Installation tutorial for the Skomer IDE

DRAFT

The Skomer IDE (Integrated Development Environment) is based on a set of tools:

- Eclipse: used the development environment
- Cygwin: used as the processor for make-files
- Mspgcc: a C-compiler for the MSB430 platform based on gcc toolchain
- Olimex JTAG-TINY: as a JTAG interface for flashing and debugging of the MSB430

Installation

Install the Java Runtime Environment

1. Run the setup:
    a. `\SkomerIDE\Setup\jre-1_5_0_14-windows-i586-p.exe`

Install the Cygwin environment

1. Navigate http://www.cygwin.com/setup.exe
2. During the installation select the following directory as the installation directory:
    a. `\SkomerIDE\Backend\cygwin`
3. During the selection of the components to install make sure that the following component is selected:
    a. `DEVEL\make` in the version >= 3.81
4. You don't need to create desktop or start menu shortcuts
5. If you are using Vista the Program Compatibility Assistant may ask a question if everything was installed correctly. Please confirm and close the assistant.
6. Navigate to the directory `\SkomerIDE\Backend\cygwin\bin`
7. Copy the file `bash.exe` to the same directory and rename the copied file to `sh.exe`

Install the MSPGCC environment

1. Run the setup:
    a. `mspgcc-20070216.exe`

   b. During the installation select the following directory as the installation directory:
      i. \SkomerIDE\Backend\mspgcc
   c. During the selection of the components to install select the following type of installation:
      i. without make and cygwin
2. After the setup installs the MSPGCC environment the following file should be replaced:
   a. The file:
      i. \SkomerIDE\Backend\mspgcc\bin\msp430-gdb.exe
   b. Should be replaced with the file:
      i. \SkomerIDE\Setup\msp430-gdb.exe
3. Copy the msvcr71.dll file
   a. From:
      i. \SkomerIDE\Setup\msvcr71.dll
   b. To
      i. \SkomerIDE\Backend\mspgcc\bin

Install the Olimex JTAG-TINY

1. Attach the Olimex JTAG-TINY device to your computer using the USB port
2. Windows will ask for drivers, point to the directory:
   a. \SkomerIDE\Setup\OLIMEX drivers
   b. Drivers are not signed, please allow Windows to install these unsigned drivers
3. The mspgcc has to be configured to use the Olimex JTAG-TINY interface
   a. Navigate to the directory
      i. \SkomerIDE\Setup\OLIMEX drivers\MSP430-DLLs 1.015
   b. Copy all DLL files
   c. Navigate to the directory
      i. \SkomerIDE\Backend\mspgcc\bin
   d. Paste the copied DLL files here (overwrite)
4. Attach an MSB430 device to the Olimex JTAG-TINY interface
5. Run cmd.exe as an Administrator
6. Execute the following command:
   a. msp430-gdbproxy msp430 TIUSB
   b. The attached should be detected now, If it's not the case, execute the following command
      i. msp430-gdbproxy msp430 --update-usb-fet
      ii. the firmware of the Olimex JTAG-TINY HW interface will be updated
   c. test the connectivity again by executing the command
      i. msp430-gdbproxy msp430 TIUSB

Install Eclipse

1. Extract all files from
    a. `\SkomerIDE\Setup\ eclipse-cpp-europa-fall2-win32.zip`
2. To
    a. `\SkomerIDE\Backend\eclipse`
3. Extract all files from
    a. `\SkomerIDE\Setup\net.sf.mspgcc.zip`
4. To
    a. `\SkomerIDE\Backend\eclipse\plugins`

The PATH environment variable

It should contain the following entries:

