Static keyword

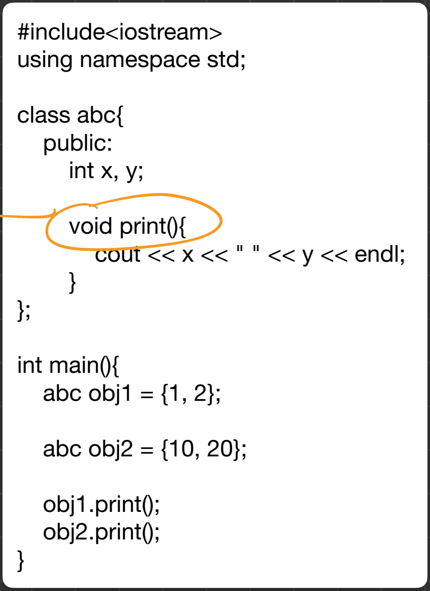
Static data member

that variable is going to share memory with all of the class instance

Static member function

There is no instance of that class being passed into that method.

without static

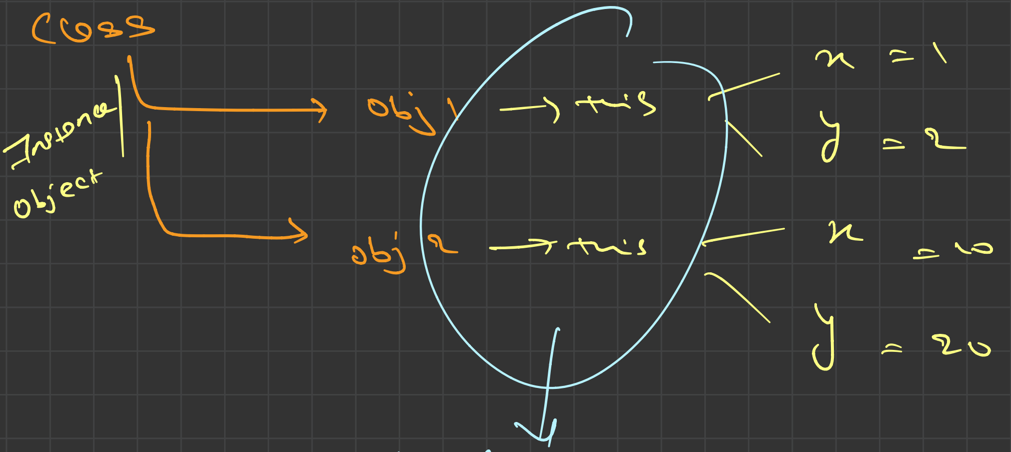


```
#include<iostream>
using namespace std;

class abc{
   public:
      int x, y;

      void print(){
         cout << x << " " << y << endl;
      }
};

int main(){
   abc obj1 = {1, 2};

   abc obj2 = {10, 20};

   obj1.print();
   obj2.print();
}
```

How they know which instance value is called?

There is a hidden pointer work.

