friend

### C++ Friend function

If a function is defined as a friend function in C++, then the protected and private data of a class can be accessed using the function.

By using the keyword friend compiler knows the given function is a friend function.

For accessing the data, the declaration of a friend function should be done inside the body of a class starting with the keyword friend.

Characteristics of a Friend function:

The function is not in the scope of the class to which it has been declared as a friend.  
It cannot be called using the object as it is not in the scope of that class.  
It can be invoked like a normal function without using the object.  
It cannot access the member names directly and has to use an object name and dot membership operator with the member name.  
It can be declared either in the private or the public part.

##### C++ friend function Example

#include <iostream>   
using namespace std;   
class Box   
{   
 private:   
 int length;   
 public:   
 Box(): length(0) { }   
 friend int printLength(Box); //friend function   
};   
int printLength(Box b)   
{   
 b.length += 10;   
 return b.length;   
}   
int main()   
{   
 Box b;   
 cout<<"Length of box: "<< printLength(b)<<endl;   
 return 0;   
}

Output

Length of box: 10

##### C++ Friend class

#include <iostream>   
   
using namespace std;   
   
class A   
{   
 int x =5;   
 friend class B; // friend class.   
};   
class B   
{   
 public:   
 void display(A &a)   
 {   
 cout<<"value of x is : "<<a.x;   
 }   
};   
int main()   
{   
 A a;   
 B b;   
 b.display(a);   
 return 0;   
}

Output

value of x is : 5