02393 Programming in C++
Module 1: Introduction

Teacher: Alberto Lluch Lafuente

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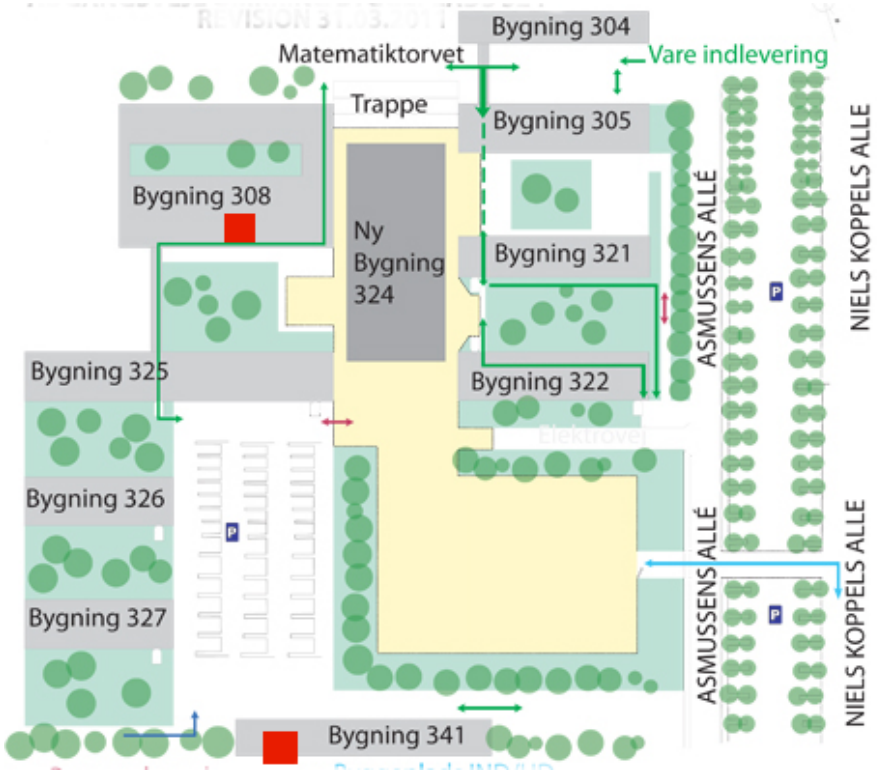
The Team

- Teacher: Alberto Lluch Lafuente (albl@dtu.dk)
  Building 324, Room 180. (Please make an appointment.)
- Teaching Assistants:
  - ★ Claudia Gabriela
- Course Responsibles: Alberto and Sebastian Alexander Mödersheim (samo@dtu.dk)
- Help with CodeJudge: Anders Roy Christiansen

See *List of participants* on the course's campusnet page

Location



- Lecture: 5pm - 7pm in building 308, room 12
- Exercises: 7pm - 9pm in E-Databars 109, 117, 127 building 308, ground floor

Evaluation

The course is pass/fail.

- Assignments
  - ★ to be handed in via *CodeJudge*
  - ★ automatically tests your code and gives you the chance to fix bugs
  - ★ please contact the TAs first, if you have trouble getting your exercises accepted by CodeJudge.
- Exam
  - ★ Date: 17.05.2016
  - ★ Duration: 4 hours

Course Materials

- Stanford Course Reader by S. Roberts, J. Zelenski: *Programming Abstractions in C++*
  - ★ Available from CampusNet
  - ★ We will often relate to this book, use its exercises . . .
  - ★ Note: some examples/exercises use a special Stanford library (closed source)

Further Information

- There are many good books on C/C++ for instance
  - ★ Bjarne Stroustrup: *The C++ Programming Language*
  - ★ Koenig and Moo: *Accelerated C++*
  - ★ KR: *THE* reference for C:
    Kernighan and Ritchie: *The C Programming Language*
- Websites like http://cplusplus.com, code.org, techrocket, etc.

  ...
- Campusnet page: slides and programs from lecture, exercises ...

