

Experiment [5]: [Shell Programming]

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AIM:

- [To Learn Basic Conditional Statements in Bash Scripting]

Requirements:

- [Any Linux Distro, any kind of text editor (vs code, vim, notepad, nano, etc)]

Theory:

- [Basic usage of conditions and arrays in bash scripting.]

Procedure & Observations

Exercise 1: [Prime Number Check]

Task Statement:

- [To check if the number given by the user is a prime number or not.]

Explanation:

- [using if else loop wap to check if the number is a prime number or not.]

Command(s):

```
#!/bin/bash
echo "Enter a number: "
read num
flag=0
0

for ((i=2; i<=num/2; i++))
do
    if [ $((num % i)) -eq 0 ]
    then
        flag=1
        break
    fi
done

if [ $flag -eq 0 ]
then
    echo "$num is a prime number."
else
    echo "$num is not a prime number."
fi
```

Output:

The screenshot shows a terminal window on a Windows operating system. The command `cat script1.sh` is run to view the contents of a shell script. The script prompts for a number, iterates through possible divisors, and checks if the number is divisible by any of them. If no divisors are found, it prints that the number is prime; otherwise, it prints that it is not prime. The user enters '7' as input, and the output shows that 7 is a prime number.

```
aarush07@BlastyPC:/mnt/d/New folder/day 5/New folder$ cat script1.sh
#!/bin/bash
echo "Enter a number: "
read num
flag=0

for ((i=2; i<=num/2; i++))
do
    if [ $((num % i)) -eq 0 ]
    then
        flag=1
        break
    fi
done

if [ $flag -eq 0 ]
then
    echo "$num is a prime number."
else
    echo "$num is not a prime number."
fi
aarush07@BlastyPC:/mnt/d/New folder/day 5/New folder$ ./script1.sh
Enter a number:
7
7 is a prime number.
aarush07@BlastyPC:/mnt/d/New folder/day 5/New folder$ |
```

Exercise 2: [Sum of Digits]

Task Statement:

- [Take input from user and give the sum of two digits.]

Explanation:

-

Command(s):

```
#!/bin/bash
echo "Enter a number: "
read num
sum=0

while [ $num -gt 0 ]
do
    digit=$((num % 10))
    sum=$((sum + digit))
    num=$((num / 10))
done

echo "Sum of digits: $sum"
```

Output:

The screenshot shows a terminal window titled 'aarush07@BlastyPC: /mnt/d/I' with a black background. The terminal displays the following session:

```
aarush07@BlastyPC:/mnt/d/New folder/day 5/New folder$ cat script2.sh
#!/bin/bash
echo "Enter a number: "
read num
sum=0

while [ $num -gt 0 ]
do
    digit=$((num % 10))
    sum=$((sum + digit))
    num=$((num / 10))
done

echo "Sum of digits: $sum"
aarush07@BlastyPC:/mnt/d/New folder/day 5/New folder$ ./script2.sh
Enter a number:
35
Sum of digits: 8
aarush07@BlastyPC:/mnt/d/New folder/day 5/New folder$ |
```

The terminal also shows system status at the bottom, including weather (23°C, Mostly cloudy), search bar, taskbar icons (File Explorer, Edge, File Manager, etc.), and system status indicators (ENG IN, battery level, date/time).

Exercise 3: [Armstrong Numbers]

Task Statement:

- [Take input user and give the sum of Armstrong number of n digits is a number equal to the sum of its digits raised to the power n. Example: $153 = 1^3 + 5^3 + 3^3$]

Explanation:

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Command(s):

```
#!/bin/bash
echo "Enter a number: "
read num
temp=$num
n=${#num}    # number of digits
sum=0

while [ $temp -gt 0 ]
do
    digit=$((temp % 10))
    sum=$((sum + digit**n))
    temp=$((temp / 10))
done

if [ $sum -eq $num ]
then
    echo "$num is an Armstrong number."
else
    echo "$num is not an Armstrong number."
fi
```

Output:

```
aarush07@BlastyPC:/mnt/d/New folder/day 5/New folder$ cat script3.sh
#!/bin/bash
echo "Enter a number: "
read num
temp=$num
n=${#num}    # number of digits
sum=0

while [ $temp -gt 0 ]
do
    digit=$((temp % 10))
    sum=$((sum + digit**n))
    temp=$((temp / 10))
done

if [ $sum -eq $num ]
then
    echo "$num is an Armstrong number."
else
    echo "$num is not an Armstrong number."
fi
aarush07@BlastyPC:/mnt/d/New folder/day 5/New folder$ ./script3.sh
Enter a number:
153
153 is an Armstrong number.
aarush07@BlastyPC:/mnt/d/New folder/day 5/New folder$ |
```

The screenshot shows a terminal window on a Windows operating system. The command `cat script3.sh` is run to view the script code. The script prompts for a number, reads it into `temp`, calculates the number of digits `n`, initializes `sum` to 0, and then enters a loop where it repeatedly divides `temp` by 10, takes the remainder (which is the current digit), adds the digit raised to the power of `n` to `sum`, and continues until `temp` is 0. Finally, it compares `sum` with the original `temp` to determine if it's an Armstrong number. The user enters '153' and the script correctly identifies it as an Armstrong number. The terminal window has a dark theme and includes a weather icon for '23°C Mostly cloudy'.

Result: