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Virtual ILP – Shell Programming

Content Manual

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Table of Content

1. Shell Programming.....5
1.1. Shell script.....5
1.2. Importance of shell script.....6
1.3. Executing a shell script.....6

1. Shell Programming

The UNIX shell program interprets user commands, which are either directly entered by the user, or which can be read from a file called the shell script or shell program.. Shell scripts are interpreted, not compiled. The shell reads commands from the script line by line and searches for those commands on the system, while a compiler converts a program into machine readable form, an executable file – which may then be used in a shell script.

1.1. Shell script

Shell script is basically a file containing list of commands, which are listed in the order of execution. A good shell script will have comments, preceded by a pound sign, #, describing the steps.

There are conditional tests, such as value A is greater than value B, loops allowing us to go through massive amounts of data, files to read and store data, and variables to read and store data, and the script may include functions. Shell scripts and functions are both interpreted. This means they are not compiled.

We can create the simple shell script file by running vi or cat command like,

```
$ vi test.sh
```

```
$ cat > test.sh <Enter>
```

Below mentioned shebang statement should be the first statement in the shell script as it tell the system that the commands mentioned in the shell script are to be executed by the shell /bin/sh

#!/bin/sh

Consider the shell script with just two commands pwd & ls.

```
$cat test.sh

#!/bin/bash
pwd
ls
```

1.2. Importance of shell script

Shell scripts are basically used for automating processes that we repeat at the prompt .
Following are some activities we can do using shell scripts:

- Automation of repetitive task
- Creating our own power tools/utilities.
- Automating command input or entry.
- Customizing administrative tasks.
- Creating simple applications.
- Automating administration tasks such as adding new users, removing obsolete users et

Some Practical examples where shell scripting can be actively used:

- Monitoring your Linux system.
- Data backup and creating snapshots.
- Dumping Oracle or MySQL database for backup.
- Creating email based alert system.
- Find out what processes are eating up your system resources.
- Find out available and free memory.
- Find out all logged in users and what they are doing.
- Find out if all necessary network services are running or not. For example if web server failed then send an alert to system administrator via a pager or an email.
- Find out all failed login attempt, if login attempt are continue repeatedly from same network IP automatically block all those IPs accessing your network/service via firewall.
- User administration as per your own security policies.
- Find out information about local or remote servers.
- Configure server such as BIND (DNS server) to add zone entries.

1.3. Executing a shell script

Below two methods can be used to execute the shell script.

```
$ sh filename
```

Or

```
$ ./filename
```

Remember to modify the file access permissions of a shell script before execution.

For execute permission.

```
$ chmod u+x filename
```

In later section we will discuss shell scripts in detailed manner.