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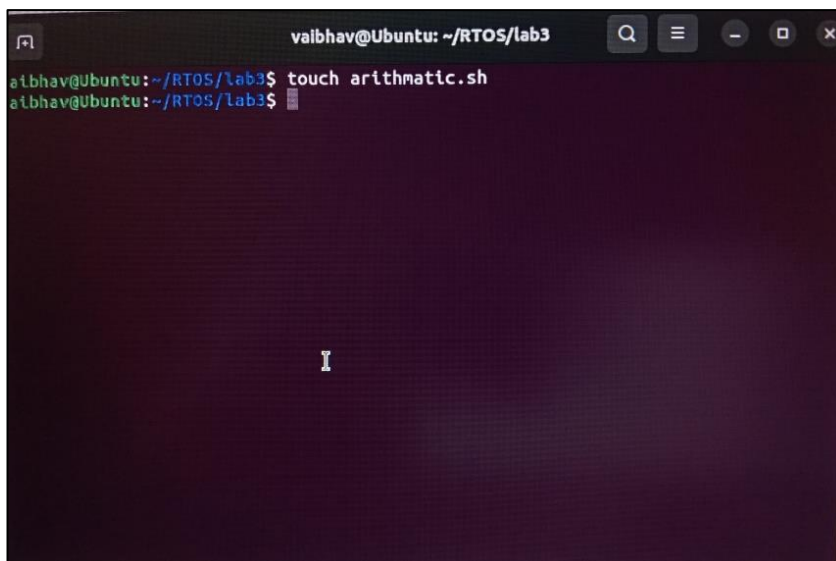
Batch : EN2

PRN : 21410027

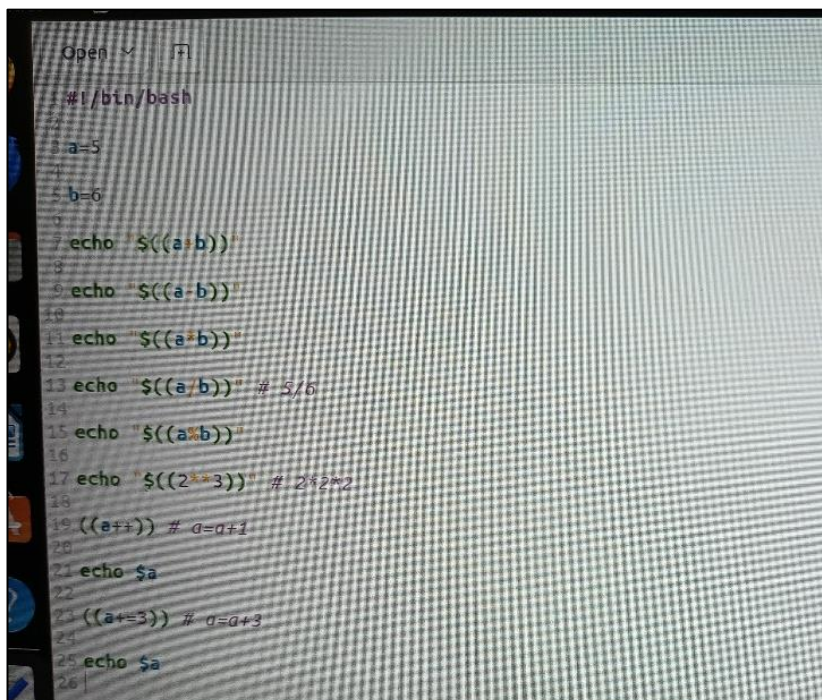
RTOS Lab Experiment No. 3

Title: Shell Scripting.

