Ten Minutes to Setup Modern Fortran Compiler 2003/2008

Modern Fortran Programming

Mohammad Rahmani
Chemical Engineering Department
Amirkabir University of Technology
[m.rahmani@aut.ac.ir]

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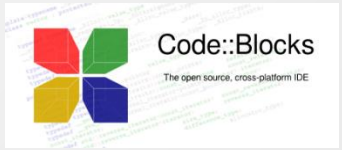


Outline

- 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

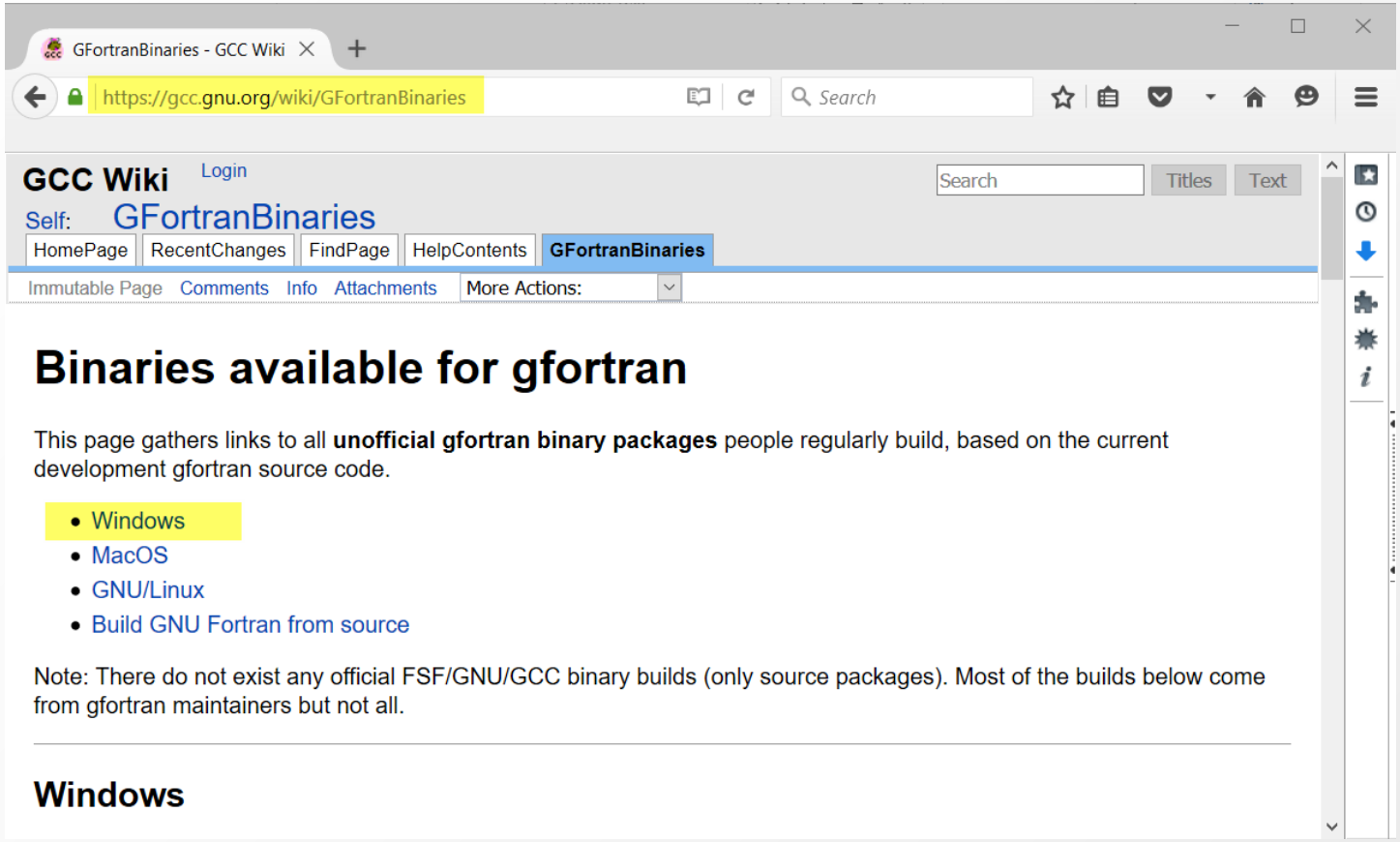
In this tutorial, we use GFortran as modern Fortran compiler and Code::Blocks as integrated development environment (IDE), both are free and cross platform