Lecture Plan

The course consists of 3 major blocks

- Basic C++
- Object-oriented programming in C++
- Advanced topics

Each block covers approximately 4 weeks

Lecture Plan

#	Date	Topic	Chapter
1	1.2	Introduction	1
2	8.2	Basic C++	1
3	15.2	Data Types	2
4	22.2	Libraries and Interfaces	3
5	29.2		
6	7.3	Classes and Objects I	4,9
7	14.3	Classes and Objects II	4,9
		Påskesferie	
8	4.4	Classes and Objects III	4,9
9	11.4	Recursive Programming	5-7
10	18.4	Lists and Trees	10.5, 11, 13.1
11	25.4	Trees	13
12	2.5	Graphs	16
13	9.5	Summary	
	17.5	Exam	

Challenges

- Large class
- Late in the evening
- Students with different backgrounds: Mat, CSE, ITCT, MatMod, ManagEng, ElecEng, GeoPh, Ph, NanoTech, ...
- Programming can hardly be learned from a lecture

About pre-requisites

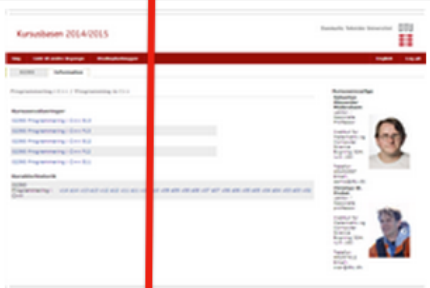
Course Base 2014/2015

Search | Link to other versions | Studyplanner

02393 | Information

02393 Programming in C++

Danish title:	Programmering i C++
Language:	English
Point(ECTS)	5
Course type:	MSc Taught under open university

