Goal of the course

Enabling you to master techniques for building and enhancing successful software systems of large size and industrial quality

This includes in particular:
- The move from programming to software engineering
- Principles of software engineering and in particular software quality
- Object technology principles and methods; the practice of object-oriented analysis, design and implementation
- Design patterns
- Principles of building reusable software

Five key topics

- Abstract Data Types
- Advanced Object Technology techniques
- Design Patterns
- Component-Based Development
- Integrated Development Environments (IDEs)
Teaching staff

Bertrand Meyer

E-mail: Bertrand.Meyer@inf.ethz.ch
Office: RZ J6
Secretary: Claudia Günthart, (01) 632 83 46

Exercise sessions

All groups have one session a week:
- Tuesday, 14:00 - 15:00

Registration in a few moments
The assistants

Bernd Schoeller (Coordinating Assistant)
Volkan Arslan
German
Till Bay
German (French)
Ilinca Ciupa
English
Martin Nordio
English
Stephan Classen <classens@student.ethz.ch> (Hilfsassistent)
German
Florian Geldmacher <florian@womaro.ch> (Hilfsassistent)
German

Practical information

Course material

Course page:
http://se.inf.ethz.ch/teaching/ss2006/0050/

Check it at least twice a week

Lecture material:
> Lecture slides
> Textbook:
Object-Oriented Software Construction,
Available from Polybuchhandlung
Sold during the break next week (≈ CHF 63 with Legi)

Exercise material:
> Exercise sheets
> Master solutions
Electronic forums

Discussion forums:
Inforum:
http://forum.vis.ethz.ch
Mailing list for each group
Advice and rules:
Use the forums and mailing lists! Take advantage of every help you can get.
Don't be shy. There are no stupid questions.
Criticism welcome, but always be polite to every participant and observe the etiquette.
To email the whole teaching team (professor and assistants):
soft-arch-assi@se.inf.ethz.ch

Exercise sessions and project

Make sure to attend all sessions
Exercise sheets will be distributed by your assistant during the exercise session
Do all exercises and the project

Exercises, “Testat” regulations (tentative)

"Testat": Needed for admittance to the exam.
Exercises:
> 6 project milestone exercises
> Project documentation
> Project presentation
To get the "Testat" you need to have done at least:
> 5 project milestone exercises
> Project documentation
> Project presentation
> Must show serious effort to address the questions
> Must have filled out questionnaire
Military services or illness -> contact your assistant.
**Programming environment**

EiffelStudio download:  
http://www.eiffel.com/downloads/

Free version available for Windows, Linux and MacOS

**Exam:** end of semester

Wednesday, 5 July 2006, 8-10 (normal class time)  
2-hour exam  
No material allowed  
Covers all material in the semester

**The project**

Integral part of the course  
Project is EiffelStudio-oriented  
(Other possibility: Traffic-related project)  
Public presentation: 28 June, main hall of HG  
Large groups: two per assistant group  
> Must organize yourselves  
> All functions represented: developers, team leader, quality assurance, documentation, ...
And now for the real news...

**EiffelStudio history:**
- 1986 First Eiffel compiler (Eiffel 1) by Eiffel Software
  - Command-line compiler
- 1988 Eiffel 2
  - Constrained generality, exceptions, assignment attempt
- 1990 First DOS implementation (Object Tools)
- 1993 Eiffel 3
  - Infix features, expanded classes
  - Graphical environment: EiffelBench
  - Eiffel: The Language
- 1997 Eiffel 4
  - Proctor mechanism
  - EiffelBench becomes EiffelStudio
- 1999 Eiffel 5
  - Tuples, agents
  - Free version
  - 2005 ECMA standard 367
  - Attached types, ...

Other milestones

**Object-Oriented Software Construction**
1st edition, 1988
2nd edition, 1997

ECMA International, Standard 367
Eiffel: Analysis, Design and Programming Language
21 June 2005

ISO (International Standards Organization)
Revision of ECMA standard
Expected April 2006

Some Eiffel projects

**Axa Rosenberg**
Investment management: from $2 billion to $40 billion
2 million lines of Eiffel

Chicago Board of Trade
Price reporting system
Eiffel + CORBA +
Solaris + Windows + ...

Boeing (Xontech)
Large-scale Eiffel
simulations of missile
defense system

Swedish social security: accident reporting & management
The news: Open-Source EiffelStudio

Full technology will be available in dual licensing
Open-Source version will be under GPL; applies to generated code as well
Will be hosted at ETH: Origo server
When and who?

The news: Origo

Till Bay

Environment under construction for distributed, cooperative, professional software development

Key URLs

http://eiffelsoftware.origo.ethz.ch
-- Project web page

https://eiffelsoftware.origo.ethz.ch/svn/es
-- Anonymous Subversion checkout
The course projects

EiffelStudio-related:
- Build tool
- Mac OSX release and installer
- Port to new platforms (Mac OSX Intel, OpenBSD...)
- Integrated support for configuration management
- New refactoring support
- Unicode support/improvements
- IDE improvements (see assistant)
- Direct code checking (“red squiggly underlines”)
- Integrated learning support
- Extended static checking (difficult)
- Others (see assistant)

Traffic-related:
- Streets and cars (traffic lights, speed limits...)
- People with schedules for their day and first person view for traveling
- Real buildings (Migros, Church, Hauptbahnhof...)
- Schedules for bus, tram etc., read from the Internet
- Topological information: river, lake, mountains, boats, parks...
- ...

This is a software architecture project

Design quality is essential
Large-group projects: must be organized like an industrial project
Configuration management
Documentation
Quality standards (analysis, design, implementation)
Should be useful (”Eat your own dog food!”)

The public presentation

June 29th, Hauptgebäude
All projects will be demonstrated
The best projects will be selected for presentation
The best of the best will be included in future releases of Open-Source EiffelStudio
Next week (12 April)

Emmanuel Stapf, EiffelSoftware

EiffelStudio code walkthrough!

The Big Red Button

http://origo.ethz.ch/unlock-eiffel/

End lecture 1