I. Get the gfortran compiler . . .

- Open the link: gcc.gnu.org/wiki/GFortran
- Click on Binaries for Windows under Download

I. Get the gfortran compiler . . .

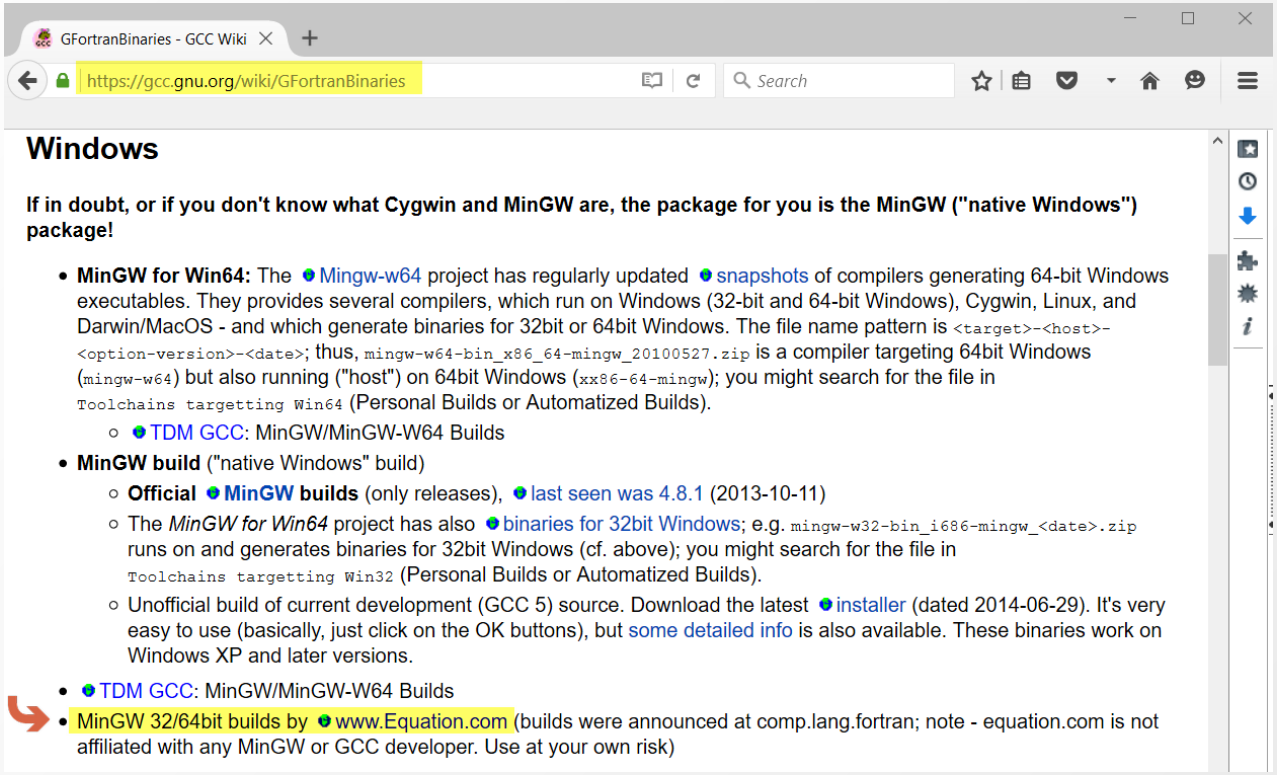
- Click on windows:



I. Get the gfortran compiler . . .

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

For this demo, we download the latest MinGW 64 bit version from *equation.com* to work on Windows 10!



You can later download other builds and follow the same instructions

II. Get the IDE

- If you don't need an IDE and use simple editor to code! you can skip this step.
- 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
    - Support building static and dynamic libraries
    - Support debugging
  - Photran
    - A great portable IDE based on Eclipse (need JRE)
    - Refractoring capabilities
    - Support debugging, workspace
    - Support building static and dynamic libraries
- Here, CB is selected as the Fortran IDE

