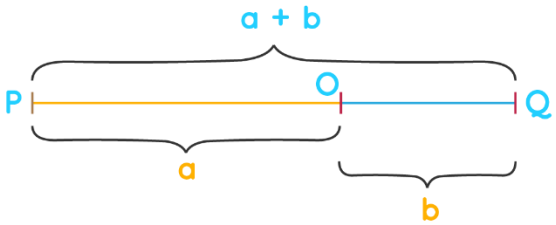
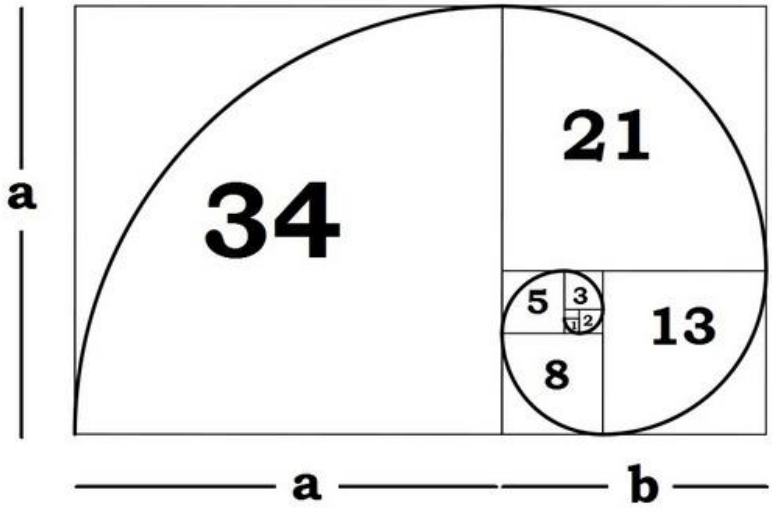
Program 3

Write a program to find the Golden ratio

The golden ratio, which is also referred to as the golden mean, divine proportion, or golden section, exists between two quantities if their ratio is equal to the ratio of their sum to the larger quantity between the two. With reference to this definition, if we divide a line into two parts, the parts will be in the golden ratio if:



$$\frac{a}{b} = \frac{a+b}{a} = 1.618.... = \phi$$



$$x = \frac{1+\sqrt{(5)}}{2} = 1.618034...$$

Program:

```
#read number of series you need
n=int(input("Enter number of series : "))


# Golden series
# Iterative method, with values saved in a list
fiblist = [0,1]
for i in range(0, n):
    fiblist.append(fiblist[i] + fiblist[i+1])
print("Series are",fiblist)


#computing the ratio of successive terms in the list of Fibonacci numbers
gratio=[fiblist[i] / float(fiblist[i-1]) for i in range(2,len(fiblist))]
print("Golden ratio : ",gratio)
```

Output:

```
Enter number of series : 5
Series are [0, 1, 1, 2, 3, 5, 8]
Golden ratio :  [1.0, 2.0, 1.5, 1.6666666666666667, 1.6]
```