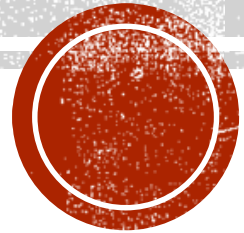
Software Engineering 2
SE1 Introduction (2)



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Requirements Workflow

- List candidate requirements
- Understand system context
- Capture functional requirements
- Capture nonfunctional requirements

Requirements Workflow: List Candidate Requirements

- Prepare a Features list
- Each feature has:
  - Status (proposed, approved, etc)
  - Estimated cost to implement (like man-hours)
  - Priority (critical, important, optional)
  - Level of risk in implementation

Requirements Workflow: Understand System Context

- Domain Model
- Business Model

Requirements Workflow: Capture Functional Requirements

- Use case model
- Each use case describes a way of using the system by a user

Requirements Workflow: Capture Nonfunctional Requirements

- Environmental and implementation constraints
- Platform dependencies
- Quality Attributes (reliability, availability,..)
- Timing constraints

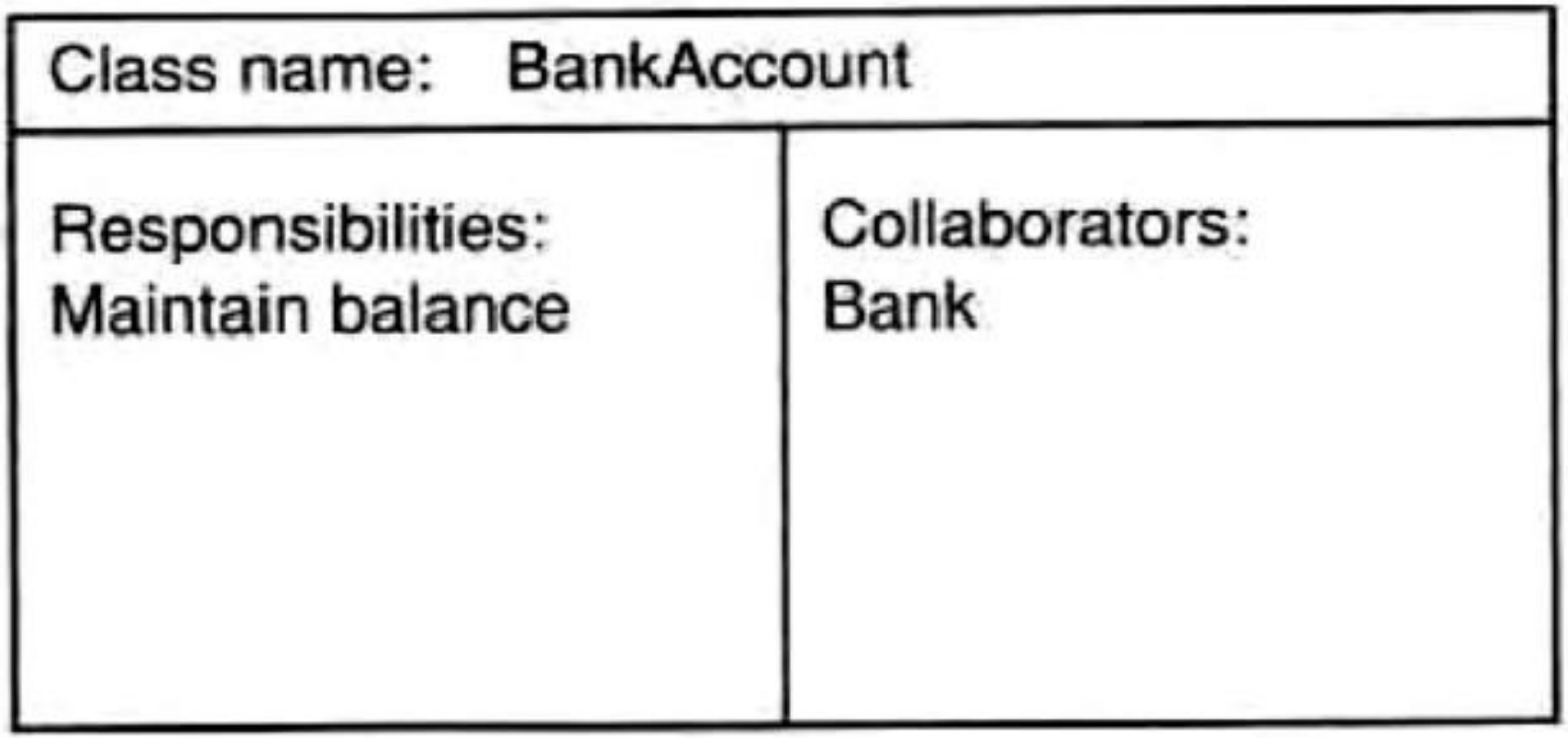
Analysis Workflow

- The aim: produce the Analysis Model
- The Analysis Model defines and models:
  - Analysis classes
  - Use case realizations

