Sequence Diagrams

Dan Fleck

Coming up: Interaction Diagrams

Interaction Diagrams

- UML Specifies a number of Interaction diagrams to model dynamic aspects of the system
- Model dynamic aspects of the system
  - Messages moving among objects/classes
  - Flow of control among objects
  - Sequences of events

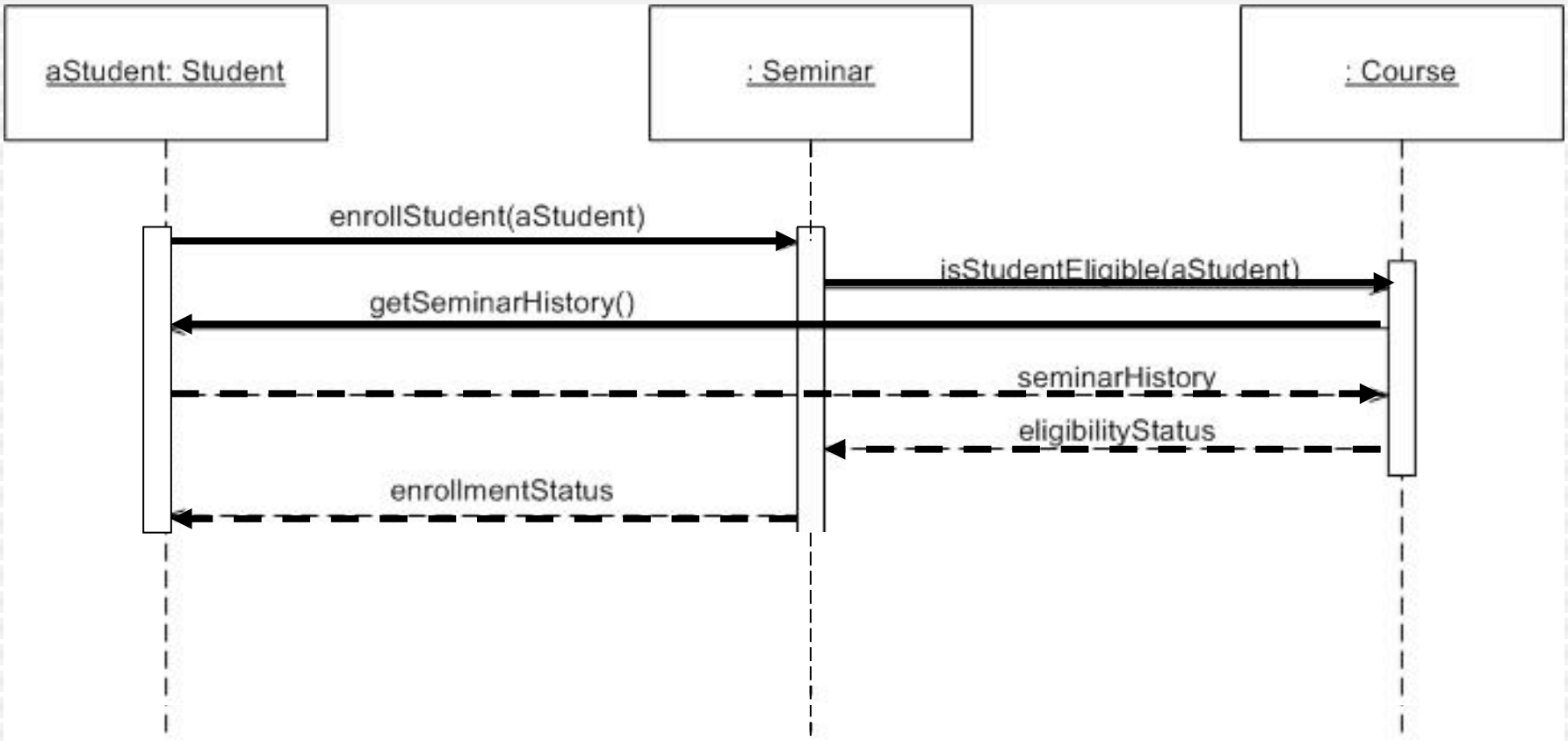
Coming up: Dynamic Diagram Types

Dynamic Diagram Types

- Interaction Diagrams
  - Set of objects or roles and the messages that can be passed among them.
  - Sequence Diagrams - emphasize time ordering
  - Communication Diagrams - emphasize structural ordering
- State Diagrams
  - State machine consisting of states, transitions, events and activities of an object
- Activity Diagrams
  - Emphasize and show flow of control among objects