`\SkomerIDE\Backend\cygwin\bin; \SkomerIDE\Backend\mspgcc\bin`

Cygwin should be the first, mspgcc should be the second in the list

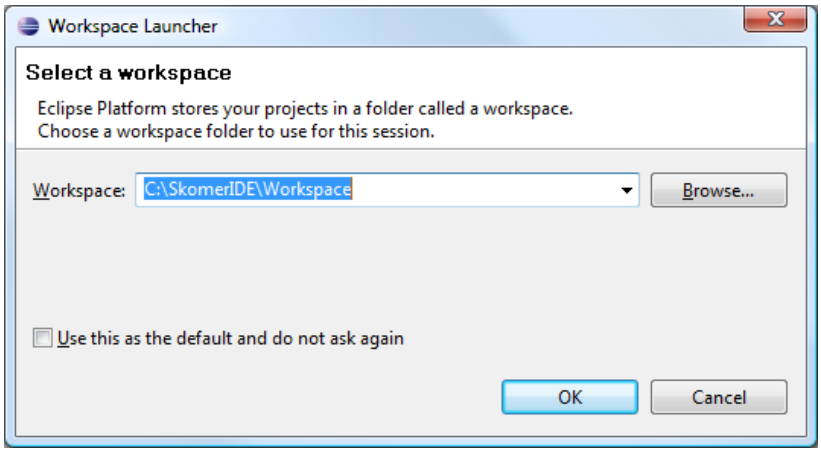
First Program

How to test the IDE

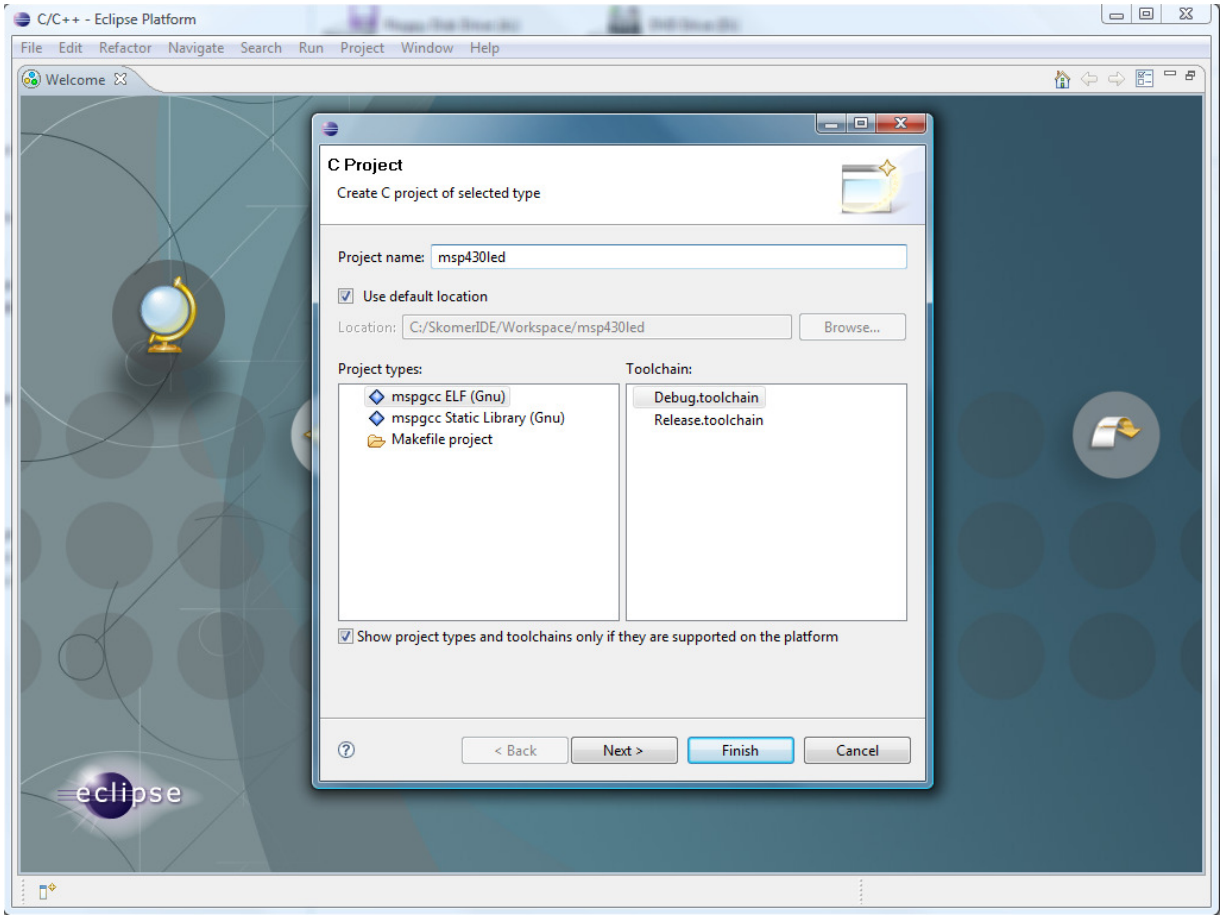
Open the Eclipse IDE

