Multiple Inheritance

Carl Friedrich Bolz, David Schneider
Dynamische Programmiersprachen
Heinrich-Heine-Universität Düsseldorf
Sommersemester 2010

Multiple Inheritance

- single inheritance has limits
- sometimes it would be good to say an object is one of several things
- solution: multiple inheritance

Changes

- every class inherits from n classes
- lookup mechanism needs to look in all bases/parents
- more careful algorithm needed!

Simple Use Cases

- interfaces
- mixins (base classes without state)

Superclass Linearization

- also known as *class precedence list* or *method resolution order* (mro)
- how to do lookup?
- for every class, create a list that describes in which order method lookup is performed
- interesting criteria:
  - *acceptability*
  - *observation of local precedence order*
  - *monotonicity*

Acceptability

only take the bit of the class hierarchy starting from the class for which to compute the mro into account
in other words: mro must be a local property

Observation of Local Precedence Order

the baseclasses of a class must appear in the right order in its mro

Monotonicity

the elements of an mro of a base class must be in the same order in the mro of a subclass

How to compute the linearization

- *compute mro from mro of bases*
- *merge those mros to ensure monotonicity and local precedence order*