

Project forum Computer science



Keld Helsgaun (coordinator)

Purpose

1. Bring you together
2. Give information about project work
3. Give inspiration for choosing a project
4. Initiate group formation

Agenda

1. Presentation round
2. Formal requirements (module bindings)
3. Information about project work

Formal requirements



This module's main focus is the construction and development of computer software. The aim is to provide the students with the basic skills, competences, and understanding of computer science as a research area and software construction and development as disciplines. The module comprises of courses and a project that underline its focus. The project has to include the planning, implementation, testing, and documentation of a medium-sized programming ~~assignment~~.

design, project

Workload for the project: 1/2 semester (15 ECTS)

Benefit



You learn to work systematically with the following elements of software construction:

1. Requirements specification

The limitations, goals and constraints are analyzed, whereupon the requirements to the software are specified.

2. Design

On basis of the requirements is given a description of the program's modules, their form, effect, and interaction.

3. Implementation

The modules of the program are realized in a programming language.

4. Testing

The modules are tested individually as well in interplay with each other, and it is verified that the software systems fulfills the requirements.

Degrees of freedom



- **Free choice of subject - respecting the module requirements**
(consultation with advisors is recommended)
- **Free group formation**
(recommended group size: 2-4 participants)

Example of subjects



Artificial intelligence

Simulation

Optimization

Computer graphics

Soft computing

Scientific computing

Numerical algorithms

Symbolic mathematics

Bioinformatics

Data-mining

Parallel systems

Distributed systems



Problem formulation

A problem formulation in form of one or more questions.
Is normally not used as in other subjects on RUC.

A project description must be given. What are the goals?

In a programming project the goals are given in form of a *requirements specification* (functional as well as non-functional requirements).

Advice



Good “chemistry” in the group is normally preferred over common technical interests.

Best group size: 2-4 members.

Use **eXtreme Programming**:

- Iterative development

- Programming in pairs

- Testing is done in parallel to development

More advice



Write a user guide early on in the project.

Start from inside (basic data structures, model)

Separate model from view (user interface)

If possible, generalize your problem formulation (such that not just a specific problem is solved, but rather a general class of problems).

Make use of the qualifications of your advisor.

Structure of the report



1. Preface
2. Introduction
3. User guide
4. Problem formulation
(*What* is the program supposed to do?)
5. Problem analysis
(*How* is it possible to achieve that?)
6. Program documentation
7. Testing
8. Conclusion

[Se also Mads Rosendahl's note](#) (in Danish)

The role(s) of the advisor



An advisor should be used as a

- **Helper** in solution of concrete problems (give ready answers on questions, prepared presentations, literature guidance).
- **Advisor** concerning the work process.
- **Supervisor**. Exploit the advisor's experience and knowledge in order not to make too many mistakes.
- **Inspirer**. The advisor can – with himself as an example – illustrate how computer scientists think and work.

He is not the project leader!



Important dates

- Application for advisor (February 11 before 11.59 PM)
- Intensive project period (May 2 – May 30)
- Project delivering (May 30 before 11.59 AM)

Advisors



Keld Helsgaun	(8 groups)
Christian Theil Have	(2 groups)
Henning Christiansen	(1 group)

Quote



“You think you know when you learn,
are more sure when you can write,
even more when you can teach,
but certain when you can program.”

-Alan J. Perlis