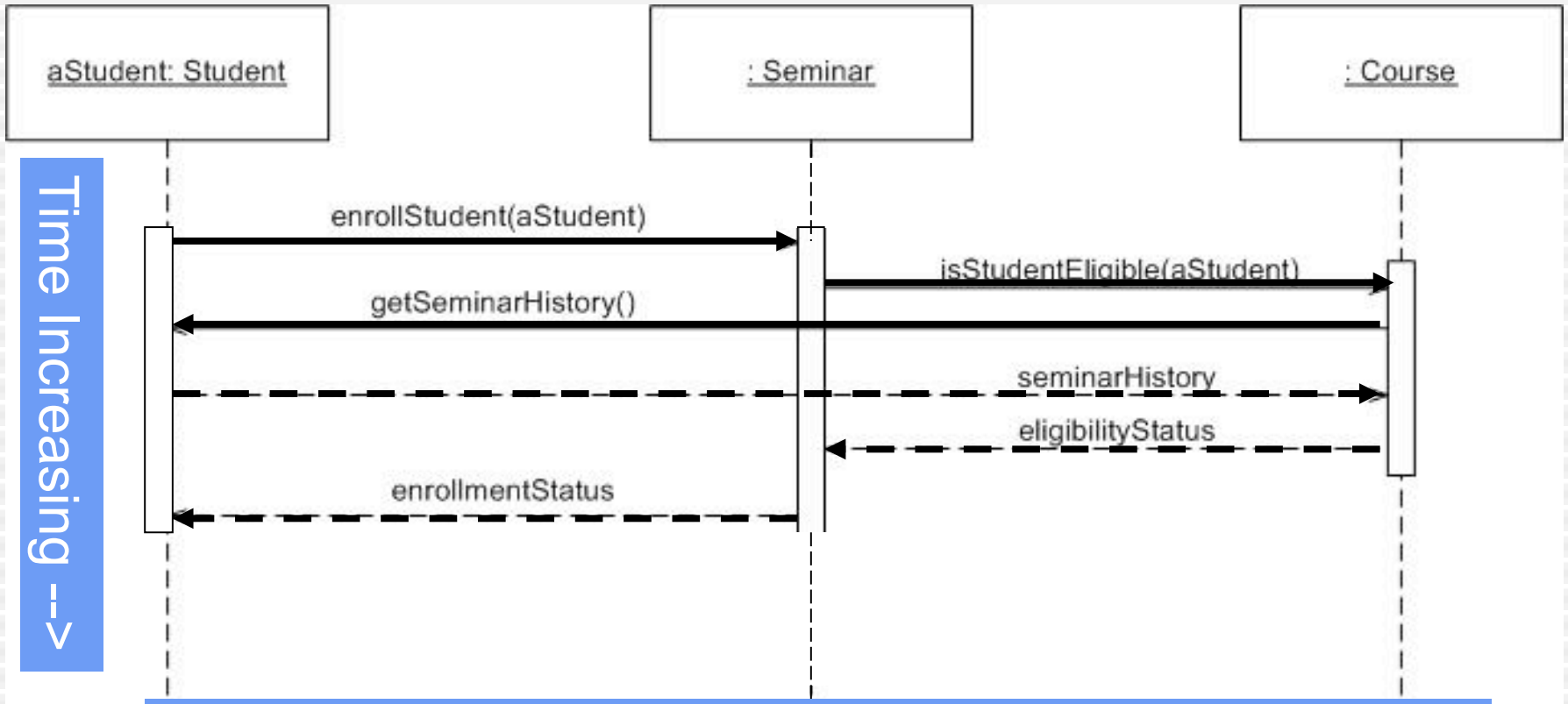
Coming up: Sequence Diagram

Sequence Diagram



Coming up: Components

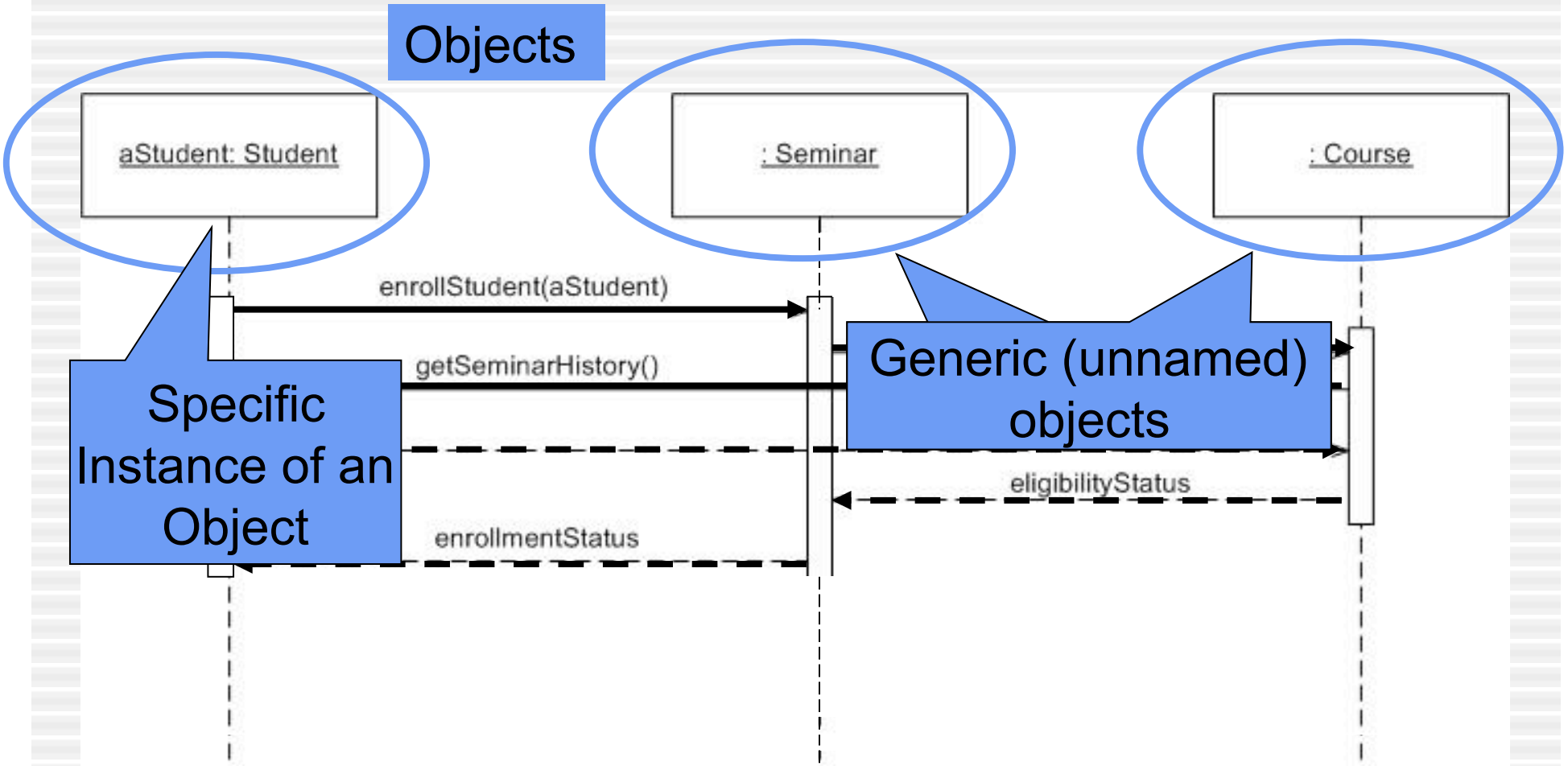
Sequence Diagram



All lines should be horizontal to indicate instantaneous actions.Additionally if ActivityA happens before ActivityB, ActivityA must be above activity A (ABOVE == BEFORE)

