Modelling Behaviour
`PA14[13]5`

Mikael Svahnberg[1]
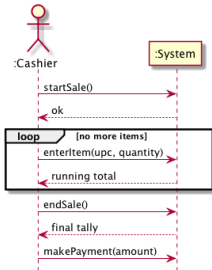
2016-03-22

[1]Mikael.Svahnberg@bth.se

Contracts

Summary

in real life

- Black Box Description
  - Use Cases
  - System Sequence Diagrams
- White Box (first steps)
  - Contracts

Stage-and-Curtain model

- Visible: Current state
  close curtains
  <things happen>
  open curtains
- Visible: new state
  The changes between current and new state are described in a
  Contract

State / System State

- Concepts (Instances of)
- Attributes (Values of)
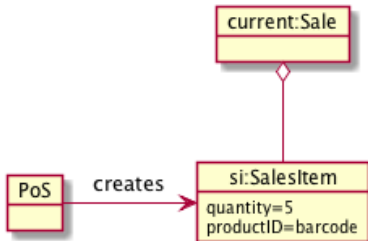- Associations (Links between instances)

Basic Contract Format

- Name
- Responsibles
- Pre-conditions
- Post-conditions

Example

- Name: *EnterItem(barcode, quantity)*
- Responsibilities: *Record sale of an item and add it to the sale. Display item description and price.*
- Preconditions: *Sale is started*
- Postconditions:
  - :SalesItem corresponding to product barcode was created.
  - :SalesItem was associated with the current :Sale
  - :SalesItem.quantity was set to *quantity*

Preconditions

- Assumptions of the state of the system before operation begins
- Not tested in the operation
  - Ensured by the caller (!) [2]

---

[2]Defensive Programming says the exact opposite: if it is a precondition, then `assert` them so that you can fail early.

Postconditions

Nature of postconditions:

- Declarative statements
- Not ordered
- Not actions performed: only state changes

Postcondition categories:

- create or delete an instance
- modification of an attribute
- create or delete an association

Extended Contract Format

- Name: *EnterItem(barcode, quantity)*
- Responsibilities: *Record sale of an item and add it to the sale. Display item description and price.*
- Type: *System*
- Cross-References: *Use case Buy Items, Requirements X, Y, Z*
- Notes: *Monitor speed of database query*
- Exceptions: *If barcode is invalid then indicate error*
- Output: *None*
- Preconditions: *Sale is started*
- Postconditions:
  - :SalesItem corresponding to product barcode was created.
  - :SalesItem was associated with the current :Sale
  - :SalesItem.quantity was set to *quantity*