



# Ten Minutes to Setup Modern Fortran Compiler 2003/2008

## Fortran Programming

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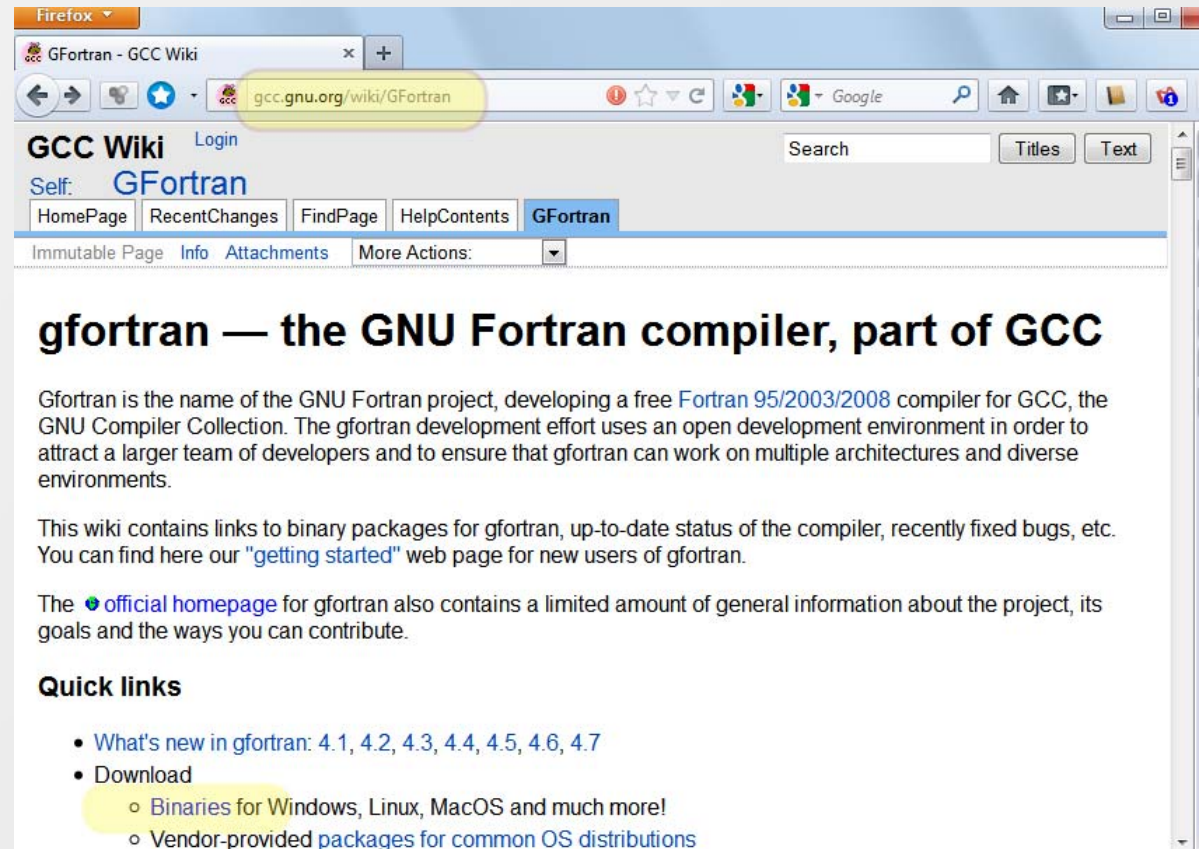


## Outline

- Get the free gfortran compiler 2003/2008
- Get the free IDE, Code::Blocks (CB) for Fortran
- Setup gfortran on Windows
- Setup CB on Windows
- Write your first Fortran program

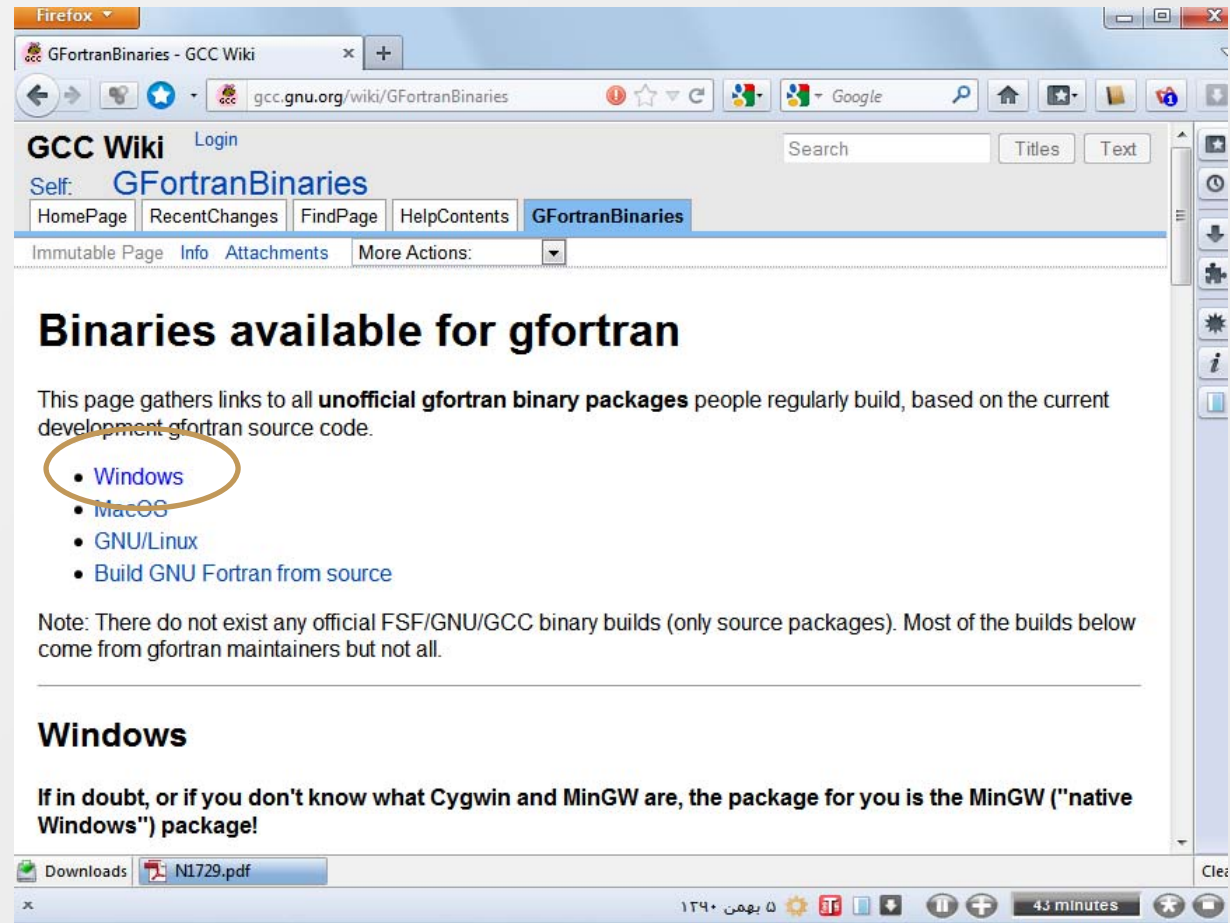
# I. Get the gfortran compiler . . .

