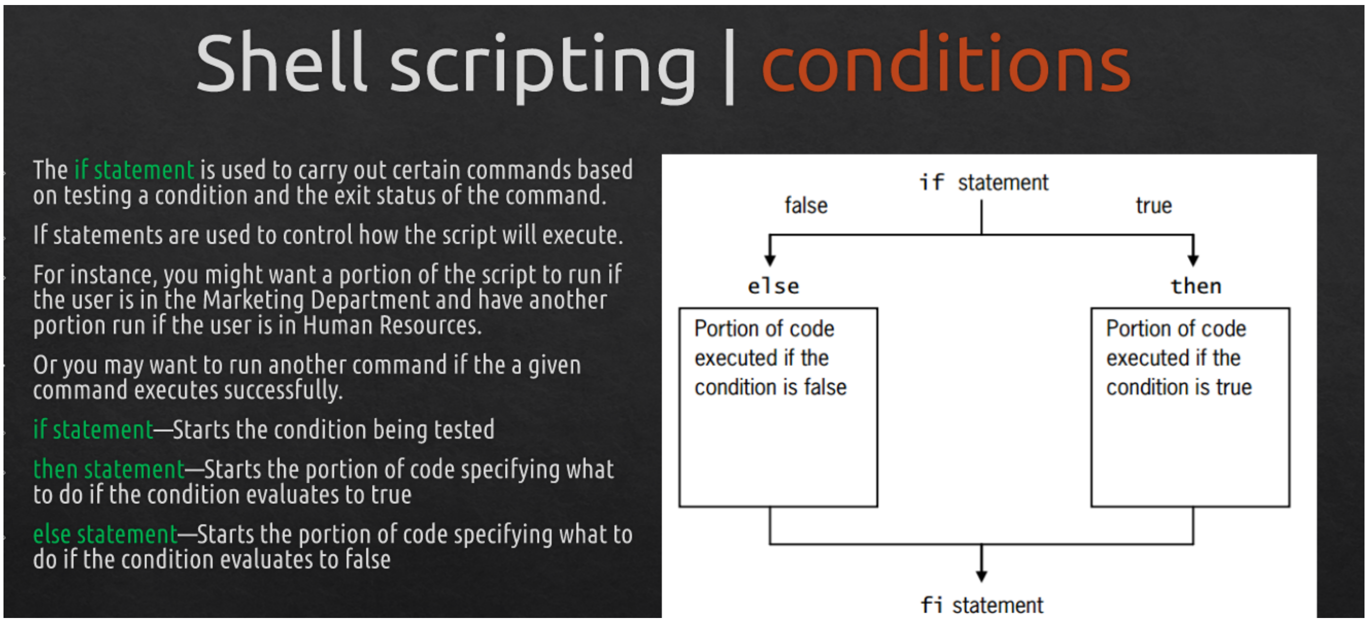
Comparison	Description	Example
n1 -eq n2	Checks if n1 is equal to n2	If [$n1 -eq $n2]
n1 -ge n2	Checks if n1 is greater than or equal to n2	If [$n1 -ge $n2]
n1 -gt n2	Checks if n1 is greater than n2	If [$n1 -gt $n2]
n1 -le n2	Checks if n1 is less than or equal to n2	If [$n1 -le $n2]
n1 -lt n2	Checks if n1 is less than n2	If [$n1 -lt $n2]
n1 -ne n2	Checks if n1 is not equal to n2	If [$n1 -ne $n2]



