

An Analysis of Modelica

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What is Modelica

- A language for modelling and simulating complex physical systems
 - System = anything we can run an experiment on
 - Why no prototypes?
 - Too dangerous
 - Too expensive
- Designed for a-causal modelling
- Discrete and continuous time models

Related languages

- Predecessors
 - Dymola, Omola, NMF, ...
- Simscape by Mathworks
 - Different compilation process
- EcosimPro developed for the ESA

Overview

- Object oriented
- Based on mathematical models

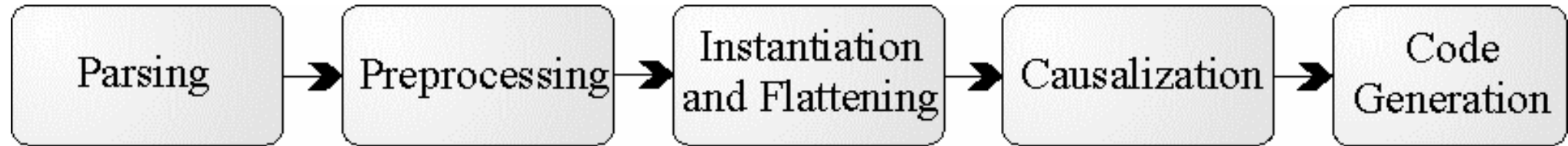
Overview: Object Oriented

- Mainly structural
 - not used for dynamic message parsing
- Classes
 - Everything is a class
 - Restricted classes
- Inheritance
 - multiple inheritance
 - interface definition
- Information hiding
 - only protected access specifier

Overview: Mathematical models

- Different variable types
 - Across (default)
 - Trough (Kirchoff's law)
- Equations
 - Represent relations between variables
 - No assignment statement! (this can be done in algorithm clauses)
 - Control structures

Compilation process



Demo with Open Modelica