- Open the following link: [gcc.gnu.org/wiki/GFortran](http://gcc.gnu.org/wiki/GFortran)
- Click on **Binaries** for Windows under Download



# I. Get the gfortran compiler . . .

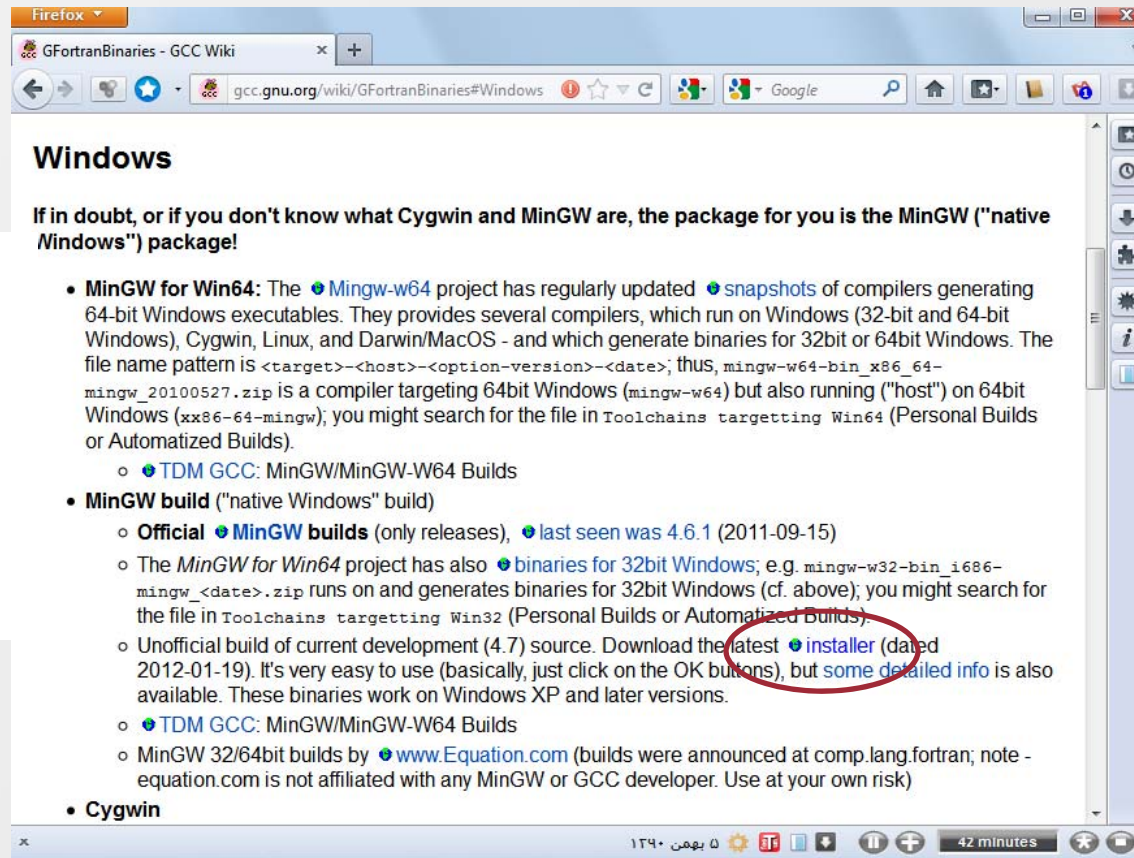
- Click on windows:



# I. Get the gfortran compiler . . .

- There are different binaries to download:
  - 32 bit
  - 64 bit

For this demo, we download the latest 32 bit and it works both on 64 and 32 bit windows!



**Windows**

If in doubt, or if you don't know what Cygwin and MinGW are, the package for you is the MinGW ("native Windows") package!

- **MinGW for Win64:** The [Mingw-w64](#) project has regularly updated [snapshots](#) of compilers generating 64-bit Windows executables. They provides several compilers, which run on Windows (32-bit and 64-bit Windows), Cygwin, Linux, and Darwin/MacOS - and which generate binaries for 32bit or 64bit Windows. The file name pattern is <target>-<host>-<option-version>-<date>; thus, mingw-w64-bin\_x86\_64-mingw\_20100527.zip is a compiler targeting 64bit Windows (mingw-w64) but also running ("host") on 64bit Windows (x86-64-mingw); you might search for the file in Toolchains targetting Win64 (Personal Builds or Automatized Builds).
  - [TDM GCC](#): MinGW/MinGW-W64 Builds
- **MinGW build** ("native Windows" build)
  - **Official [MinGW builds](#)** (only releases), [last seen was 4.6.1](#) (2011-09-15)
  - The [MinGW for Win64](#) project has also [binaries for 32bit Windows](#); e.g. mingw-w32-bin\_i686-mingw\_<date>.zip runs on and generates binaries for 32bit Windows (cf. above); you might search for the file in Toolchains targetting Win32 (Personal Builds or Automatized Builds).
  - Unofficial build of current development (4.7) source. Download the latest [installer](#) (dated 2012-01-19). It's very easy to use (basically, just click on the OK buttons), but [some detailed info](#) is also available. These binaries work on Windows XP and later versions.
  - [TDM GCC](#): MinGW/MinGW-W64 Builds
  - MinGW 32/64bit builds by [www.Equation.com](#) (builds were announced at comp.lang.fortran; note - equation.com is not affiliated with any MinGW or GCC developer. Use at your own risk)
- **Cygwin**

