Software Engeneering

Lecture Notes on CASE-Tools: Together

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(based on slides from Günter Teubner)

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Outline of the lecture

- What is CASE?
  - **The acronym**
  - **Typical components of CASE tools**
- Major goals and concepts
  - **Lifecycle support**
  - **Roundtrip engineering**
- Working with Together
  - **Analysis**
  - **Design**
  - **Implementation**
  - **Documentation**

What does CASE mean?

- The acronym CASE stands for
  - **C**omputer
  - **A**ided
  - **S**oftware
  - **E**ngineering

- CASE is the use of computer-based support in the software development process

What is a CASE Tool ?

- A CASE *tool* is a computer-based product aimed at supporting one or more software engineering activities within a software engineering process.

- In reality, often even tools which support only one particular part of this process (such as compilers, editors, UI generators) are called CASE tools.

- Our definition is: *CASE tools are browsers and editors for models in graphical and textual form*.

What is a CASE Environment ?

- A CASE *environment* is a collection of CASE tools with an integration approach that supports the interactions that occur among the tools

- The interaction may be done by
  - a shared database
  - a repository (checkin, checkout)
  - a message broadcast system

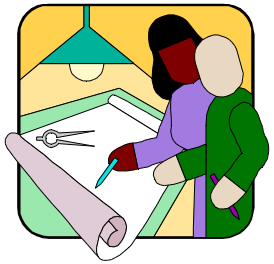
Functionality of CASE tools

- Typical functionality
  - **browsing and editing of models with a graphical user interface**
  - **automatic code generation**
  - **documentation generation**
- Ideal functionality
  - **consistency checks between diagrams**
  - **support of the whole software life cycle**

Typical components of CASE tools

- Project repository
  - **persistent storage of all development documents**
    - **Mockups, RAD, SDD, ODD, Meeting Protocols, Source Code**
  - **integrated version control system**
  - **concurrent, distributed modeling**

- Interface to other tools
  - **software development tools**
  - **process and workflow modeling tools**
  - **offering a scripting language**

Analysis	Design	Implementation	Testing	Maintenance
				

Current situation: Quality of support differs

Not all aspects of the software engineering process are supported by today's CASE-tools !

- Good support for
  - **requirements analysis (class diagrams, use cases, etc.)**
  - **implementation**
- Moderate support for
  - **system design**
  - **testing**
  - **maintenance**
- Poor support for
  - **requirements elicitation**