Select Workspace, preferably to

C:\SkomerIDE\Workspace

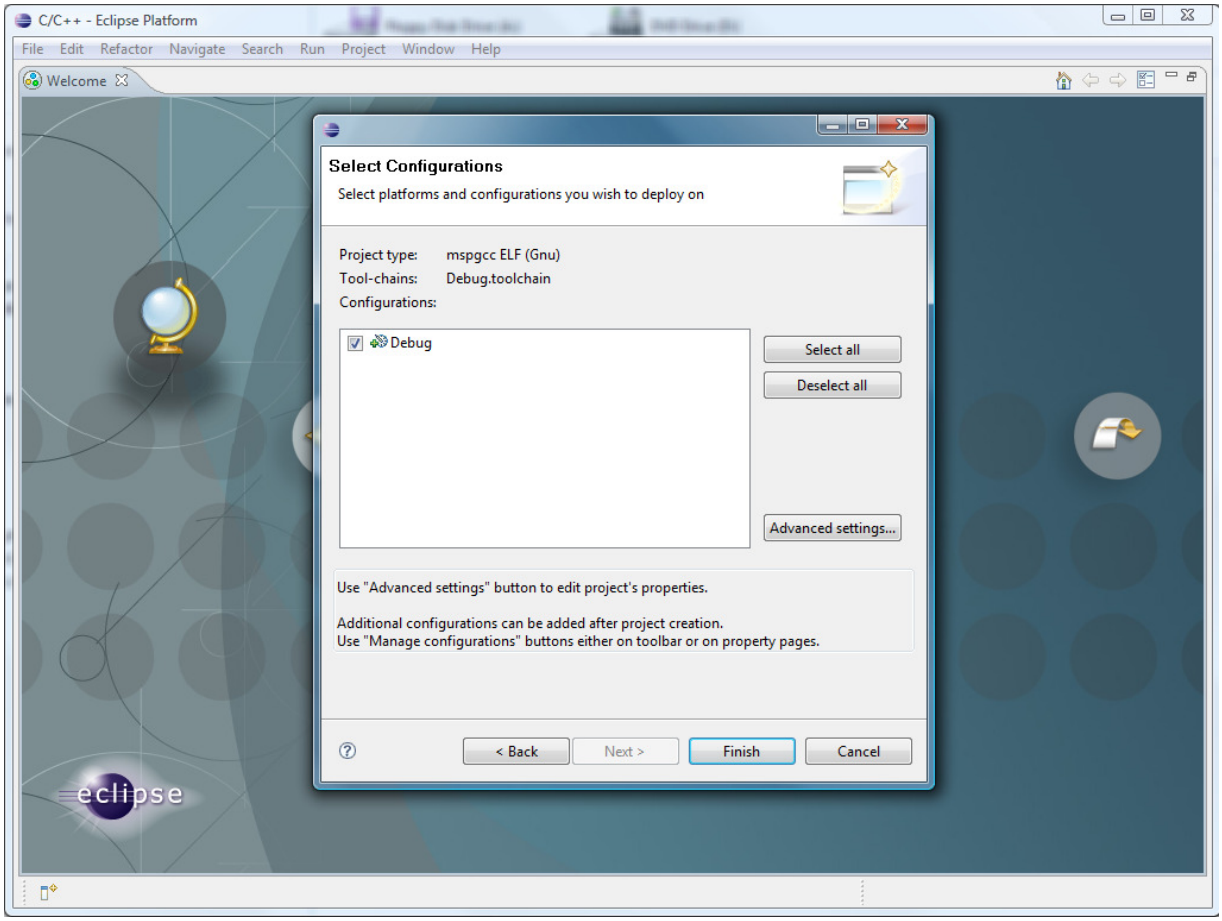


Select **FILE -> NEW -> C Project**



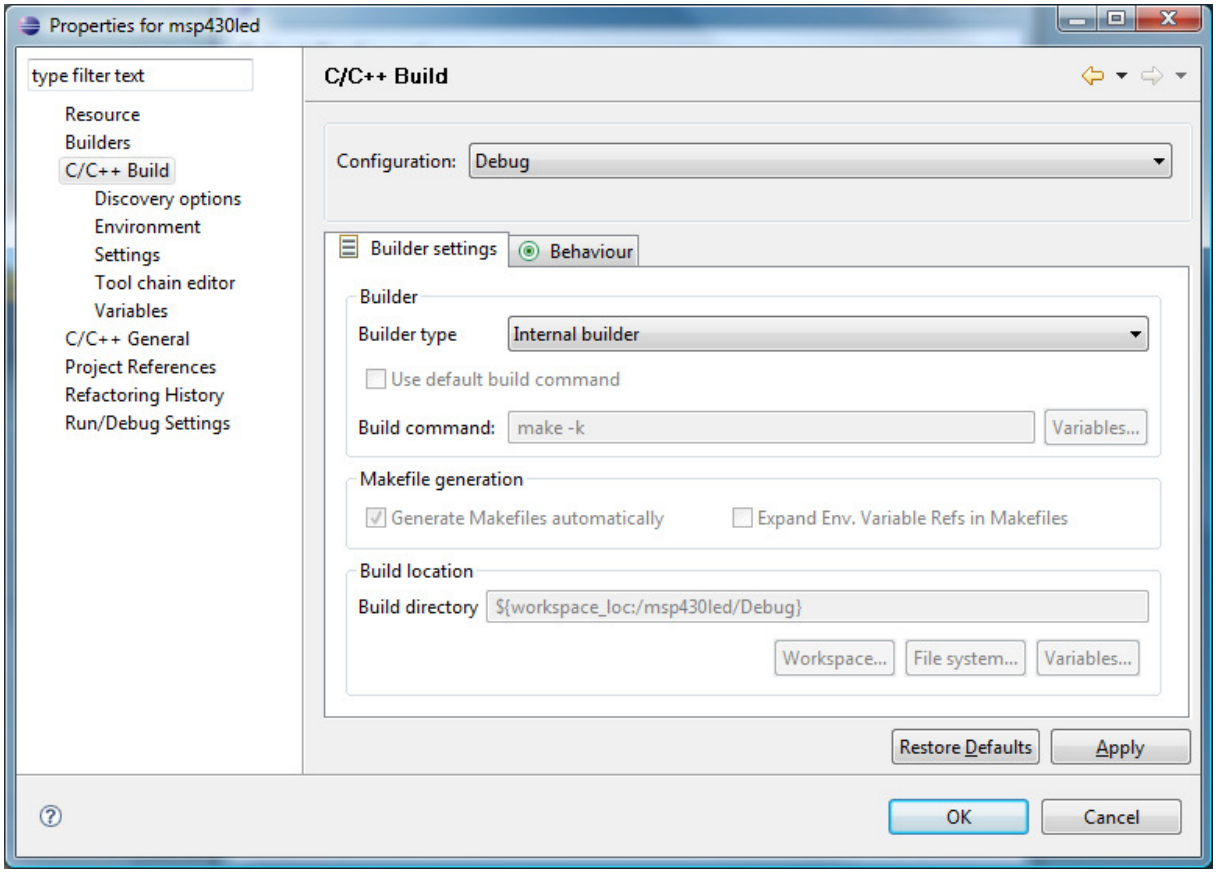
Specify the project name **msp430led** and select **mspgcc ELF (Gnu)**