*You can later download other builds and follow the same instructions*



## II. Get the IDE

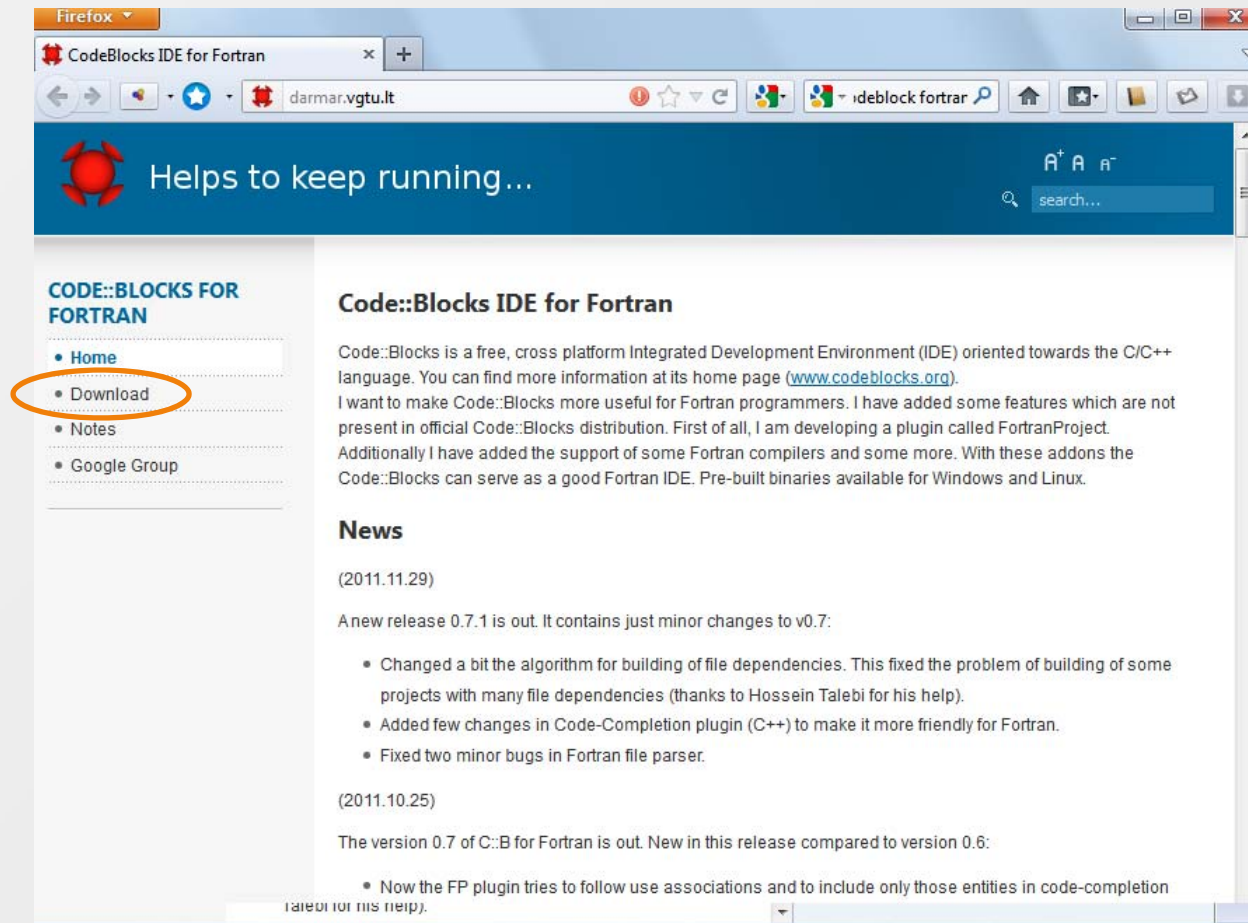
- You can skip this step, if you don't need an IDE and use simple editor to code!
- There are two different IDEs you can download for free:
  - Code::Blocks (CB) for Fortran
    - Easy to use, syntax highlighting and code completion
    - Support multi-projects workspace
    - Can create static and dynamic libraries
    - Support debugging
  - Photran
    - A great portable IDE based on Eclipse (need JRE)
    - Refactoring capabilities
    - Support debugging, workspace
    - Can create static and dynamic libraries
- Here, CB is selected as the Fortran IDE

*IDE stands for Integrated Development Environment*



## II. Get the CB IDE for Fortran ...

- Open the following link:  
<http://darmar.vgtu.it/>
- Click on download



## II. Get the CB IDE for Fortran ...

- Download the appropriate build



Here, we download the 32bit  
Windows version!

If you work on linux, you should  
download both gfortran and CB  
for linux!







## III. Setup gfortran ...

- Install gfortran on Windows by running the executable downloaded in step I

*The file version on the date of this presentation is gfortran-windows-20120119.exe*

Name	Date modified	Type	Size
 CodeBlocks_Fortran_v0.7.1_Win32.zip	12/24/2011 8:58 AM	WinRAR ZIP archive	13,653 KB
 gfortran-windows-20120119.exe	1/19/2012 8:49 PM	Application	64,678 KB

*In this demo, we install on Windows 7, 64 bit. The instruction is the same under other versions of Windows!*

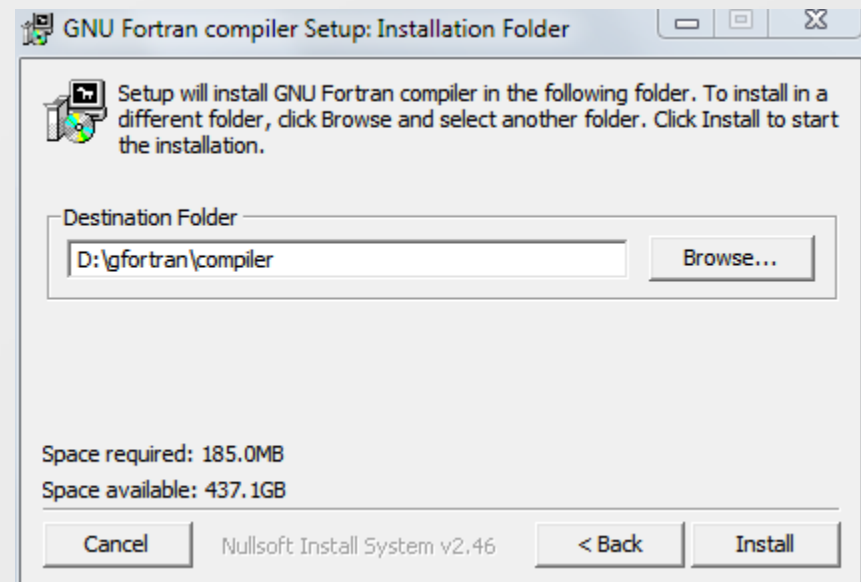
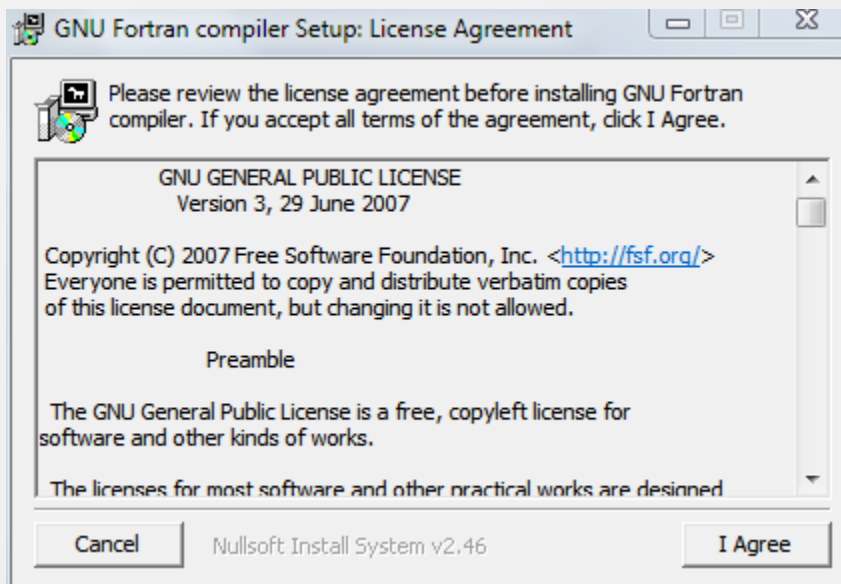


## III. Setup gfortran ...

- Follow the on screen instruction to complete the install!
- By default gfortran will be installed in Windows “Program Files” folder. If you setup a 32 bit version on 64 bit Windows, it will be installed in “Program Files (x86)”
- I recommend to choose an installation folder separate from windows Program Files! But it works fine even you install in “Program Files” folder!