Analysis Classes

- Analysis classes represent a crisp, well-defined abstraction in the problem domain.
- Analysis classes include
  - a set of high-level candidate attributes
  - a set of high-level operations

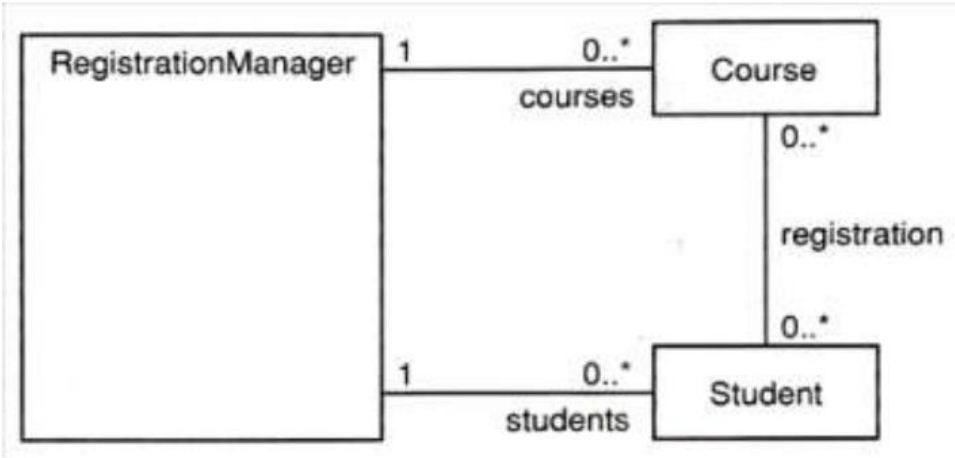
CRC Analysis

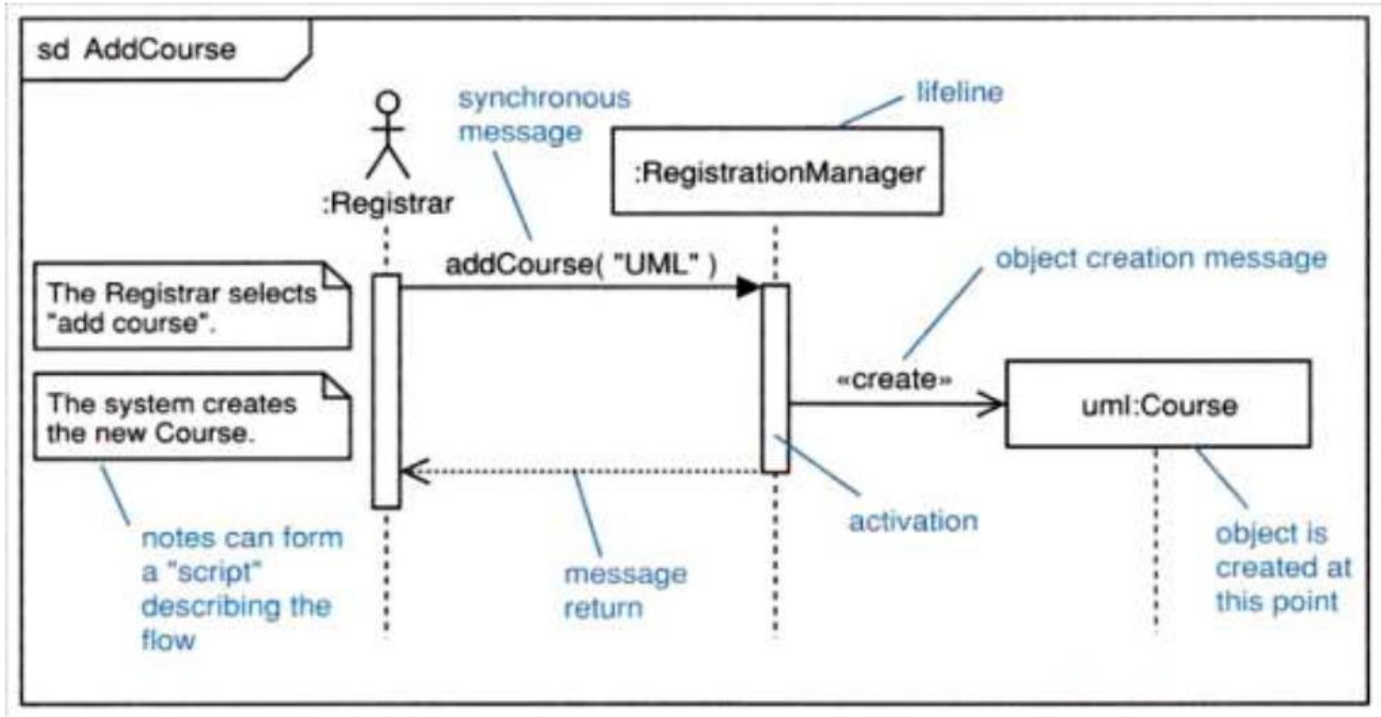


Use Case Realizations

- Use case realizations show how instances of analysis classes interact to realize the functional requirements specified by a use case.
- Each use case realization realizes exactly one use case.

Use case: AddCourse
ID: 8
Brief description: Add details of a new course to the system.
Primary actors: Registrar
Secondary actors: None.
Preconditions: 1. The Registrar has logged on to the system.
Main flow: 1. The Registrar selects "add course". 2. The Registrar enters the name of the new course. 3. The system creates the new course.
Postconditions: 1. A new course has been added to the system.
Alternative flows: CourseAlreadyExists





Design Workflow

- The design workflow is about determining how the functionality specified in the analysis model will be implemented.

