Institut für Informatik — TUM
Scientific **C**omputing in **C**omputer **S**cience
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Tutorial
(Advanced Programming)
Worksheet 1:

Assignment 1: Hello World

Hello world is one of the most traditional introductions to almost every programming language. Therefore we may not miss it in our tutorial!

```
#include <iostream>

int main(int argc, char *argv[])
{
        std::cout << "Hello World!" << std::endl;
        return 0;
}
```

Have a look at the lecture slides which already give an introduction to the *Hello World* program.

Compile & execute a hello world program.

Assignment 2: Hello Person

We want to enhance the *Hello World* example from before, greeting actual persons.

For that purpose, use and complete the skeleton provided for class `Person`. Use the constructor to prompt the user for a first name and a last name, and initialize the respective member variables of type `std::string`. The stream `std::cin` gives access to command line input (see the example below).

```
std::string s;
std::cin >> s;
```

Also fill in the missing output statement in member function `sayHello` such that it prints the line:

```
Hello <first name> <last name>!
```

Tips on programming and compilers:

- It is recommended to work with an IDE like Eclipse / your favorite editor (VI, Emacs etc.) on a GCC compiler in Ubuntu. For further details see the links below.
- Use the -Wall flag during compilation. Warnings at their best could prevent better code optimization by the compiler; and at their worst could be errors in disguise.

- Printing statements is one way of debugging. However, smarter ways exist (GDB, Eclipse debugger etc.).
- A good reference website for C++ - http://www.cplusplus.com/

Links

Compilers:

- GCC with at least C++0x (better: C++11) support:
  `http://gcc.gnu.org`
  - 4.6.x (partial C++0x), included in Ubuntu 12.04 (sufficient)
  - 4.7.x (partial C++11), included in Ubuntu 12.10 and Ubuntu 13.04
  - 4.8.1 or greater (full C++11), included in Ubuntu 13.10
- Intel C++ Composer XE 2013:
  `http://software.intel.com/en-us/non-commercial-software-development`
  (free for non commercial use, but requires registration)

Eclipse IDE with CDT:

- Available in Ubuntu repository "universe" since 12.04: package eclipse-cdt
- or download latest version of Eclipse IDE for C/C++ Developers:
  `http://www.eclipse.org/downloads/`
- Set up the IDE: `http://www3.ntu.edu.sg/home/ehchua/programming/howto/EclipseCpp_HowTo.html`

Questions:

Answer the following questions:

- What is a compiler?
- What is the difference between Java and C?
- What is a preprocessor (*#include*)?
- Is there a difference between *(a+b)*0.5*, *(a+b)/2.0* and *(a*0.5+b*0.5)*? If there's a difference, how do you account for that?