Part A: Shell scripting of Arithmetic Operations



```
vaibhav@Ubuntu: ~/RTOS/lab3
aibhav@Ubuntu:~/RTOS/lab3$ touch arithmetic.sh
aibhav@Ubuntu:~/RTOS/lab3$
```



```
#!/bin/bash
1 a=5
2
3 b=6
4
5 echo $((a+b))
6
7 echo $((a-b))
8
9 echo $((a*b))
10
11 echo $((a/b)) # 5/6
12
13 echo $((a%b))
14
15 echo $((2*3)) # 2*3*2
16
17 ((a++)) # a=a+1
18
19 echo $a
20
21 ((a+=5)) # a=a+5
22
23 echo $a
24
25
26
```

```
vaibhav@Ubuntu: ~/RTOS/lab3
vaibhav@Ubuntu:~/RTOS/lab3$ touch arithmetic.sh
vaibhav@Ubuntu:~/RTOS/lab3$ ls -al
total 936
drwxrwxr-x 2 vaibhav vaibhav 4096 Aug 25 14:42 .
drwxrwxr-x 6 vaibhav vaibhav 4096 Aug 19 12:14 ..
-rw-rw-r-- 1 vaibhav vaibhav 463589 Aug 19 14:26 21410027_LAB_3.odt
-rw-rw-r-- 1 vaibhav vaibhav 464150 Aug 19 14:26 21410027_LAB_3.pdf
-rw-rw-r-- 1 vaibhav vaibhav 193 Aug 25 14:42 arithmetic.sh
-rwxrwxr-x 1 vaibhav vaibhav 138 Aug 19 12:45 ifelse.sh
-rwxrwxr-x 1 vaibhav vaibhav 239 Aug 19 12:55 switch.sh
-rwxrwxr-x 1 vaibhav vaibhav 143 Aug 19 11:40 while.sh
vaibhav@Ubuntu:~/RTOS/lab3$ chmod +x arithmetic.sh
vaibhav@Ubuntu:~/RTOS/lab3$ ls -al
total 936
drwxrwxr-x 2 vaibhav vaibhav 4096 Aug 25 14:42 .
drwxrwxr-x 6 vaibhav vaibhav 4096 Aug 19 12:14 ..
-rw-rw-r-- 1 vaibhav vaibhav 463589 Aug 19 14:26 21410027_LAB_3.odt
-rw-rw-r-- 1 vaibhav vaibhav 464150 Aug 19 14:26 21410027_LAB_3.pdf
-rwxrwxr-x 1 vaibhav vaibhav 193 Aug 25 14:42 arithmetic.sh
-rwxrwxr-x 1 vaibhav vaibhav 138 Aug 19 12:45 ifelse.sh
-rwxrwxr-x 1 vaibhav vaibhav 239 Aug 19 12:55 switch.sh
-rwxrwxr-x 1 vaibhav vaibhav 143 Aug 19 11:40 while.sh
vaibhav@Ubuntu:~/RTOS/lab3$ ./arithmetic.sh
11
-1
30
0
5
8
6
9
vaibhav@Ubuntu:~/RTOS/lab3$
```

Part B: Shell scripting of conditional statements

```
Oracle VM VirtualBox
File Input Devices Help
s Text Editor

Open
1 #!/bin/bash
2 m=1
3 n=2
4
5 if [ $m -eq $n ]
6 then
7     echo "Both variables are the same"
8 else
9     echo "Both variables are different"
10 fi
```



```
vaibhav@Ubuntu: ~/RTOS/lab3
vaibhav@Ubuntu:~/RTOS/lab3$ ls -al
total 936
lrwxrwxr-x 2 vaibhav vaibhav 4096 Aug 25 14:42 .
lrwxrwxr-x 6 vaibhav vaibhav 4096 Aug 19 12:14 ..
-rw-rw-r-- 1 vaibhav vaibhav 463589 Aug 19 14:26 21410027_LAB_3.odt
-rw-rw-r-- 1 vaibhav vaibhav 464150 Aug 19 14:26 21410027_LAB_3.pdf
-rwxrwxr-x 1 vaibhav vaibhav 193 Aug 25 14:42 arithmetic.sh
-rwxrwxr-x 1 vaibhav vaibhav 138 Aug 19 12:45 ifelse.sh
-rwxrwxr-x 1 vaibhav vaibhav 239 Aug 19 12:55 switch.sh
-rwxrwxr-x 1 vaibhav vaibhav 143 Aug 19 11:40 while.sh
vaibhav@Ubuntu:~/RTOS/lab3$ ./ifelse.sh
Both variables are different
vaibhav@Ubuntu:~/RTOS/lab3$
```

