Generic programming and library development

Description:
The purpose of this course is to provide a deep understanding of the C++ programming language and its standard library. Advanced programming techniques are described, and it is shown how these techniques are used in modern library development.

Course team:

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- Jyrki Katajainen <jyrki@diku.dk> (course coordinator)

Course home page:
http://www.diku.dk/forskning/performance-engineering/Generic-programming/
Generic programming

The term generic programming has been used in at least four different but related meanings.

1. Programming with generic parameters
2. Programming by abstracting from concrete types
3. Programming with parametrized components
4. Programming method based on finding the most abstract representation of efficient algorithms

[Vandevoorde and Josuttis 2003, §14.5]
Course elements

**Cycle:** Lecture-Assignment-Discussion-Reading

**Lectures:** on Tuesdays, 8 in all

**Assignments:** given on Tuesdays; deadline Friday morning

**Discussion sessions:** on Fridays, 7 in all

**Reading:**

**Mini-project:** deadline 23 June 2006 at 9.15

**Oral exam:** on week 26
Grading

Group/class participation: 10%
Assignments: 10%
Presentation: 20%
Mini-project: 30%
Oral exam: 30%

Grading is based on the normal 13-scale.
Lectures

**Time:** every Tuesday on weeks 17–24

**Place:** here

**Contents:** We follow the textbooks quite closely; a detailed plan is available at ISIS.

**Keywords:** template basics, advanced programming techniques, metaprogramming, smart pointers, tuples, function objects, constraint polymorphism, generic algorithms
Assignments

**Handouts:** accessible via ISIS

**Deadline:** Friday morning (not *St. Bededag*)

**Group size:** 1-3 people

**Answer length:** 2-4 pages

**Answer format:** \LaTeX{} DIKU-article style available via the CPH STL home page http://www.cphstl.dk/WWW/tools.html

**Handing in:** electronically via ISIS

No late assignments, please!
Discussion sessions

**Time:** every Friday except *St. Bededag* (also after *Kristi himmelfartsdag*)

**Place:** here

**Presenters:** 2–3 groups present their results of the assignment

**Opponents:** 2–3 other groups comment the presentations

**16th June:** dedicated to mini-projects and course evaluation
Mini-project

Handout: accessible via ISIS

Problem formulation: a preliminary version is available already now (see CPH STL report 2005-1)

Supporting code: will be made available at the beginning of June

Group size: 1-3 people

Answer length: about 12 pages

Answer format: \LaTeX{} DIKU-article style available via the CPH STL home page http://www.cphstl.dk/WWW/tools.html

Handing in: electronically via ISIS by 23 June 2006 at 9.15
Exam

**Time:** week 26

**Place:** *nordfløjen*

**Form:** individual, oral, 30 minutes, no preparation (internal examiners)

**Pensum:** mini-project and the material covered by the lectures