

# Object-oriented Programming for Automation & Robotics

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**LS 11 Algorithm Engineering**

Lecture 1 • Winter 2011/12 • Oct 11

# Agenda

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1. Introduction
2. Pool accounts
3. Signing up (two groups)
4. (If you sign up for group 2 you can come back at 13:30)
5. Writing a “Hello World” program

# What will you learn in this course?

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- the programming language **C++**
- the principles of object-oriented programming
- using a programming environment: **Visual Studio**

We will focus on **practical** programming skills.

→ Lab sessions are important!

# Our Team

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- **Dr. Carsten Gutwenger**

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- **M. Sc. Orwa Nassour**

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Tel.: 0231 / 755-6329

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- **Course materials** (slides, assignments etc.)

`ls11-www.cs.tu-dortmund.de/teaching/oop-2011`

# Organization

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- Two groups:
  - **group 1:** 10:30 to 13:00
  - **group 2:** 13:30 to 16:00
- Combined lecture course + lab sessions
- Each week: **non-mandatory** assignment sheet
- **Four exam sheets**
  - complete it at home or during the lab sessions
  - present your solution during the lab sessions (next week)
  - **successful:** solve (and understand) at least half of the problems
- **Final written exam** (last week):
  - requirement: **three** successful exam sheets

# How will we proceed?

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- Small lecture about new concepts
  - Time for asking questions
  - Further reading required (see suggested reading on next slide)
- Work on the current assignment sheet
  - Orwa and myself are around to help you
  - You can also work on the current exam sheet
  - Presentation of your solution for the exam sheet

# Suggested Reading

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- **Practical C++ Programming**

*by Steve Oualline*, 2nd edition, O'Reilly Media

available online in the TU network:

<http://proquest.safaribooksonline.com/0596004192>

- **C++ Primer**

*by Stanley B. Lippman, Josée Lajoie, Barbara E. Moo*, 4th edition,  
Addison-Wesley Professional

available online in the TU network

<http://proquest.safaribooksonline.com/0201721481>

- **Exploring C++: The Programmer's Introduction to C++**

*by Ray Lischner*; Apress

- ... or pick your own favorite (lots of books in German and other languages available)

# A word of warning

- Programming is a practical task
  - you won't learn it just by reading a book
  - you need practical experience in solving problems
  - the lab sessions are the most important part
- Be prepared: Read the suggested topics in books before the lecture!
- You don't have to understand every detail
  - to fully understand you have to try it out!
- Don't hesitate to ask questions
  - about C++ concepts
  - **and:** concerning technical problems



# Pool Accounts

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Let's get a RETINA-pool account!

1. Log on to a free computer:
  - Username: **newaccount**
  - Password: **anmelden**
  - Log on to: RETINA
2. Fill out the registration form and submit your data (**“Anmelden”**)
3. The admin of the RETINA-pool will visit us, prepare your student id card!

# Pool Accounts

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1. Log on to a free computer:
  - Username: **newaccount**
  - Password: **anmelden**
  - Log on to: RETINA
2. Fill out the registration form and submit your data (“Anmelden”)
  - Vorname = first name
  - Nachname = family name
  - Matrikelnummer = student number
  - Studienbeginn = 2011
  - Benutzername = user name
  - Kennwort = password

# Signing Up

- Two groups:
  - **group 1:** 10:30 to 13:00
  - **group 2:** 13:30 to 16:00
- To sign up, send an email to
  - carsten.gutwenger@cs.tu-dortmund.de
- Subject: **OOP sign-up group <grp-number>**  
where <grp-number> is **1** or **2**
- Body:
  - First name:** *<your first name>*
  - Family name:** *<your family name>*
  - <your student number>*

# “Hello World”

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1. Log on to a free computer with your account
2. Open Visual Studio 2008
3. Create a new C++ project **HelloWorld**
  - i. Select **File** → **New** → **Project**
  - ii. Under **Project Types**, expand Visual C++ and then select Win32  
Under **templates**, click **Win32 Console Application**
  - iii. Type project name **HelloWorld** and click **OK**
  - iv. In the **Win32 Application Wizard**, click Application Settings  
Under **Additional Options**, select **Empty Project** and click **Finish**

# “Hello World”

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4. Create a C++ source file **HelloWorld.cpp**
  - i. In **Solution Explorer**, right-click the **Source Files** folder, point to **Add** and then click **New Item**
  - ii. On the **Visual Studio installed templates** list, select **C++ File (.cpp)**, type as file name **HelloWorld.cpp**, and then click **Add**

# “Hello World”

- Type in the following code:

```
#include <iostream>
```

```
int main()
```

```
{
```

```
    std::cout << "Hello World!" << std::endl;
```

```
    return 0;
```

```
}
```

- Build the program:
  - Select **Build** → **Build Solution**
- Run the program:
  - Select **Debug** → **Start without Debugging**

# Preparations for next week

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- Choose your favorite book
- Read the Introduction / Getting Started part
- Read the (basic) parts on
  - variables and assignment
  - conditional statements (**if**-statements)
  - loops (**while**-statement)
- e.g. sections  
1.1, 4.1-4.7, 6.1, 6.2, 6.4-6.7  
in Practical C++