

Recursion

Void func(int n)

```
{  
    Base condition  
  
    Return func(n-1);  
}
```

int fib(int n)

```
{  
    if(n<=1)  
        Return n;  
    Return fib(n-1) + fib(n-2);  
}
```

Time - $O(2^n)$

Memory - $O(1)$ without call stack
 $O(n)$ with call stack

fib(n)
 fib(n-1) fib(n-2)
 fib(n-2) fib(n-3)
 fib(n-3) fib(n-4)

 fib(2)
fib(0) fib(1) n levels - 2^{n-1}

Memory -

4 type

Data

Heap

Stack

..

Fast expo

Gcd -

Int gcd(int a, int b)

```
{  
    if(a==0)  
        Return b;
```

```
        Return gcd(b,a%b);  
    }
```

Sorting algo

Binary search

Tower of hanoi

Src = 1

Des = 3

Aux =2

N =4

```
Void hanoi(int n, int src, int des, int aux)
```

```
{  
    if(n==1)  
    {  
        cout<<"Move one disc from "<<src<<" to "<<des;  
        return;  
    }  
  
    Hanoi (n-1, src, aux, des);  
    cout<<"Move one disc from "<<src<<" to "<<des;  
    Hanoi (n-1, aux, des, src);  
  
}
```