Select **NEXT**

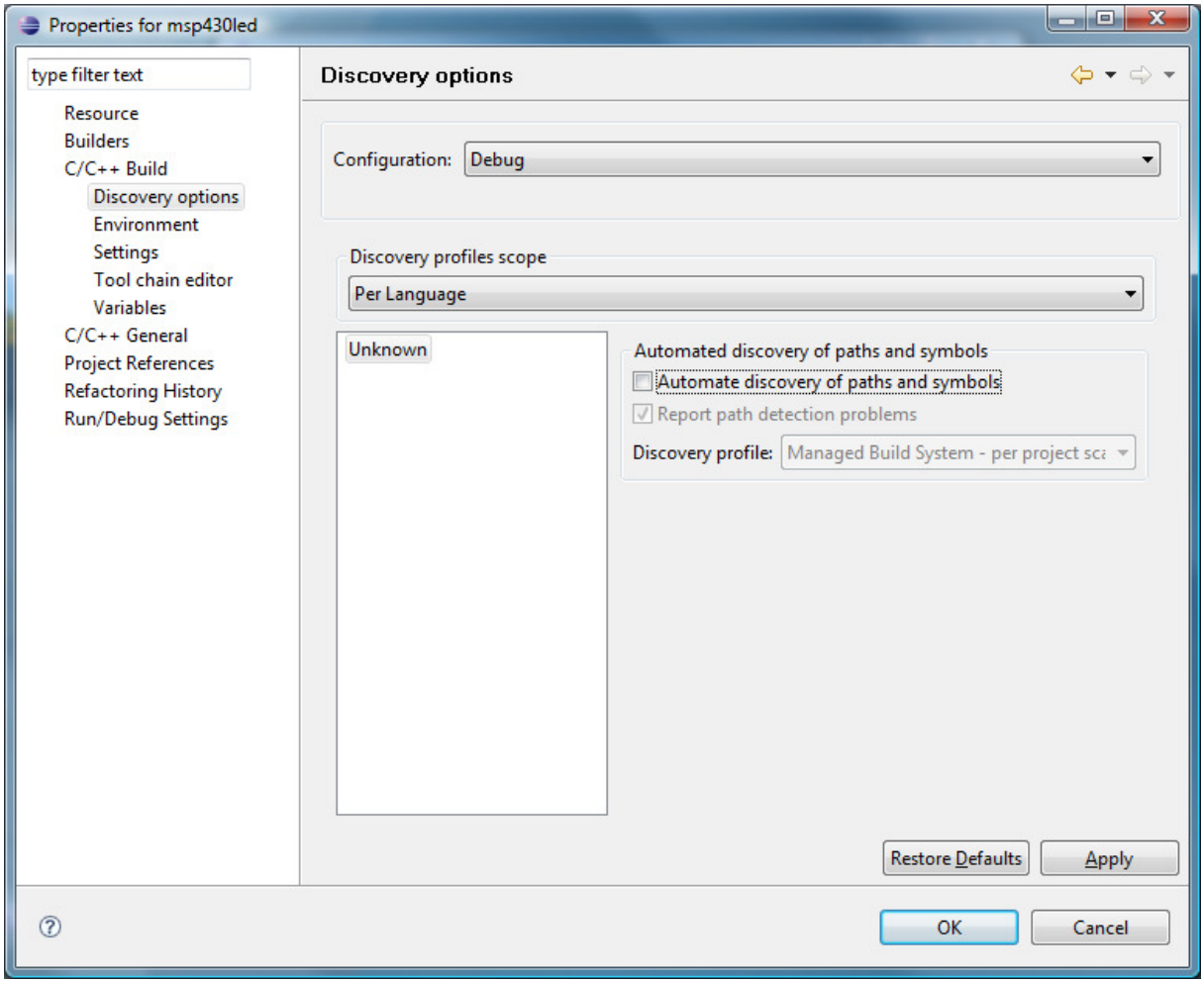


Select **Advanced settings...**

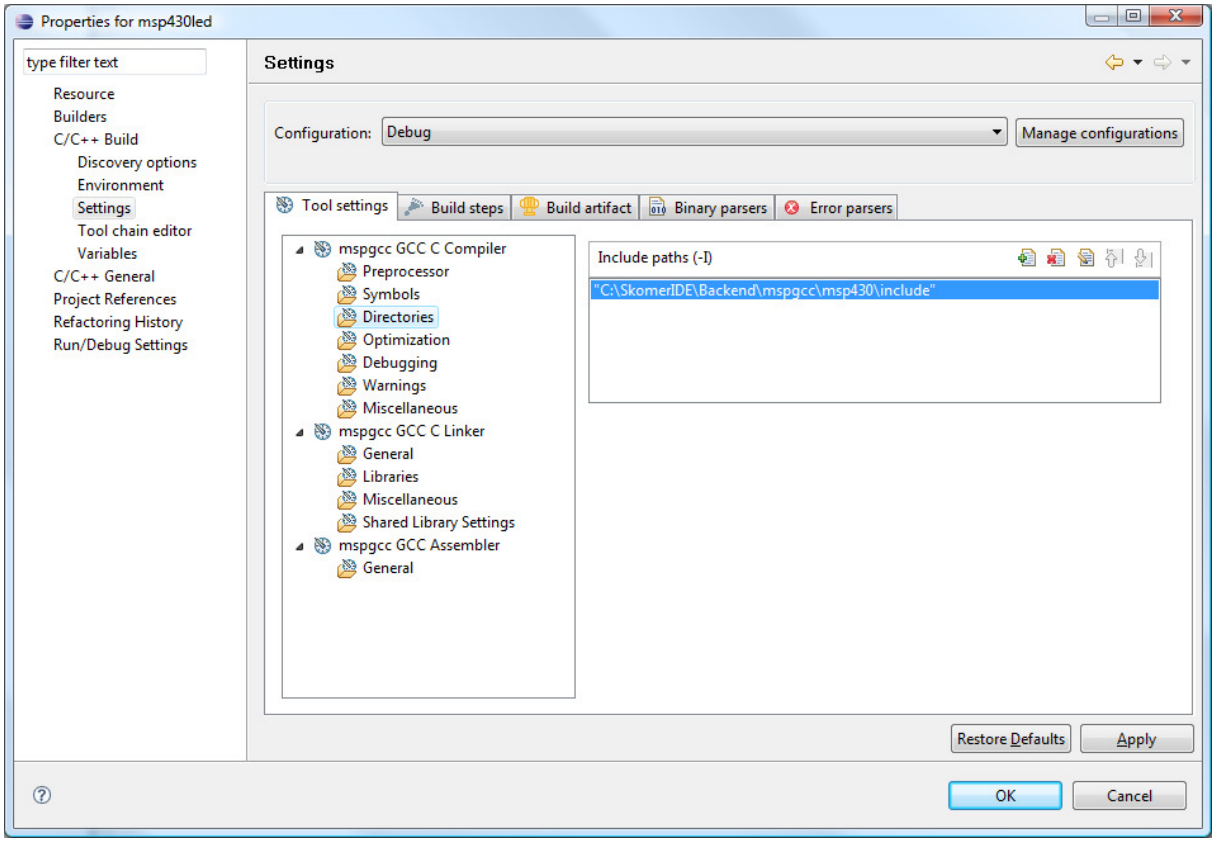
And specify the Builder type



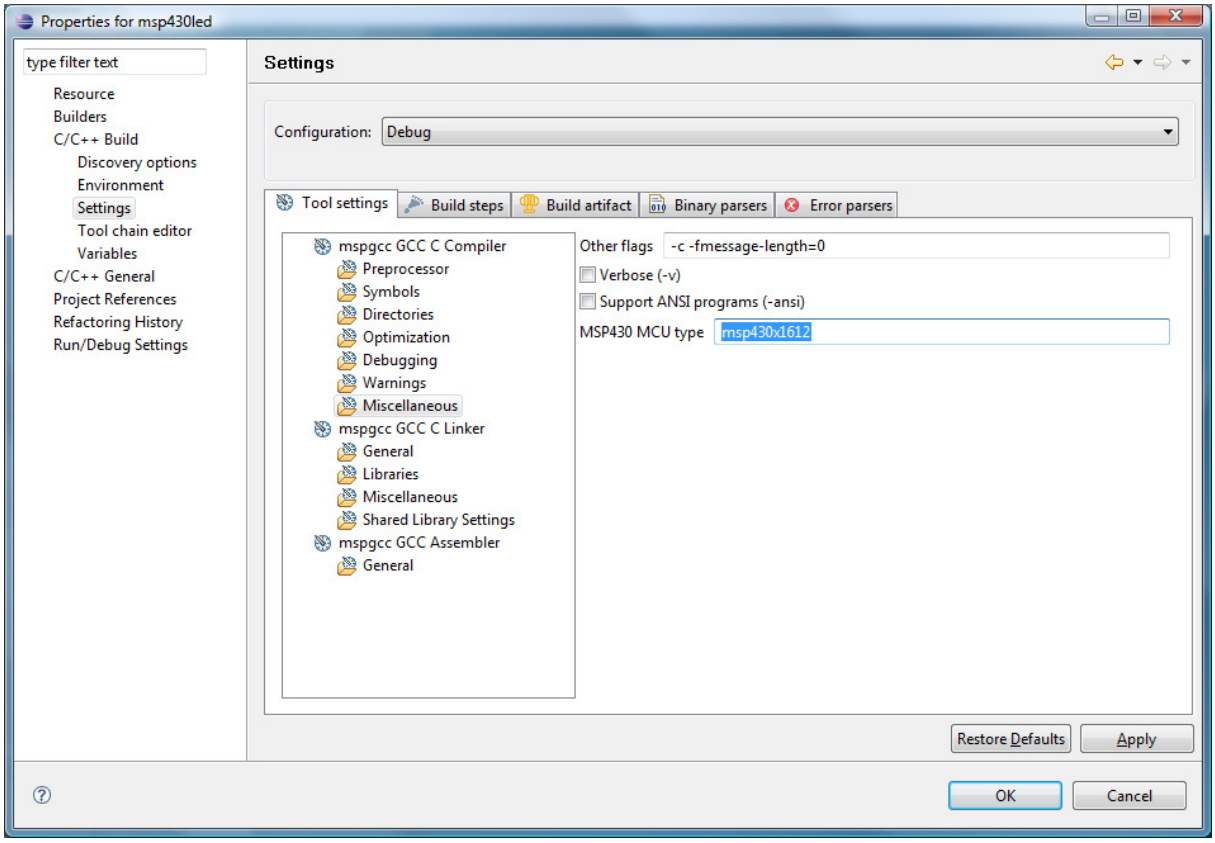
Disable the automatic discovery of path and symbols

