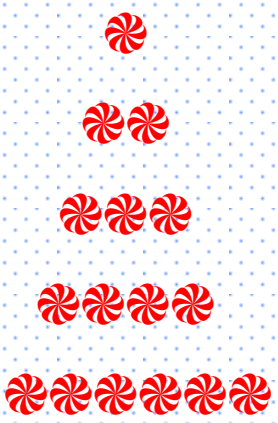
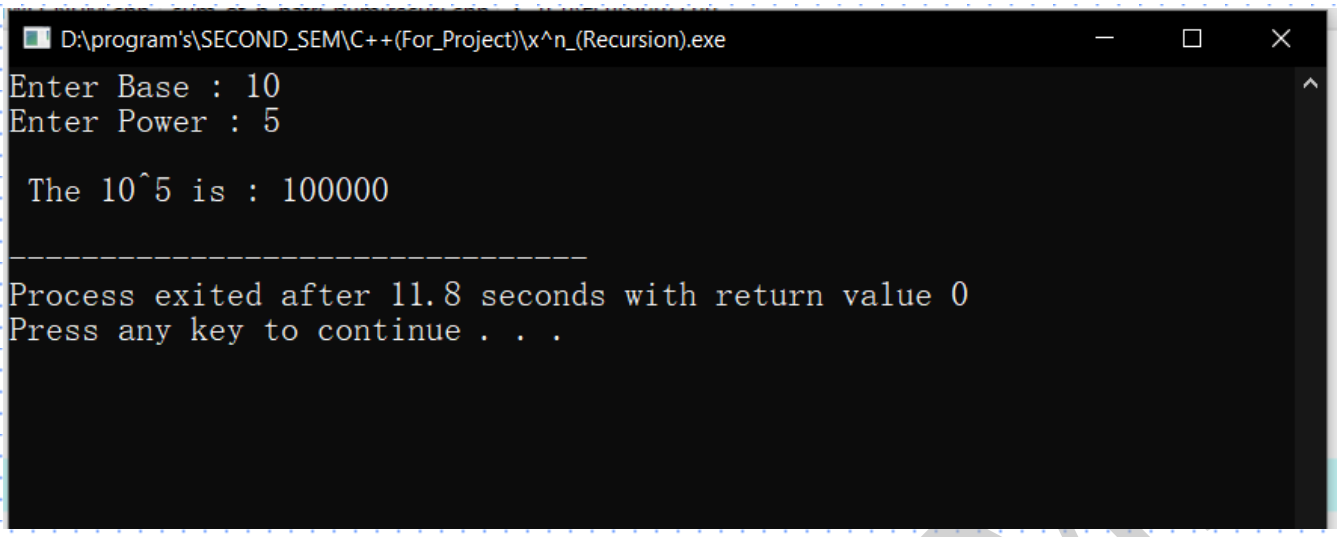
Some Important C++ Program Using Recursive Function



1. Calculate x^n using Recursion

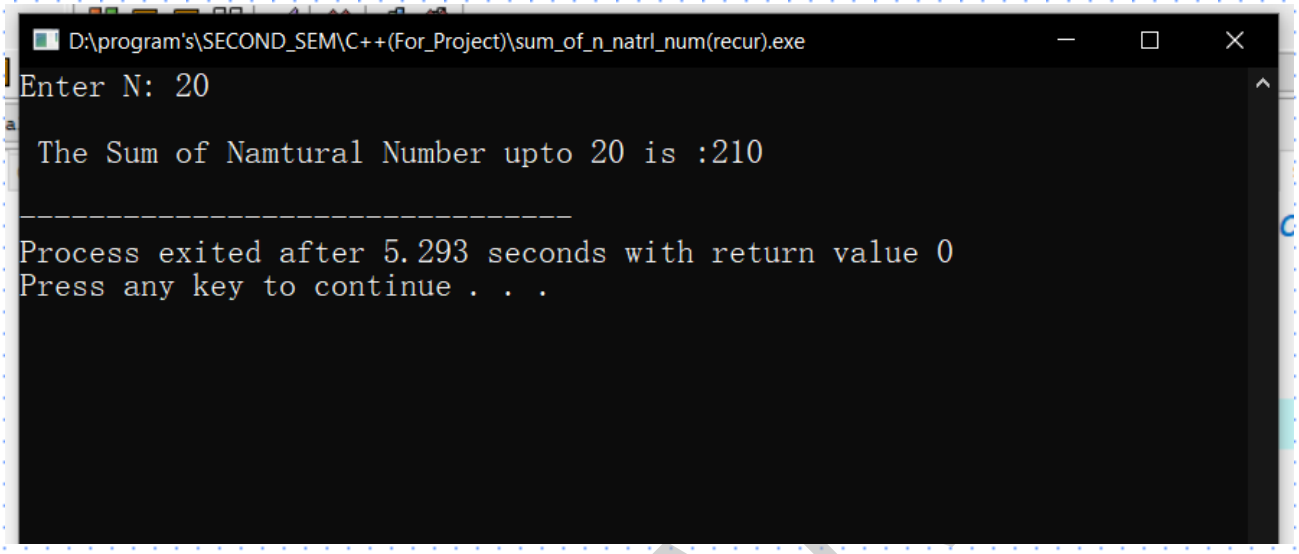
```
#include<iostream>
using namespace std;
int main()
{
	int x,n;
	long int power(int,int),result;
	cout<<"Enter Base : ";
	cin>>x;
	cout<<"Enter Power : ";
	cin>>n;
	result = power(x,n);
	cout<<"\n The "<<x<<"^"<<n<<" is : "<<result<<endl;
}
long int power(int x,int n){
	if(n==0)
		return 1;
	else
		return (x*power(x,n-1));
}
```