Shell scripting | Comparison operators

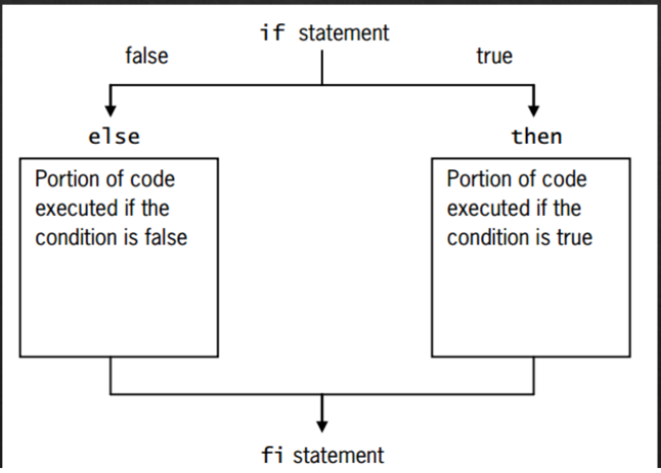
String Comparison

Comparison	Description	Example
str1 = str2	Checks if str1 is the same as string str2	If [$str1 = $str2]
str1 != str2	Checks if str1 is not the same as str2	If [$str1 != $str2]
str1 < str2	Checks if str1 is less than str2	If [$str1 < $str2]
str1 \> str2	Checks if str1 is greater than str2	If [$str1 > $str2]
-n str1	Checks if str1 has a length greater than zero	If [$str1 -n]
-z str1	Checks if str1 has a length of zero	If [$str1 -z]