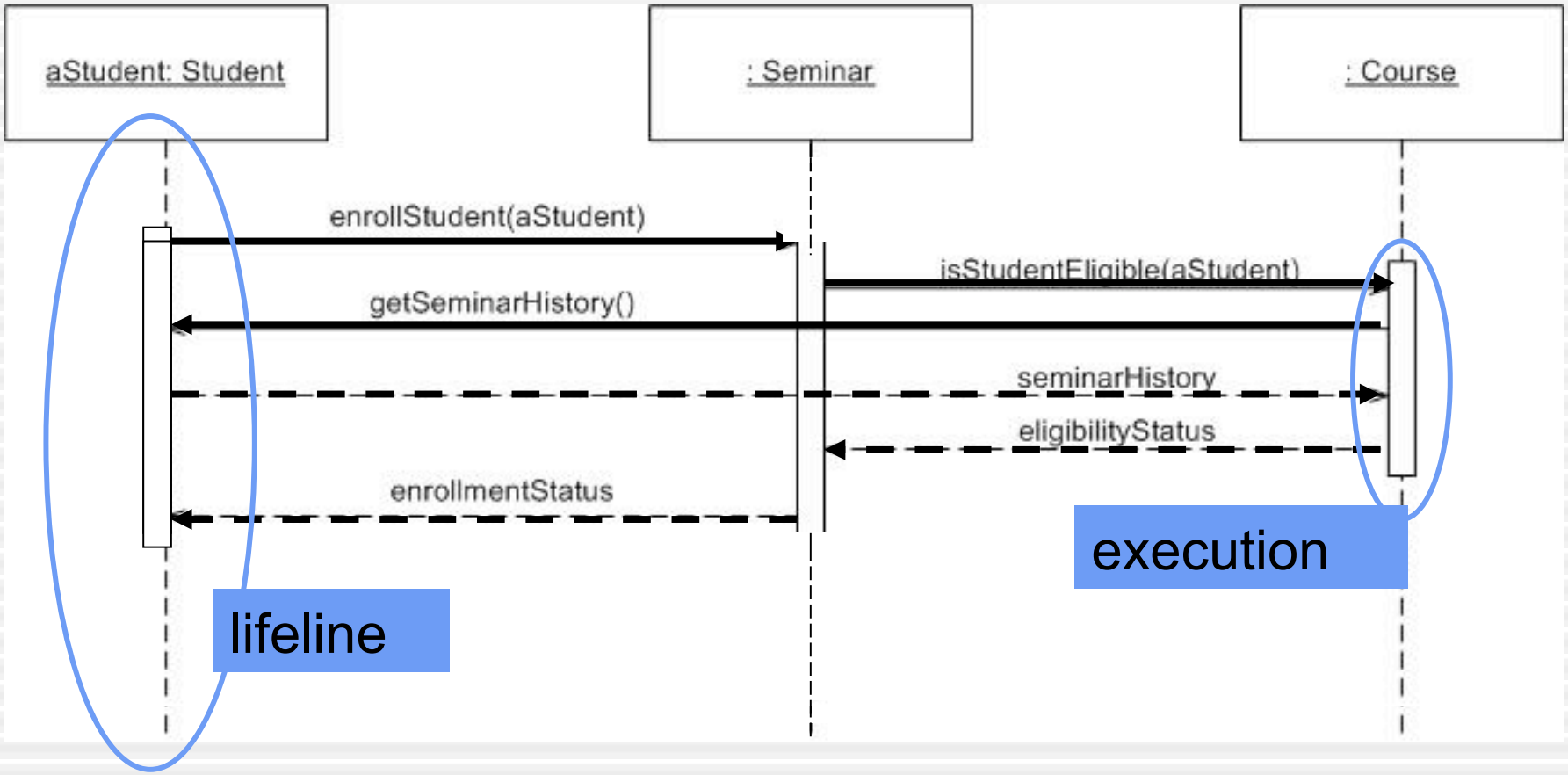
Coming up: Components

Components



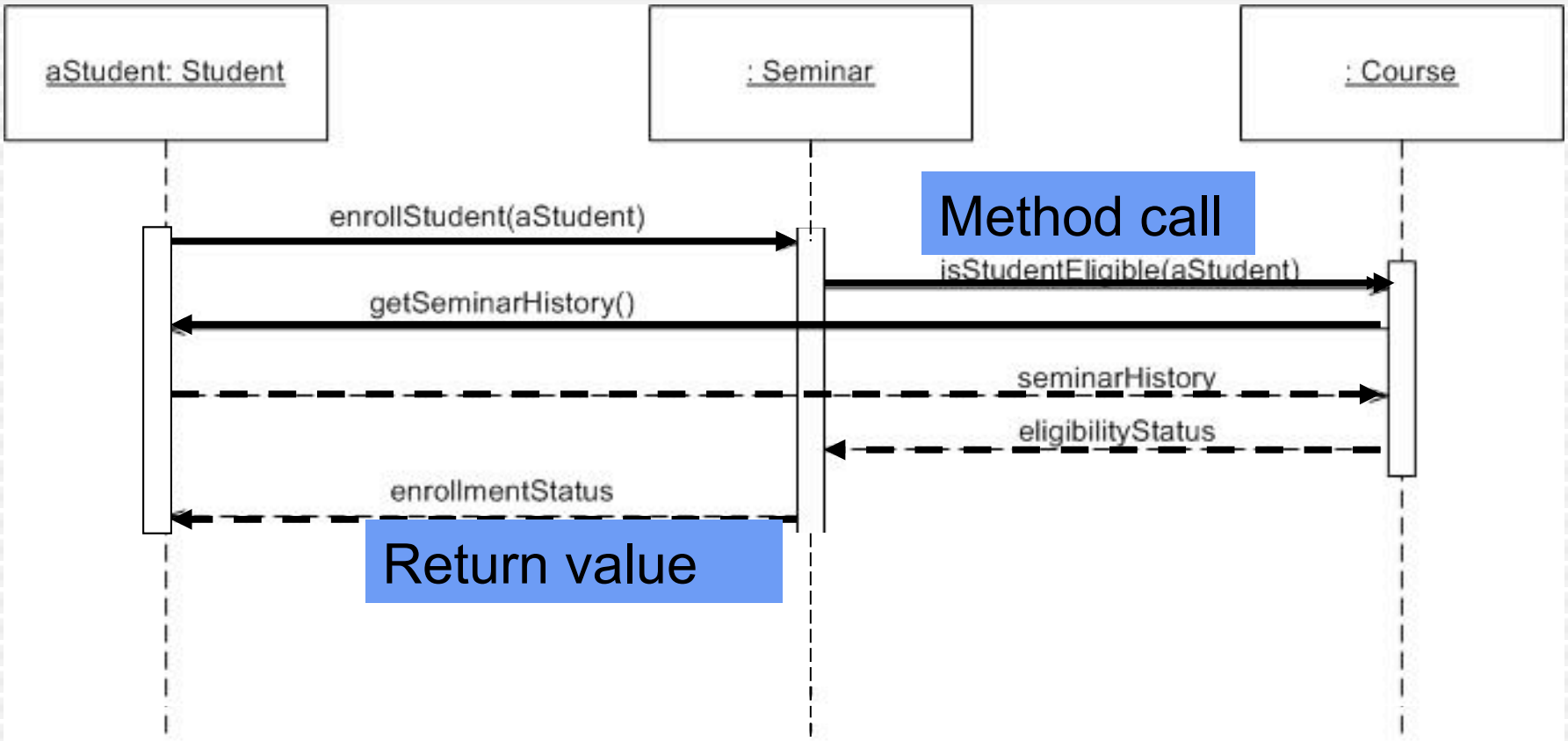