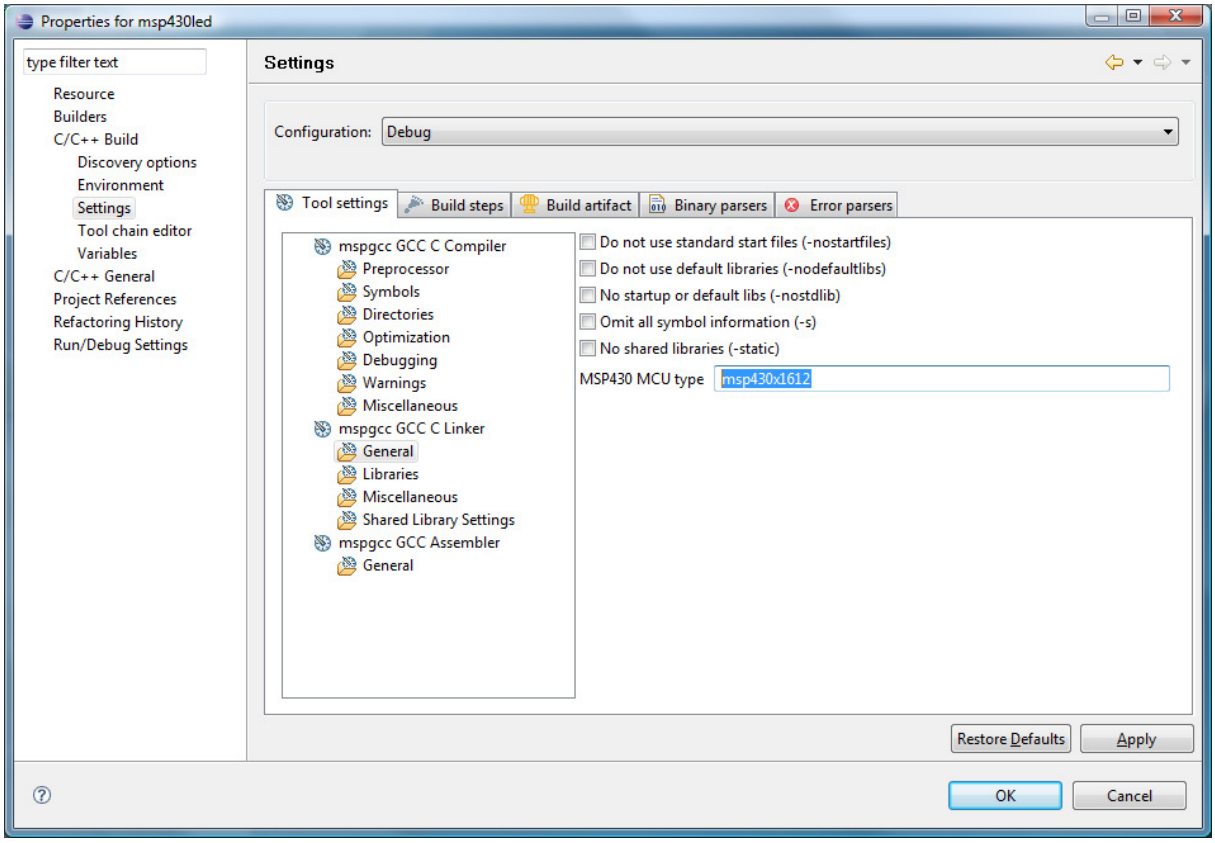


Add the path to MSP430 includes: **C:\SkomerIDE\Backend\mspgcc\msp430\include**

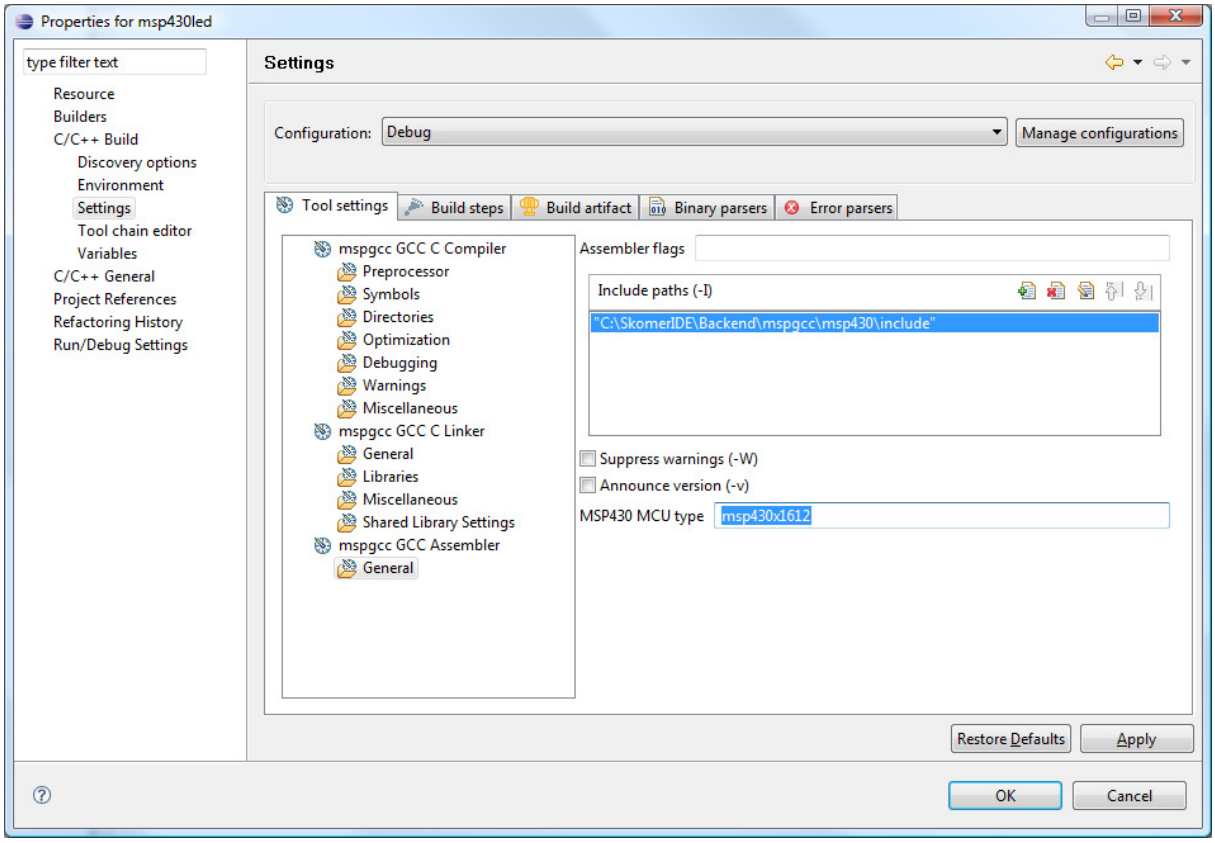


Set the MSP430 MCU type to **msp430x1612** three times:


Properties for msp430led
type filter text
Resource
Builders
C/C++ Build
Discovery options
Environment
Settings
Tool chain editor
Variables
C/C++ General
Project References
Refactoring History
Run/Debug Settings
Settings
Configuration: Debug
Tool settings
Build steps
Build artifact
Binary parsers
Error parsers
mspgcc GCC C Compiler
Preprocessor
Symbols
Directories
Optimization
Debugging
Warnings
Miscellaneous
mspgcc GCC C Linker
General
Libraries
Miscellaneous
Shared Library Settings
mspgcc GCC Assembler
General
Other flags
-c -fmessage-length=0
Verbose (-v)
Support ANSI programs (-ansi)
MSP430 MCU type
msp430x1612
Restore Defaults
Apply
OK
Cancel

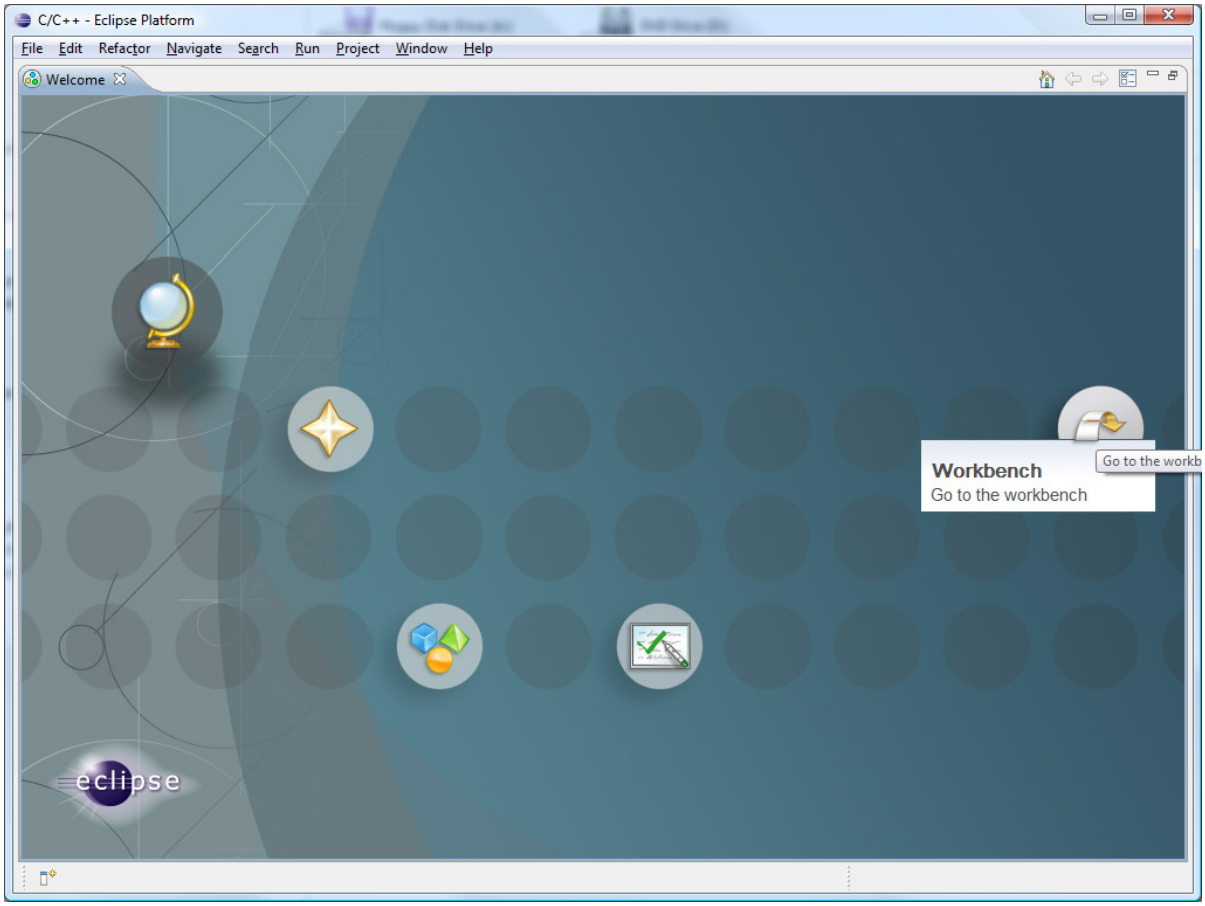


And add the path to MPS430 includes again: **C:\SkomerIDE\Backend\mspgcc\msp430\include**