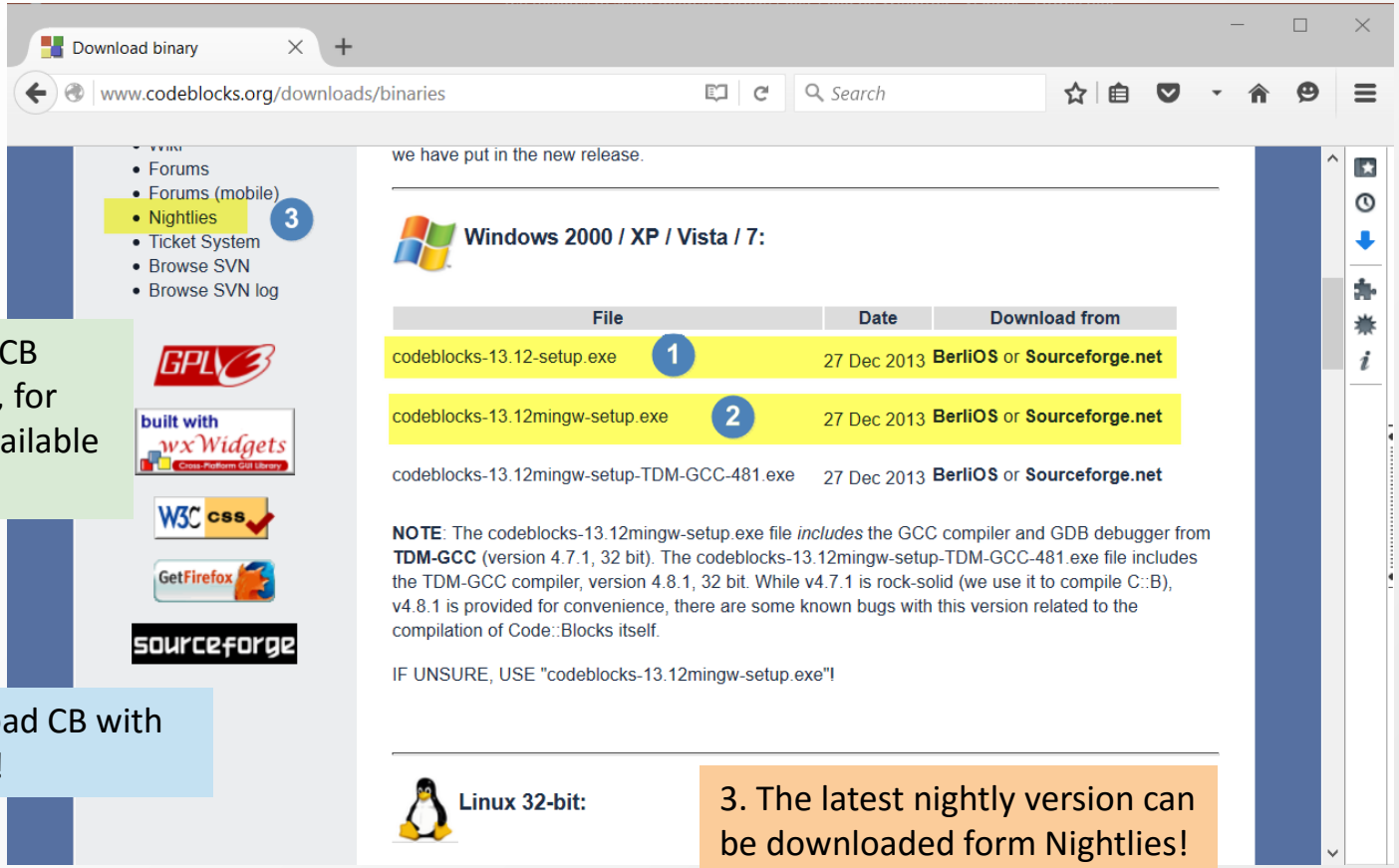
IDE stands for Integrated Development Environment