### III. Setup gfortran ...



- Here I used “D:\gfortran\compiler” as my installation folder
- Wait to finish installation





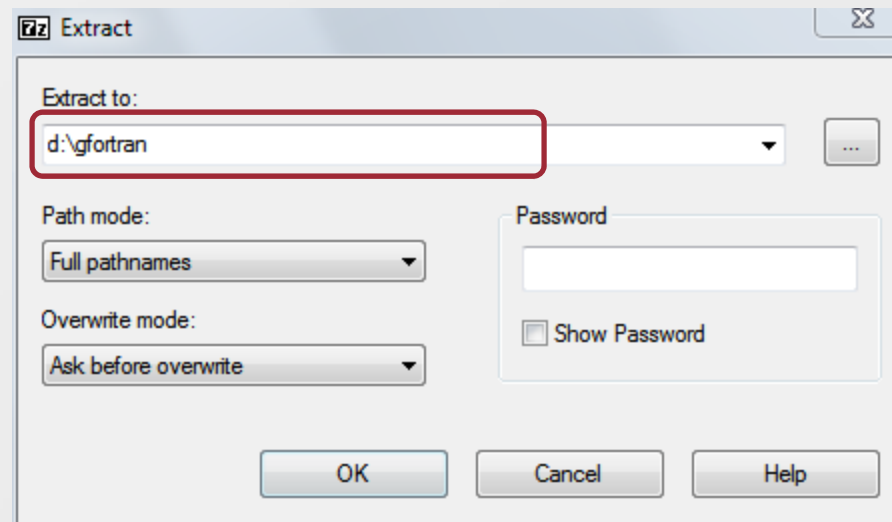
## IV. Setup CB for Fortran ...

- CB for Fortran is actually portable
- Just unzip the package into the folder of your choice

Name	Date modified	Type	Size
 CodeBlocks_Fortran_v0.7.1_Win32.zip	12/24/2011 8:58 AM	WinRAR ZIP archive	13,653 KB
 gfortran-windows-20120119.exe	1/19/2012 8:49 PM	Application	64,678 KB

## IV. Setup CB for Fortran ...

- Here we put CB in the same folder as gfortran i.e in our case *D:\gfortran*
- Just unzip the package in the folder of your choice

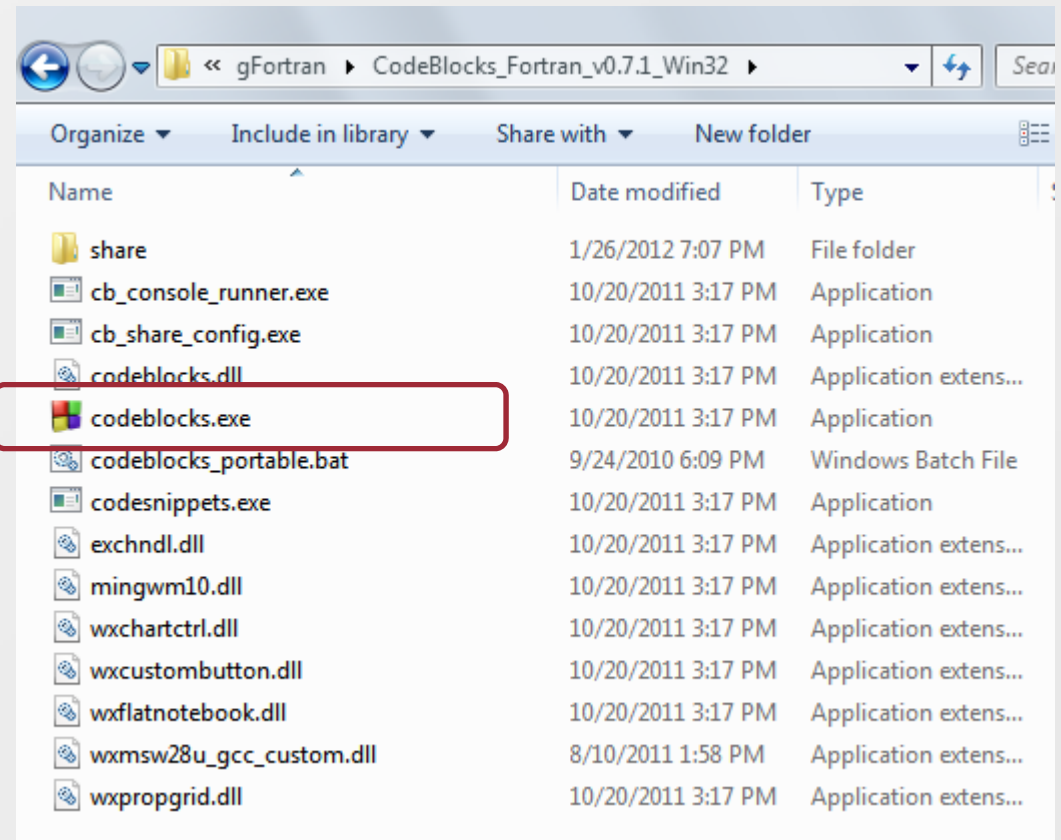


To unzip, you can use the free utility [7-zip](#).



## Run CB and Set Options

- Open the CB installation folder and run codeblocks.exe
- For convenience, you can make a shortcut on your desktop!

