Rhapsody Demo I: Class Diagrams

Visibility

Intuition

Context, OCL with Visibility

What is Visibility Good For?

Associations

Overview & Plan

(Temporarily)

Extend Signature

From Diagrams to Signatures

What if Things are Missing?

Class Diagram Semantics Cont'd

Semantical Relevance

• The semantics (or meaning) of an extended object system signature $S$ wrt. a structure $D$ is the set of system states $\mathcal{S}_D$.

• The semantics (or meaning) of an extended object system signature $S$ is the set of sets of system states wrt. some structure of $S$, i.e. the set $\{\mathcal{S}_D | D \text{ is structure of } S\}$.

Which of the following aspects is semantically relevant, i.e. does contribute to the constitution of system states?

- A class
  - has a set of stereotypes,
  - has a name,
  - belongs to a package,
  - can be abstract,
  - can be active,
  - has a set of attributes,
  - has a set of operations (later).

Each attribute has

- a visibility,
- a name, a type,
- a multiplicity, an order,
- an initial value, and
- a set of properties, such as readOnly, ordered, etc.

What About The Rest?

- Classes:
  - Stereotypes: Lecture 6
  - Active: not represented in $\sigma$. Later: relevant for behaviour, i.e., how system states evolve over time.

- Attributes:
  - Initial value expression: not represented in $\sigma$. Later: provides an initial value as effect of "creation action".
  - Visibility: not represented in $\sigma$. Later: viewed as additional typing information for well-formedness of OCL expressions and actions.

- Properties:
  - such as readOnly, ordered,
  - composite (Deprecated in the standard.)
  - readOnly — can be treated similar to visibility.
  - ordered — not considered in our UML fragment (→ sets vs. sequences).
  - composite — cf. lecture on associations.
visibility. By example:

Visibility is '• not '× on the class of the object which "tries to read out the value ".

Guest: should we take visibility into account yes / no, and check well-typedness by the new / old rules. Just decide: we need not apply respect visibility.

We consider visibility expressions. Apply the new visibility rules.

Consider the expression $x + 1$. It is syntactically correct, but there is no guarantee that it is well-typed since $x$ is a protected variable.

Recall that visibility is a matter of well-typedness only.

Example:

The domain is the lab $I = \{ 0, \emptyset \}$. The operation $\times$ must be defined on this domain and on the domain of the operation $\oplus$.
Klasse 1

Beziehungsname

Nutzer

* {ordered}

Multiplizität

Klasse 1

Abhängige

Teil

Existenz-

•

Unab-

interpretation

Klasse 3.

association ends (each with multiplicity, visibility, etc.)

(iv) Change

•

qualifizierte Assoziation

Teil (instances of associations)

Existenz-

•

Unab-

interpretation

Klasse 1

Teil (instances of classes)

σ objects

•

system states

(iii) Define

klasse

accordingly.

r

b

c

Klasse 2

\( \lambda \)

= \( \emptyset \}

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Assoziation

Attributierte Assoziation

"belong" only for navigability is the

Multiplicity abbreviations

i ∈ N, M (µ, µ∗ | T, T)

Association Ends

... 1

Definition.


Temporary (Lecture 7 – 9) Extended Signature

– 7 – 2016-11-17 – Sassocsyn –

Figure 7.20 - Combining line path graphics to represent the information from the picture.

(use with care!)

So, What Do We (Have to) Cover?

More Association Syntax