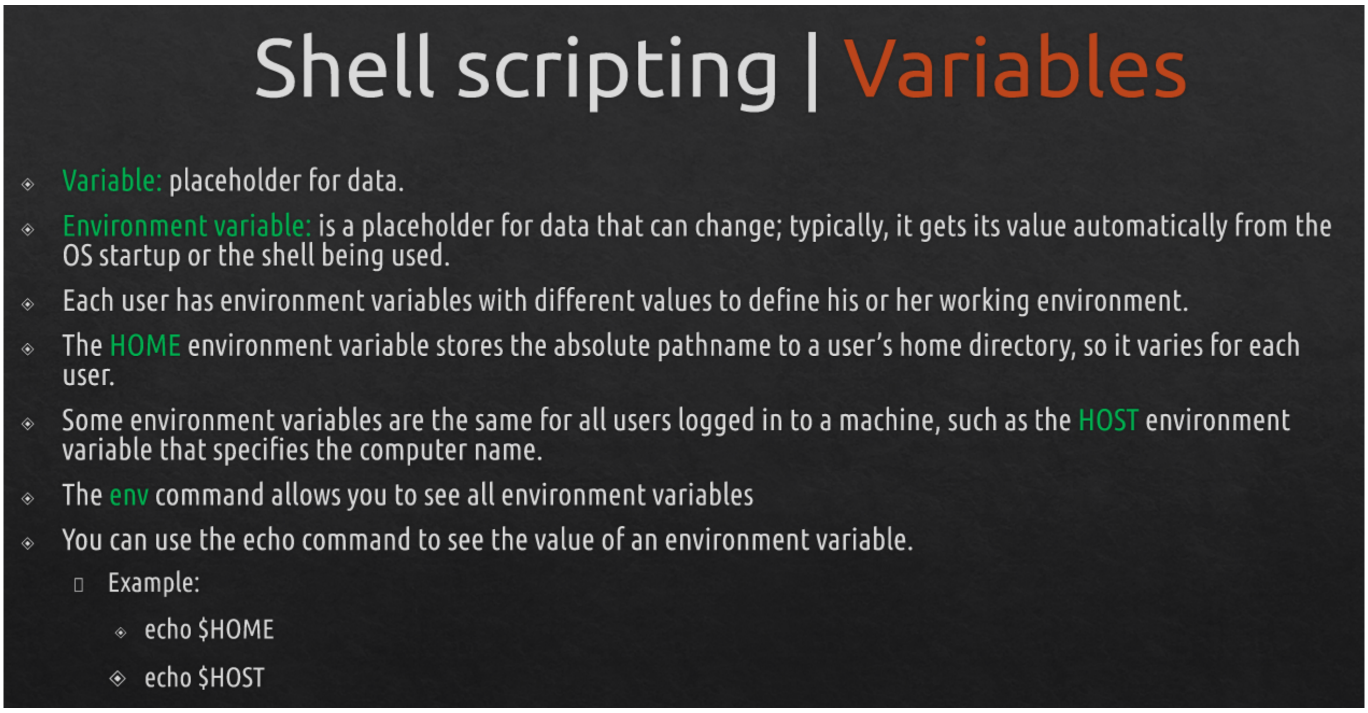


Shell scripting | conditions

- The if statement is used to carry out certain commands based on testing a condition and the exit status of the command.
- If statements are used to control how the script will execute.
- For instance, you might want a portion of the script to run if the user is in the Marketing Department and have another portion run if the user is in Human Resources.
- Or you may want to run another command if the a given command executes successfully.
- if statement—Starts the condition being tested
- then statement—Starts the portion of code specifying what to do if the condition evaluates to true
- else statement—Starts the portion of code specifying what to do if the condition evaluates to false

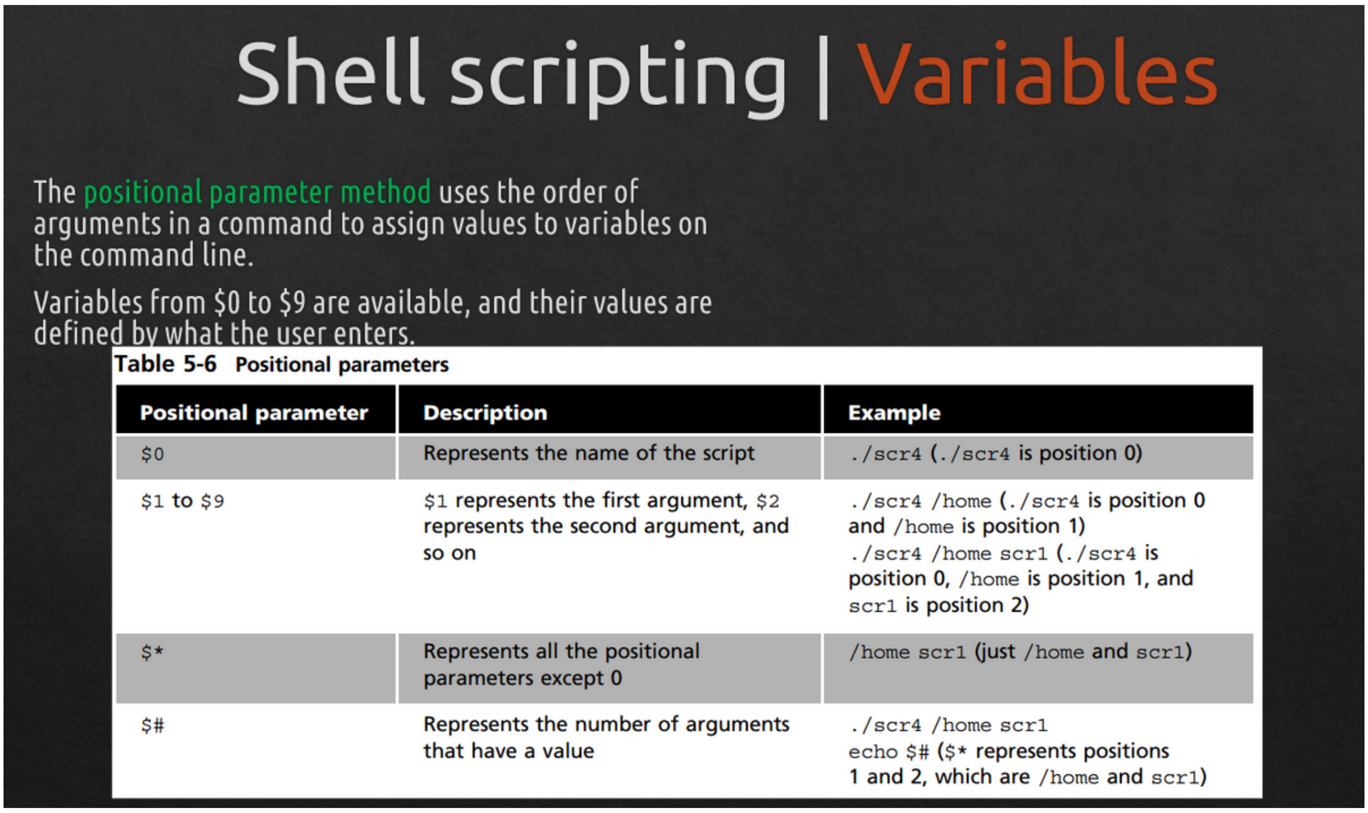


if statement
false
true
else
then
Portion of code executed if the condition is false
Portion of code executed if the condition is true
fi statement