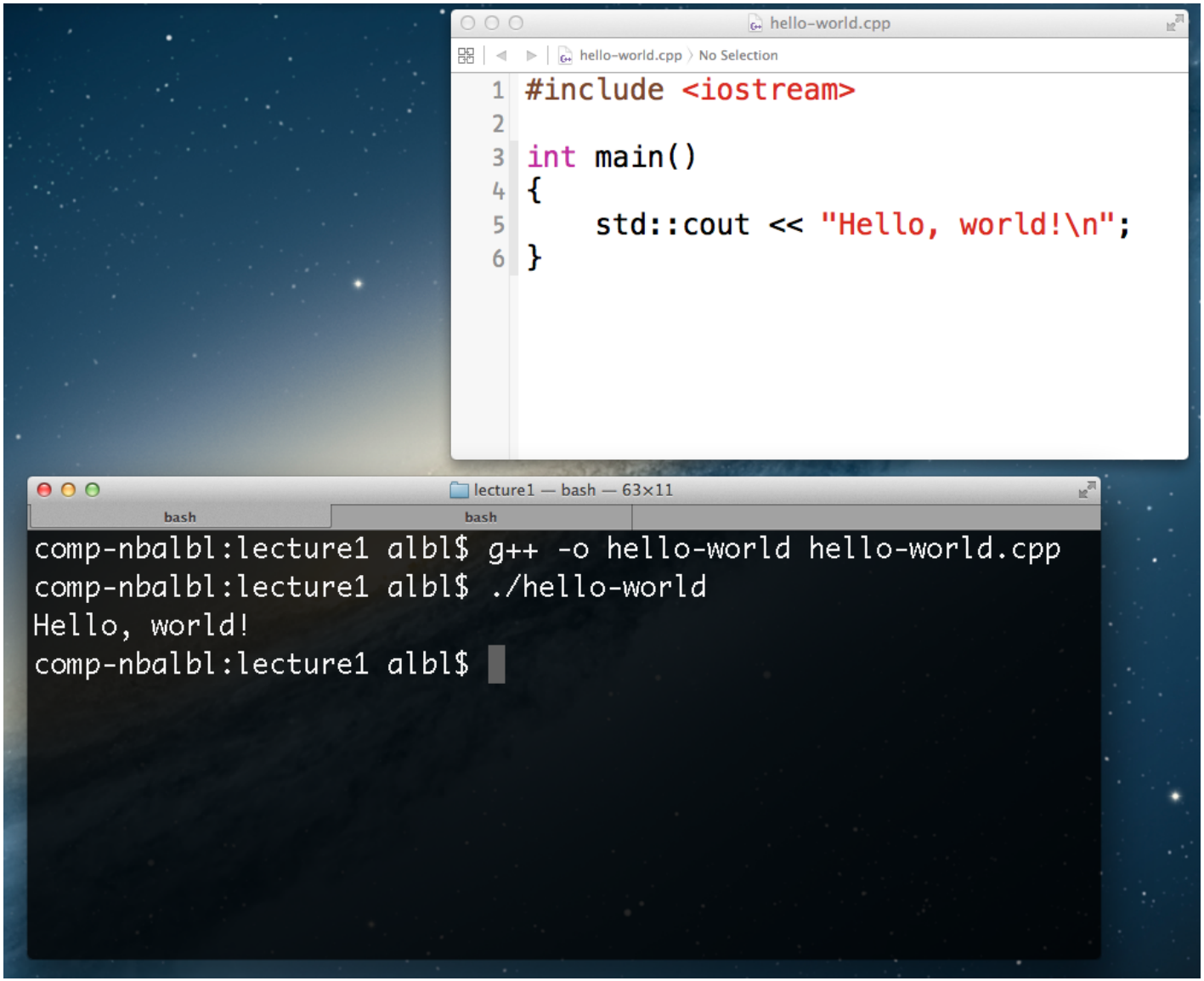


Schedule:	Spring and Fall Spring and Fall: Monday evening at 5-9 pm.
Location:	Campus Lyngby
Scope and form:	Normally, there are lectures from 5pm to 7pm followed by exercises.
Duration of Course:	13 weeks
Date of examination:	Special day
Type of assessment:	Written examination and exercises
Exam duration:	4 hours
Aid:	Written works of reference are permitted
Evaluation:	pass / not pass , internal examiner
Previous Course:	02198
Not applicable together with:	91174/49423/49420/02198/02319/
Qualified Prerequisites:	Knowledge of basic programming concepts such as datatypes, choices and decisions, loops and functions.

Ideas for an Effective Course: Live Programming

- Live programming
  - ★ Not much code on slides.
  - ★ Instead: developing a program/example during the lecture
  - ★ We may make smaller exercises together in the lecture
    - ▶ please bring your laptops to the lecture