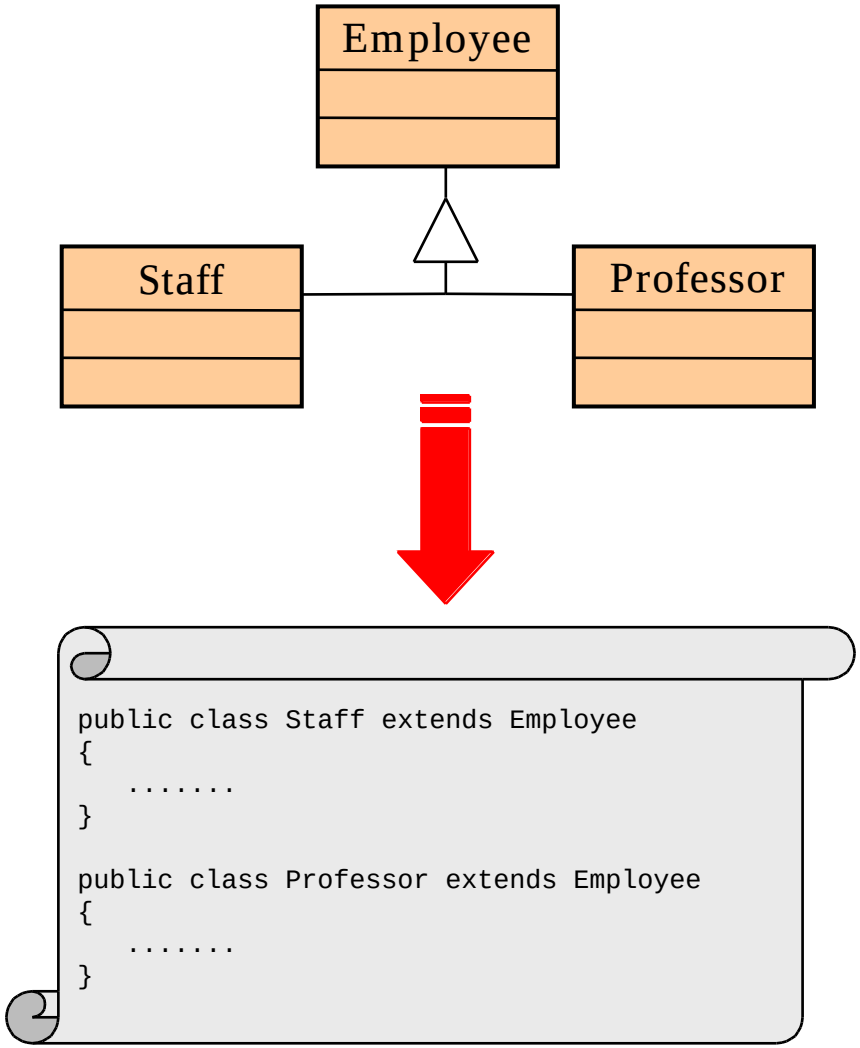
Level of integration

- not integrated
  - **separate CASE tools exist for different parts of the software engineering activities**
  - **each tool has its own set of project documents and a unique user interface**
  - **the user works with multiple tools**
- integrated
  - **all tools are working on the same project documents**
  - **a tool can trigger activities of other tools (e.g. start an formal integrity check after a model has been changed)**
  - **the tools share one common user interface**
  - **the user has the feeling of working with one tool**

Forward Engineering

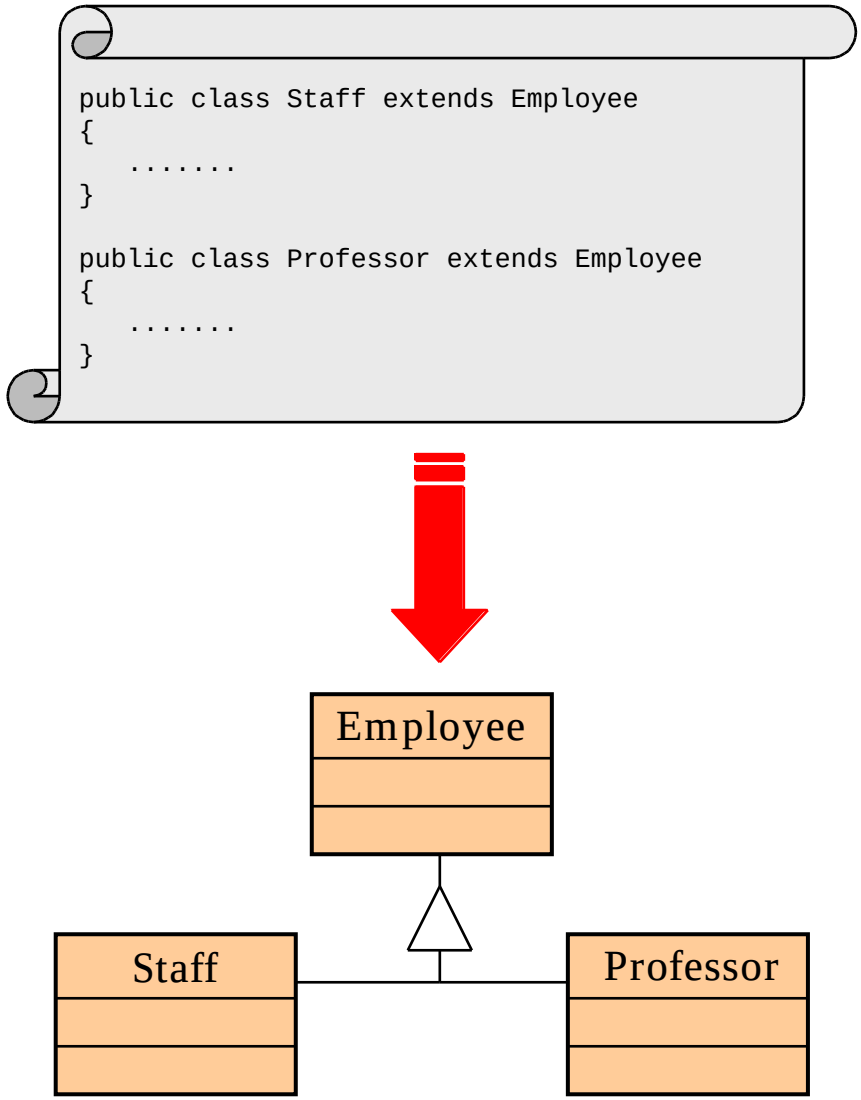
- Forward engineering is the generation of skeleton code out of the analysis or design models.
  The developer still has to write the bodies of the methods.

