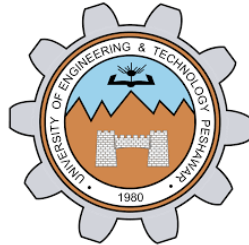


Operating Systems Lab-2

Shell Programming (Part I)



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Operating Systems Lab

Objectives:

The aim of this laboratory is to learn and practice SHELL scripts by writing small SHELL programs.

The following are the primary objectives of this lab session:

- Understanding what is a SHELL script.
 - What is a SHELL script.
 - Different kinds of SHELLs in UNIX
- Why and where it is used
- First simple SHELL script
- SHELL variables
 - User Defined variables
 - System variables
 - Read only variables and wiping out variables
 - Assigning values to variables
 - Reading input

Shell:

Shell interface to the operating system is called a shell. The shell is the outermost layer of the operating system. Shells incorporate a programming language to control processes and files, as well as to start and control other programs.

Shell scripts

A shell script or a shell program is a series of commands put in a file and executed by the Shell. We will use shell to create shell scripts.

Uses of Shell scripts


- 1) Customizing your work environment. For Example, every time you login, if you want to see the current date, a welcome message, and the list of users who have logged in you can write a shell script for the same.
 - 2) Automating your daily tasks. For example, to back up all the programs at the end of the day.
 - 3) Automating repetitive tasks.
 - 4) Executing important system procedures, like shutting down the system, formatting a disk, creating a file system etc.
 - 5) Performing some operations on many files.
-

Example 1:

Save the file and type the file name in command line and the file is executed as follows.

```
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab# ls
Awais_LAB#01.docx  Awais_LAB#01.pdf
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab# mkdir lab-2
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab# cd lab-2/
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# vim task1.sh
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# ./task1.sh
task1.sh
  PID TTY          TIME CMD
   11 tty1      00:00:00 init
   12 tty1      00:00:00 bash
   83 tty1      00:00:00 bash
   85 tty1      00:00:00 ps
Wed Mar  8 22:59:38 PKT 2023
/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2#
```

Output:



The screenshot shows a terminal window with a dark background. The prompt is `root@DESKTOP-NEI4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2`. The user has entered the command `ls`, and the output is displayed on the next line: `ps`, `date`, and `pwd`. The `pwd` command is highlighted in orange. The terminal window has standard Linux window controls (minimize, maximize, close) in the top right corner. At the bottom of the terminal, there is a status bar with the text `-- REPLACE --` on the left, `4,3` in the center, and `All` on the right.

Example 2:

Usage: SS2

```
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2
root@DESKTOP-NEII4G1:/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# vim task3.sh
root@DESKTOP-NEII4G1:/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# ./task2.sh
Awais
Hello Awais !, Welcome to Home
root@DESKTOP-NEII4G1:/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# ./task3.sh
What is your name?
Awais
Hello Awais. Assalam-o-Alaikum.
root@DESKTOP-NEII4G1:/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# ./task3.sh
What is your name?
Awais
Hello Awais. Assalam-o-Alaikum.
root@DESKTOP-NEII4G1:/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2#
```

Output:

```
root@DESKTOP-NEI4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2
echo What is your name\?
read name
echo Hello $name. Assalam-o-Alaikum
```

Example3:

Usage: SS3

```
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# vim task3.sh
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# ./task3.sh
Please enter your surname\n
followed by your first name: \c
Awais
Welcome to CSE Dept., UET, Awais
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2#
```

Output:

```
root@DESKTOP-NEI4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2
echo "Please enter your surname\n"
echo "followed by your first name: \c"
read name1 name2
echo "Welcome to CSE Dept., UET, $name2 $name1"
```



Example4:

```
# Usage: SS4
```

```
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# vim task4.sh
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# ./task4.sh
Please Enter source file name: c
source
Enter the target file name :c
target
cp: cannot stat 'source': No such file or directory
file source is copied into the target
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# ./task4.sh
Please Enter source file name: c
source.txt
Enter the target file name :c
target.txt
cp: cannot stat 'source.txt': No such file or directory
file source.txt is copied into the target.txt
root@DESKTOP-NEII4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2#
```

Output:

```
root@DESKTOP-NEI4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2
echo "Please Enter source file name: \c"
read source
echo "Enter the target file name :\c"
read target
cp $source $target
echo file $source is copied into the $target
```

Example 5:

Usage: SS5

```
root@DESKTOP-NEII4G1:/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2
root@DESKTOP-NEII4G1:/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# vim task5.sh
root@DESKTOP-NEII4G1:/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# ./task5.sh
sum is 12 + 90
expr: non-integer argument
sum is
root@DESKTOP-NEII4G1:/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# vim task5.sh
root@DESKTOP-NEII4G1:/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2# ./task5.sh
sum is 12 + 90
sum is 102
root@DESKTOP-NEII4G1:/mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2#
```

Output:

```
root@DESKTOP-NEI4G1: /mnt/e/Computer_System-Engineering/Fourth Semester/Operating System Lab/lab-2
a=12
b=90
echo sum is $a + $b          # Will display sum is 12 + 90
echo sum is `expr $a + $b`
```