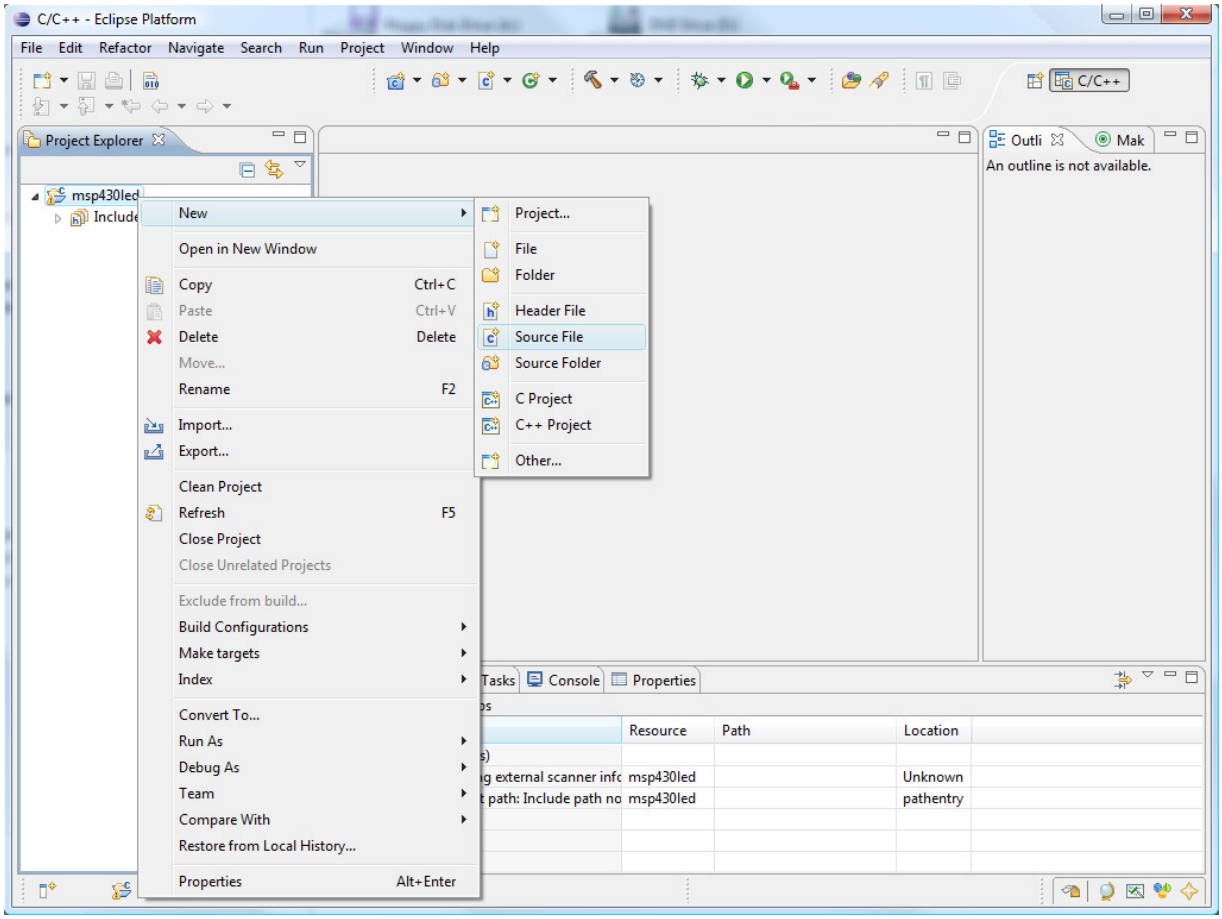


Click **OK** and **Finish**

Go to the workbench:



Add new **source file** with the name **main.c**



Paste the following source code:

```
#include <msp430x16x.h>

int main(void){
	WDTCTL = WDTPW | WDTHOLD;

	P5DIR |= 0x80;

	while (1) {
		volatile unsigned int i;

		P5OUT |= 0x80;

		for (i = 0; i < 50000; i++);

		P5OUT &= ~0x80;

		for (i = 0; i < 50000; i++);
	}
}
```

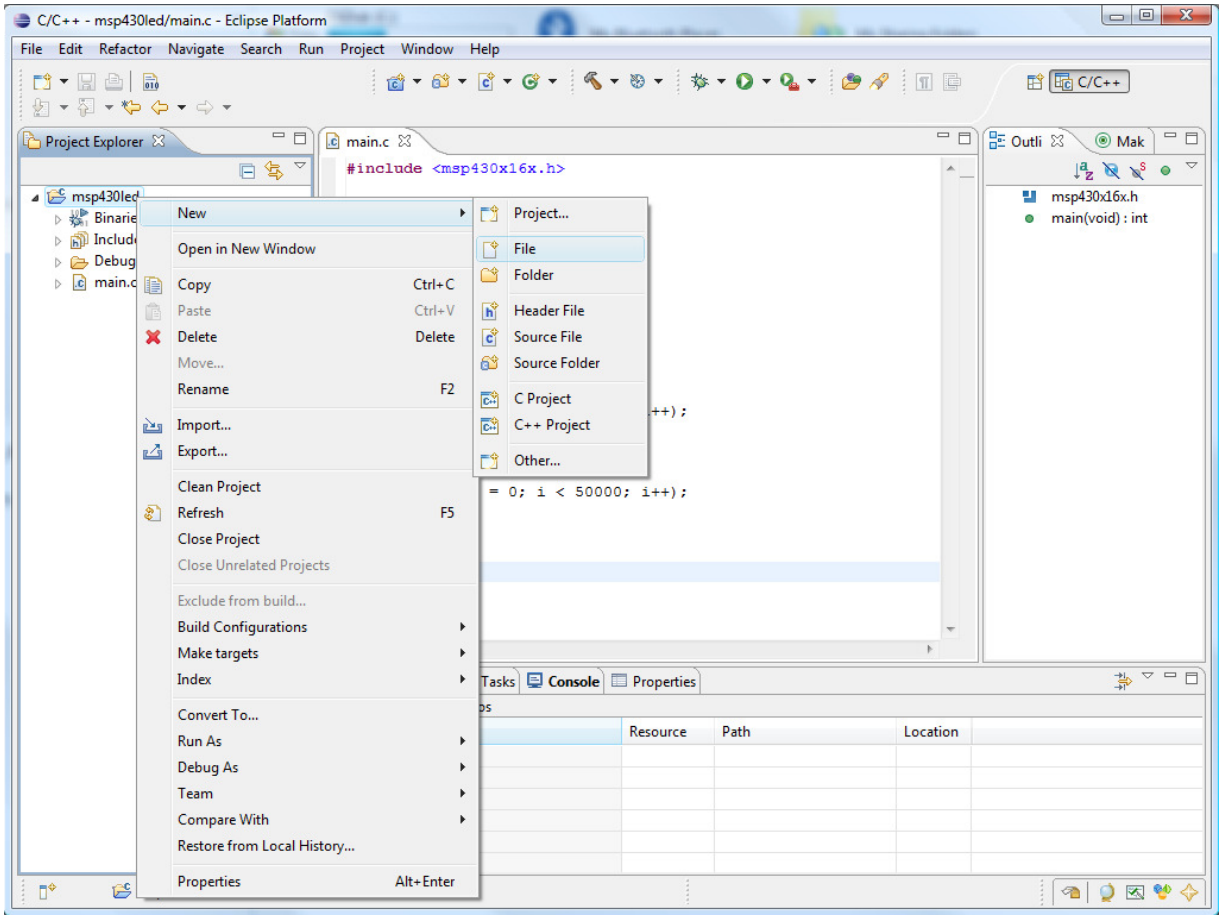
Save the file and then hit **CTRL + B** in order to compile.

Try to add a syntax error, the error should be correctly detected and marked within the IDE.

➔ Compiler works.

