Super Methods

Calling up the Evolutionary Tree

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January 27, 2005

This work was performed under the auspices of the U.S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under Contract No. W-7405-Eng-48.
UCRL-PRES-209186

What is a Super Method?

- Look! Up in the sky! It's a bird! It's a ….
- OOP languages provide a way of calling overwritten super class methods.
- 'Super Class Method' = 'Super Method.'
- In Java, the syntax is:
  - super.foo()

Motivation

- Super methods allow code reuse.
- Provides a way of accessing parent data.
- It was sitting around half completed.

How is it done?

- Supers may only be called from the Impls.
- Every binding is different.
- The IOR already has super tables and data.
- An IOR function gives us the vtable for just the first super class.
- We call on that vtable with the current object.
- We only generate OVERWRITTEN methods.

How is it done? (example)

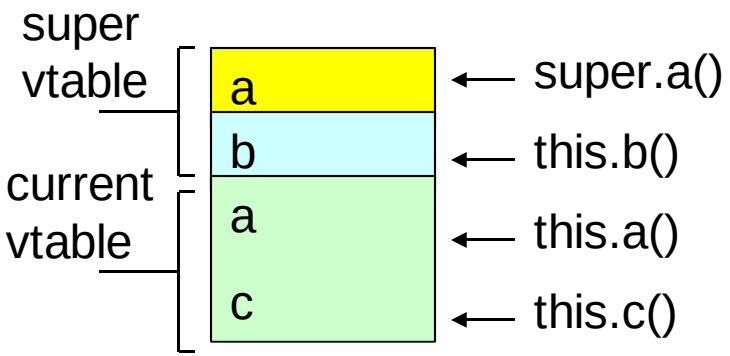
Class C inherits from B, which inherits from A.

A defines method a, B defines method b.

C defines method c, and overwrites method a.

Class Hierarchy

Virtual Function Table



How to call supers in C

- If we want to call super.a() from C_Impl.c (as shown in our example) we would:
- Prefix ‘super_’ to the super method:

```
char* impl_C_a(C self) {
/* DO-NOT-DELETE splicer.begin(C.a) */
  char* ret = super_a(self);
  return ret;
/* DO-NOT-DELETE splicer.end(C.a) */
```

How to call supers in Cxx/UCxx

- Prefix ‘super.’ to the super method:

```
::std::string C_impl::a () throw () {
  // DO-NOT-DELETE splicer.begin(C.a)
  ::std::string ret = super.a();
  return ret;
  // DO-NOT-DELETE splicer.end(C.a)
}
```

How to call supers in Fortran 77

Fully qualify the super method with: class_super_name_f()

```
 subroutine C_a_fi(self, retval)
       implicit none
C       in C self
       integer*8 self
C       out string retval
       character*(*) retval

C       DO-NOT-DELETE splicer.begin(C.a)
       call C_super_a_f(self, retval)
C       DO-NOT-DELETE splicer.end(C.a)
end
```

How to call supers in Fortran 90

- Prefix ‘super_’ to the super method:

```
recursive subroutine C_a_mi(self, retval)
  use C
  use C_impl
  implicit none
  type(C_t) :: self ! in
  character (len=*) :: retval ! out

! DO-NOT-DELETE splicer.begin(C.a)
  call super_a(self, retval)
! DO-NOT-DELETE splicer.end(C.a)
end subroutine C_a_mi
```

How to call supers in Java

- Prefix ‘super_’ to the super method:

```
public java.lang.String a_Impl ()
 {
   // DO-NOT-DELETE splicer.begin(C.a)
   java.lang.String ret = super_a();
   return ret;
   // DO-NOT-DELETE splicer.end(C.a)
 }
```

Conclusion

- Supers should ease working with Babel when Impls contain data.
- Make Babel more OOP!
- Unfortunately, Python does not yet work. (delayed)