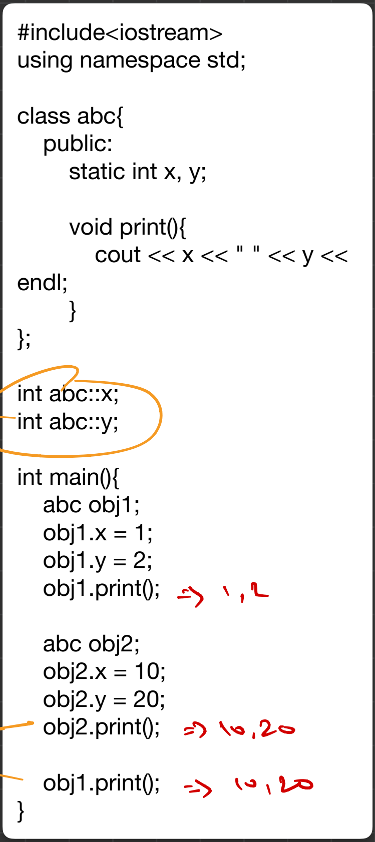
this → x , this → y



hidden parameter

this pointer → particular to objects

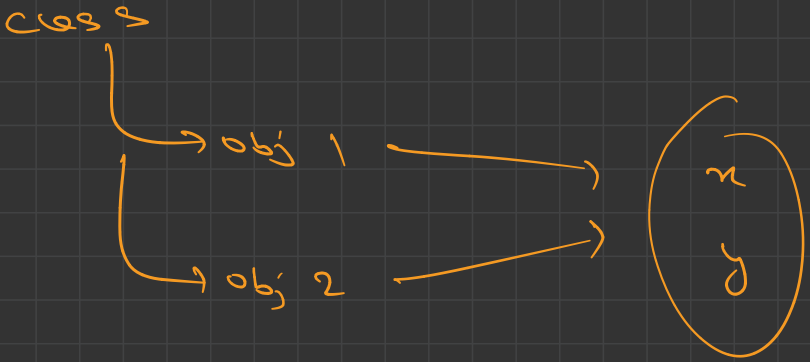
with static



```
#include<iostream>
using namespace std;

class abc{
    public:
        static int x, y;

        void print(){
            cout << x << " " << y <<
endl;
        }
};

int abc::x;
int abc::y;

int main(){
    abc obj1;
    obj1.x = 1;
    obj1.y = 2;
    obj1.print();  => 1,2

    abc obj2;
    obj2.x = 10;
    obj2.y = 20;
    obj2.print();  => 10,20

    obj1.print();  => 10,20
}
```

belong to class abc
not with instance

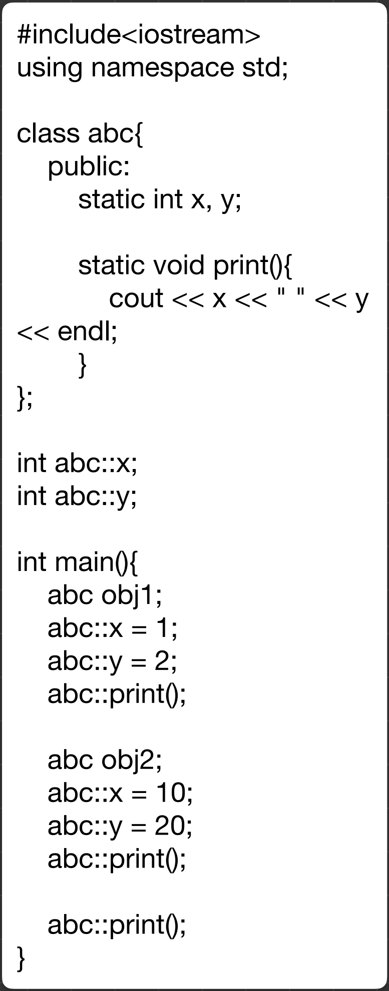
use same
variable



Share
same
variable

Static member

for static member →
the variable inside the static member must be a static .



```
#include<iostream>
using namespace std;

class abc{
    public:
        static int x, y;

        static void print(){
            cout << x << " " << y
<< endl;
        }
};

int abc::x;
int abc::y;

int main(){
    abc obj1;
    abc::x = 1;
    abc::y = 2;
    abc::print();

    abc obj2;
    abc::x = 10;
    abc::y = 20;
    abc::print();

    abc::print();
}
```

with static member, w/o static data

Throw error

↓

now x, y are different for each instance & the print member function is static to all instance

↓

print cannot find x & y related to which instance

```
#include<iostream>
using namespace std;

class abc{
    public:
        int x, y;

        static void print(){
            cout << x << " " << y << endl;
        }
};

int main(){
    abc obj1;
    obj1.x = 1;
    obj1.y = 2;
    abc::print();

    abc obj2;
    obj2.x = 10;
    obj2.y = 20;
    abc::print();

    abc::print();
}
```