

GOOP vs. LVOOP

Object oriented programming
in LabVIEW 8.20

Jeffrey Habets
NI Certified LabVIEW Architect
www.vi-tech.nl

Contents

- LabVIEW Object Oriented Programming
 - Usage of LV classes, by-value
 - Manipulation of object data
 - Inheritance
- GOOP
 - Potential of By-reference
 - Tools

Short about Object Orientation

- It is a way of structuring software
 - Building block: Classes instead of VIs
- A class:
 - "A cluster + VIs"
 - Grouping VIs with a common responsibility

Why Object Orientation?

- Easier to maintain
- Easier to extend
- Testability
- The benefits increase when the system grows

Is LabVIEW Object Oriented now?

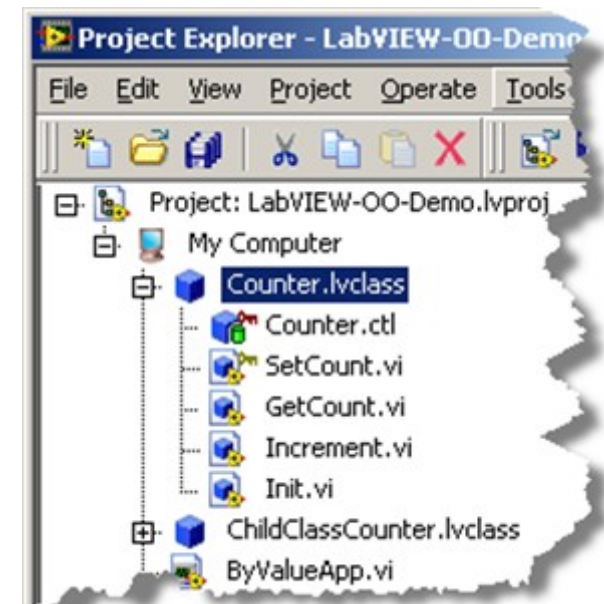
What do we have?

- Classes
- VIs "methods" of the class
- Private data – defined in a type def
- Inheritance between classes

Answer: **YES!**

DEMO: A class in LabVIEW 8.20

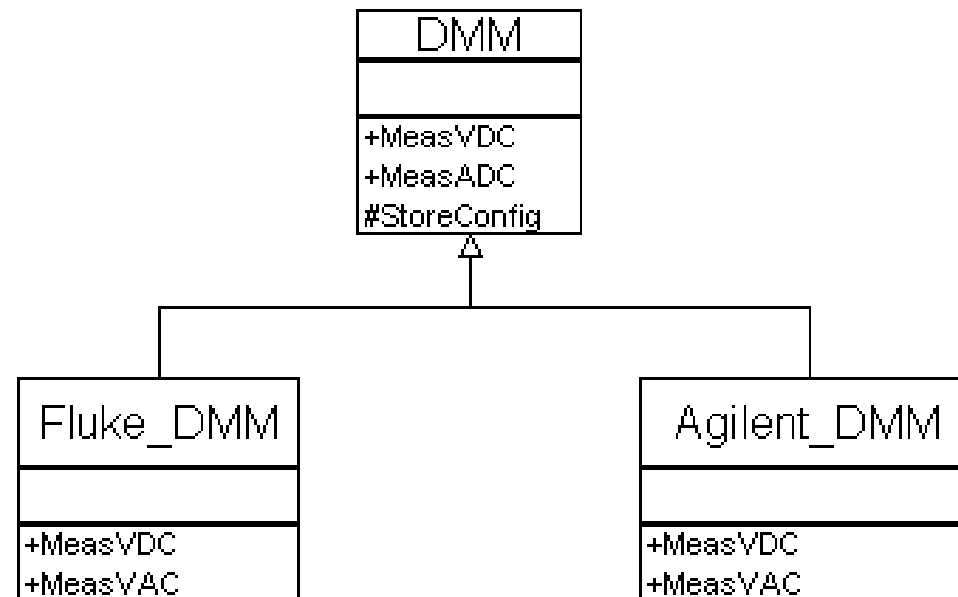
1. Create and explore a class
2. Class: Counter and the By ValueApp.vi
3. Class constant, read-write data
4. Class icon template



Inheritance

Creates replacability between classes which:

- Inherit from the same ancestor
- Have the same public VIs

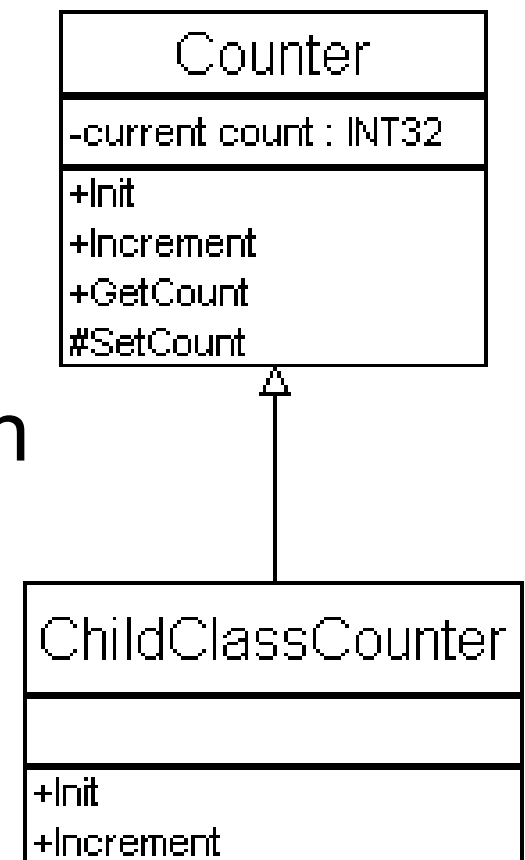


DEMO: Inheritance in LabVIEW

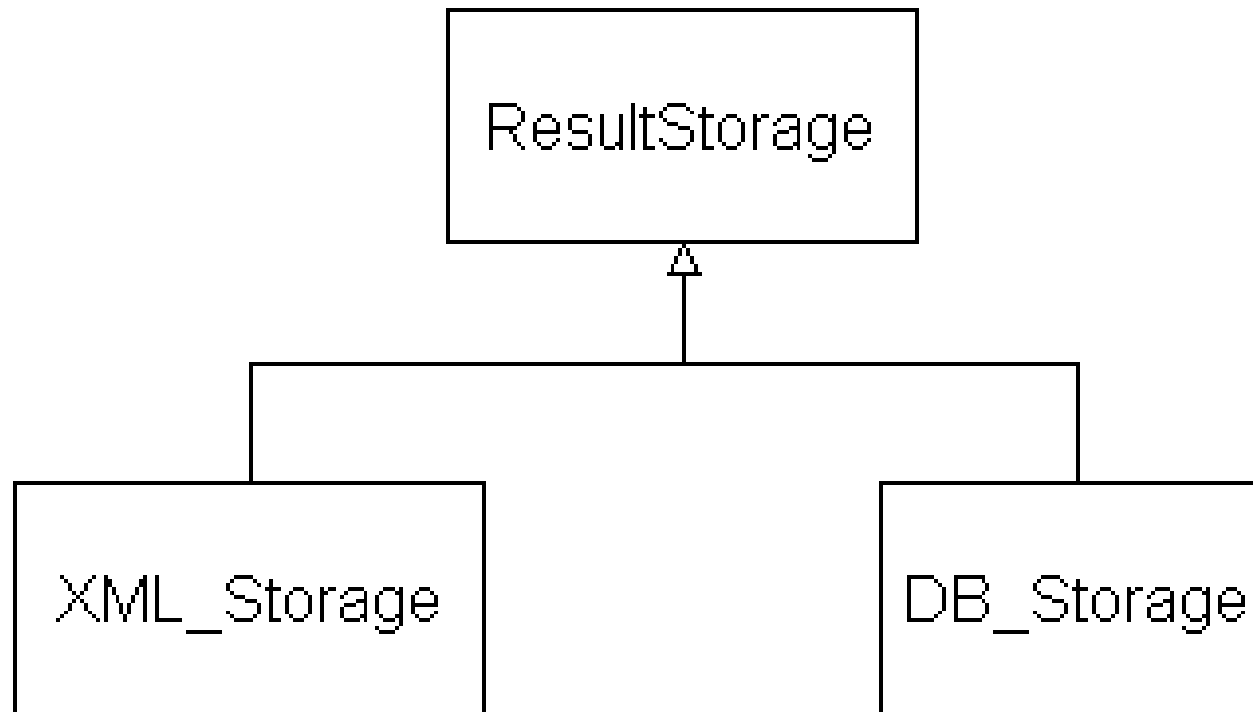
Init and Increment are “magical”
Dynamic dispatch VIs:

- Same VI name on each class
- Different block diagrams
- LabVIEW chooses which VI to run

DEMO: InheritanceApp.vi



Another example



Extension - GOOP

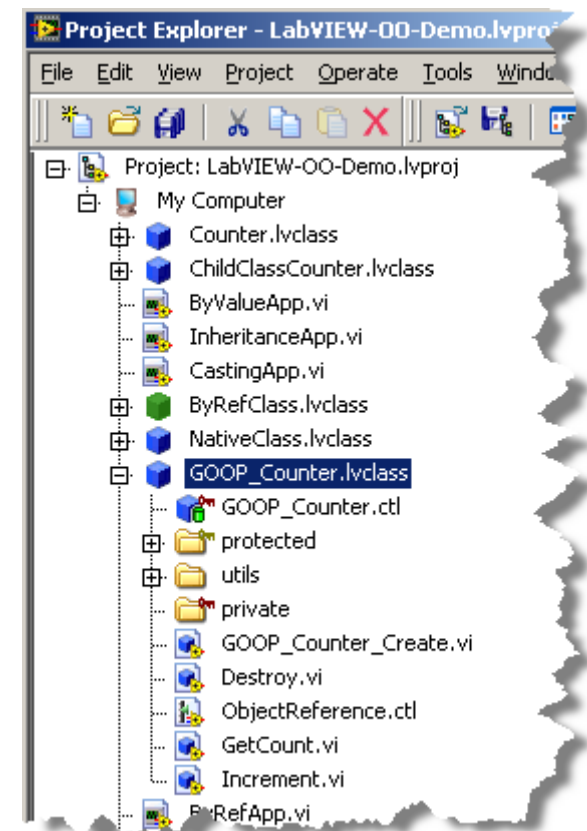
LabVIEW class + Reference

Instead of: Object in the wire
→ Reference in the wire

Gives control of object creation and destruction

DEMO: GOOP

- ByRefApp.vi
- Create a GOOP class



summary

- GOOP
 - Modeling of system resources / hardware
 - Tooling!
- LVOOP
 - Parallel access to data (no semaphores)
 - Dataflow (replace clusters)
 - Native dynamic dispatching

Resources

LabVIEW Object-Oriented Programming FAQ
<http://zone.ni.com/devzone/cda/tut/p/id/3573>

Expressionflow – Blog by Tomi Maila
<http://expressionflow.com/>

GOOP on LAVA
<http://forums.lavag.org/GOOP-f68.html>

Endevo – Makers of Goop Development Suite and UML Modeller
<http://www.endevo.se/content/blogcategory/18/103/lang,en/>

LabVIEW Examples – Fundamentals → Object-Oriented

VI Technologies
<http://www.vi-tech.nl/>

