C++ Programming I

Fundamentals of Object Oriented C ++ Programming

C++ Programming
FS 2020

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Welcome

Welcome to C++ Programming I

Time:
- ▶ Thursday 16:15h-18:00h Weekly
- ▶ Break: 17h
- ▶ 13 x 2 Lectures

Lecture Style:
- ▶ 50% Theory
- ▶ 50% Coding

Homepage:
```
http://www.bme.master.unibe.ch/studies/
curriculum/list_of_courses/c_programming_i/
```

Course Material:
```
https://ilias.unibe.ch/goto_ilias3_unibe_crs_
1664434.html
```

Exercises and Credits

Exercises

- ~**10 Exercises**, when handed in on time: **15**%
- **2 written exams**, midterm exam **25**% and final exam **60**%
- Date for midterm exam: **09.04.2020**

Procedure

- Exercises are strongly recommended
- Submission of at least **7 exercises** is required for exam admission
- Time for exercise is **1 week**
- Post questions in the exercise forum!
- Exercises and solutions are discussed in the lecture

Content

Fundamentals of Object Oriented C++ Programming

Lecture 0

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Welcome
  Credits
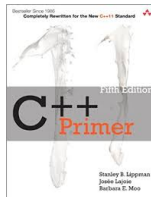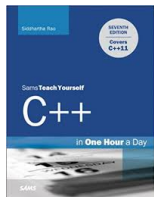 Content
  Literature

Why C++

Literature

Text Books

The course closely follows the following Literature:

▶ **Sams Teach Yourself, C++ in One Hour a Day** (8th Edition, 2017), Siddhartha Rao, ISBN-13: 978-0789757746

Comprehensive Reference book:

▶ **The C++ Programming Language** (4th Edition, 2015), Bjarne Stroustrup, ISBN/ISSN: 2244009029992

▶ **C++ Primer** (5th Edition, 2013), Stanley B. Lippman, ISBN-13: 978-0321714114

Literature
Links

Useful Links:

- ▶ `https://www.tutorialspoint.com/cplusplus/cpp_stl_tutorial.htm`
- ▶ `http://www.learncpp.com/`
- ▶ Training: `http://progressor.ti.bfh.ch`

Why C++

Programming Languages
Differences

Programming languages are differentiated in:

- ► Compiled vs. interpreted languages
    - ► C++ , C, Java, Pascal etc. vs. MATLAB, Python
- ► High level vs. assembler languages
    - ► Assembler (computer) languages are very primitive
    - ► Simple operations are divided into multiple steps
    - ► Language varies from computer to computer
    - ► High-level programming languages are human-readable and understood by the computer model (abstraction)
- ► Multipurpose vs. specific purpose languages
- ► Procedural, Object-oriented, function-oriented and logical languages
- ► Generic programming

Programming Languages
Why C++

Various modern and popular programming languages exist:
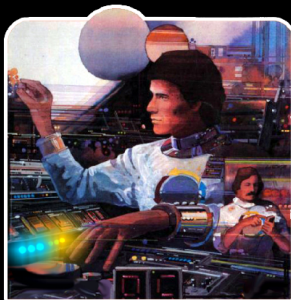
- Java, C#, Objective-C, Modula etc.

Common consensus:

- 'The' programming language for system programming is: C
- C has significant weaknesses. Biggest weakness: Missing 'Type safety'

Benefits of C++ :

- C++ adds the power of abstraction from high-level programming languages to C

    - Object-Oriented
    - Type Safety
    - Huge amount of tested and efficient libraries available → STL
- **High-level language for low-level problems**

Have Fun !!!

Thank You

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