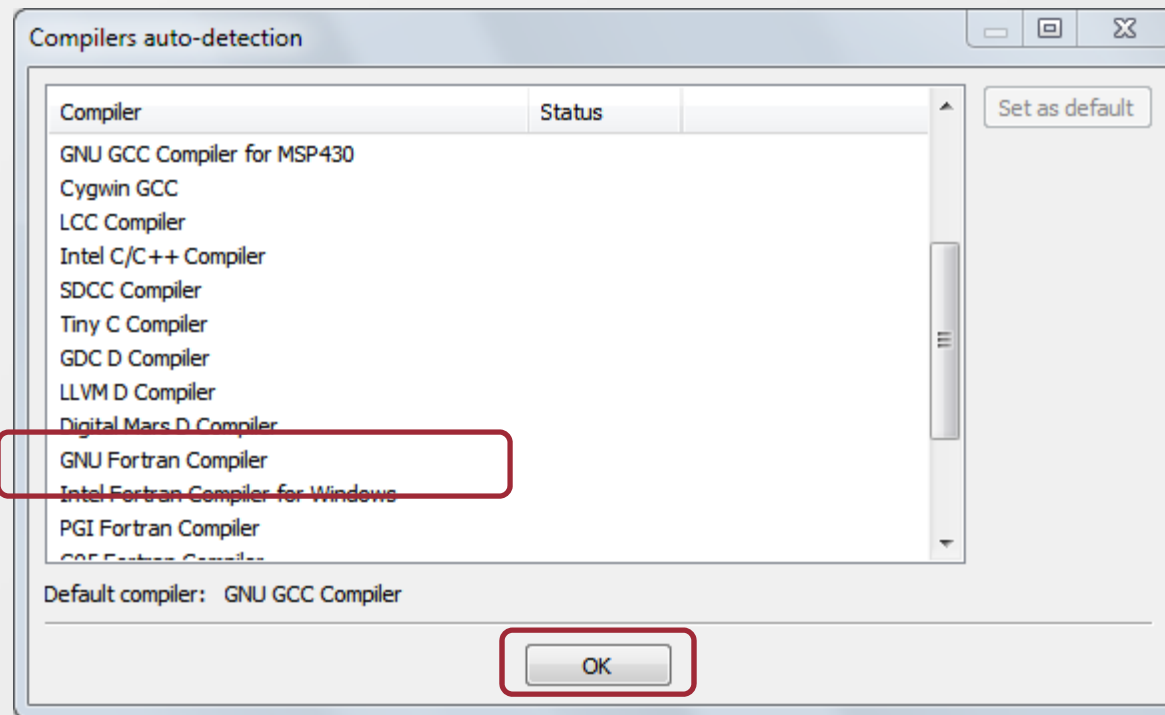


*You can use CB as portable. You can consult the CB help for this purpose!*



## Set the Default Compiler

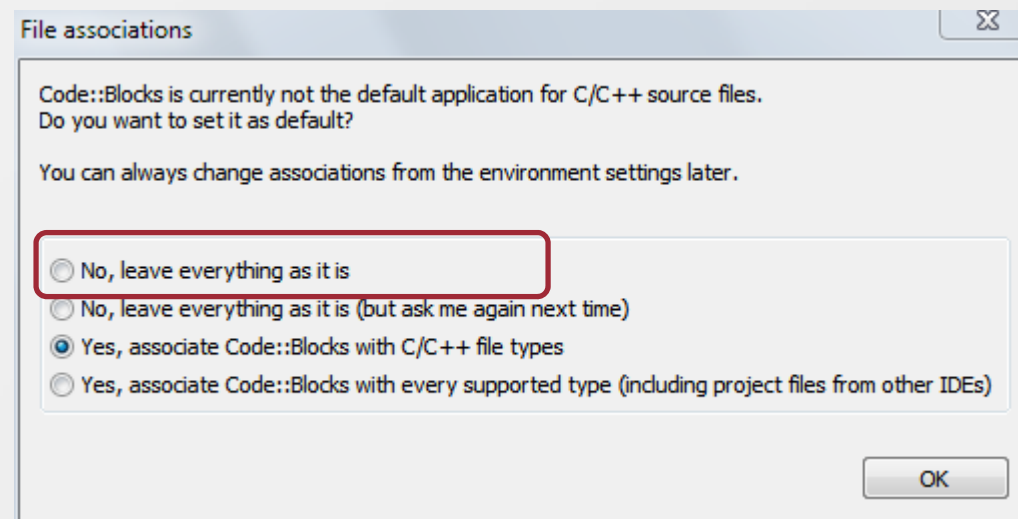
- After CB starts, a window appears ask for default compiler
- Select 'GNU Fortran Compiler'
- Click on 'Set as Default' and press 'Ok' button





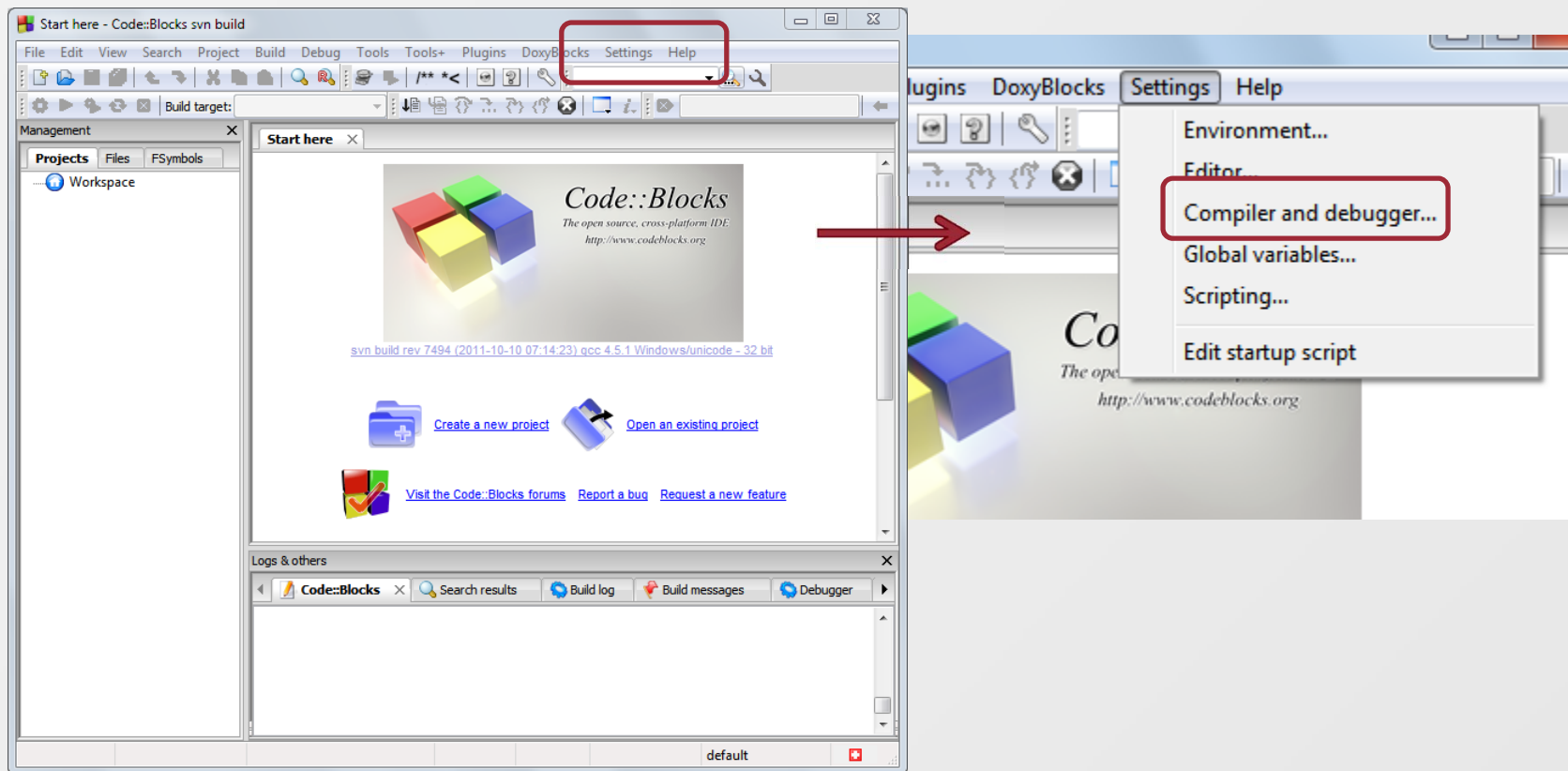
## File associations

- CB lets you to associates file types with itself.
- You can skip this step or set some file types to be opened by CB.