II. Get the CB IDE for Fortran …

- Open the CB link: http://codeblocks.org/
- Click on download

II. Get the CB IDE for Fortran …

- Download the appropriate build



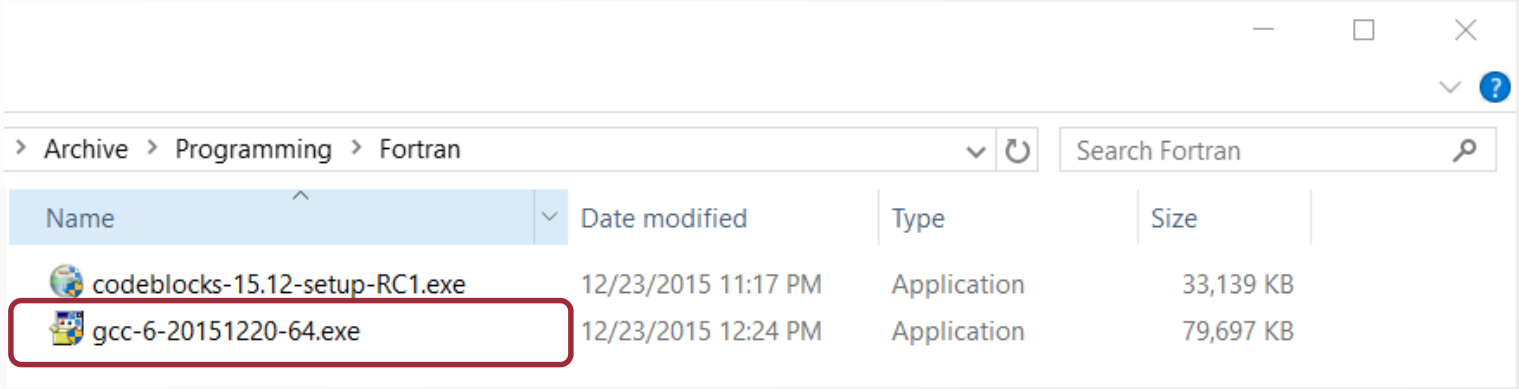
1. Here, we download CB 15.12 (nightly version), for Windows. CB is also available for other platforms

2. You can also download CB with gcc (MinGW) included!

3. The latest nightly version can be downloaded form Nightlies!

III. Setup gfortran …

- First install gfortran on Windows by running the executable downloaded in step I
  The file version on the date of this presentation is gcc-6-20151220-64



In this tutorial, we install gcc on Windows 10, 64 bit. The instruction is the same under other versions of Windows!

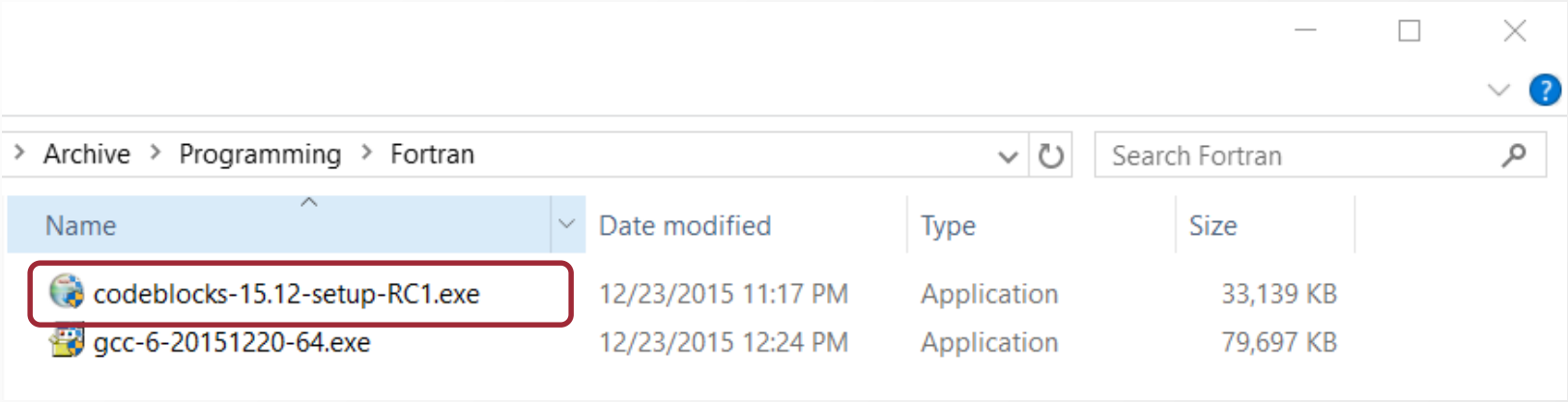
III. Setup gfortran …

- 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!
- For this tutorial, we have installed the gcc compiler collection in *D:\gfortran\gcc6*

