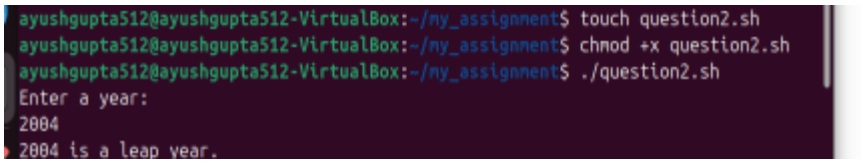
LAB ASSIGNMENT-03

1. To find Largest of Three Numbers

```
#!/bin/bash
read -p "Enter first number: " a
read -p "Enter second number: " b
read -p "Enter third number: " c

if (( a >= b && a >= c )); then
echo "$a is the largest."
elif (( b >= a && b >= c )); then
echo "$b is the largest."
else
echo "$c is the largest."
Fi
```

2. To find a year is leap year or not.

```
#!/bin/bash
read -p "Enter a year: " year

if (( (year % 4 == 0 && year % 100 != 0) || (year % 400 == 0) )); then
echo "$year is a leap year."
else
echo "$year is not a leap year."
Fi
```



3. To input angles of a triangle and find out whether it is valid triangle or not

```
#!/bin/bash
read -p "Enter angle1: " a
read -p "Enter angle2: " b
read -p "Enter angle3: " c

sum=$((a + b + c))

if (( sum == 180 && a > 0 && b > 0 && c > 0 )); then
```

```
echo "Valid Triangle"
else
echo "In"valid" Triangle"
fi
```

```
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ touch question3.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ chmod +x question3.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ ./question3.sh
Enter first angle:
30
Enter second angle:
40
Enter third angle:
110
The triangle is valid.
```

4. To check whether a character is alphabet, digit or special character.

```
#!/bin/bash
read -p "Enter a character: " ch

if [[ $ch =~ [A-Za-z] ]]; then
echo "Alphabet"
elif [[ $ch =~ [0-9] ]]; then
echo "Digit"
else
echo "Special Character"
fi
```

```
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ ./question4.sh
Enter a character:
a
The character 'a' is an alphabet.
```

5. To calculate profit or loss

```
#!/bin/bash
read -p "Enter cost price: " cp
read -p "Enter selling price: " sp

if (( sp>cp )); then
echo "Profit of $((sp - cp))"
elif (( sp<cp )); then
echo "Loss of $((cp - sp))"
else
echo "No Profit No Loss"
fi
```

```
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ touch question5.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ chmod +x question5.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ ./question5.sh
Enter Cost Price (CP):
390
Enter Selling Price (SP):
289
Loss = 101
```

6. To print all even and odd number from 1 to 10

```
#!/bin/bash
echo "Even numbers:"
fori in {1..10}; do
if (( i % 2 == 0 )); then
echo -n "$i "
fi
done

echo -e "\nOdd numbers:"
fori in {1..10}; do
if (( i % 2 != 0 )); then
echo -n "$i "
fi
done
echo
```

```
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ touch question6.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ chmod +x question6.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ ./question6.sh
Even numbers from 1 to 10:
2 4 6 8 10
Odd numbers from 1 to 10:
1 3 5 7 9
```

7. To print table of a given number

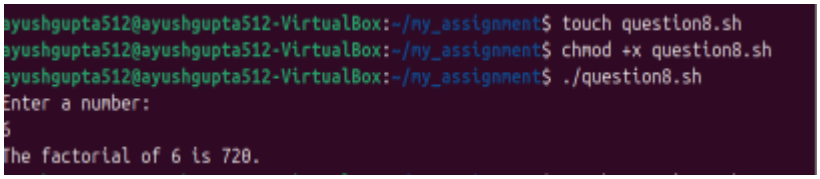
```
#!/bin/bash
read -p "Enter a number: " n
fori in {1..10}; do
echo "$n x $i = $((n * i))"
done
```

```
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ touch question7.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ chmod +x question7.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ ./question7.sh
Enter a number to print its table:
2
Multiplication table of 2:
2 x 1 = 2
2 x 2 = 4
2 x 3 = 6
2 x 4 = 8
2 x 5 = 10
2 x 6 = 12
2 x 7 = 14
2 x 8 = 16
2 x 9 = 18
2 x 10 = 20
```

