**Some Important C++ Program Using Recursive Function**

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# **Calculate x^n using Recursion**

**#include<iostream>**

**using namespace std;**

**int main()**

**{**

**int x,n;**

**long int power(int,int),result;**

**cout<<"Enter Base : ";**

**cin>>x;**

**cout<<"Enter Power : ";**

**cin>>n;**

**result = power(x,n);**

**cout<<"\n The "<<x<<"^"<<n<<" is : "<<result<<endl;**

**}**

**long int power(int x,int n){**

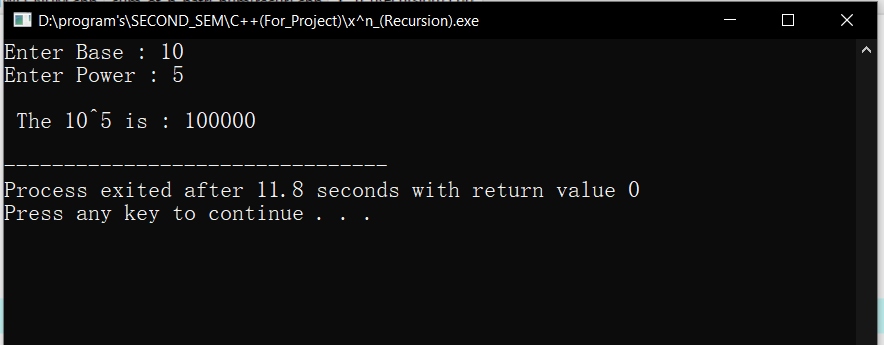
**if(n==0)**

**return 1;**

**else**

**return (x\*power(x,n-1));**

**}**

****

# **Sum of N Natural Numbers using Recursion**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int n,sum(int);**

**cout<<"Enter N: ";**

**cin>>n;**

**cout<<"\n The Sum of Natural Number up to "<<n<<" is :"<<sum(n)<<endl;**

**}**

**int sum(int n){**

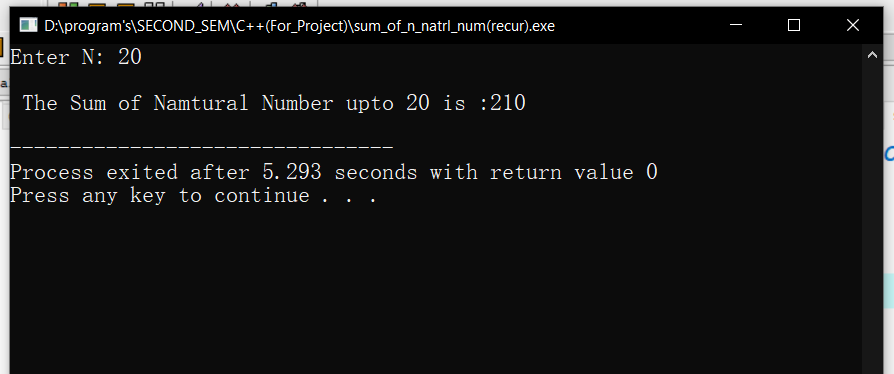
**if(n==1)**

**return 1;**

**else**

**return (n+sum(n-1));**

**}**

****

# **GCD of Two Numbers using Recursion**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int a,b;**

**int GCD(int,int),result;**

**cout<<"Enter A : ";**

**cin>>a;**

**cout<<"Enter B : ";**

**cin>>b;**

**result = GCD(a,b);**

**cout<<"\n GCD of "<<a<<" and "<<b<<" is :"<<result<<endl;**

**}**

**int GCD(int a, int b){**

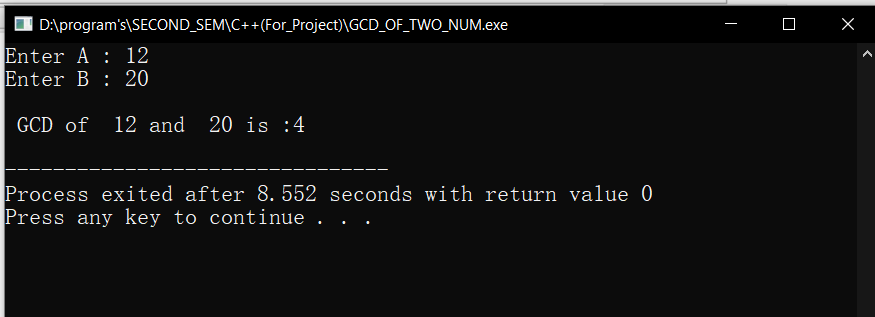
**if(b==0)**

**return a;**

**else**

**return (GCD(b,a%b));**

**}**

****

# **Factorial of a Number using Recursion**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int n;**

**long int fact(int);**

**cout<<" Enter N : ";**

**cin>>n;**

**cout<<" \n The factorial of "<<n<<" is :"<<fact(n)<<endl;**

**}**

**long int fact(int n)**

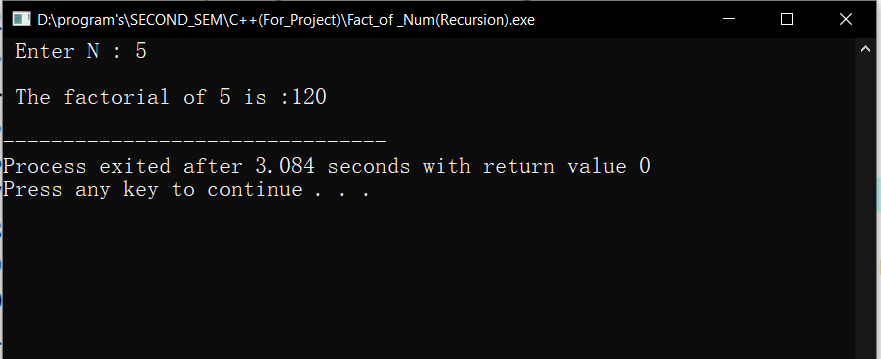
