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Why you can't initilize a vector in a class?

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20-Mar-2007, 13:17

meili100 ●
Junior Member
❯

Join Date: Feb 2
Posts: 37

❓ **Why you can't initilize a vector in a class?**

Hi, folks,

here is a piece of codes:

CPP / C++ / C Code:

```cpp
#include <vector>
using namespace std;

class test{
private:
 char str[10];\\this is OK
 vector<int> a1(10);\\not OK
};
```

It reports :error C2059: syntax error : 'constant'
Why I can't initilize the size of a1? Wny I CAN initilize the size of str?
Thank you!

20-Mar-2007, 15:00

davekw7x ○
Outstanding Member
❯❯❯❯❯

Join Date: Feb 2004
Location: Left Coast,
Posts: 6,153

Why you can't initilize a vector in a class

Quote:

> Originally Posted by **meili100**
>
> *It reports :error C2059: syntax error : 'constant'*
> *Why I can't initilize the size of a1? Wny I CAN initilize the size of str?*

Class definitions contain information about the size and nature of their members, but they aren't actually data items. Knowing the size of an array is important to the compiler. The size must be known at compile time, since the size of the array influences the size of the object, and the compiler has to know --- at compile time--- how to create code that manipulates and uses pointers to the objects.

Knowing that the class has a vector member is important, but at compile time, there are no members. A "vector" class member is just a pointer in the object, whereas an "array" class member actually has that storage in the object itself.

When you create an object, the first thing that happens is that storage is allocated and certain table entries are made for that particular object. Then a constructor is called to populate the actual data item from the class definition.

If you don't have a constructor (that is, the "default" constructor is used), then if the class has a vector member, an empty vector will be created. If you do have a constructor, you can make it resize the vector and/or initialize it with whatever you require.

CPP / C++ / C Code:

```
//
#include <vector>

using std::vector;

class test{
  public:
    test(int n = 10) {a1.resize(n);}
    int geta1size() const {return a1.size();}
    // more public stuff here to deal with the private stuff
  private:
    char str[10];
    vector <int> a1;
};

//
#include <iostream>
using namespace std;

int main()
{
    test a;
    test b(3);
    cout << "a.geta1size() = " << a.geta1size() << endl;
    cout << "b.geta1size() = " << b.geta1size() << endl;
    cout << "sizeof(test)  = " << sizeof(test) << endl;
    cout << "sizeof(a)     = " << sizeof(a) << endl;
    cout << "sizeof(b)     = " << sizeof(b) << endl;
    return 0;
}
```

Output (g++ on Windows XP):

Code:

```
a.geta1size() = 10
b.geta1size() = 3
sizeof(test)  = 24
sizeof(a)     = 24
sizeof(b)     = 24
```

Output (Borland bcc32 on Windows XP):
[code]
a.geta1size() = 10
b.geta1size() = 3
sizeof(test) = 48
sizeof(a) = 48
sizeof(b) = 48
[/c]

Output (Microsoft Visual C++ version 6 on Windows XP)"

Code:

```
a.geta1size() = 10
b.geta1size() = 3
sizeof(test)  = 28
sizeof(a)     = 28
sizeof(b)     = 28
```
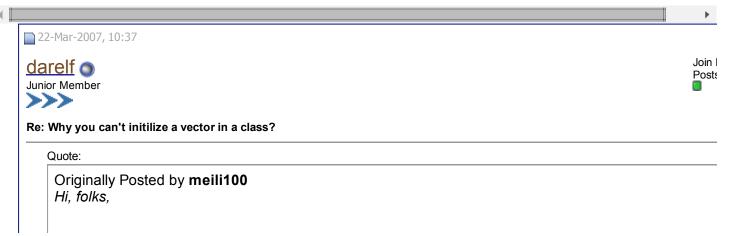
The actual values reported by the sizeof() stuff are (probably) not very important to us mere humans, bu
would be used in calls to memory allocation (new). Those values would be used (internally) by the comp
for generating pointer arithmetic and iterator code.

Note that the sizeof() stuff doesn't depend on the number of elements in a vector member (the vector
member is a pointer inside the object). Try again with different dimension on the array, and you can see
sizeof() *is* dependent on array size.

Regards,

Dave

Last edited by davekw7x : 20-Mar-2007 at 15:57.

22-Mar-2007, 10:37

darelf
Junior Member
>>>

Re: Why you can't initilize a vector in a class?

Quote:

Originally Posted by **meili100**
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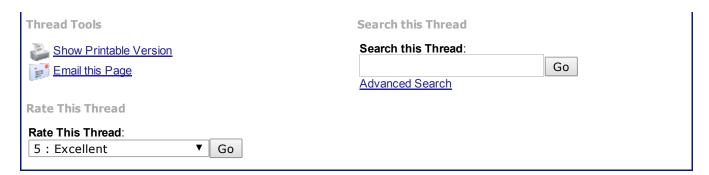*Thank you!*

I know you asked "why", and Dave answered you.... but here's how to initialize it the way you want. Us "member initialization list".

CPP / C++ / C Code:

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

class test{
public:
  test() : a1( vector<int>(10) ) { }
private:
 char str[10];
 vector<int> a1;
};
```

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