8. To find factorial of a given integer

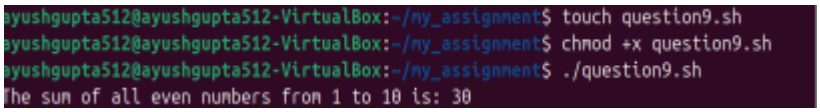
```
#!/bin/bash
read -p "Enter a number: " num
```

```
fact=1

for ((i=1; i<=num; i++)); do
fact=$((fact * i))
done

echo "Factorial of $num is $fact"
```



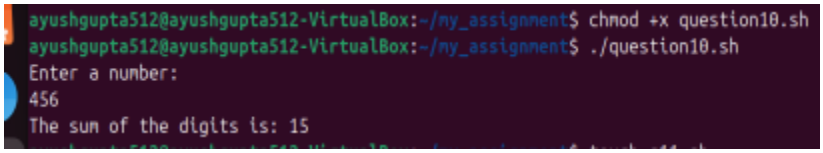
9. To print sum of all even numbers from 1 to 10.

```
#!/bin/bash
sum=0
fori in {1..10}; do
if (( i % 2 == 0 )); then
sum=$((sum + i))
fi
done
echo "Sum of even numbers from 1 to 10 is $sum"
```



10. To print sum of digit of any number.

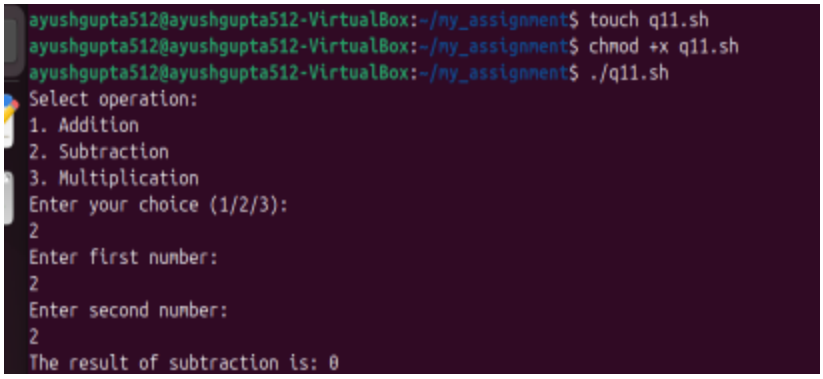
```
#!/bin/bash
read -p "Enter a number: " num
sum=0

while (( num> 0 )); do
digit=$((num % 10))
sum=$((sum + digit))
num=$((num / 10))
done

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



11. To make a basic calculator which performs addition, subtraction, Multiplication,

Division

```
#!/bin/bash

echo "Enter two numbers:"

read a

read b


echo "Choose operation: + - * /"

read op


case $op in

   +) echo "$a + $b = $((a + b))" ;;

-) echo "$a - $b = $((a - b))" ;;

   \*) echo "$a * $b = $((a * b))" ;;

   /) echo "$a / $b = $((a / b))" ;;

   *) echo "Invalid operation" ;;

Esac
```



12. To print days of a week.

```
#!/bin/bash
days=("Sunday" "Monday" "Tuesday" "Wednesday" "Thursday" "Friday" "Saturday")

for day in "${days[@]}"; do
echo "$day"
done
```

```
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ touch q12.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ chmod +x q12.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ ./q12.sh
Days of the week are:
1. Sunday
2. Monday
3. Tuesday
4. Wednesday
5. Thursday
6. Friday
7. Saturday
```

13. To print starting 4 months having 31 days.