IV. Setup CB for Fortran …

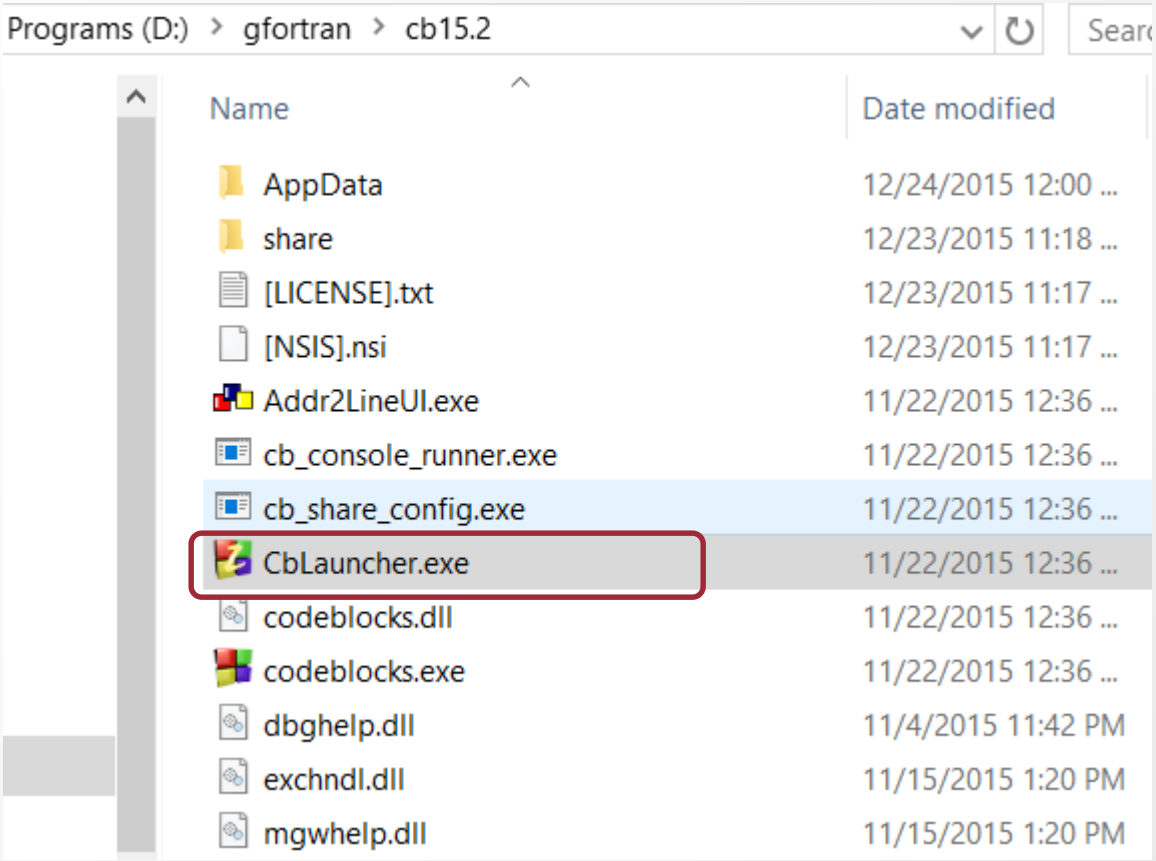
- Next, install Code::Blocks (CB)
- For this tutorial we used the latest release (15.12 RC1)

- *CB and gcc both are portable and can be installed by simple unzip to a folder of choice. (you can use the free 7-zip to do this).*



Run CB and Set Options

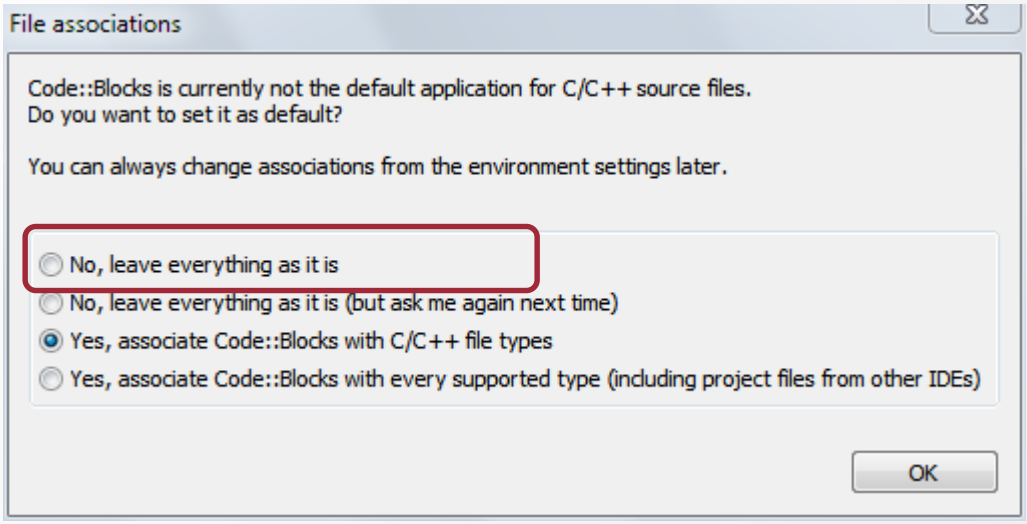
- Open the CB installation folder and run codeblocks.exe
- For convenience, you can make a shortcut on your desktop!