Debugging:

Add new File with the name **gdbtarget.ini**



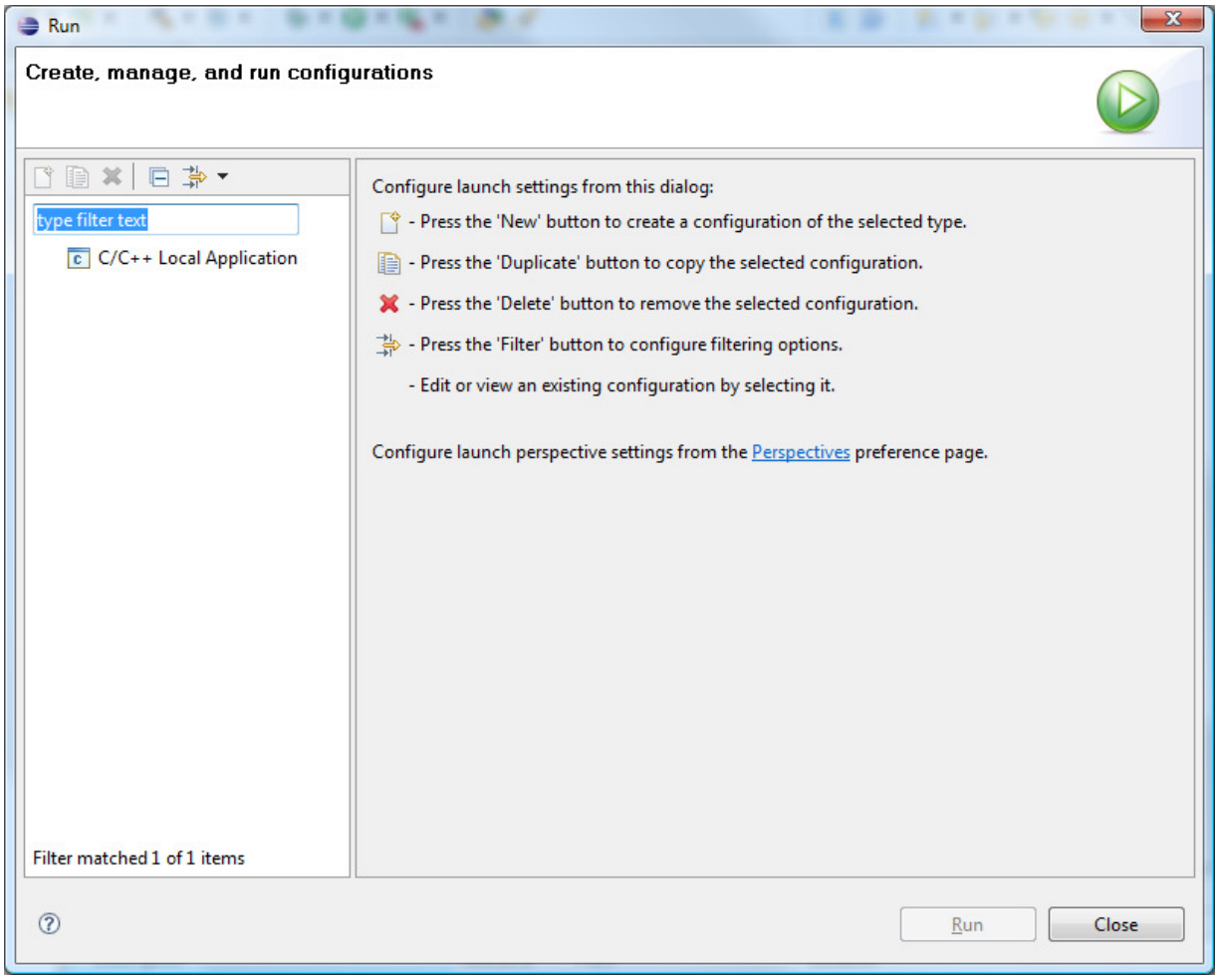
Paste the following into the file:

```
target remote localhost:3333
set remoteaddresssize 16
set remotetimeout 9999999
set download-write-size 512
set remote memory-write-packet-size 512
set remote memory-write-packet-size fixed
set remote memory-read-packet-size 512
set remote memory-read-packet-size fixed
monitor erase main
```

load Debug\msp430led

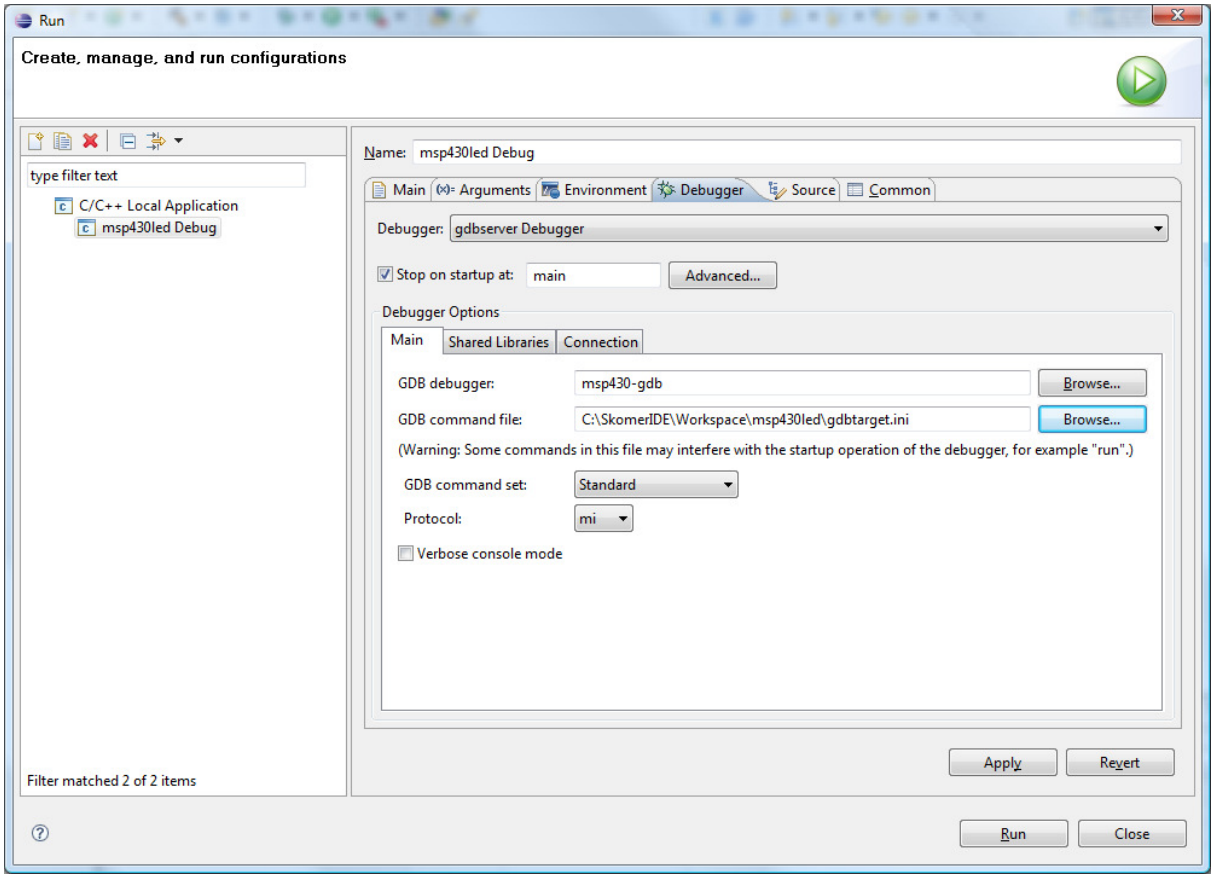
Please note that the name of the application is referenced in this file!