Coming up: Components

Components



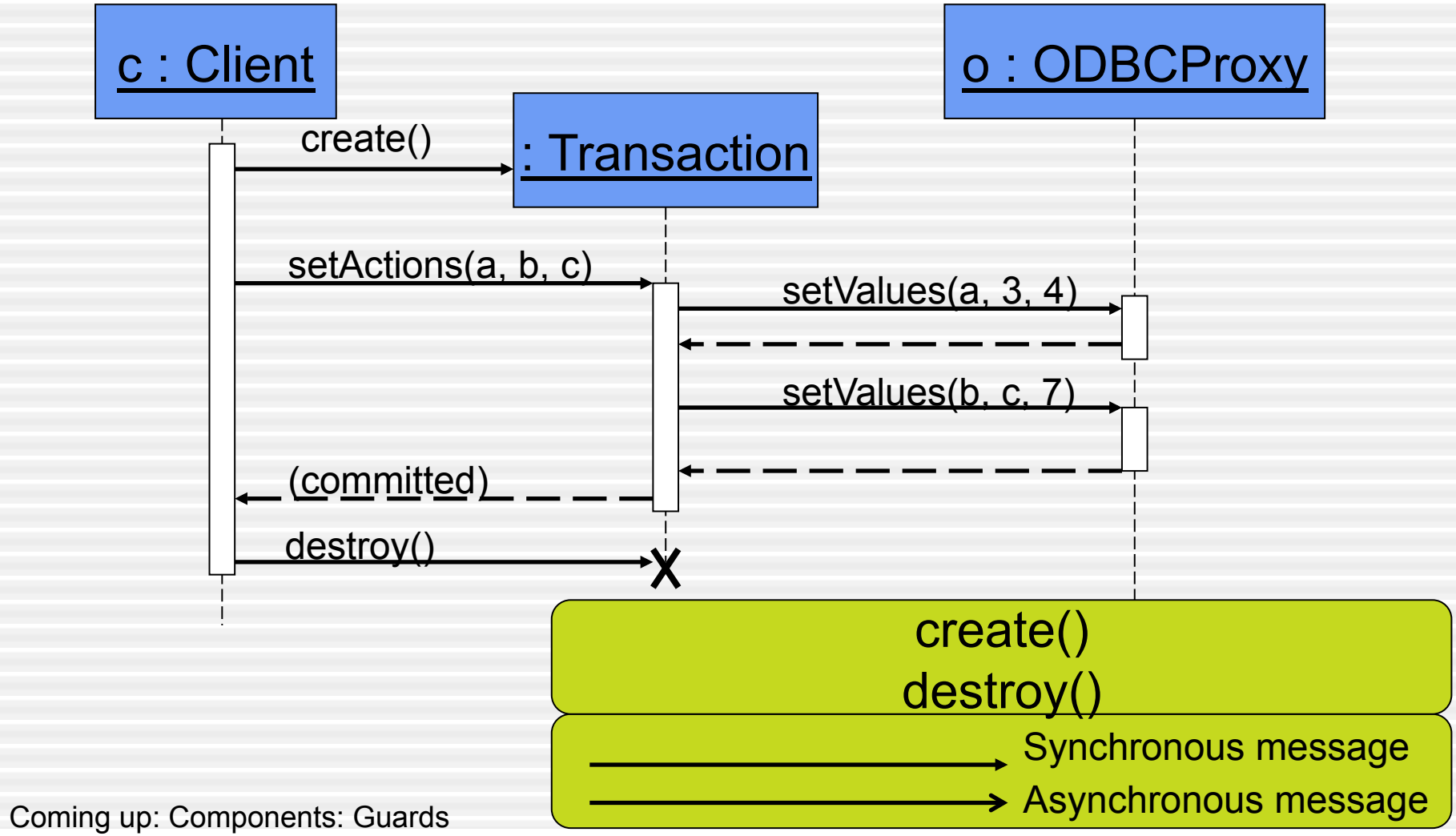
Coming up: Components

Components