Shell scripting | Variables

- Variable: placeholder for data.
- Environment variable: is a placeholder for data that can change; typically, it gets its value automatically from the OS startup or the shell being used.
- Each user has environment variables with different values to define his or her working environment.
- The HOME environment variable stores the absolute pathname to a user's home directory, so it varies for each user.
- Some environment variables are the same for all users logged in to a machine, such as the HOST environment variable that specifies the computer name.
- The env command allows you to see all environment variables
- You can use the echo command to see the value of an environment variable.
  - Example:
    - echo $HOME
    - echo $HOST



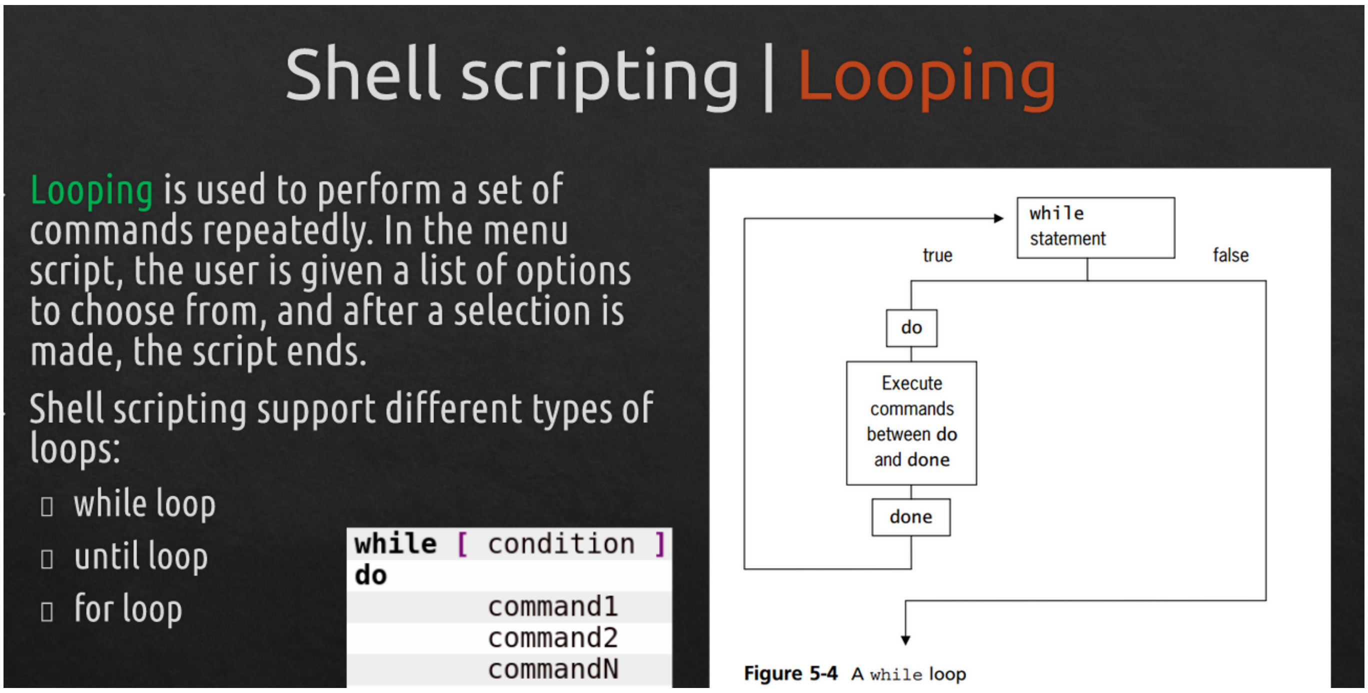
Shell scripting | Variables

The positional parameter method uses the order of arguments in a command to assign values to variables on the command line.

