Introduction

Basics of Shell Scripting

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Topics to be covered

- Introduction to shell
- Well known shells
- Variables
- Logical Operators
- Arithmatic Operators
- Conditional Construct
- Looping Construct

Introduction to Shell

- Shells: tools to execute user commands.
- Called “shells” because they hide the details on the underlying operating system under the shell's surface.
- Commands are input in a text terminal, either a window in a graphical environment or a text-only console.
- Shells can be scripted: provide all the resources to write complex programs (variable, conditionals, iterations...)

Well known shells

Most famous and popular shells

- sh: The Bourne shell (obsolete)
  - Traditional, basic shell found on Unix systems, by Steve Bourne.
- bash: The Bourne Again shell (most popular)
  - An improved implementation of sh with lots of added features too.
- csh and tcsh are other popular shells but not of much interest to us.
- We will concentrate on using bash for shell scripting.

Variables

- Variables can be of 2 types:
  - System Variables: Created and maintained by Linux
  - User Defined Variables
- Variables begin with underscore (_) or an alphanumeric character.
- Variables are case sensitive.
- The variable can be accesses using $.
  - e.g. echo ”The value of No is $No”

Logical Operators

- Some of the common logical operators are:
  - !exp1 NOT exp1
  - exp1 -a exp2 True if exp1 and exp2 are true
  - exp1 -o exp2 True if exp1 or exp2 is true.
- Some of the mathematical operators are:
  - -eq is equal to
  - -ne is not equal to
  - -lt is less than
  - -le is less than or equal to
  - -gt is greater than
  - -ge is greater than or equal to

Arithmetic Operators

- 'test' is the commonly used arithmetic operator.
- The format of test is as follows:

  test expression OR [expression]

- If the expression is true, returns 0, else returns false or non-zero.
- test is very commonly used with if-else.

Conditional Construct

- Most frequently used conditional construct is the 'if-else'.
- The syntax for if is as follows:

```
if [condition]; then
                code
else
                code
fi
```

Looping Construct

- Important looping contructs are for and while
- An example of 'for loop':

```
for ((initial condition ; check condition ; update))
do
        code
done
```

- The same can be written using 'while' as:

```
initial condition
while (check condition)
do
        code
        update
done
```

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References

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