**{**

**if(n==0)**

**return 1;**

**else**

**return (n\*fact(n-1));**

**}**

# **Fibonacci series using recursion and normal**

**#include<iostream>**

**using namespace std;**

**//Using Recursion up to given term -->fibo(n) = fibo(n-1)+fibo(n-2) | tail Point-->n=0,o-->n=1,1**

**int main(){**

**int n,i=0,c=0;**

**int fibo(int);**

**system("cls");**

**cout<<"N =";cin>>n;**

**cout<<"Fibonacci Series :"<<endl;**

**for(i=1;i<=n;i++){**

**cout<<fibo(c++)<<" ";**

**}**

**return 0;**

**}**

**int fibo(int n){**

**if(n==0)**

**return 0;**

**else if (n==1)**

**return 1;**

**else**

**return (fibo(n-1)+fibo(n-2));**

**}**

**/\***

**//-------------------------------------------------------------------------------**

**//Normal up to n**

**int main(){**

**int a=0,b=1,c=0,n;**

**cout<<" N= ";cin>>n;**

**cout<<"Fibonacci Series up to N "<<n<<"are as follows : "<<endl;**

**while(c<=n){**

**cout<<c<<" ";**

**a = b;**

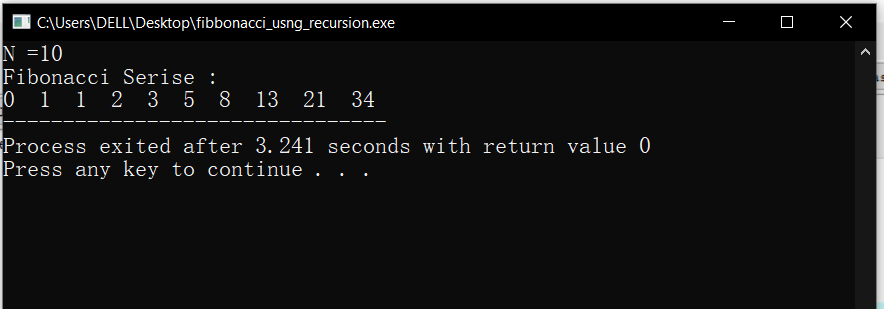
**b = c;**

**c = a+b;**

**}**

**}**

**\*/**

****

# **Print 1 to N using Recursion**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int n;**

**void disp(int);**

**system("cls");**

**cout<<"N = ";cin>>n;**

**disp(n);**

**return 0;**

**}**

**void disp(int n){**

**if(n==0){**

**return;**

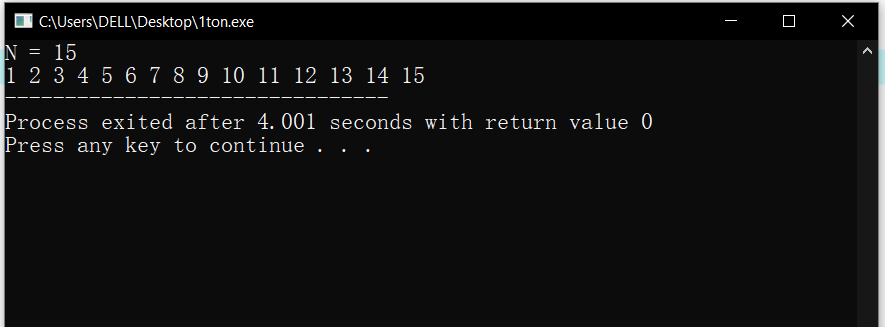
**}**

**else**

**disp(n-1);**

**cout<<n<<" ";**

**}**

****

# **Print n to 1 using Recursion**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int n;**

**void disp(int);**

**system("cls");**

**cout<<"N = ";cin>>n;**

**disp(n);**

**return 0;**

**}**

**void disp(int n){**

**if(n==0){**

**return;**

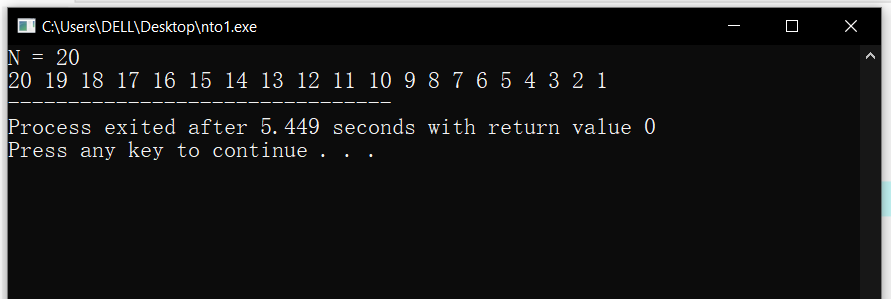
**}**

**else**

**cout<<n<<" ";**

**disp(n-1);**

**}**

****