- Typical flow of events
  - **Create or modify an object model for a system**
    - **Generate the code for this model**
    - **Allow external modification of this code**

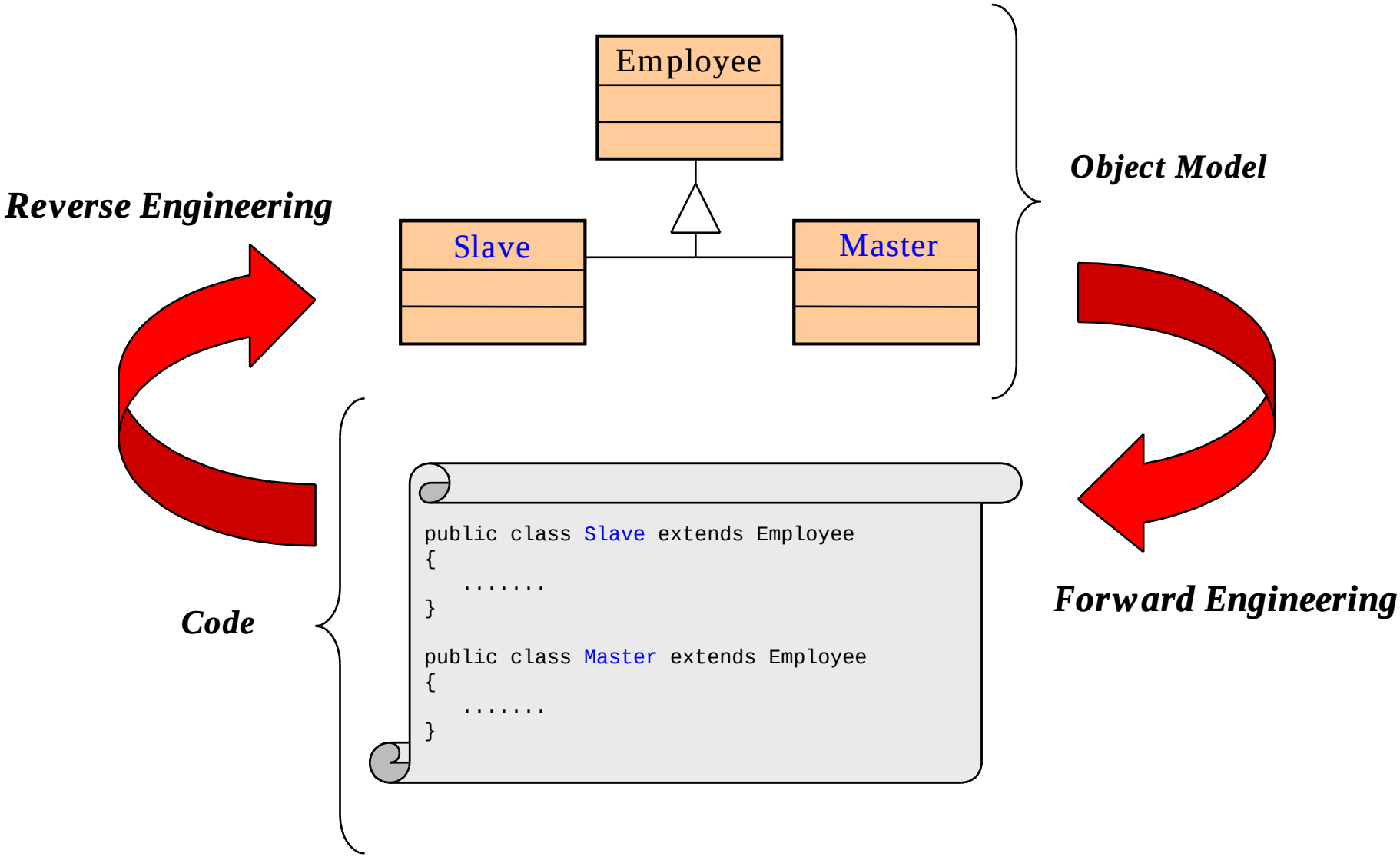


Reverse Engineering

- Reverse engineering is the recreation of an analysis or design model from existing code.
- Typical flow of events
  - **Scan a set of already existing source code files**
  - **Generate the object model for these files**
  - **Allow now modifications on this object model**



Roundtrip Engineering

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