

## 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

for ((i=2; i<num; 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:

```
aditya@aditya-Inspiron-15-3530: ~/exp5
aditya@aditya-Inspiron-15-3530:~$ mkdir exp5
aditya@aditya-Inspiron-15-3530:~$ cd exp5
aditya@aditya-Inspiron-15-3530:~/exp5$ vim exp5.sh
aditya@aditya-Inspiron-15-3530:~/exp5$ ./ exp5.sh
bash: ./: Is a directory
aditya@aditya-Inspiron-15-3530:~/exp5$ ./exp5.sh
bash: ./exp5.sh: Permission denied
aditya@aditya-Inspiron-15-3530:~/exp5$ chmod 777 exp5.sh
aditya@aditya-Inspiron-15-3530:~/exp5$ ./exp5.sh
Enter a number:
12
12 is not a prime number.
aditya@aditya-Inspiron-15-3530:~/exp5$ ./exp5.sh
Enter a number:
13
13 is a prime number.
aditya@aditya-Inspiron-15-3530:~/exp5$
```

## Exercise 2: [Sum of Digits]

## Task Statement:

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

## Explanation:

- [This script will take input from user and will give the following output.]

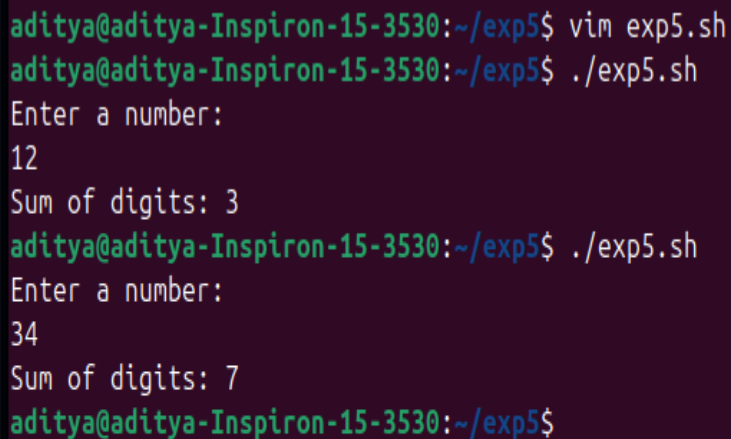
## Command(s):

```
#!/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:



```
aditya@aditya-Inspiron-15-3530:~/exp5$ vim exp5.sh
aditya@aditya-Inspiron-15-3530:~/exp5$ ./exp5.sh
Enter a number:
12
Sum of digits: 3
aditya@aditya-Inspiron-15-3530:~/exp5$ ./exp5.sh
Enter a number:
34
Sum of digits: 7
aditya@aditya-Inspiron-15-3530:~/exp5$
```

### 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:

- [This script will tell if the number entered by the user is an armstrong number or not.]

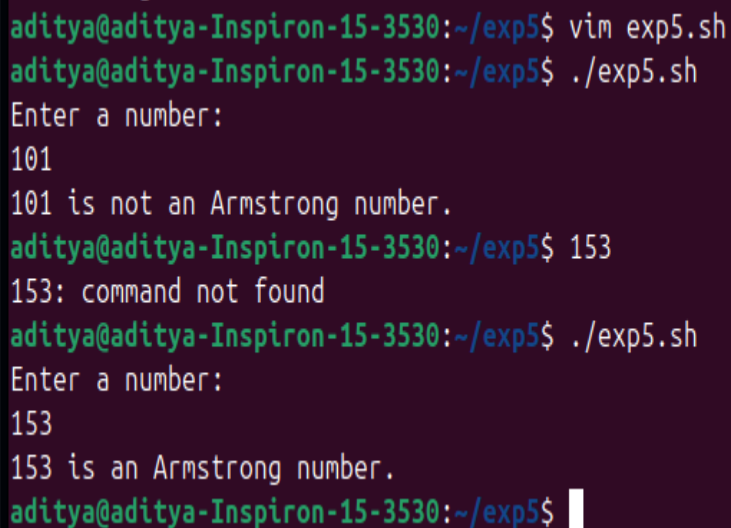
#### Command(s):

```
#!/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:



A terminal window with a dark purple background. The prompt is 'aditya@aditya-Inspiron-15-3530:~/exp5\$'. The user enters 'vim exp5.sh', then './exp5.sh'. The script prompts 'Enter a number:' and the user enters '101'. The script outputs '101 is not an Armstrong number.'. The user then enters '153' at the prompt. The script outputs '153: command not found'. The user then enters './exp5.sh' at the prompt. The script prompts 'Enter a number:' and the user enters '153'. The script outputs '153 is an Armstrong number.'. The prompt is now 'aditya@aditya-Inspiron-15-3530:~/exp5\$' with a cursor.

```
aditya@aditya-Inspiron-15-3530:~/exp5$ vim exp5.sh
aditya@aditya-Inspiron-15-3530:~/exp5$ ./exp5.sh
Enter a number:
101
101 is not an Armstrong number.
aditya@aditya-Inspiron-15-3530:~/exp5$ 153
153: command not found
aditya@aditya-Inspiron-15-3530:~/exp5$ ./exp5.sh
Enter a number:
153
153 is an Armstrong number.
aditya@aditya-Inspiron-15-3530:~/exp5$
```

### Result:

- The Exercises were successfully completed for Basic Shell Scripting.