Variables from $0 to $9 are available, and their values are defined by what the user enters.

Table 5-6 Positional parameters

Positional parameter	Description	Example
`$0`	Represents the name of the script	`./scr4` (`./scr4` is position 0)
`$1` to `$9`	`$1` represents the first argument, `$2` represents the second argument, and so on	`./scr4 /home` (`./scr4` is position 0 and `/home` is position 1) `./scr4 /home scr1` (`./scr4` is position 0, `/home` is position 1, and `scr1` is position 2)
`$*`	Represents all the positional parameters except 0	`/home scr1` (just `/home` and `scr1`)
`$#`	Represents the number of arguments that have a value	`./scr4 /home scr1` `echo $#` (`$*` represents positions 1 and 2, which are `/home` and `scr1`)



Shell scripting | Looping

Looping is used to perform a set of commands repeatedly. In the menu script, the user is given a list of options to choose from, and after a selection is made, the script ends.

Shell scripting support different types of loops:

- while loop
- until loop
- for loop

```
while [ condition ]
do
          command1
          command2
          commandN
```

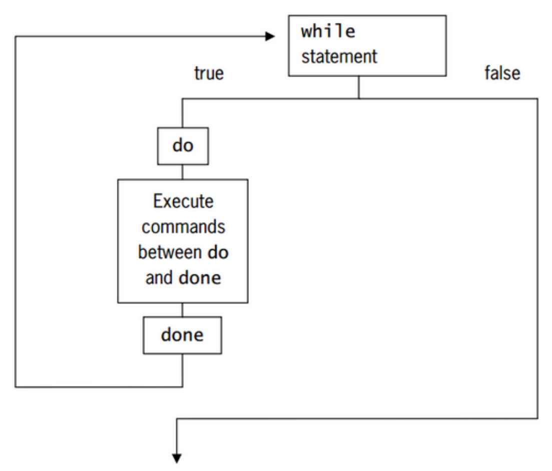
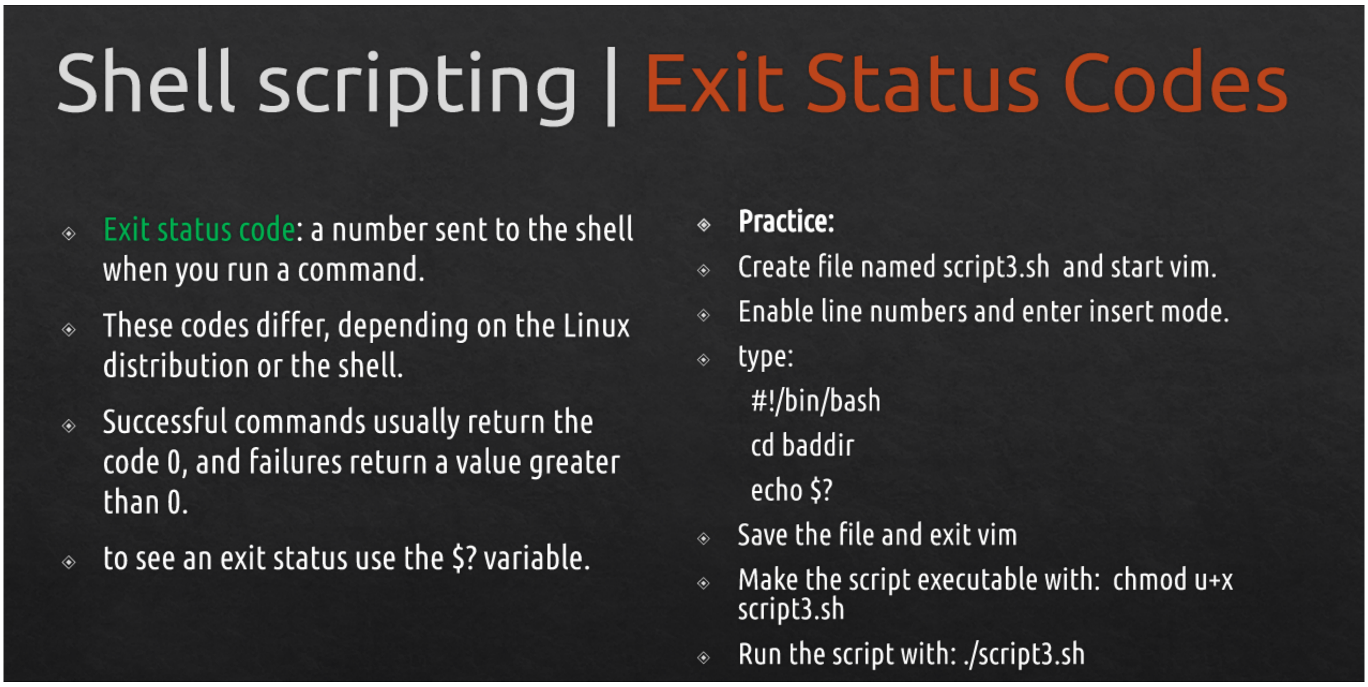


Figure 5-4 A while loop



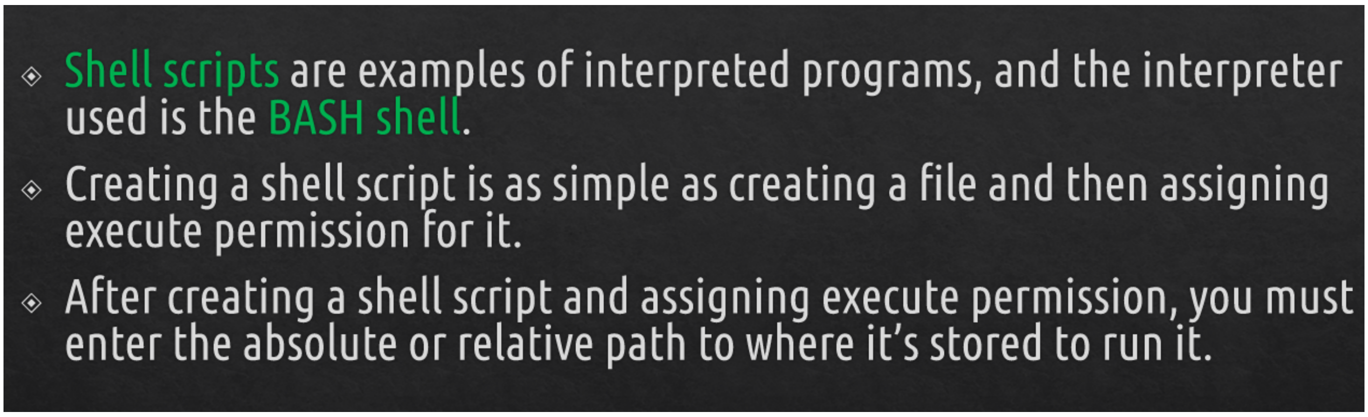
Shell scripting | Exit Status Codes

- Exit status code: a number sent to the shell when you run a command.
- These codes differ, depending on the Linux distribution or the shell.
- Successful commands usually return the code 0, and failures return a value greater than 0.
- to see an exit status use the $? variable.

- **Practice:**
- Create file named script3.sh and start vim.
- Enable line numbers and enter insert mode.
- type:

```
#!/bin/bash
cd baddir
echo $?
```

- Save the file and exit vim
- Make the script executable with: chmod u+x script3.sh
- Run the script with: ./script3.sh



- Shell scripts are examples of interpreted programs, and the interpreter used is the BASH shell.
- Creating a shell script is as simple as creating a file and then assigning execute permission for it.
- After creating a shell script and assigning execute permission, you must enter the absolute or relative path to where it's stored to run it.