

Re: Virtual function and multiple inheritance

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- *From:* "Bo Persson" <bop@xxxxxx>
 - *Date:* Sat, 2 Feb 2008 12:32:09 +0100
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George wrote:

Thanks Alf,

Your reply is great! I think you mean,

1.

containing two `__vfptr` is for the simple reason to maintain the same memory structure as sub-object;

It could be used in place of either a Foo or a Goo object, for example when passed by reference to a function. To do this, it probably needs two different vtables, at least in this implementation.

Note that the language as such doesn't say anything about how virtual functions are to be implemented, just how they should behave.

2.

`__vfptr` for Foo contains Derived overridden virtual methods for Foo, not Foo itself's virtual methods implementation, and `__vfptr` for Goo contains Derived overridden virtual methods for Goo, not Goo itself's virtual methods implementation. Right?

I'll make a guess that these two vtables are specific for Derived. If you were to define two separate objects of the Foo and Goo classes, I bet there will be one or two separate vtables for those. As Alf suggests, the implementation just might share (or overlay) the vtables for Foo and Derived, especially if Derived is the only class deriving from Foo.

As the Foo and Goo subobjects cannot possibly have the same offset from the start of Derived, one vtable might be shared, but not both.

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That's likely why you found two vtable pointers in Derived.

3.

Where is class Derived's own `__vfptr` (points to its own virtual methods)? From debugging, I can not find it out by adding a new method in Derived which is not in Foo and Goo.

I believe you have actually found Derived's `__vfptr`. As there aren't any separate Foo or Goo objects, their own vtable pointers need not be present in the resulting executable. Or perhaps one of them is?

Bo Persson

regards,
George

"Alf P. Steinbach" wrote:

* George "the mysterious BOT":