Note:You need bc package installed in terminal to run the following program

1. Write a shell program to check whether the number given by the user is prime or not

Solution

```
echo "Enter a number to check for the prime number"
read n
for (( i=2; i<=$n/2;i++))
do
if [ $((n % $i)) -eq 0  ]
then
echo "The number is not a prime number"
exit
fi
done
echo "The given number is prime number"
```

2. Write a shell program to print the Fibonacci series.

Solution

```
echo "Enter how many numbers of fibonacci series to be generated"
read n
x=0
y=1
i=2
echo "the Fibonacci series is :"
echo "$x"
echo "$y"
while [ $i -lt $n ]
do
z=`expr $x + $y `
```

```
echo "$z"
x=$y
y=$z
n=` expr $n - 1 `
done
```

3. Write a shell program to print menu i. Area of circle ii. Circumference of circle iii. Area of square iv. Perimeter of square v. Area of square vi. Perimeter of square And perform the operation as per selected option. (with select loop)

Solution

‘

```
select option in Area_Of_Circle Circumference_Of_Circle Area_of_Square Perimeter_of_square  Area_of_rectangle Perimeter_of_rectangle none
do
    case $option in
      Area_Of_Circle)
       echo "Enter the radius : "
        read r
        echo "Area of the Circle is"
        echo "3.14 * $r * $r" | bc
       ;;
       Circumference_Of_Circle)
        echo "Enter the radius : "
        read r
        echo "Circumference of the Circle is"
        echo "2 * 3.14 * $r " | bc
         ;;
          Area_of_Square)
        echo "Enter the Side of square : "
        read r
        echo "Area  of square is"
        echo "$r * $r " | bc
         ;;
```

```
        Perimeter_of_square)
       echo "Enter the Side of square : "
        read r
        echo "Perimeter  of square is"
        echo "4 * $r " | bc
         ;;
          Area_of_rectangle)
        echo "Enter the length of square : "
        read l
        echo "Enter the breadth of square : "
        read b
        echo "Area  of rectangle is"
        echo "$l * $b " | bc
         ;;
        Perimeter_of_rectangle)
        echo "Enter the length of square : "
        read l
        echo "Enter the breadth of square : "
        read b
        echo "Perimeter  of rectangle is"
        echo " $l * 2 +  2 * $b " | bc
         ;;
      none)
     break
      ;;
   *) echo "ERROR: Invalid selection"
 ;;
esac


done
```

4. Write a shell program for the temperature converter. (case) i. Celsius to Fahrenheit ii. Fahrenheit to Celsius

Solution

```
select option in Convert_From_Celcius_To_Fahrenheit
Convert_From_Fahrenheit_To_Celcius none
do
case $option in
     Convert_From_Celcius_To_Fahrenheit)
      echo "Enter Temperature in celcius:"
      read c
      echo " Temperature in fahrenheit is:"
      echo "($c * 9/5) + 32" | bc
      ;;
    Convert_From_Fahrenheit_To_Celcius)
     echo "Enter Temperature in Fahrenheit:"
     read f
     echo " Temperature in Celcius is:"
     echo "($f - 32) * 5/9" | bc
      ;;
 none)
         break
          ;;
       *) echo "ERROR: Invalid selection"
     ;;
    esac
done
```

5. Write a shell program to check whether the number given by the user is palindrome or not.

Solution

```
echo "Enter the number"
read n

number=$n
```

```
reverse=0
while [ $n -gt 0 ]
do
a=`expr $n % 10 `
n=`expr $n / 10 `
reverse=`expr $reverse \* 10 + $a`
done

if [ $number -eq $reverse ]
then
   echo "Number is palindrome"
else
   echo "Number is not palindrome"
Fi
```

6. Write a shell program to print the factorial of a number given by the user.

Solution

```
echo "Enter a number for the factorial"
read f
fact=1
for (( i=1; i<=f; i++ ))
do
fact=$((fact * i))
done
echo "factorial of the number is : $fact"
```

7. Write a shell program to find the largest in three numbers given by the user.

Solution

```
echo "Enter First Number"
read a
echo "Enter Second Number"
read b
echo "Enter Third Number"
```

```
read c
if [ $a -gt $b ] && [ $a -gt $c ]
then
echo "$a Is the greatest number"
elif [ $b -gt $a ] && [ $b -gt $c ]
then
echo "$b Is the greatest number"
elif [ $c -gt $a ] && [ $c -gt $b ]
then
echo "$c Is the greatest number"
else
echo "All numbers are equal"
fi
```

8. Write a shell program to display the cube of the number up to given an integer.

Expected output:

Number is: 1 and cube of 1 is : 1
Number is: 2 and cube of 1 is : 8
Number is: 3 and cube of 1 is : 27
So on.
Solution

```
echo "Enter a number upto which you want the cube of numbers"
read c
for ((i=1;i<=c;i++))
do
cube=$(( i*i*i ))
echo "Number is :$i and cube of $i is: $cube"
Done
```

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

```
echo "Enter  a number to check for even or odd "
read a
c=$(( a % 2 ))
if [ $c -eq 0 ]
then
echo "The give number is an even number"
else
echo "The give number is an odd number"
fi
```

10. Write a shell program to swap two numbers without a third variable.
Solution

```
a=1
b=2
echo "Value of a:$a and value of b:$b"
a=$(( $a + $b ))
b=$(( $a - $b ))
a=$(( $a -$b ))
echo "Value of a:$a and value of b:$b"
```

11. Write a shell program to print all prime number from 1 to 100.

Solution

```
sum=0
for((i=2;i<=100;i++))
do
num1=$(($i % 2))
num2=$(($i % 3))
num3=$(($i % 5))
num4=$(($i % 7))
if [ $i -eq 2 ] || [ $i -eq 3 ] || [ $i -eq 5 ] || [ $i -eq 7 ]
then
echo "$i"
```

```
elif [ $num1 -ne 0 ] && [ $num2 -ne 0 ] && [ $num3 -ne 0 ] && [ $num4 -ne
0 ]
then
echo "$i"
fi
Done
```

12. Write a shell program to print odd sequence from 1 to 20 and print the sum of the numbers.
Solution

```
sum=0
for((i=1;i<=20;i++))
do
num1=$(($i % 2))
if [ $i -eq 1 ]
then
echo "$i"
elif [ $num1 -ne 0 ]
then
echo "$i"
sum=$(( $sum + $i ))
fi
done
echo "Sum of these odd number is :$sum"
```

13. Write a shell program to print pattern
1
2 2
4 4 4
8 8 8 8
Solution

```
a=1
for((i=1;i<=4;i++))
```

```
do
for((j=1;j<=i;j++))
do
echo -n "$a"
done
a=$(( $a * 2 ))
echo
done
```

14. Write a shell program to print pattern

```
* * * *
* *   *
*   * *
* * * *
```

Solution

```
for (( i=4; i>=1; i--))
do
for j in {1..4}
do
if [ $i -lt 4 -a $i -gt 1 ]
then
if [ $i == $j ]
then
echo -n " "
else
echo -n "*"
fi
else
echo -n "*"
fi
done
echo
done
```