1. Write a shell script program to display a given message.

```
#!/bin/sh
echo "Enter your message:"
read message
echo "Your message is:"$message
```

2. Write a shell script to print whether two numbers are equal or not

```
#!/bin/sh

echo "Enter 2 numbers:"
read num1
read num2
if [ $num1 -eq $num2 ]
then
        echo "Numbers are equal"
else
        echo "Numbers are Diffrent"
fi
```

3. Write a Shell Program to find the roots of the quadratic equation.

```
#!/bin/sh

echo Enter the coefficient of x^2:
read a
echo Enter the coefficient of x:
read b
echo Enter the constant term:
read c
f=`echo "-($b)" |bc`
p=`expr 2 \* $a`
if [ $a -ne 0 ]
then
   d=`echo \( \( $b \* $b \) - \( 4 \* $a \* $c \) \) | bc`
   if [ $d -lt 0 ]
```

```
    then
       x=`echo "-($d)" | bc`
       s=`echo "scale=2; sqrt ( $x )" | bc`
       echo The first root is:
       echo "($f + $s i) / $p"
       echo The second root is:
       echo "($f - $s i) / $p"

    elif [ $d -eq 0 ]
    then
       res=`expr $f / $p`
    echo The root is: $res
    else
       s=`echo "scale=2; sqrt( $d )" | bc`
       res1=`echo "scale=2; ( $f + $s) / ( $p )"|bc`
       res2=`echo "scale=2; ( $f - $s) / ( $p )"|bc`
       echo The first root is: $res1
       echo The second root is: $res2
    fi
else
    echo "Coefficient of x^2 can not be 0."
fi
```

4.Write a shell script to getting input details like name, roll number and marks and print them.

```
#!/bin/sh

echo "Enter your name:"
read name
echo "Enter your roll number:"
read rol
echo "Enter your mark:"
read mark

echo "Your Details"
echo "Name:"$name
echo "Roll Number:"$rol
echo "Mark:"$mark
```

5. Write a shell script to perform integer arithmetic operations.

```
#!/bin/bash

echo "Enter the first Number : "
read a
echo  "Enter the second Number : "
read b
add=$(( $a+$b ))
sub=$(( $a-$b ))
mul=$(( $a*$b ))
div=$(( $a/$b ))
echo "Addition :" $add
echo "Substraction :" $sub
echo "Multiplication :" $mul
echo "Division : " $div
```

6. Write a Shell program to swap two values.

```
#!/bin/sh

echo "Enter 2 numbers:"
read a
read b
echo "Before swapping"
echo "A:"$a
echo "B:"$b

a=$((a+b))
b=$((a-b))
a=$((a-b))

echo "After swapping"
echo "A:"$a
echo "B:"$b
```

7. Write a shell program to find the area of a triangle.

```
#!/bin/sh

echo "Enter the base:"
read b
echo "Enter the height:"
read h
echo "Area of Triangle is"
echo " 0.5 * $b * $h " | bc
```

8. Write a shell program to find the square and cube of a number.

```
#!/bin/sh

echo "Enter a number:"
read num
square=$((num*num))
cube=$((num*num*num))
echo "Square of the number is:"$square
echo "Cube of the number is ":$cube
```

9. Write a shell program to check whether the given number is odd or even.

```
#!/bin/sh

echo "Enter a number:"
read num
rem=$((num % 2))
if [ $rem -eq 0 ]
then
echo "Number is Even"
else
echo "Number is odd"
fi
```

10. Write a shell program to find the minimum among four values.

```
#!/bin/sh

echo "Enter 4 numbers:"
read a
read b
read c
read d
if [ $a -lt $b ] && [ $a -lt $c ] && [ $a -lt $d ]
then
echo "$a is the smallest"
elif [ $b -lt $a ] && [ $b -lt $c ] && [ $b -lt $d ]
then
echo "$b is the smallest"
elif [ $c -lt $a ] && [ $c -lt $b ] && [ $c -lt $d ]
then
echo "$c is the smallest"
elif [ $d -lt $a ] && [ $d -lt $b ] && [ $d -lt $c ]
then
echo "$d is the smallest"
fi
```

11. Write a shell program to check whether the input number is prime or not.

```
#!/bin/bash

echo "Enter a Number : "
read a
flag=0
half=$(( $a/2 ))
for i in $(seq 2 $half)
do
if [ $(( a % i )) -eq 0 ]
then
echo "$a is not a prime number"
flag=1
```

```
break
fi
done
if [ $flag -eq 0 ]
then
echo "$a is a prime number"
fi
```

12. Write a shell program to find the area of circle, square, rectangle and triangle using case statements.

```
val=1
while [ $val = 1 ]
do
echo "----MENU----"
echo "1. Circle"
echo "2. Square"
echo "3. Rectangle"
echo "4. Triangle"
echo "5. Exit"
echo "Enter your choice:"
read ch

case "$ch" in
1) echo "----Circle----"
echo "Enter the radious:"
read r
echo "Area of the Circle is"
echo "3.14 * $r * $r" | bc;;

2) echo "----Square----"
echo "Enter the side:"
read s
echo "Area of the square is"
echo "$s * $s" | bc;;

3) echo "----Rectangle----"
echo "Enter the length:"
read l
```

```
echo "Enter the height:"
read h
echo "Area of the rectangle is"
echo "$l * $h" | bc;;

4) echo "----Triangle----"
echo "Enter the base:"
read b
echo "Enter the height:"
read h
echo "Area of Triangle is"
echo " 0.5 * $b * $h " | bc;;

5) echo "Bye"
val=0;;
*)echo "Invalid input"
esac
done
```

13. Write a shell program to find the factorial of a given number

```
#!/bin/bash
echo "Enter the Number : "
read n
fact=1
for i in $(seq 2 $n)
do
fact=$(( fact*i ))
done
echo "Factorial of $n is $fact"
```

14. Write a Simple Shell script to print the sum of n natural numbers.

```
#!/bin/bash
echo "Enter the limit : "
read n
sum1=0
```

```
for i in $(seq 1 $n)
do
sum1=$(( sum1+i ))
done
echo "Sum of $n Natural number is $sum1"
```

15. Write a shell program to reverse a number.

```
#!/bin/bash
echo "Enter a Number : "
read n
while [ $n -ne 0 ]
do
rem=$(( $n%10 ))
rev=$(( rev*10+rem ))
n=$(( n/10 ))
done
echo
echo "Reversed number : " $rev
```