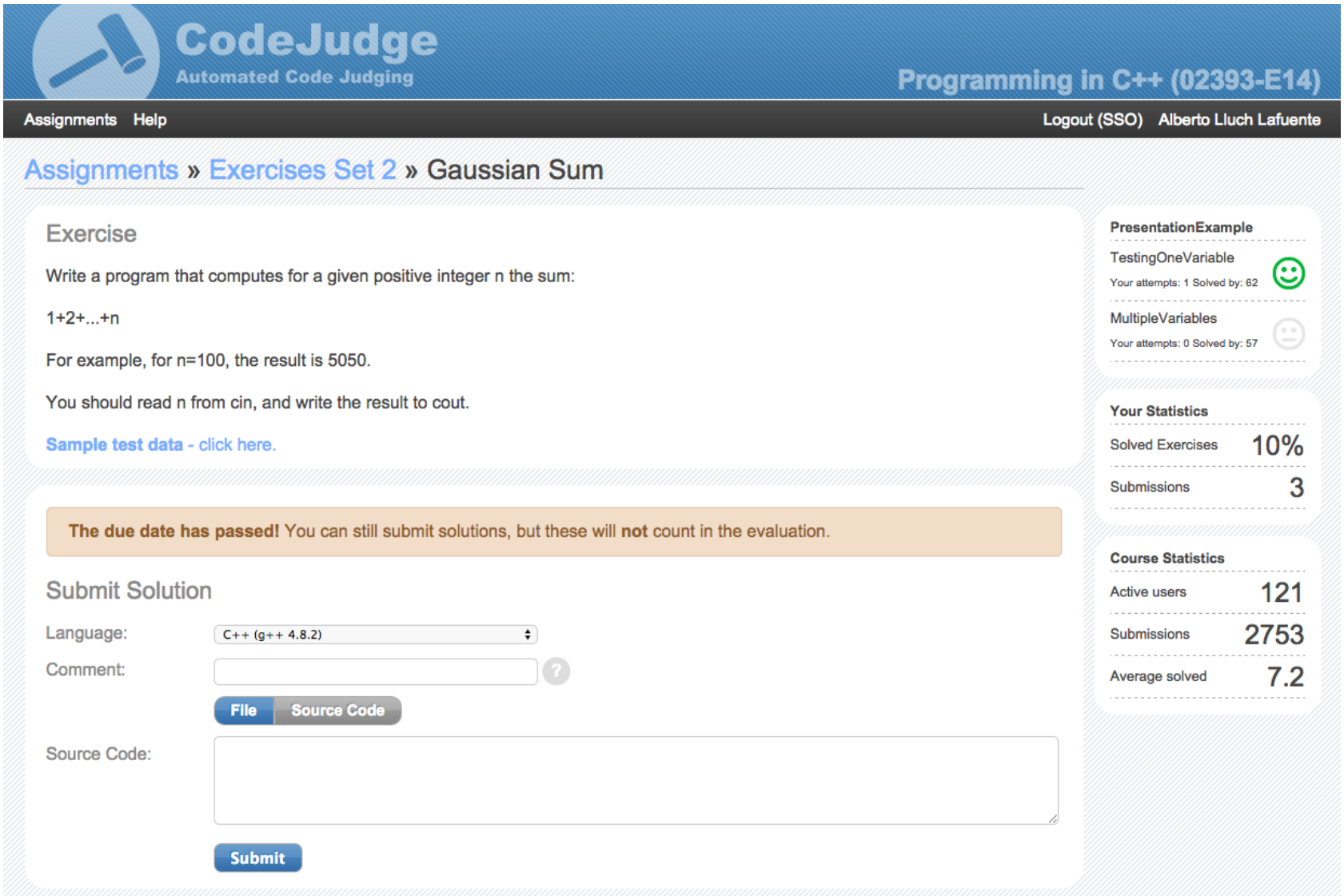
Live Programming



Ideas for an Effective Course: CodeJudge

- Exercises using *CodeJudge*
  - ★ One needs to practice!
  - ★ Immediate feedback from *CodeJudge* which tests your code

CodeJudge


CodeJudge
Automated Code Judging
Programming in C++ (02393-E14)
Assignments Help
Logout (SSO) Alberto Lluch Lafuente
Assignments » Exercises Set 2 » Gaussian Sum
Exercise
Write a program that computes for a given positive integer n the sum:
1+2+...+n
For example, for n=100, the result is 5050.
You should read n from cin, and write the result to cout.
Sample test data - click here.
The due date has passed! You can still submit solutions, but these will not count in the evaluation.
Submit Solution
Language:
C++ (g++ 4.8.2)
Comment:
File
Source Code
Source Code:
Submit
PresentationExample
TestingOneVariable
Your attempts: 1 Solved by: 62
MultipleVariables
Your attempts: 0 Solved by: 57
Your Statistics
Solved Exercises 10%
Submissions 3
Course Statistics
Active users 121
Submissions 2753
Average solved 7.2