Part C: Shell scripting using loops and switch case

```
#!/bin/bash
# set n to 1
n=1
# continue until $n equals 5
while [ $n -le 5 ]
do
    echo "welcome $n times."
    n=$(( n+1 )) # increments $n
done
```

```
#!/bin/bash
fruit=kiwi
case $fruit in
    "apple") echo "apple is tasty";;
    "banana") echo "I like banana";;
    "kiwi") echo "Newzealand is famous for kiwi";;
    *) echo "default case";;
esac
```

```
vaibhav@Ubuntu: ~/RTOS/lab3
vaibhav@Ubuntu:~/RTOS/lab3$ ls -al
total 936
drwxrwxr-x 2 vaibhav vaibhav 4096 Aug 25 14:42 .
drwxrwxr-x 6 vaibhav vaibhav 4096 Aug 19 12:14 ..
-rw-rw-r-- 1 vaibhav vaibhav 463589 Aug 19 14:26 21410027_LAB_3.odt
-rw-rw-r-- 1 vaibhav vaibhav 464150 Aug 19 14:26 21410027_LAB_3.pdf
-rwxrwxr-x 1 vaibhav vaibhav 193 Aug 25 14:42 arithmetic.sh
-rwxrwxr-x 1 vaibhav vaibhav 138 Aug 19 12:45 ifelse.sh
-rwxrwxr-x 1 vaibhav vaibhav 239 Aug 19 12:55 switch.sh
-rwxrwxr-x 1 vaibhav vaibhav 143 Aug 19 11:40 while.sh
vaibhav@Ubuntu:~/RTOS/lab3$ ./while.sh
Welcome 1 times.
Welcome 2 times.
Welcome 3 times.
Welcome 4 times.
Welcome 5 times.
vaibhav@Ubuntu:~/RTOS/lab3$
```

```
vaibhav@Ubuntu: ~/RTOS/lab3
vaibhav@Ubuntu:~/RTOS/lab3$ ls -al
total 936
drwxrwxr-x 2 vaibhav vaibhav 4096 Aug 25 14:42 .
drwxrwxr-x 6 vaibhav vaibhav 4096 Aug 19 12:14 ..
-rw-rw-r-- 1 vaibhav vaibhav 463589 Aug 19 14:26 21410027_LAB_3.odt
-rw-rw-r-- 1 vaibhav vaibhav 464150 Aug 19 14:26 21410027_LAB_3.pdf
-rwxrwxr-x 1 vaibhav vaibhav 193 Aug 25 14:42 arithmetic.sh
-rwxrwxr-x 1 vaibhav vaibhav 138 Aug 19 12:45 ifelse.sh
-rwxrwxr-x 1 vaibhav vaibhav 239 Aug 19 12:55 switch.sh
-rwxrwxr-x 1 vaibhav vaibhav 143 Aug 19 11:40 while.sh
vaibhav@Ubuntu:~/RTOS/lab3$ switch.sh
switch.sh: command not found
vaibhav@Ubuntu:~/RTOS/lab3$ ./switch.sh
Newzeland is famous for kiwi
vaibhav@Ubuntu:~/RTOS/lab3$
```

Answer the following:

1) Write significance of Shell script in Linux.

→ A **shell script** in Linux is a program written in a shell scripting language that is executed by the shell (command-line interpreter). Shell scripts are a powerful way to automate tasks, manage system configurations, and perform routine operations.

Significance of Shell Script:

1. **Automation of Tasks:** Shell scripts can automate repetitive tasks like backups, file management, system monitoring, and software installation, reducing manual effort and the chance of errors.
2. **System Administration:** System administrators use shell scripts to manage and configure servers, schedule jobs using cron, and handle user permissions and services.
3. **Batch Processing:** Shell scripts can be used to execute a series of commands in batch mode, making it easier to handle tasks that require multiple steps.
4. **Custom Tools:** Users can create custom command-line tools tailored to their specific needs by writing shell scripts, extending the functionality of the system.
5. **Portability:** Shell scripts are portable across different Unix-like systems (e.g., Linux, macOS), provided that the same shell and utilities are available, allowing for consistent execution in various environments.
6. **Integration with Other Programs:** Shell scripts can integrate with other programs and tools, allowing them to be used as part of larger workflows or as glue between different software components.

2) write types of shells.

Types of Shells

In Unix-like operating systems, a shell is a command-line interpreter that provides a user interface for the operating system. There are several types of shells, each with its features and syntax. Some of the most commonly used shells include:

1. **Bourne Shell (sh):**
 - **Path:** /bin/sh
 - **Significance:** The original Unix shell developed by Stephen Bourne. It is simple and widely available, forming the basis for many other shells.
2. **Bash (Bourne Again Shell):**
 - **Path:** /bin/bash
 - **Significance:** The most widely used shell on Linux. It is an enhanced version of the Bourne shell with additional features like command history, tab completion, and improved scripting capabilities.
3. **C Shell (csh):**
 - **Path:** /bin/csh
 - **Significance:** Developed by Bill Joy, the C Shell has a syntax similar to the C programming language. It introduced features like command history and aliasing.
4. **Korn Shell (ksh):**
 - **Path:** /bin/ksh
 - **Significance:** Developed by David Korn, it combines features of the Bourne shell with additional programming capabilities. It is compatible with both the Bourne and C shells.

5. **Z Shell (zsh):**

- **Path:** /bin/zsh
- **Significance:** A highly customizable and feature-rich shell, zsh includes features from bash, ksh, and tcsh, along with additional improvements like theme support and extended globbing.

6. **tcsh:**

- **Path:** /bin/tcsh
- **Significance:** An enhanced version of the C Shell (csh) with additional features such as command-line editing and spell checking.

7. **Fish (Friendly Interactive Shell):**

- **Path:** /usr/bin/fish
- **Significance:** A modern shell with a focus on user-friendliness. It offers features like syntax highlighting, autosuggestions, and a more intuitive scripting language.