Coming up: Components

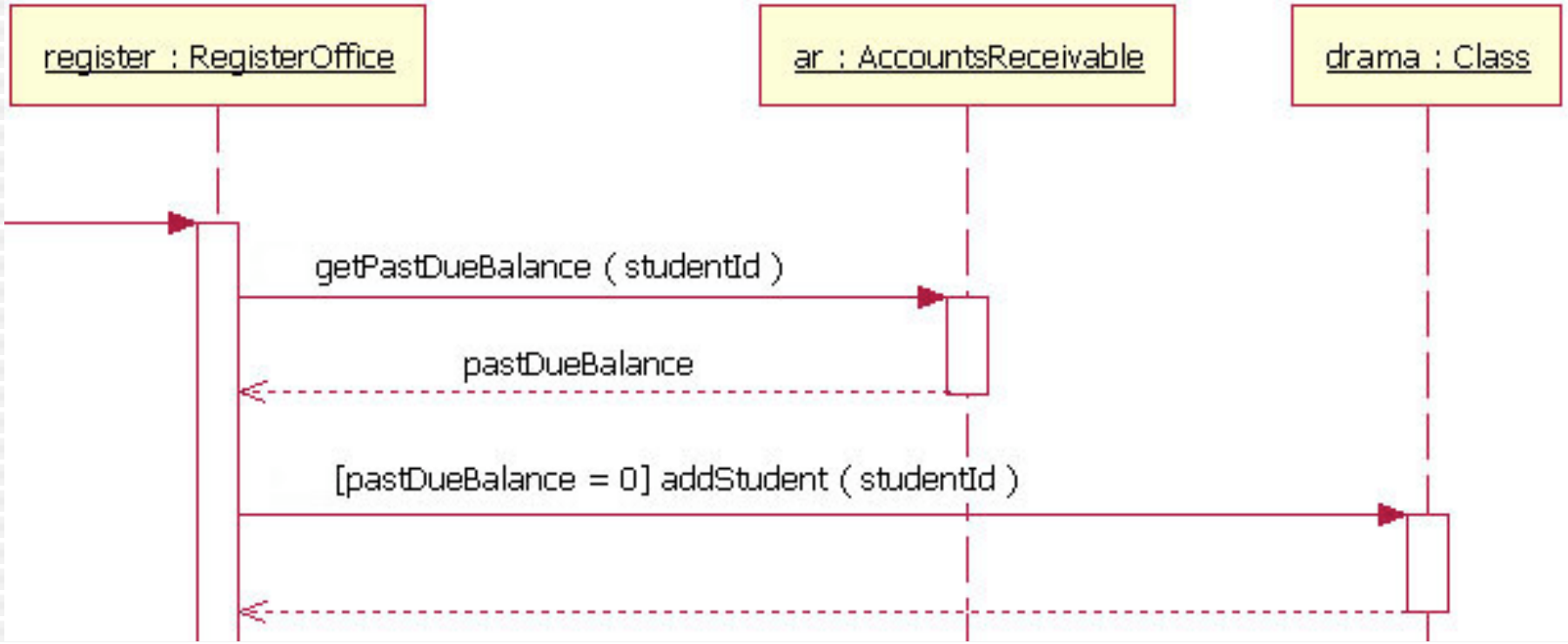
Components



Coming up: Components: Guards

Components: Guards