2. 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
```

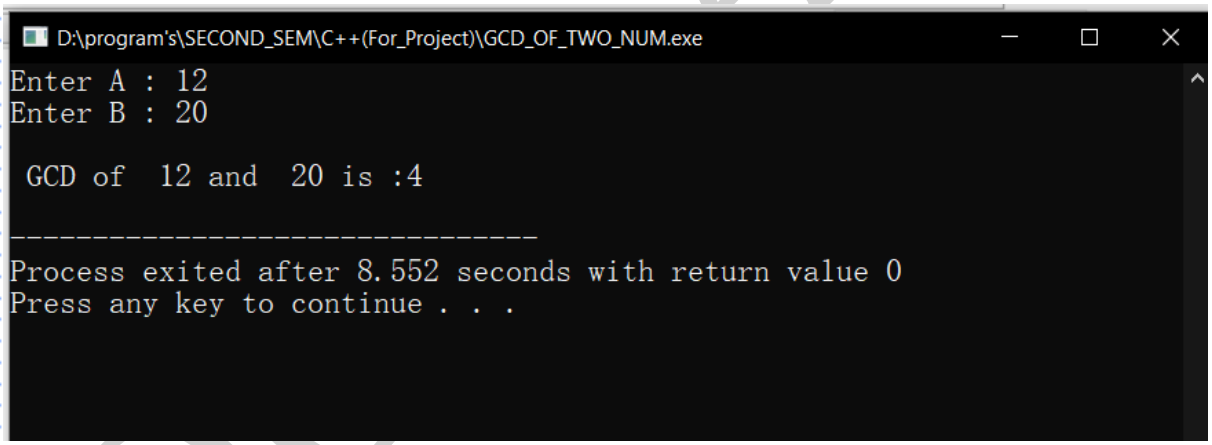
```
        return (n+sum(n-1));
}
```



3. GCD of Two Numbers using Recursion

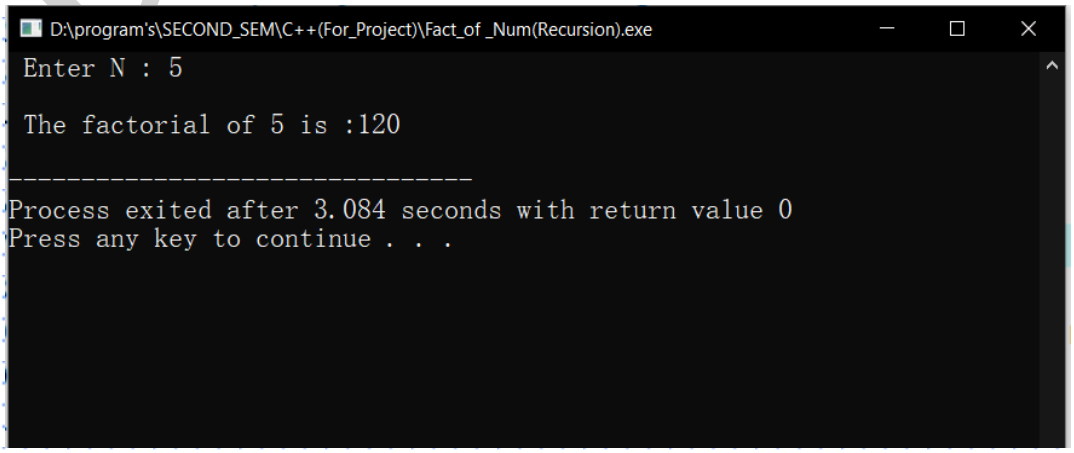
```
#include<iostream>
using namespace std;
int main(){
    int a,b;
    int GCD(int,int),result;
    cout<<"Enter A : ";
    cin>>a;
    cout<<"Enter B : ";
    cin>>b;
```

