Adapting Object-oriented Programming Concepts in Classical IEC 61131-3 (SA/MA)

Lehrstuhl für Automatisierung und Informationssysteme
Technische Universität München
Prof. Dr.-Ing. Birgit Vogel-Heuser

Task Description:

Object orientation is a well-established programming paradigm that eases the development by better matching the programmers' intuitive way of describing technical systems. Additionally, it allows software constructs that are simply not possible in traditional programming, e.g., exchanging units that "inherit" from the same base (see figure on the right).

However, developers of automation systems must often use programming languages that do not include object orientation, thus denying them its benefits. The goal of this thesis is to analyze the object-oriented syntax of IEC 61131-3, identify useful object orientation-based programming patterns, and then propose software constructs that achieve the same purpose without object orientation. The proposed concept will be evaluated by translating a state-of-the-art PLC reference implementation to classical IEC 61131-3.
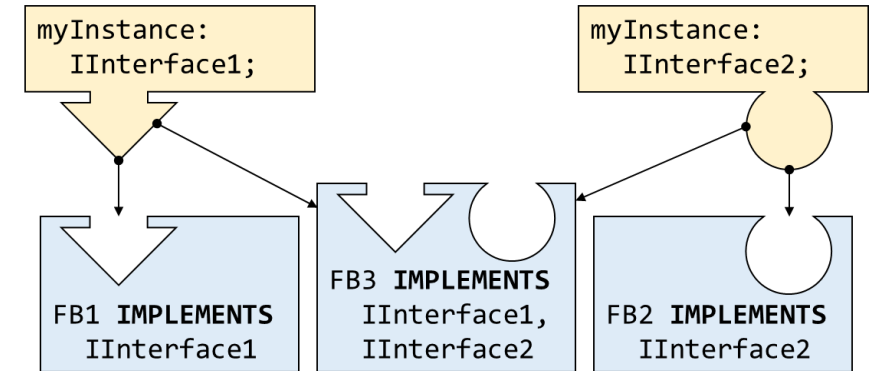
Preliminaries:

- Reliable, independent work ethic
- Experience in object-oriented programming (OO IEC 61131-3, C++, C#, Java, etc.)
- Experience in classical IEC 61131-3 is beneficial

Jan Wilch

Tel.:   +49 (0) 89 / 289 16431
E-Mail: jan.wilch@tum.de