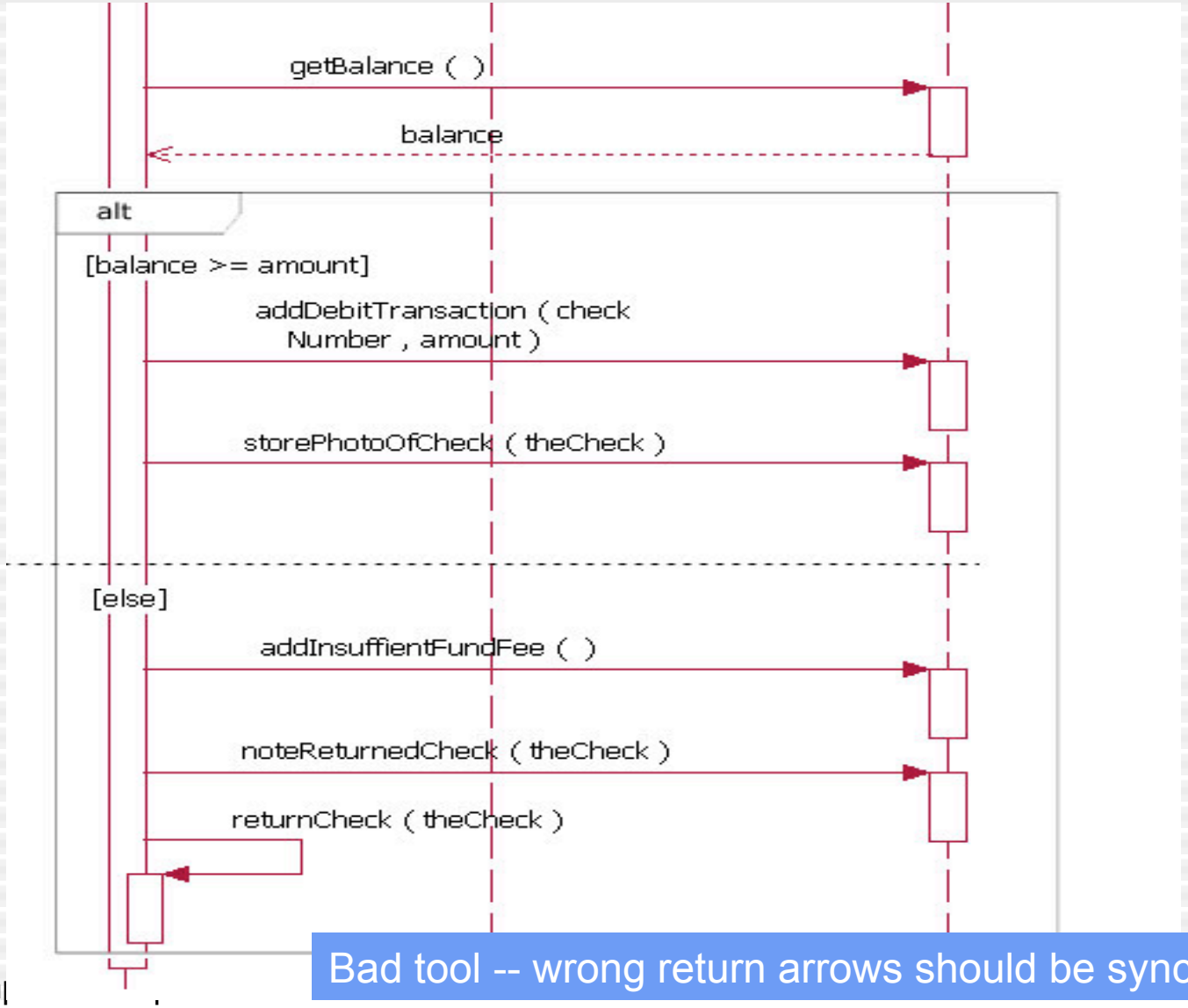
Note: If you cannot see the diagrams, go to the IBM website on the last slide!



