How to define a template member function of a template class [duplicate]

Asked 9 years, 7 months ago   Active 3 years ago   Viewed 47k times

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Closed 9 years ago.

Possible Duplicate:
How do I define a template function within a template class outside of the class definition?

I'm struggling with the syntax for the case where I have a template member function within a template class:

```
template <typename T> class Foo
{
    void Bar(const T * t);
    template <typename T2> void Bar(const T2 * t);
};

template <typename T> void Foo<T>::Bar(const T * t)
{
    // ... no problem ...
}

template <typename T> void Foo<T>::Bar<typename T2>(const T2 * t)
{
    // ... this is where I'm tearing my hair out ...
}
```

The first member function is fine, but the template member function which handles types other than the base type of the template class is where I am having problems. For the above case I get the following errors:

```
template_problem.cpp:12: error: parse error in template argument list
template_problem.cpp:12: error: expected ',' or '...' before '*' token
template_problem.cpp:12: error: ISO C++ forbids declaration of 'T2' with no type
template_problem.cpp:12: error: template-id 'Bar<<expression error > >' in declara
template_problem.cpp:12: error: prototype for 'void Foo<T>::Bar(int)' does not ma
template_problem.cpp:4: error: candidates are: template<class T template<class T
template_problem.cpp:7: error:                 void Foo<T>::Bar(const T*)
template_problem.cpp:12: error: template definition of non-template 'void Foo<T>::
```

and I've also tried every other syntax variation I can think of for the template version of `Bar`.

`c++` `templates`

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edited May 23, 2017 at 12:10
🔷 Community Bot
1 ● 1

asked Jul 9, 2012 at 12:15
Paul R
201k ● 34 ● 370 ● 537

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```
template<typename T>
template<typename T2>
void Foo<T>::Bar(const T2* t)
{
    // stop tearing your hair out
}
```

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answered Jul 9, 2012 at 12:20
jrok
52.4k ● 9 ● 104 ● 139

3 Can the lines `template<typename T>` and `template<typename T2>` change places? – hkBattousai Jan 17, 2016 at 9:31

3 @hkBattousai If you change `Foo<T>` to `Foo<T2>`, then yes. The order matters. – jrok Jan 17, 2016 at 13:19 ✎

   Why is it necessary to define a class template function as void Foo<T>::Bar() instead of void Foo::Bar()? What's the reason for adding <T> to the Foo(class name)? Why not the plain Foo(class name)? – Rahul May 30, 2018 at 10:52

   @Rahul because it's a template class and requires a template argument. – Qwerty01 Jun 27, 2018 at 16:08 ✎

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```
template <typename T>
template <typename T2>
void Foo<T>::Bar(const T2 * t) {
    // ... this is where I'm tearing my hair out ...
}
```

Ugly isn't it.

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edited Feb 20, 2019 at 23:48
Catskul
16.3k ● 13 ● 76 ● 112

answered Jul 9, 2012 at 12:23
111111
15k ● 6 ● 41 ● 58

6 Yes - it's amazing how many different and seemingly logical syntax variations you can try without stumbling on the correct one. – Paul R Jul 9, 2012 at 12:24

4 @PaulR to be honest for templates it becomes such a tangle that I write the implementations right in the class definition. I honestly believe that is easy to read then all separated out with the template junk added to it. – 111111 Jul 9, 2012 at 12:26

2 Yes - I'm beginning to see the attraction of doing it that way. – Paul R Jul 9, 2012 at 12:37

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