Design Workflow

- Architectural Design
- Design a Use Case
- Design a Class
- Design a Subsystem

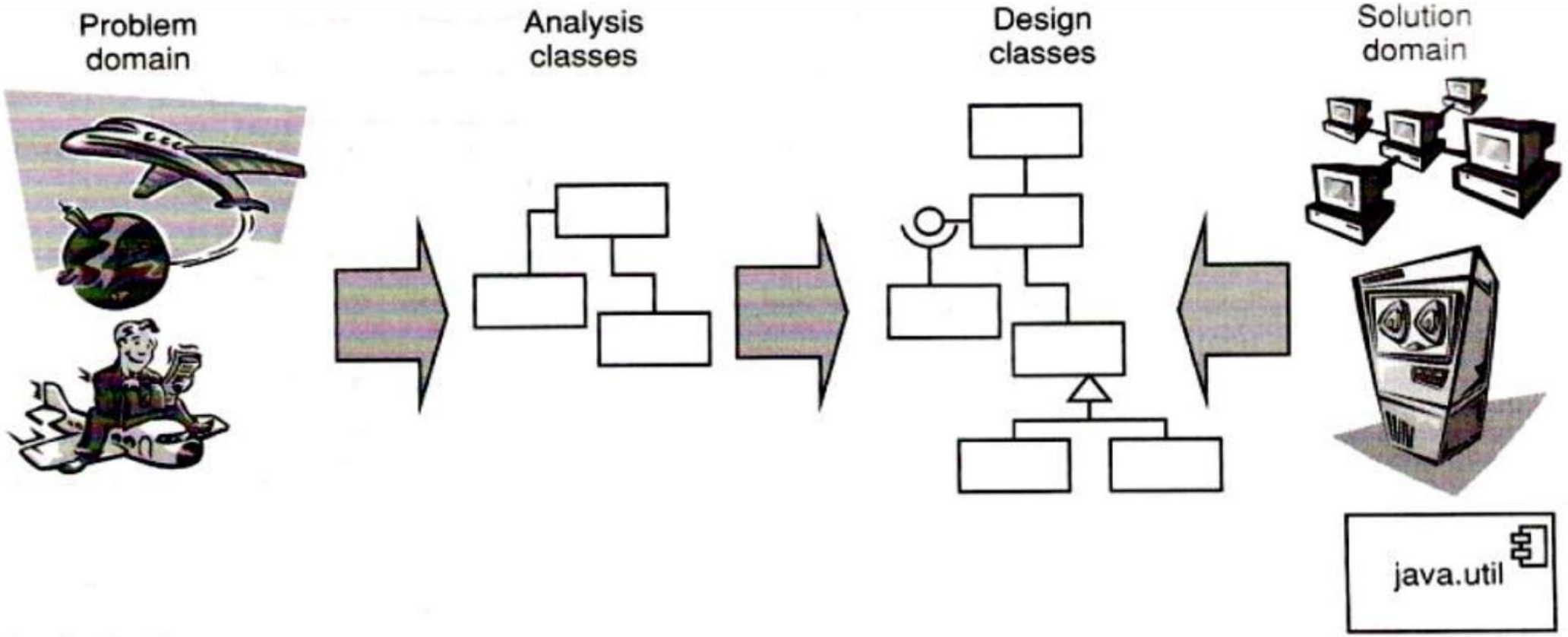
Design Workflow : Design Classes

- Design classes are the building blocks of the design model.
- Design classes are classes whose specifications have been completed to such a degree that they can be implemented