Bad tool -- wrong return arrows should be synchronous!

Coming up: Components: alt/else

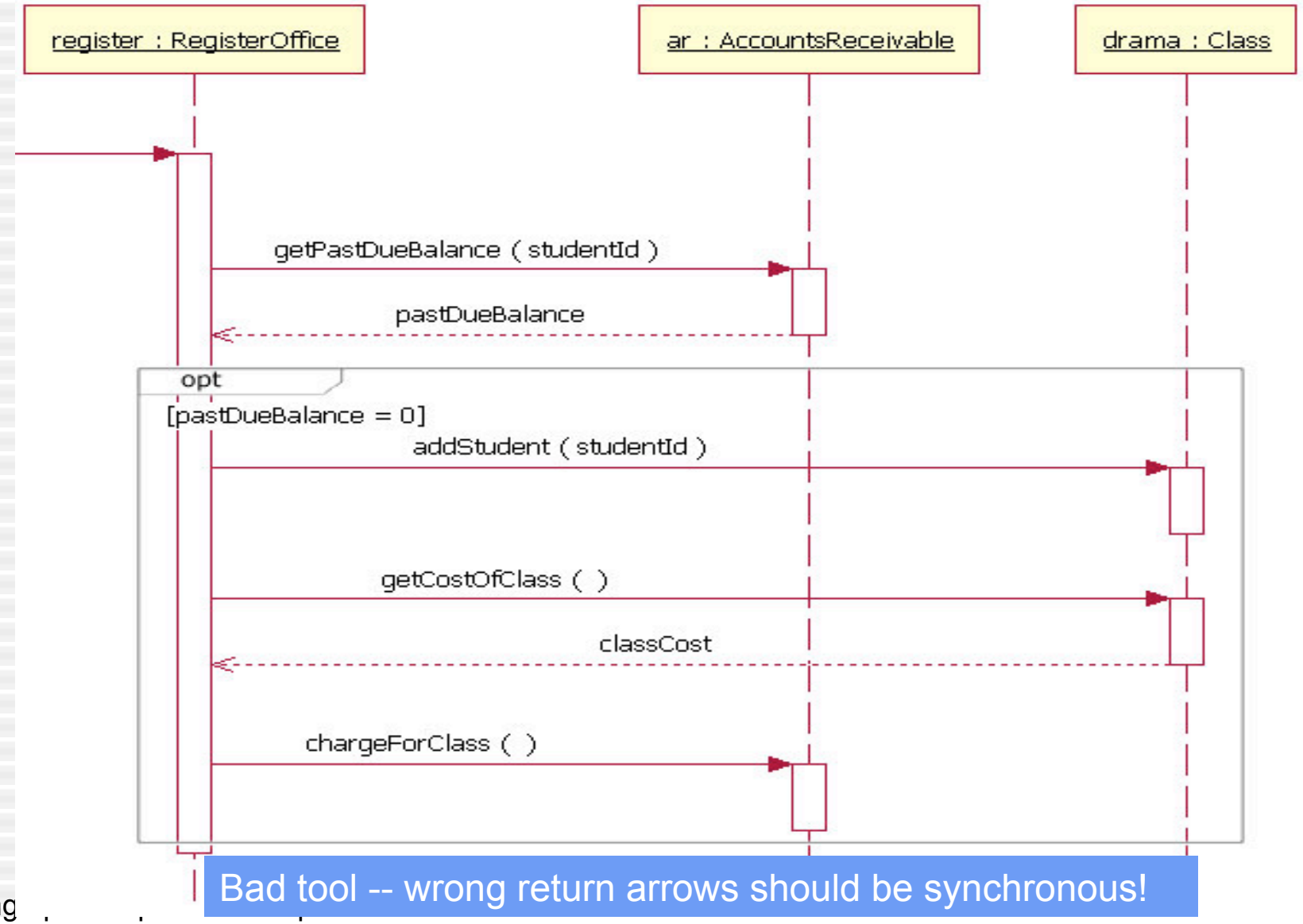
Components: alt/else



Bad tool -- wrong return arrows should be synchronous!