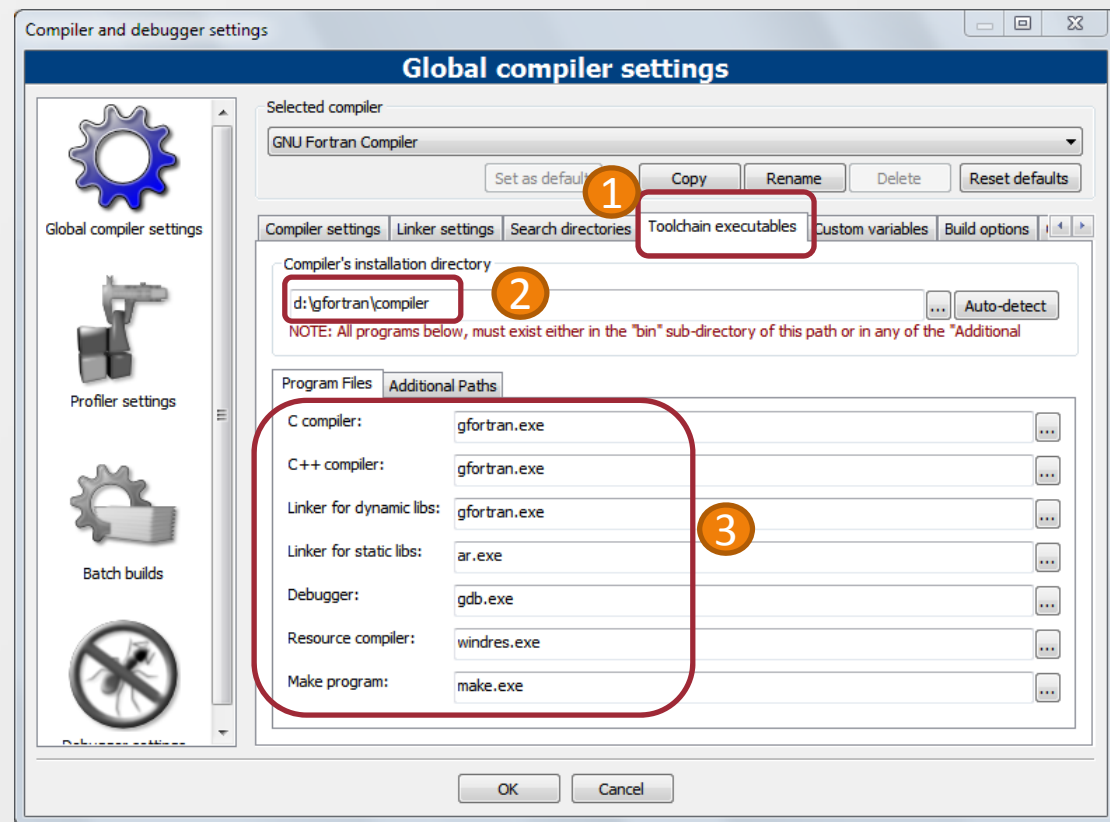
# Set compiler and debugger path ...

- Click on setting
- Select 'Compiler and debugger...'



# Set compiler and debugger path

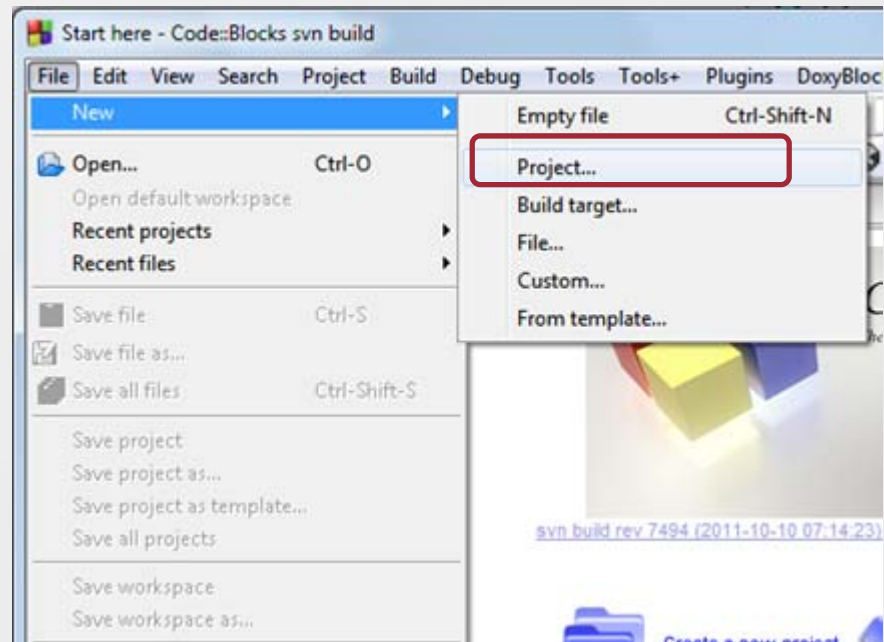
- Click on 'Toolchain executables' and set the path
- For this demo, the path is as below!
- Correct it (step 2 below) based on your installation
- Click 'OK'
- That's all.





