Introduction to Programming − Concepts and Tools

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Summary

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- Concepts of procedural programming (week 1−3, 6, 7)
  - Syntactic elements, basic data types, arithmetic expressions
  - Control structures, loops
  - Methods (procedures), call by value vs call by name, method overloading, scope, recursion
  - Arrays
  - Searching in/sorting of arrays
- Elementary concepts of OOP (week 4, 5)
  - Classes and objects, access modifiers, encapsulation, static variables and methods
  - Inheritance, generic methods using class object, abstract classes, interfaces
  - UML class diagrams

Summary

- Selected topics in programming (week 8−10)
  - Software engineering, testing
  - Exception handling
  - File handling
  - Dynamic data structures
- Graphical user interfaces (week 11)
  - Windows, frames
  - Components
  - Event handling

Cross−session topics

- Good programming practice
  - Useful variable names
  - Indentation
  - Comments
  - ...
- Java (online) documentation
- Reporting
  - Design
  - Testing
  - User Guide

Perspective

- Concepts in programming
  - Language independent
  - Syntax independent
  - Apply to many languages very different in style
  - Transferable
- Realisation of those concepts in Java
  - Syntax is important

Acquired skills

- Go for the concepts!
  - Without understanding the concepts you will not be able to implement even simple algorithms or to write larger programs.
  - Focus on the essentials.
- Acquire (practical) skills along the way!
  - Skills are important to be able to apply the concepts.
  - Solid skills cannot be acquired without conceptual skills.
  - Acquiring skills can support learning the concepts.

Topics not covered

- Team work
- Programming larger pieces of software
- Object oriented programming
- (More) modern technology
- Databases/Internet
- Advanced algorithms
- Other programming language paradigms
- ...

Exam

- Friday, January 16th
- Open book, bring
  - Course book
  - Additional notes by Peter Sestoft
  - Handwritten notes
  - Language dictionary
- English questions only
- 4 questions of given weight

Exam preparation

- Do a programming project
- Use old exam(s) as exam preparation, see homepage. Note however that our course focuses more on concepts than GP, which will be reflected in the exam.
- Use the newsgroup to ask fellow students, and test your own skills by answering questions of fellow students.
- A last resort might be sending me an email, but try the newsgroup first, since more people can participate in the discussion.

Finally ...

- Thanks for joining the course!
- Enjoy the project period!
- Enjoy being at ITU!