LAB CYCLE 3(1-10)

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1. Write a program to find the factorial of a number

```
n=int(input("Enter a number..."))
def fact(n):
    if n==1:
        return 1
    else:
        return n*fact(n-1)

print("factorial of  ",n," is ",fact(n))
```

```
25mca30@mcaserver:~/linux25/lab3$ python3 fact.py
Enter a number...5
factorial of   5  is  120
```

2. Generate Fibonacci series of N terms

```
n=int(input("Enter the Number..."))
a=0
b=1
print(a)
print(b)
for i in range(2,n):
    c=a+b;
    print(c)
    a=b
    b=c
```

```
25mca30@mcaserver:~/linux25/lab3$ python3  fib.py
Enter the Number...20
0
1
1
2
3
5
8
13
21
34
55
89
144
233
377
610
987
1597
2584
4181
```

3. Write a program to find the sum of all items in a list. [Using for loop]

```
n=input("enter numbers comma separated   ")
numbers1=list(map(int,n.split(",")))
sum=0
for i in numbers1:
    sum=sum+i;
print("sum of the the items is ",sum)
```

```
25mca30@mcaserver:~/linux25/lab3$ python3 sumoflist.py
enter numbers comma separated   12,34,12,78,34,1
sum of the the items is  171
```

4. Generate a list of four digit numbers in a given range with all their digits even and the number is a perfect square.

```
import math
def even(n):
    for digits in str(n):
        if int(digits)%2!=0:
            return False
    return True

perfect_square=[]
sran=int(input("Enter the start range..."))
ran=int(input("Enter the end  range..."))
if ran>9999 or sran<1000:
    print("range must be between 1000 --- 9999")
else:
    for i in range(sran,ran):
        square=math.isqrt(i)
        if square*square==i:
            if even(i):
                perfect_square.append(i)

print(perfect_square)
```

```
25mca30@mcaserver:~/linux25/lab3$ python3  prefect.py
Enter the start range...2000
Enter the end  range...7000
[4624, 6084, 6400]
25mca30@mcaserver:~/linux25/lab3$ python3  prefect.py
Enter the start range...13
Enter the end  range...90000
range must be between 1000 --- 9999
[]
```

5. Write a program using a for loop to print the multiplication table of n, where n is entered by the user.

```
n=int(input("Enter the number ..."))
```

```
for i in range(1,11):
    print(i ,"*",n,"=",i*n)
```

```
25mca30@mcaserver:~/linux25/lab3$ python3  multable.py
Enter the number ...2
1 * 2 = 2
2 * 2 = 4
3 * 2 = 6
4 * 2 = 8
5 * 2 = 10
6 * 2 = 12
7 * 2 = 14
8 * 2 = 16
9 * 2 = 18
10 * 2 = 20
```

6. Write a program to display alternate prime numbers till N (obtain N from the user).

```
def is_prime(num):
    if num<=1:
        return False
    for i in range(2,int(num ** 0.5)+1):
        if num%i==0:
            return False
    return True


def alt_prime(num):
    count=0
    for i in range(2,num+1):
        if is_prime(i):
            count+=1
            if count%2!=0:
                print(i,end=" ")


n=int(input("enter a  Number Limit...."))
print("The List of Alternative prime numbers....")
alt_prime(n)
```

print()

```
25mca30@mcaserver:~/linux25/lab3$ python3  alter_prime.py
enter a  Number Limit....20
The List of Alternative prime numbers....
2 5 11 17
```

7. Write a program to compute and display the sum of all integers that are divisible by 6 but not by 4, and that lie below a user-given upper limit.

```
m=int(input("enter the lower limit..."))
n=int(input("enter the upper limit..."))
sum=0
for i in range(m,n):
    if i%6==0 and i%4!=0:
        sum=sum+i
print("sum of integers divisible by 6 but not by 4 is ",sum)
```

```
25mca30@mcaserver:~/linux25/lab3$ python3 div6not4.py
enter the lower limit...5
enter the upper limit...20
sum of integers divisible by 6 but not by 4 is  24
```

8. Calculate the sum of the digits of each number within a specified range (from 1 to a user-defined upper limit). Print the sum only if it is prime.

```
def is_prime(num):
    if num<=1:
        return False
    for i in range(2,int(num ** 0.5)+1):
        if num%i==0:
            return False
    return True
```

```
n=int(input("Enter the upper limit...."))
for i in range(1,n+1):

    sum_digit=sum(int(j) for j in str(i))
    if is_prime(sum_digit):
        print(f"Number : {i},sum of digits is: {sum_digit} is prime")
```

```
25mca30@mcaserver:~/linux25/lab3$ python3 sumofprime.py
Enter the upper limit....20
Number : 2,sum of digits is: 2 is prime
Number : 3,sum of digits is: 3 is prime
Number : 5,sum of digits is: 5 is prime
Number : 7,sum of digits is: 7 is prime
Number : 11,sum of digits is: 2 is prime
Number : 12,sum of digits is: 3 is prime
Number : 14,sum of digits is: 5 is prime
Number : 16,sum of digits is: 7 is prime
Number : 20,sum of digits is: 2 is prime
```

9. A number is input through the keyboard. Write a program to determine if it’s palindromic.

```
n=int(input("Enter a number ...."))
if str(n)==str(n)[::-1]:
    print("the number ",n," is a palindrome...")
else:
    print("the number ",n," is not a palindrome...")
```

```
25mca30@mcaserver:~/linux25/lab3$ python3  palin.py
Enter a number ....121
the number  121  is a palindrome...
25mca30@mcaserver:~/linux25/lab3$ python3  palin.py
Enter a number ....123
the number  123  is not a palindrome...
```

10. Write a program to generate all factors of a number. [use while loop]

```
n=int(input("enter a Number....."))
factors=[]
i=1
while i<=n:

    if n%i==0:
        factors.append(i)
    i=i+1

print("The factors of the number ",n," is ",factors)
```