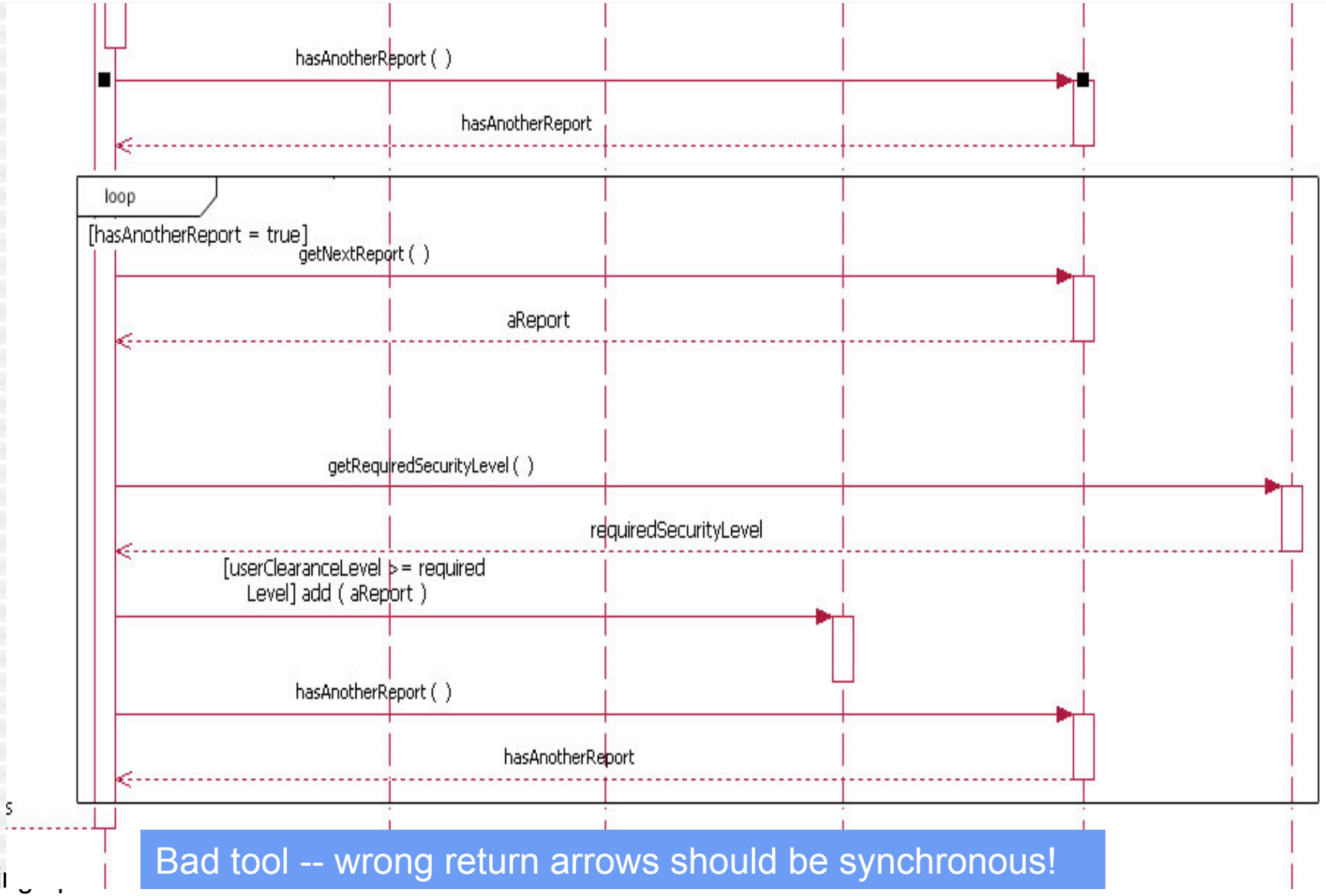
Coming up: Comp

Components: option



Bad tool -- wrong return arrows should be synchronous!

Components: loop



Bad tool -- wrong return arrows should be synchronous!

Comi

In class exercise

- Draw a sequence diagram for:
  - In Beauty and the Beast kitchen items came to life. Draw a sequence diagram for making a peanut butter and jelly sandwich if the following objects are alive: knife, peanut butter jar (and peanut butter), jelly jar (and jelly), bread, plate. I may or may not want the crusts cut off. Don't forget to open and close things like the jars, and put yourself away, cleanup, etc…

In class exercise

- Draw a sequence diagram for:
  - Getting on a flight. Start at home, check in at the counter, go through security, and end up at the gate. (If you have time during the exercise, get yourself to your seat.)
    - You may get searched in security

In class exercise

- Draw a sequence diagram for:
  - Getting money from our old friend the ATM machine
    - Treat each part of the ATM as a class
      - Money dispenser
      - Screen
      - Keypad
      - Bank computer
      - Etc…

Coming up: References

In class exercise

- Draw a sequence diagram for checking out a movie from the Red Box console at your local grocery store

- The main screen has options Rent and Return.
  - From the rent menu, one could browse the movies, select, and them to the cart.
  - To check out one should swipe the credit card and for security input the billing address zip code.
  - Charge the credit card
  - Print a receipt
  - Deliver the movie to the customer

- Return Option (and the movie is late):
  - Customer inserts the movie
  - A confirmation message will be displayed that says whether or not the return was successful.
  - The rental fee is for the movies to be returned the following day before 5 pm. After 5 pm, the credit card will be charged for another day rental. If it is late, a penalty would be assessed

References

- Example diagrams from: http://www.ibm.com/developerworks/rational/library/3101.html

- Also see Booch G.,The Unified Modeling Language User Guide, ch 19.