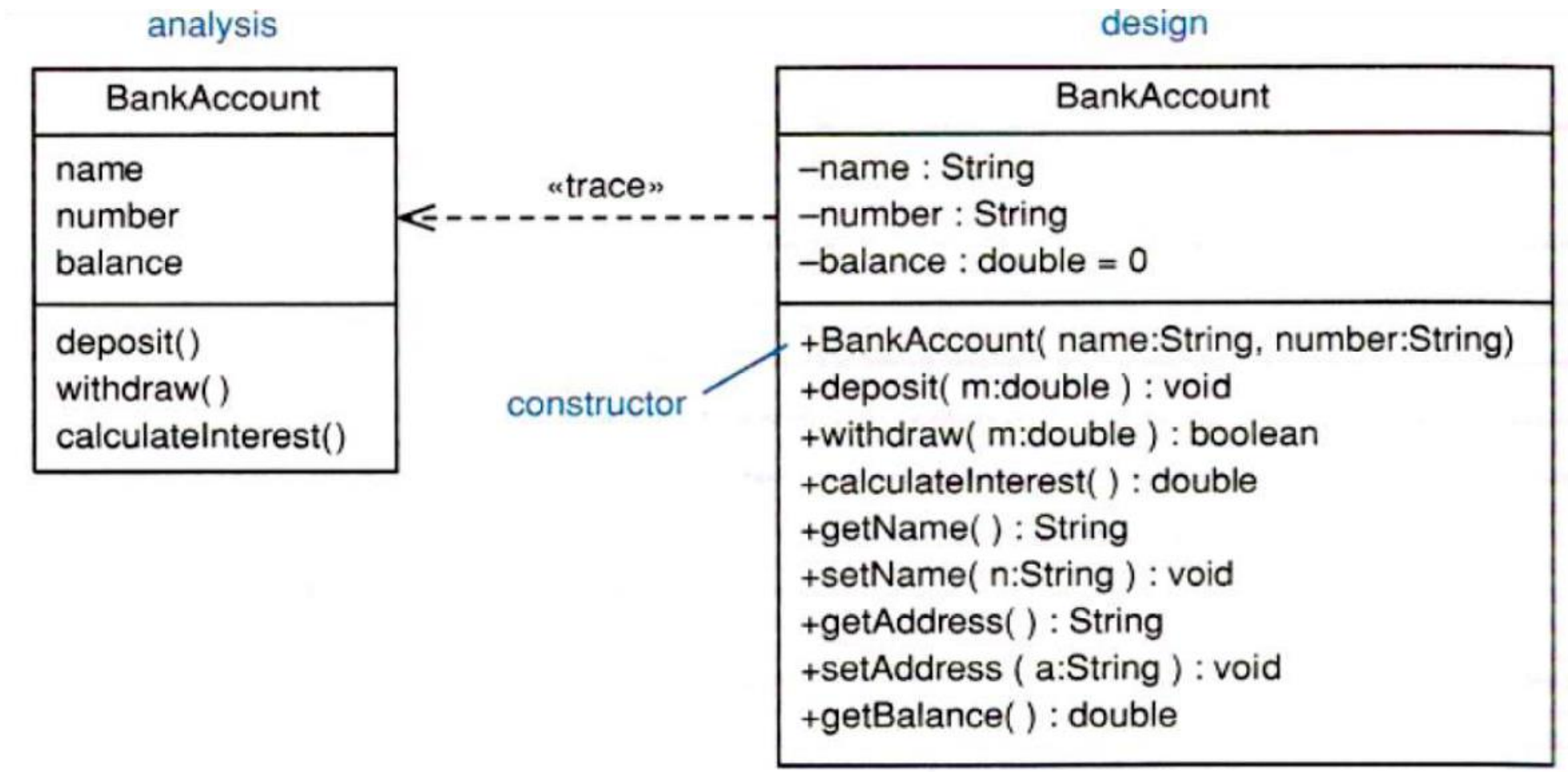
Design Workflow : Design Classes

- Design classes come from two sources
  - the problem domain
    - a refinement of analysis classes;
    - one analysis class may become one or more design classes;
  - the solution domain
    - utility class libraries;
    - reusable components
    - implementation-specific details.
    - GUI libraries

