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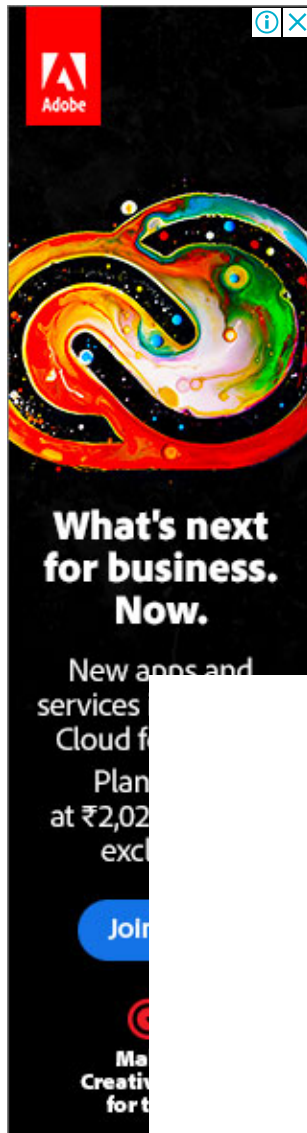
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Friend class and function in C++

Friend Class A friend class can access private and protected members of other class in which it is declared as friend. It is sometimes useful to allow a particular class to access private members of other class. For example a LinkedList class may be allowed to access private members of Node.

```
class Node
{
private:
    int key;
    Node *next;
    /* Other members of Node Class */


    friend class LinkedList; // Now class LinkedList can
                             // access private members of Node
};
```



Friend Function Like friend class, a friend function can be given special grant to access private and protected members. A friend function can be:


- a) A method of another class
- b) A global function





```
class Node
{
  private:
    int key;
    Node *next;

```



```


/* Other members of Node Class */
friend int LinkedList::search(); // Only search() of linkedLi
// can access internal members
};
```

Following are some important points about friend functions and classes:

- 1) Friends should be used only for limited purpose. too many functions or external classes are declared as friends of a class with protected or private data, it lessens the value of encapsulation of separate classes in object-oriented programming.
- 2) Friendship is not mutual. If a class A is friend of B, then B doesn't become friend of A automatically.
- 3) Friendship is not inherited (See [this](#) for more details)
- 4) The concept of friends is not there in Java.

A simple and complete C++ program to demonstrate friend Class







```
#include <iostream>
class A {
private:
    int a;
public:
    A() { a=0; }
    friend class B;    // Friend Class
};

class B {
private:
    int b;
public:
    void showA(A& x) {
        // Since B is friend of A, it can access
        // private members of A
        std::cout << "A::a=" << x.a;
    }
};

int main() {
    A a;
    B b;
    b.showA(a);
    return 0;
}
```







Output:

A::a=0

A simple and complete C++ program to demonstrate friend function of another class



 `#include <iostream>`
 `class B;`
 `class A`
 `{`
`public:`
`void showB(B&);`
`};`

`class B`
`{`
`private:`
`int b;`
`public:`
`B() { b = 0; }`
`friend void A::showB(B& x); // Friend function`
`};`

`void A::showB(B &x)`
`{`
`// Since show() is friend of B, it can`
`// access private members of B`
`std::cout << "B::b = " << x.b;`
`}`


`int main()`
`{`
`A a;`
`B x;`
`a.showB(x);`
`return 0;`
`}`

Output:


B::b = 0

A simple and complete C++ program to demonstrate global friend







```
#include <iostream>
```



```
class A
```



```
{
```



```
    int a;
```

```
public:
```

```
    A() {a = 0;}
```

```
    friend void showA(A&); // global friend function
```

```
};
```



```
void showA(A& x) {
```

```
    // Since showA() is a friend, it can access
```

```
    // private members of A
```

```
    std::cout << "A::a=" << x.a;
```

```
}
```



```
int main()
```

```
{
```

```
    A a;
```

```
    showA(a);
```

```
    return 0;
```

```
}
```

Output:

```
A::a = 0
```

References:

http://en.wikipedia.org/wiki/Friend_class

http://en.wikipedia.org/wiki/Friend_function

<http://www.cprogramming.com/tutorial/friends.html>

<http://www.parashift.com/c++-faq/friends-and-encap.html>

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