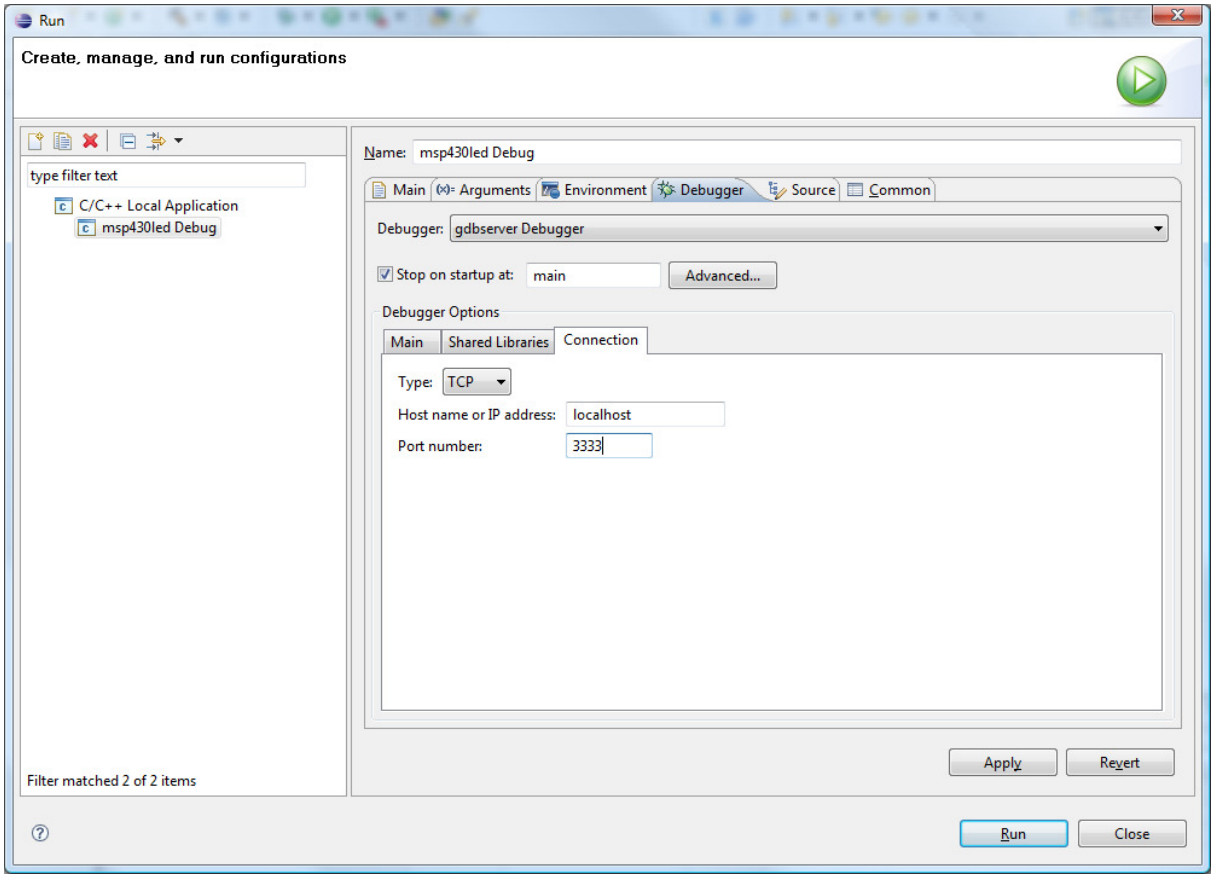
Select **Run -> Open Debug Dialog...**



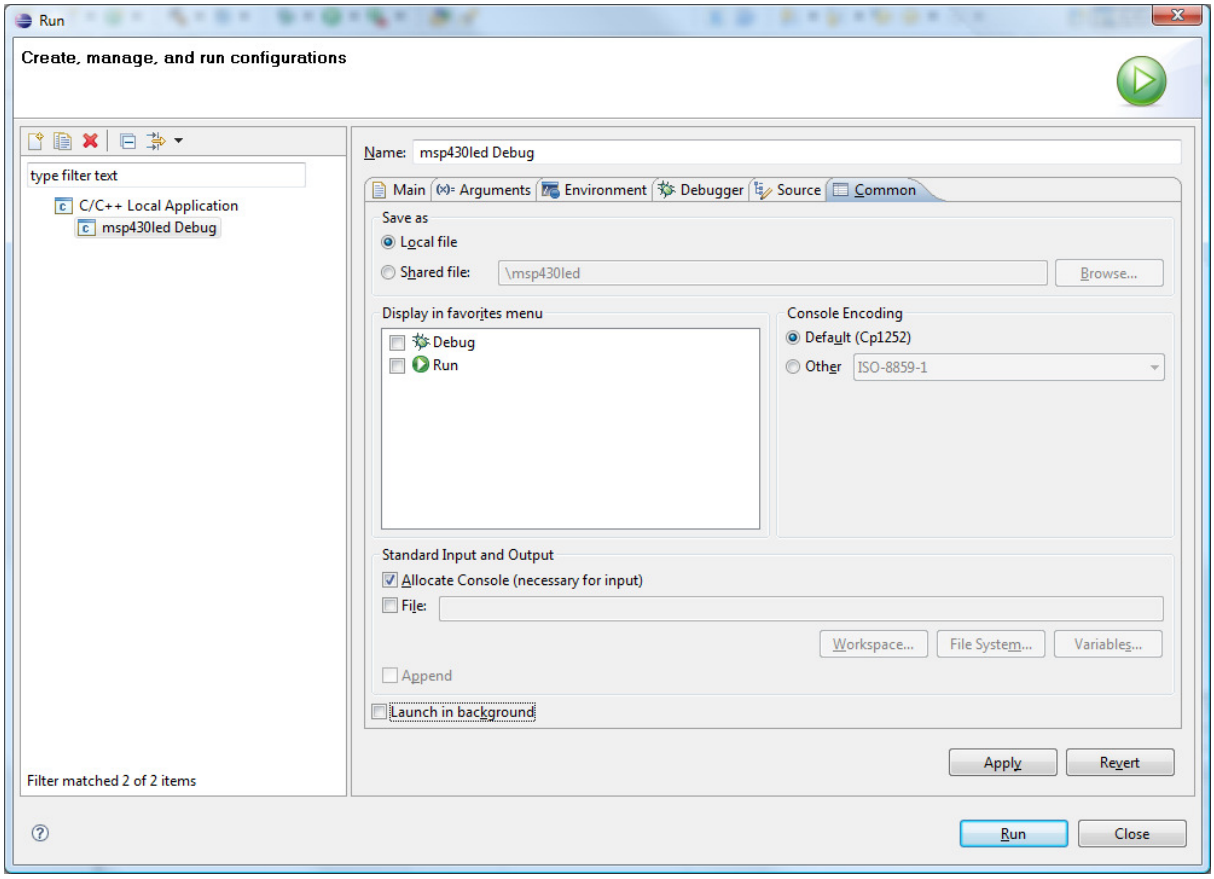
Press the **New** button to create a configuration.

Switch to the debugger tag and set the options as follows:


Run
Create, manage, and run configurations
type filter text
C/C++ Local Application
msp430led Debug
Filter matched 2 of 2 items
Name: msp430led Debug
Main
Arguments
Environment
Debugger
Source
Common
Debugger: gdbserver Debugger
Stop on startup at: main
Advanced...
Debugger Options
Main
Shared Libraries
Connection
GDB debugger: msp430-gdb
Browse...
GDB command file: C:\SkomerIDE\Workspace\msp430led\gdbtarget.ini
Browse...
(Warning: Some commands in this file may interfere with the startup operation of the debugger, for example "run".)
GDB command set: Standard
Protocol: mi
Verbose console mode
Apply
Revert
Run
Close



Remove the **Launch in background** chceckbox


Run
Create, manage, and run configurations
type filter text
C/C++ Local Application
msp430led Debug
Filter matched 2 of 2 items
Name: msp430led Debug
Main
Arguments
Environment
Debugger
Source
Common
Save as
Local file
Shared file:
\msp430led
Browse...
Display in favorites menu
Debug
Run
Console Encoding
Default (Cp1252)
Other
ISO-8859-1
Standard Input and Output
Allocate Console (necessary for input)
File:
Workspace...
File System...
Variables...
Append
Launch in background
Apply
Revert
Run
Close