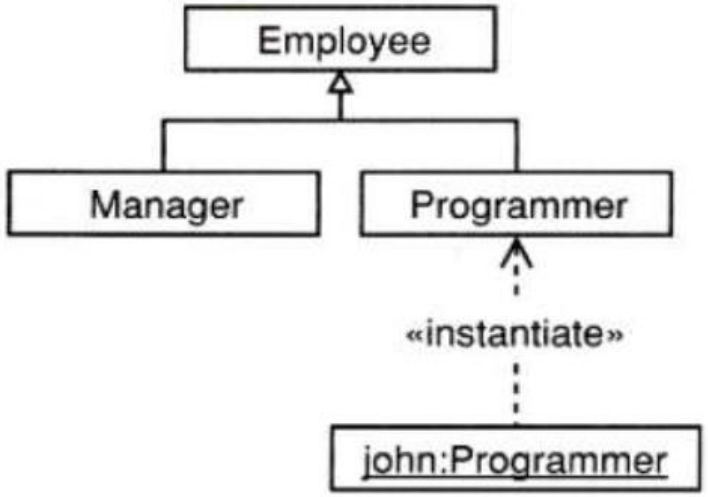
Design Workflow : Design Classes

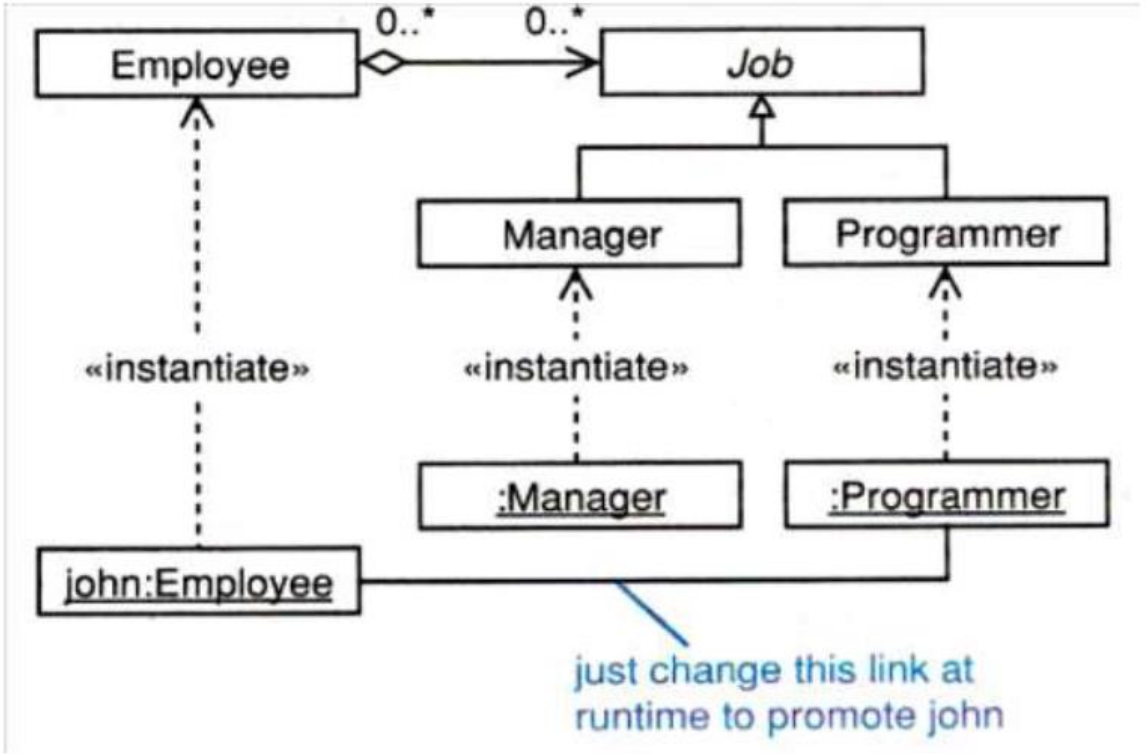


Design Workflow : Design Classes