```
#!/bin/bash
months=("January" "March" "May" "July")
echo "Months with 31 days:"
for month in "${months[@]}"; do
echo "$month"
done
```

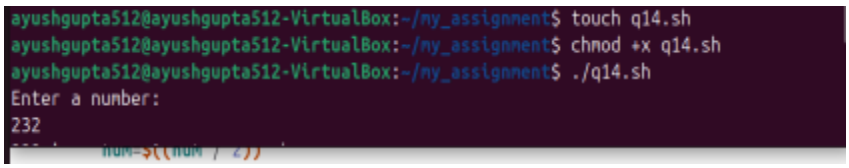
```
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ touch q13.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ chmod +x q13.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ ./q13.sh
The first four months with 31 days are:
1. January
2. March
3. May
4. July
```

14. Using functions,

a. To find given number is Amstrong number or not

```
#!/bin/bash

is_armstrong() {

num=$1

sum=0

temp=$num


while (( temp > 0 )); do

digit=$((temp % 10))

sum=$((sum + digit * digit * digit))

temp=$((temp / 10))
```

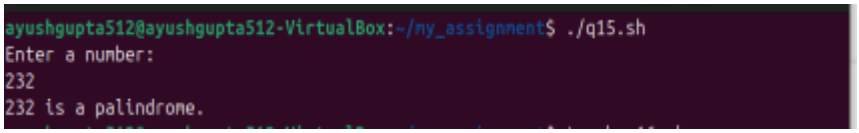
```
done

if (( sum == num )); then
echo "$num is an Armstrong number."
else
echo "$num is not an Armstrong number."
fi
}

read -p "Enter a number: " n
is_armstrong $n
```



b. To find whether a number is palindrome or not

```
#!/bin/bash
is_palindrome() {
num=$1
rev=0
temp=$num

while (( temp > 0 )); do
digit=$((temp % 10))
rev=$((rev * 10 + digit))
temp=$((temp / 10))
done
```

```
if (( rev == num )); then
echo "$num is a palindrome."
else
echo "$num is not a palindrome."
fi
}

read -p "Enter a number: " n
is_palindrome $n
```



c. To print Fibonacci series upto n terms

```
#!/bin/bash
fibonacci() {
   n=$1
   a=0
   b=1
echo "Fibonacci series up to $n terms:"
for (( i=0; i<n; i++ )); do
echo -n "$a "
fn=$((a + b))
      a=$b
      b=$fn
done
echo
}
```

```
read -p "Enter number of terms: " n
fibonacci $n
```

```
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ ./q16.sh
Enter the number of terms for the Fibonacci series:
5
Fibonacci series up to 5 terms is:
0 1 1 2 3
```

d. To find given number is prime or composite

```
#!/bin/bash
is_prime() {
num=$1
if (( num<= 1 )); then
echo "$num is neither prime nor composite."
return
fi

for (( i=2; i*i<=num; i++ )); do
if (( num % i == 0 )); then
echo "$num is composite."
return
fi
done
echo "$num is prime."
}

read -p "Enter a number: " n
is_prime $n
```

```
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ touch q17.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ chmod +x q17.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ ./q17.sh
Enter a number:
235
235 is a composite number.
```

e. To convert a given decimal number to binary equivalent

```
#!/bin/bash
decimal_to_binary() {
num=$1
   binary=""
while (( num> 0 )); do
binary=$((num % 2))$binary
num=$((num / 2))
done
echo "Binary: $binary"
}

read -p "Enter decimal number: " n
decimal_to_binary $n
```

```
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ touch q18.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ chmod +x q18.sh
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$ ./q18.sh
Enter a decimal number:
123
Binary equivalent: 1111011
ayushgupta512@ayushgupta512-VirtualBox:~/my_assignment$
```