Programming Paradigms

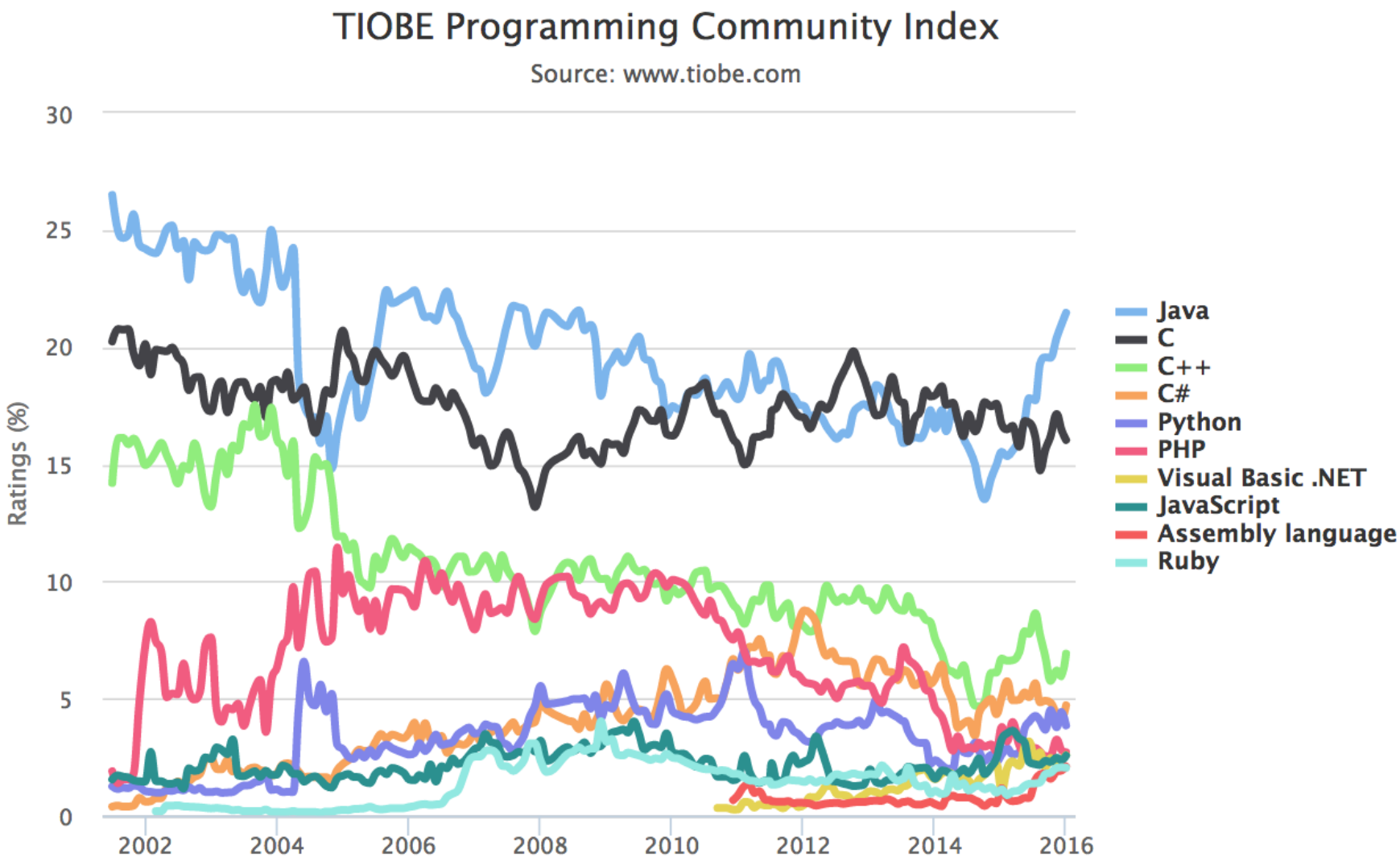
1. Procedural or Imperative Programming
2. Modular programming
3. Object-Oriented Programming
4. Generic Programming
5. Functional Programming
6. Logic Programming

C++ supports the first 4.

C++ and Efficiency

- C++ allows you to do things that many programming languages forbid
- Advantage: you can program close-to-the-machine and optimize code to the last bit
- Ideal for computer games, hardware drivers, and in general fast processing of data.
- But speed is not everything,
  there are other interesting properties of code:
  - ★ Free from errors (or at least not full of them)
  - ★ Easy to read/understand and modify
  - ★ General/re-usable
  - ★ Portable
- Do not lose time and code quality by "stupid" optimizations!

C++ popularity



Hello World

It is custom to first program "Hello World".
Live programming examples