Universität Karlsruhe (TH)
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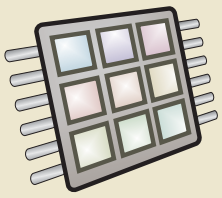

Multicore Software Engineering
Young Investigator Group

HowTo-Guide

Getting started with OpenMP

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http://www.multicore-systems.org/research/

1 Getting started with OpenMP

OpenMP (Open Multi-Processing) is an API for shared memory multiprocessing programming in C/C++ and Fortran. This section describes how to set up your environment to be able to compile programs like the OpenMP-"Hello world" example shown in figure 1.

```
#include <omp.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    int id;
    #pragma omp parallel private(id)
    {
        id = omp_get_thread_num();
        printf("%d: Hello World!\n", id);
    }
    return 0;
}
```

Figure 1: A hello-world program using OpenMP.

1.1 Linux

GCC supports OpenMP since version 4.2, simply install it using your distribution's package manager. You should now be able to compile programs using OpenMP e. g. with

```
$ gcc -fopenmp -o hello hello-openmp.c
```

1.2 Windows

First install the POSIX thread library as described in "Getting started with POSIX threads"[1]

Download GCC 4.2 from the MinGW project `http://www.mingw.org/`, you need gcc-core-4.2.xyz.tar.gz and optionally gcc-g++-4.2.xyz.tar.gz if you want to use OpenMP with C++. Unpack the archives into your MinGW root directory.

Edit $MINGW/lib/gcc/mingw32/4.2.1-sjlj/libgomp.spec to contain

```
*link_gomp: -lgomp -lpthreadVC2
```

instead of the original contens.

You should now be able to compile programs using OpenMP, e. g. with

```
C:\>gcc-sjlj.exe -fopenmp -o hello hello-openmp.c
```

1.3 Eclipse

Create a new "Managed Makefile" project.

Open the Properties dialog from the Project menu. In the section C/C++ Build add -fopenmp to the Miscellaneous flags for GCC C++ Compiler, GCC C Compiler, and GCC C++ Linker as shown in figure 2.

[1] available at `http://www.multicore-systems.org/research/howto.html`

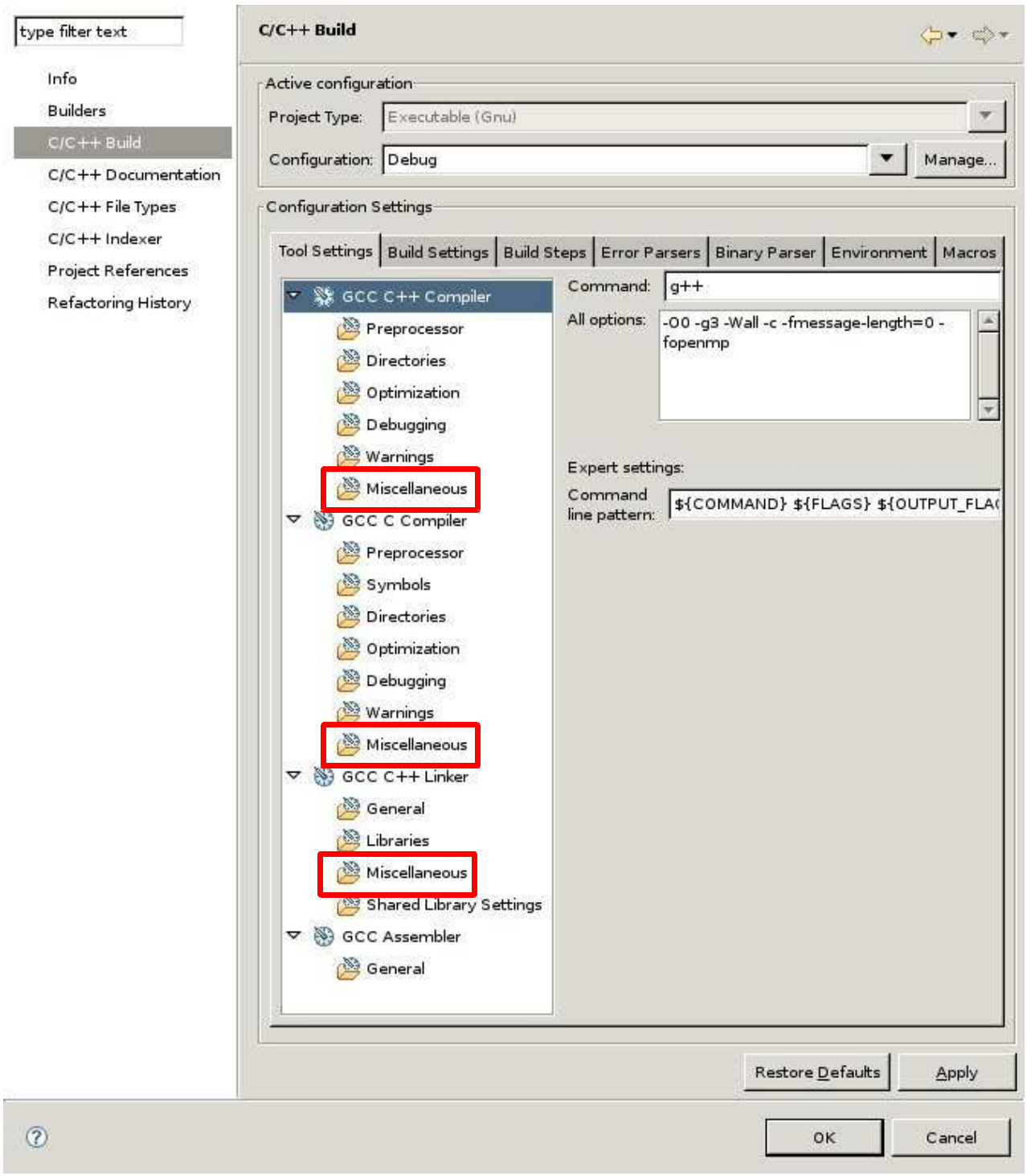

Figure 2: Setting compiler flags for OpenMP in Eclipse.