## Can I alias a member of a base class in a derived class?

Asked 9 years, 5 months ago Modified 9 years, 5 months ago Viewed 3k times



Say I have the following classes:

template <class T>

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**(1)** 

```
class Base {
  protected:
   T theT;
    // ...
};
class Derived : protected Base <int>, protected Base <float> {
  protected:
    // ...
   using theInt = Base<int>::theT;
                                       // How do I accomplish this??
   using theFloat = Base<float>::theT; // How do I accomplish this??
};
```

In my derived class, I would like to refer to Base::theT using a more intuitive name that makes more sense in the Derived class. I am using GCC 4.7, which has pretty good coverage of C++ 11 features. Is there a way of using a using statement to accomplish this kind of how I tried in my example above? I know that in C++11, the using keyword can be used to alias types as well as eg. bring protected base class members into the public scope. Is there any similar mechanism for aliasing a member?

```
c++ c++11
```

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4 — I think you either need references or probably rather a function which won't take up space in the derived class.: | – Xeo Dec 9, 2012 at 4:49

1 Answer

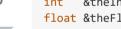
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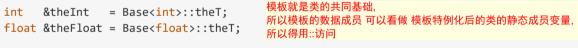
**\$** 



Xeo's tip worked. If you are using C++ 11, you can declare the aliases like so:

```
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```







If you don't have C++11, I think you can also initialize them in the constructor:



```
int &theInt;
float &theFloat;
Derived() : theInt(Base<int>::theT), theFloat(Base<float>::theT) {
 theInt = // some default
  theFloat = // some default
```

EDIT: The slight annoyance is that you can't initialize the the value of those aliased members until the main body of the constructor (ie, inside the curly braces).

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- Note that this increases the size of the derived class by sizeof(void\*) times the number of references. That's why I included the suggestion of a simple getter function that is named thexxx . – Xeo Dec 9, 2012 at 5:53
  - Yes, I suppose you are right. Luckily, I don't think an extra 8 bytes will kill me since I don't have a lot instances of the Derived class, so I can stick with the easier-to-type reference version when I access the data member. - Nicu Stiurca Dec 9, 2012 at 7:47