Pranav Polavarapu - 19BTRCR008 ¶

A. Python program to find the sum and average of natural numbers up to n where n is provided by user.

In [1]:
```
n = int(input(" Enter a Number: "))

sum = 0
i = 1

while (i <= n):
    sum = sum + i
    i = i + 1

average = sum / n

print("The Sum of Natural Numbers from 1 to {0} =  {1}".format(n, sum))
print("Average of Natural Numbers from 1 to {0} =  {1}".format(n, average))
```

```
 Enter a Number: 6
The Sum of Natural Numbers from 1 to 6 =  21
Average of Natural Numbers from 1 to 6 =  3.5
```

B. (1) Python program to find factorial, and Fibonacci of a number, received by user, with iterative process.

In [2]:
```
#Factorial-Iterative
number = int(input(" Please enter any Number to find factorial : "))
fact = 1
i = 1

while(i <= number):
    fact = fact * i
    i = i + 1

print("The factorial of %d  = %d" %(number, fact))
```

```
 Please enter any Number to find factorial : 5
The factorial of 5  = 120
```

In [3]:
```
#Fibonacci-iterative
def fiboitr():
    n = int(input("enter the number of terms: "))
    n1 = 0
    n2 = 1
    c = 0
    if n <= 0 :
        print("enter a positive integer")
    elif n == 1:
        print(f"Fibonacci sequence upto {n} : ")
        print(n1)
    else :
        print(f"Fibonacci sequence upto {n} : ")
    while c < n:
        print(n1,end = '\n')
        m = n1 + n2
        n1 = n2
        n2 = m
        c += 1
fiboitr()
```

```
enter the number of terms: 5
Fibonacci sequence upto 5 :
0
1
1
2
3
```

B. (2) Python program to find factorial, and Fibonacci of a number, received by user, with Recursive process.

In [6]:
```
##Recursive Factorial
def recur_factorial(n):
   if n == 1:
       return n
   else:
       return n*recur_factorial(n-1)

num = int(input("Enter input: "))

if num < 0:
   print("No Fact for 0")
elif num == 0:
   print("The factorial of 0 is 1")
else:
   print("The factorial of", num, "is", recur_factorial(num))
```

```
Enter input: 5
The factorial of 5 is 120
```

In [5]:
```
#Recursive Fibonacci

def recur_fibo(n):
   if n <= 1:
       return n
   else:
       return(recur_fibo(n-1) + recur_fibo(n-2))

nterms = int(input("Enter input: "))

if nterms <= 0:
   print("Invalid")
else:
   print("Fibonacci sequence:")
   for i in range(nterms):
       print(recur_fibo(i))
```

```
Enter input: 5
Fibonacci sequence:
0
1
1
2
3
```