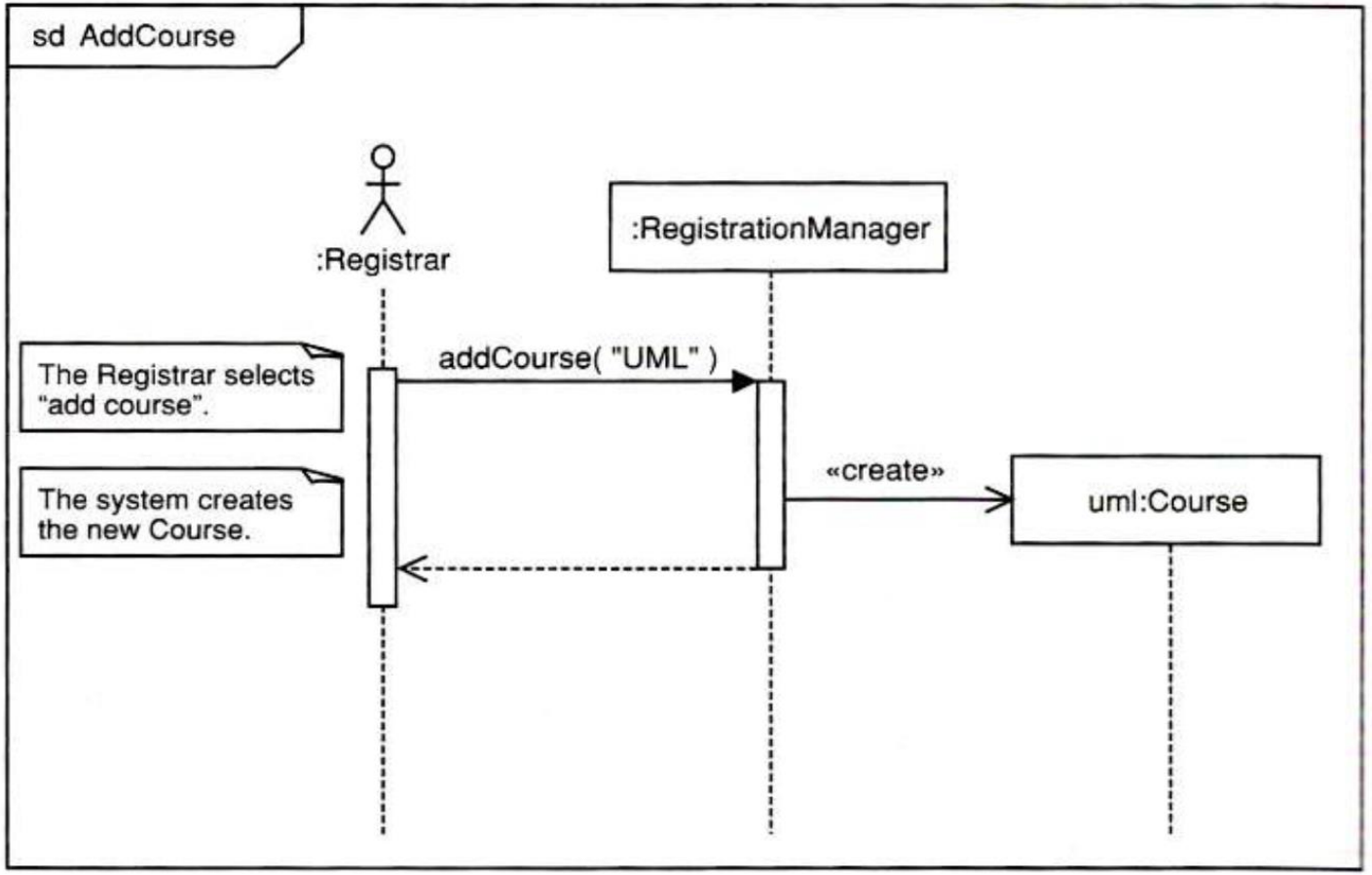


Design Workflow : Design Classes

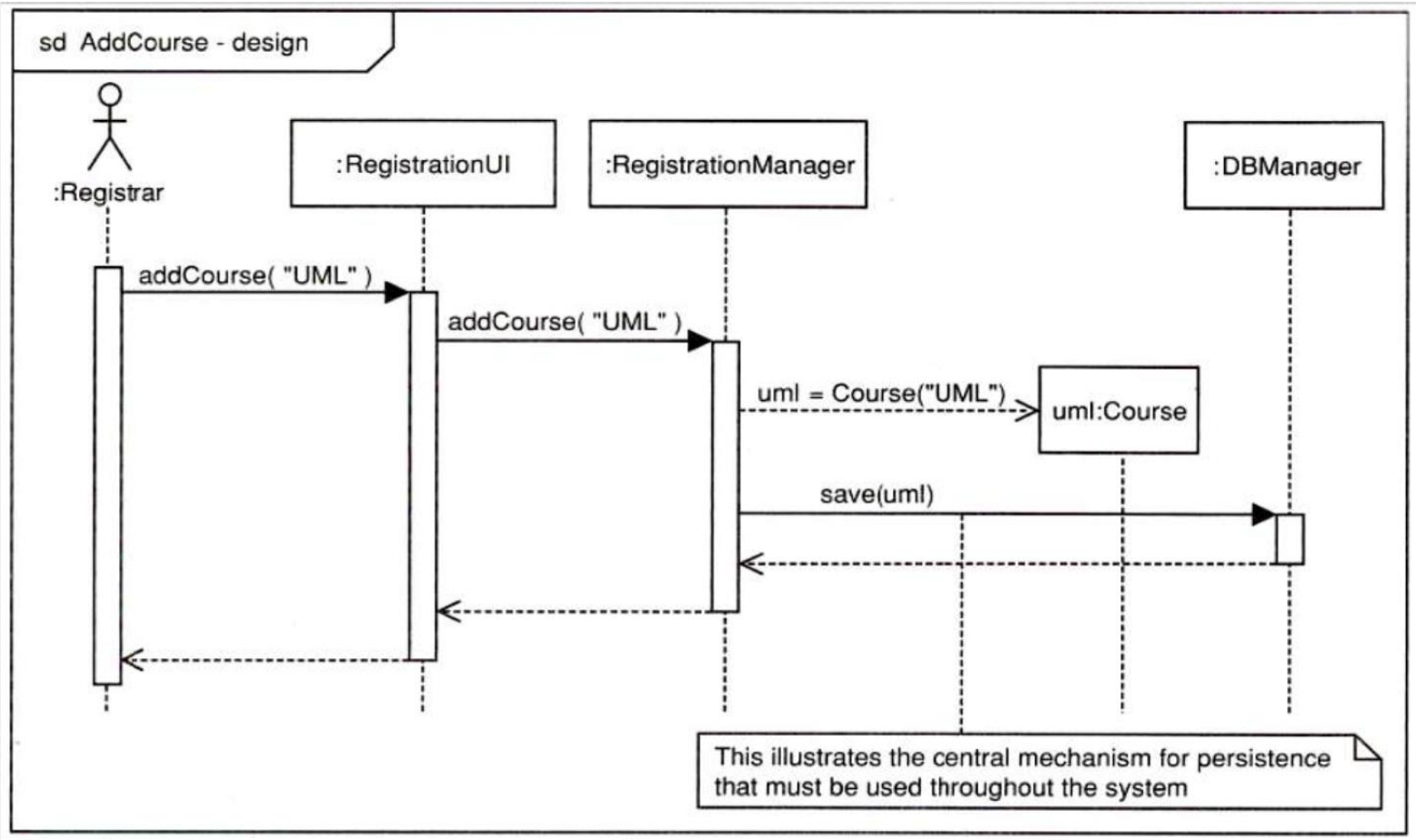




Design Workflow : DESIGN A USE CASE



Design Workflow : DESIGN A USE CASE



Reference

- http://sharif.edu/~ramsin/index_files/undergradcourse_OOD.htm