## V. Create a simple Fortran program ...

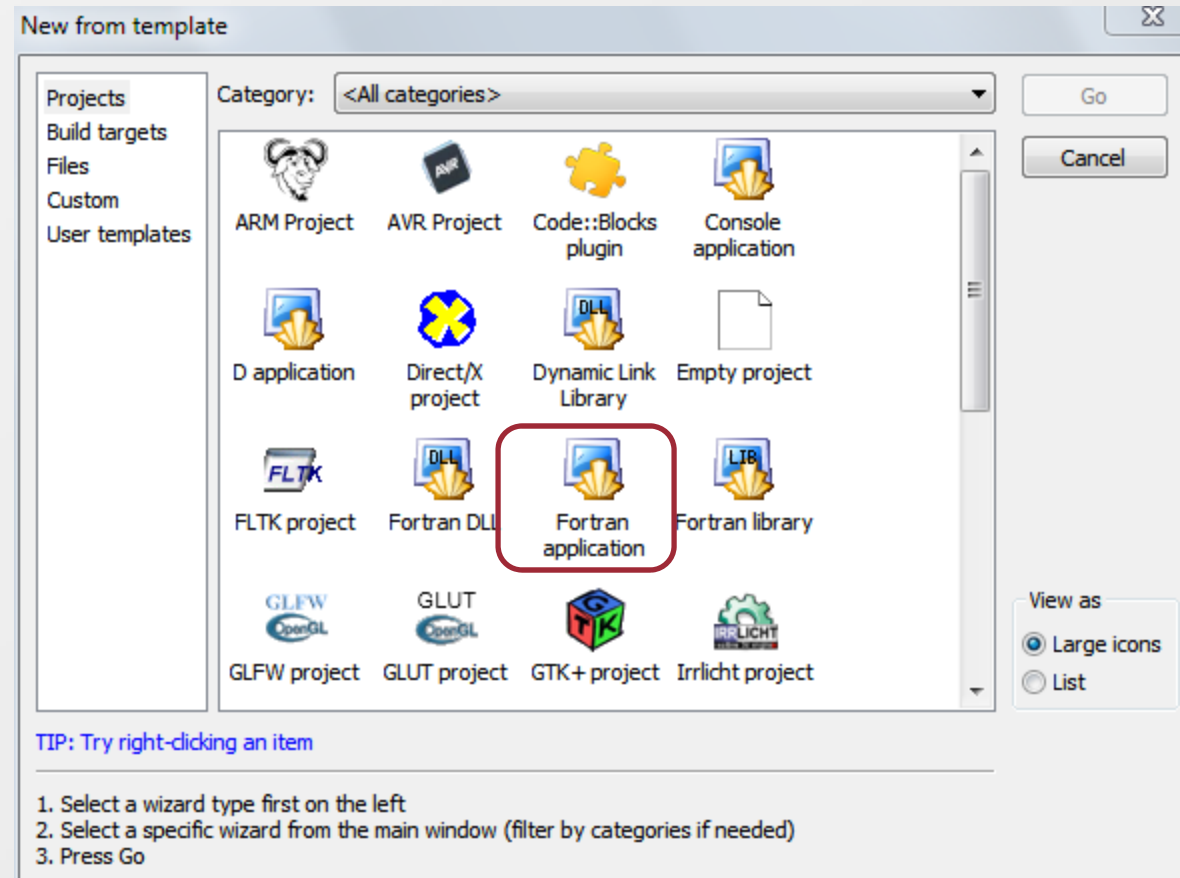
- Click on 'New' from menubar
- Select 'Project'





# Fortran Application

- In the window appears, select 'Fortran Application'







# Welcome window

- Select 'Next'





## Select project title and folder

- Enter a project title
- Select a project folder

Please select the folder where you want the new project to be created as well as its title.

Project title:  
HelloWorld 1

Folder to create project in:  
D:\gFortran\work 2

Project filename:  
HelloWorld.cbp

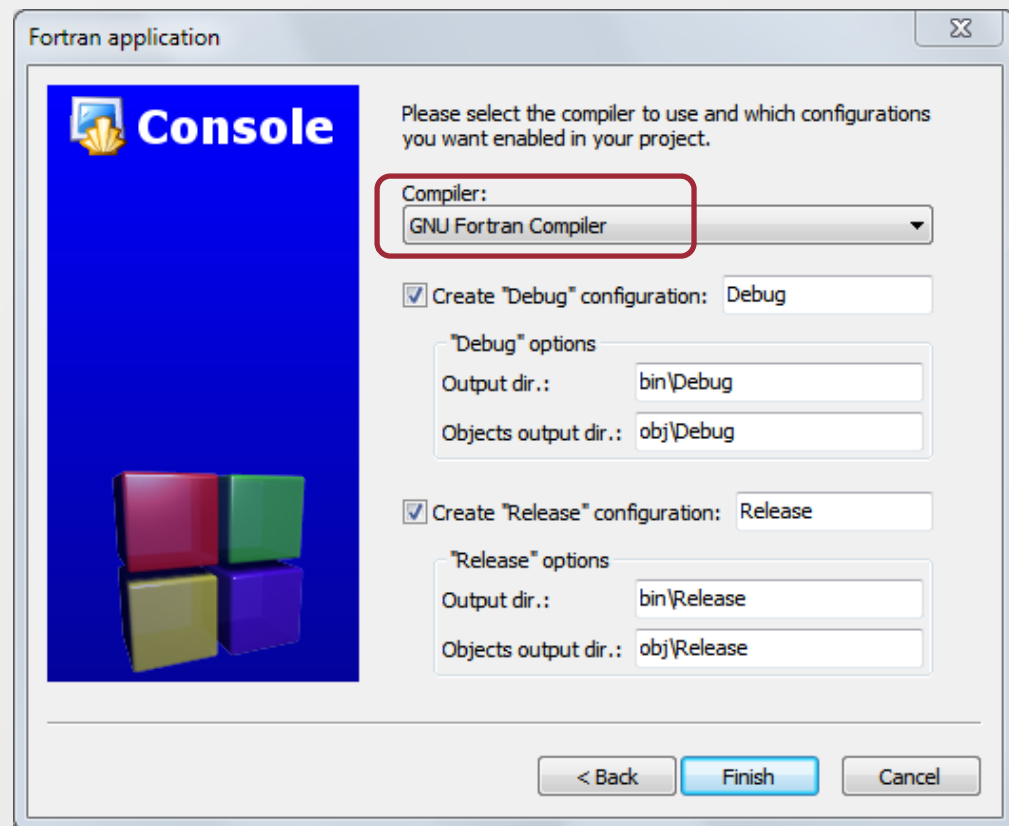
Resulting filename:  
D:\gFortran\work\HelloWorld\HelloWorld.cbp