```
        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));
}
```



4. Factorial of a Number using Recursion

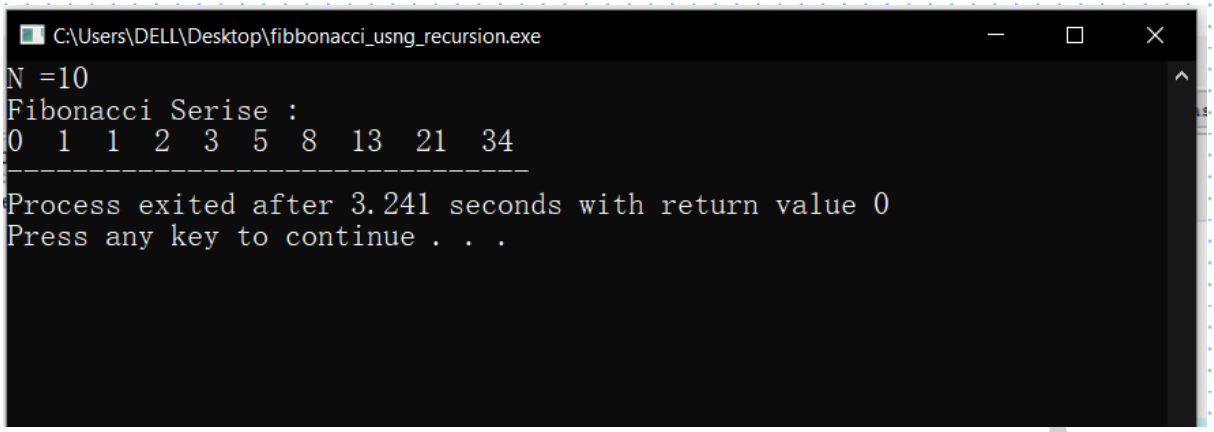
```
#include<iostream>

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));

}
```



5. 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;
```

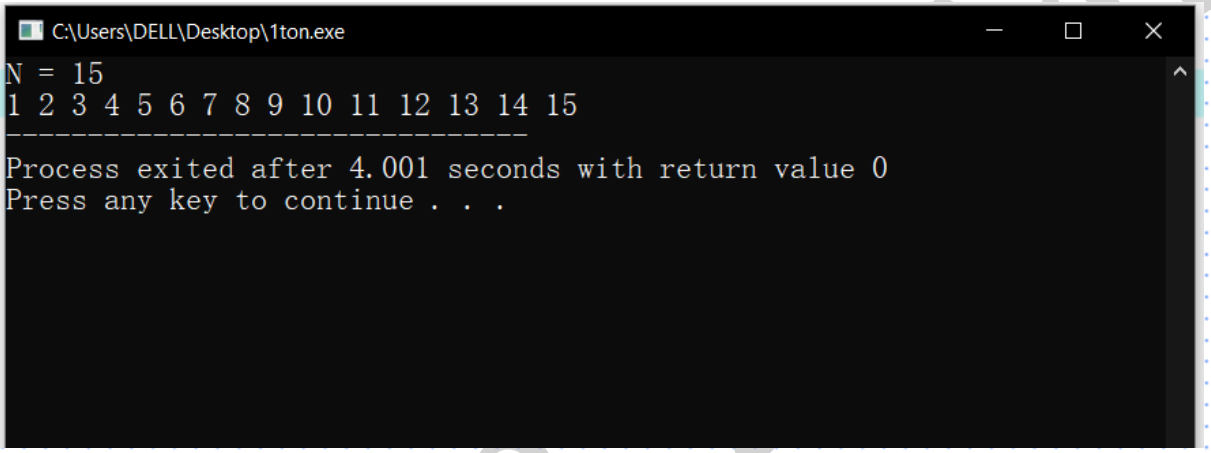
```
        else
            return (fibo(n-1)+fibo(n-2));
}
/*
//-----------------------------------------------------------------
//Normal up to n
int main(){
    int a=0,b=1,c=0,n;
    cout<<" N= ";cin>>n;
    cout<<"Fibonacci Series up to N "<<n<<"are as follows :
"<<endl;
    while(c<=n){
        cout<<c<<" ";
        a = b;
        b = c;
        c = a+b;
    }
}

*/
```



6. 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<<" ";

}
```



7. 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);
}
```