
Subject: moveable question

Posted by [mtdew3q](#) on Wed, 28 Nov 2012 03:56:31 GMT

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Hi-

In the following sample I thought this would break the moveable assertion. I used a class instead of a struct. I hooked up ultimate++ tonight and I wanted to see how moveable worked.

Please see my one in-line comment.

thanks for any assistance. - jim

```
#include <Core/Core.h>
```

```
#include<iostream>
```

```
using namespace Upp;
```

```
using namespace std;
```

```
class SimpleVector: Moveable<SimpleVector>{
```

```
    UPP::Vector<int*> v;
```

```
    int * val;
```

```
    int a;
```

```
    SimpleVector * sv;
```

```
public:
```

```
    SimpleVector();
```

```
SimpleVector& operator=( const SimpleVector& rhs );
```

```
    ~SimpleVector();
```

```
    void TestMove();
```

```
};
```

```
SimpleVector::SimpleVector(){
```

```
    int n = 2;
```

```
    int * y = &n;
```

```
    v.Add(y);
```

```
    cout<< *v[0];
```

```
}
```

```
SimpleVector::~SimpleVector(){
```

```
    AssertMoveable<SimpleVector>();
```

```

}

void SimpleVector::TestMove(){

    val = &a;
    sv = this;
    // thought these 2 would break moveable assertion per the example in docs ??

}

SimpleVector& SimpleVector::operator=( const SimpleVector& rhs ){

    sv= rhs.sv;
    return *this;
}

CONSOLE_APP_MAIN
{

    SimpleVector s;
    s.TestMove();

}

```

Subject: Re: moveable question
Posted by [dolik.rce](#) on Wed, 28 Nov 2012 07:04:09 GMT
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Hi,

```

First let me comment on you constructor, see the comments:SimpleVector::SimpleVector(){
    int n = 2;
    int * y = &n; // this is broken, you're taking addresss of temporary object,
                // the pointer will point to random data in memory when you leave the function
    v.Add(y);
    Cout()<<*v[0]; // you can use U++ Cout() instead of std::cout ;)
}

```

Now, the assertion, AssertMoveable merely checks if the object is moveable. It is users responsibility to assure that anything that inherits from Moveable<T> (or is marked with NTL_MOVEABLE() macro) is actually moveable. Moveable is just a hint from a programmer to the compiler, it doesn't really make it moveable, or prevent you from doing moveability-breaking operations.

To illustrate how the pointers in TestMove() break things, you have to think little further, lets see what happens when you try to copy the SimpleVector:CONSOLE_APP_MAIN

```
{
SimpleVector s;
s.TestMove();

// To actually break it, try to perform a copy operation:
SimpleVector v;
v=s;

// Now it is broken, because the pointers were just copied
// The v.val points s.a, which is in most cases not what you want
// Also v.sv == s.sv, same problem
// Imagine what happens when s is destructed earlier than v
// -> you have pointers to non-existent objects, just asking for a crash ;)
}
```

Does that shed some light on the subject?

Best regards,
Honza

Subject: Re: moveable question
Posted by [mtdew3q](#) on Wed, 28 Nov 2012 13:34:23 GMT
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Hi Honza,

I will fix it when I get home tonight. I have to rush to . Thanks very much for the cool tips. I know I can make it work now.

jim

Subject: Re: moveable question
Posted by [mtdew3q](#) on Thu, 29 Nov 2012 05:12:16 GMT
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Hi-

I think this SimpleVector class is moveable because:

- 1) No references or pointers are stored to the object itself or to subobjects in the methods of the type, into variables that exist after the method finishes execution.
- 2) The types that can be moved in memory using memcpy are called moveable.

I think that is good enough. It was very hard for me to try to break the assertion but it is good practice to try out memcpy.

I never did end up breaking that assertion. I took out the Vector from the members.

thanks - jim

```
#include <Core/Core.h>
#include<iostream>
#include<cstring>

using namespace Upp;
using namespace std;

class SimpleVector: Moveable<SimpleVector>{
    int len;
    char * iptr;
    int a;
    int * ptr;

public:
    SimpleVector(const char *iptr2);

    SimpleVector& operator=( const SimpleVector& rhs );
    SimpleVector(const SimpleVector & s1);
    ~SimpleVector();
    char* GetString();
} sv1("");

SimpleVector::SimpleVector(const char *iptr2){
    std::cout<<"Entering constructor";
    std::cout<<endl;

    len = strlen(iptr2) + 1;
    iptr = new char[len + 1];
    strncpy(iptr, iptr2, len);
    iptr[len-1]='\0';
    a = 10;
    ptr = new int(2);

    std::cout<<"leaving constructor";
}
SimpleVector& SimpleVector::operator=( const SimpleVector& rhs ){

    Cout()<<"entering assignment";
    std::cout<<endl;
```

```

if (this == &rhs)
    return *this;

std::cout<<"debug test"<<endl;

delete [] iptr;
iptr=0;
len = rhs.len;

delete ptr;
ptr=0;

if(rhs.iptr){
    iptr = new char[len + 1];
    strncpy(iptr,rhs.iptr,len);
    a = rhs.a;
    Cout()<<*iptr;
    std::cout<<endl;
}else
    iptr=0;

if(rhs.ptr){
    ptr = new int(2);
    memcpy(ptr,rhs.ptr,sizeof(int));
}else
    ptr=0;

return *this;
}

SimpleVector::~SimpleVector(){
    Cout()<< "the new soundgarden album is out!";
    std::cout<<endl;
    delete[] iptr;
    iptr = 0;

    delete ptr;
    ptr = 0;
    std::cout<<"debug test"<<endl;
    AssertMoveable<SimpleVector>();
}

CONSOLE_APP_MAIN
{
    std::cout<<endl;
    std::cout<<"program begin!";
    cout<<endl;
}

```

```
SimpleVector s("foo1");  
SimpleVector s2("foo2");  
// SimpleVector s2 = s; copy constructor  
s2=s;  
}
```