< Back   Next >   Cancel

*Don't worry about the Project filename, it will be 'main.f90'*

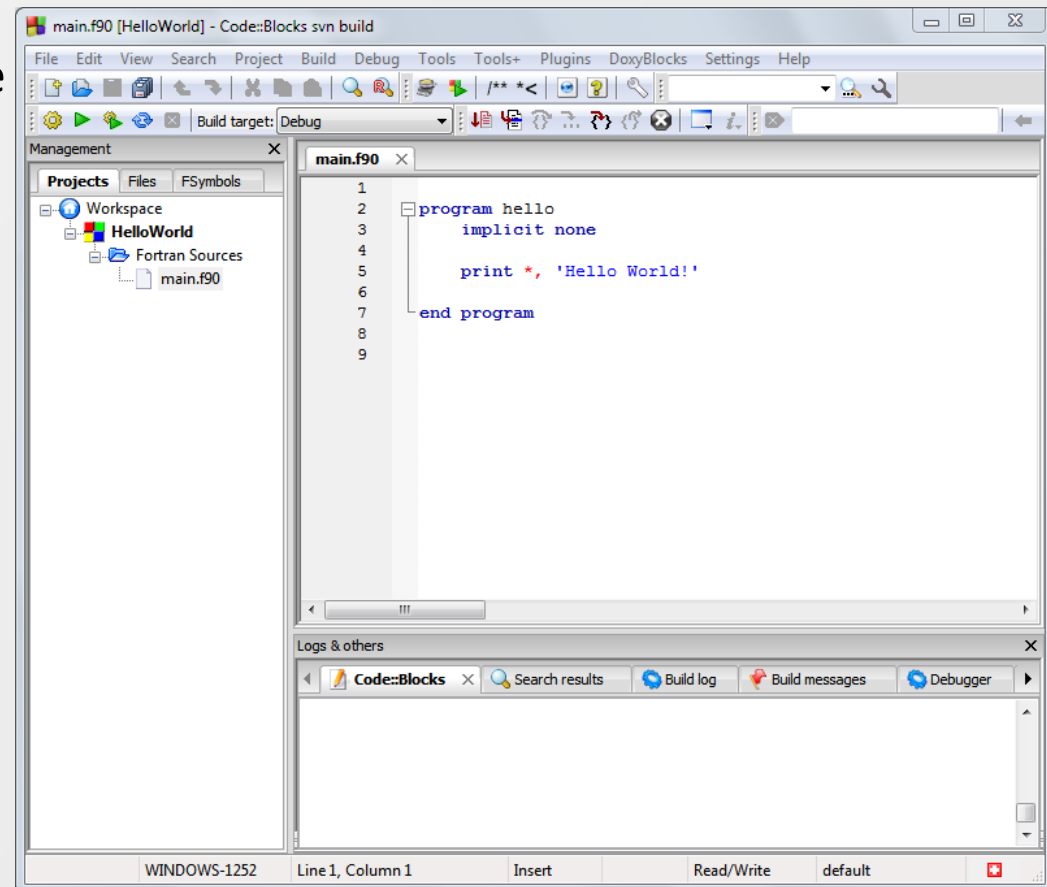
# Fortran project configuration

- By default CB create two build configurations
  - Debug configuration
  - Release configuration
- Make sure 'Compiler' is set to 'GNU Fortran Compiler'
- Click on 'Finish'



# The Fortran source file

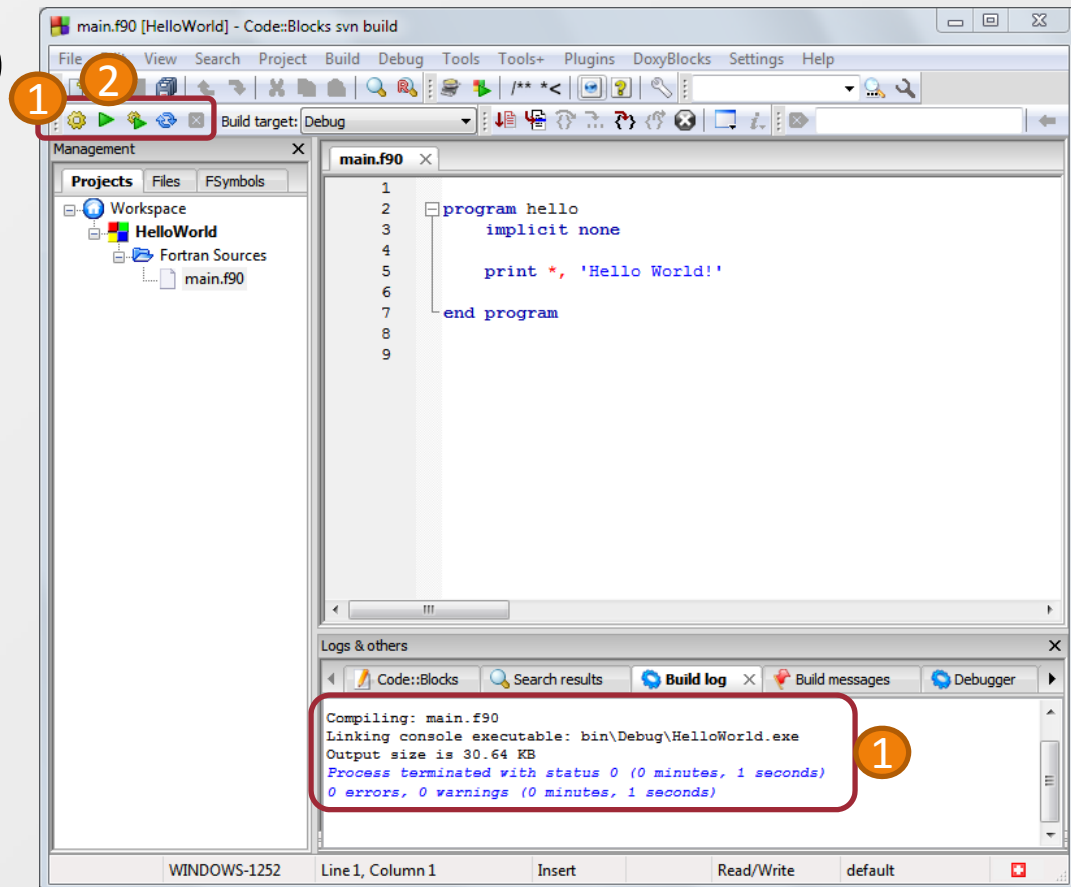
- By default a 'main.f90' is created
- You can edit it and put your own code inside 'main.f90'
- You can also rename it, if you like
- ...



```
1
2 program hello
3   implicit none
4
5   print *, 'Hello World!'
6
7 end program
8
9
```

# Compile, build and run your first program

- Click on 'build' button to compile and build your program (*step 1*)
- Click on 'Run' button (*step 2*)





# See the result

The screenshot shows a code editor window titled "main.f90 [HelloWorld] - Code::Blocks svn build". The editor displays the following Fortran code:

```
1  
2 program hello  
3   implicit none
```

Below the code editor, a console window titled "D:\gFortran\work\HelloWorld\bin\Debug\HelloWorld.exe" shows the execution output:

```
Hello World!  
Process returned 0 (0x0)   execution time : 0.020 s  
Press any key to continue.
```

At the bottom of the console window, the following text is visible:

```
Checking for existence: D:\gFortran\work\HelloWorld\bin\Debug\HelloWorld.exe  
Executing: "D:\gFortran\CodeBlocks_Fortran_v0.7.1_Win32\cb_console_runner.exe"  
"D:\gFortran\work\HelloWorld\bin\Debug\HelloWorld.exe" (in D:\gFortran\work  
\HelloWorld\.)
```

The status bar at the bottom of the editor shows "WINDOWS-1252", "Line 1, Column 1", "Insert", "Read/Write", and "default".





## Some exercises

- Exercises
  - Create a Fortran program with two source files
  - Compile only the source files, one by one using 'compile current file' under 'build' menu item
  - Rebuild your program by using the toolbar icon
  - Try debugging capabilities of CB
    - Add some variables to watch window
    - Step into procedures
  - Try other Fortran projects provided by CB
    - Make a Fortran static library
    - Make a Fortran DLL
  - Try workspace capabilities of CB
    - Create two projects
    - Make one dependent on the other