You can use CB as portable. To run CB in portable mode run "CbLauncher.exe

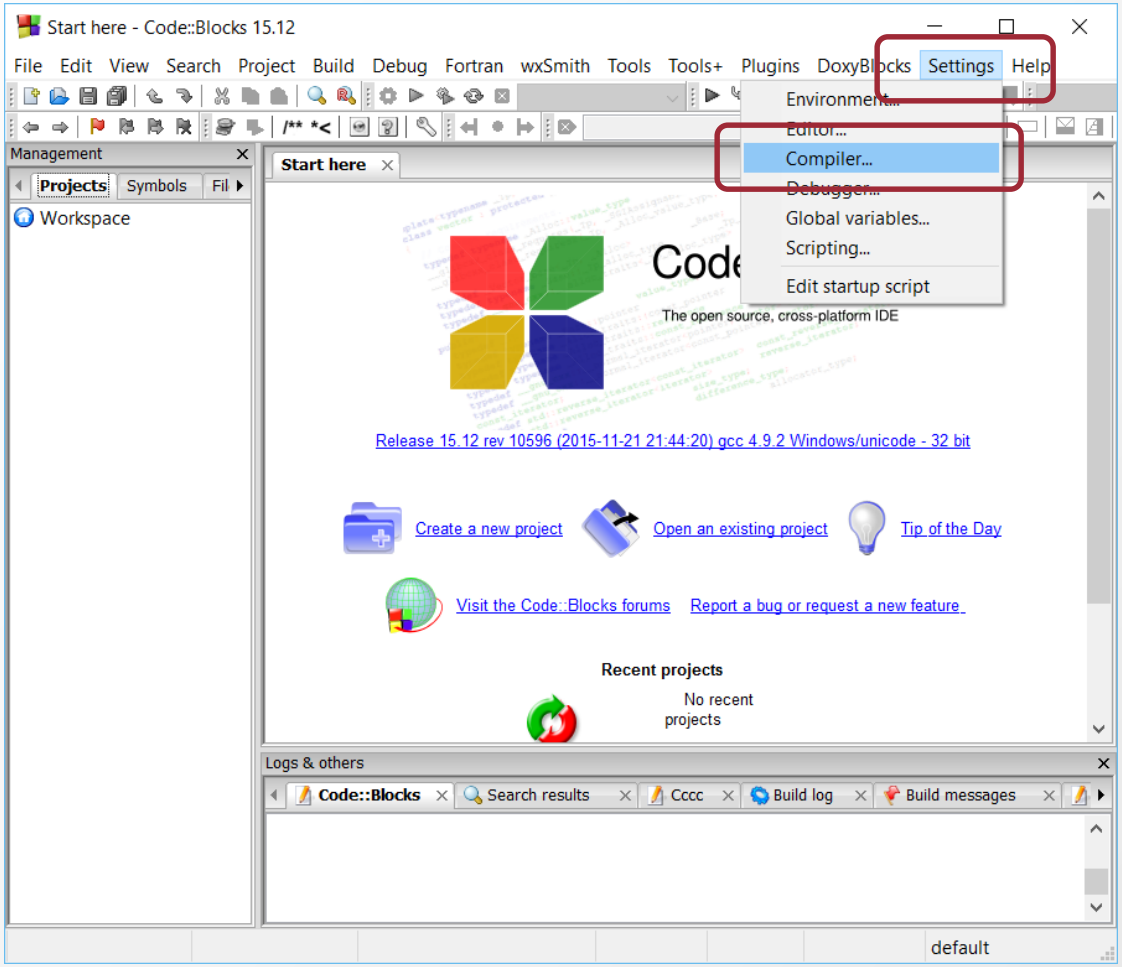
File associations

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



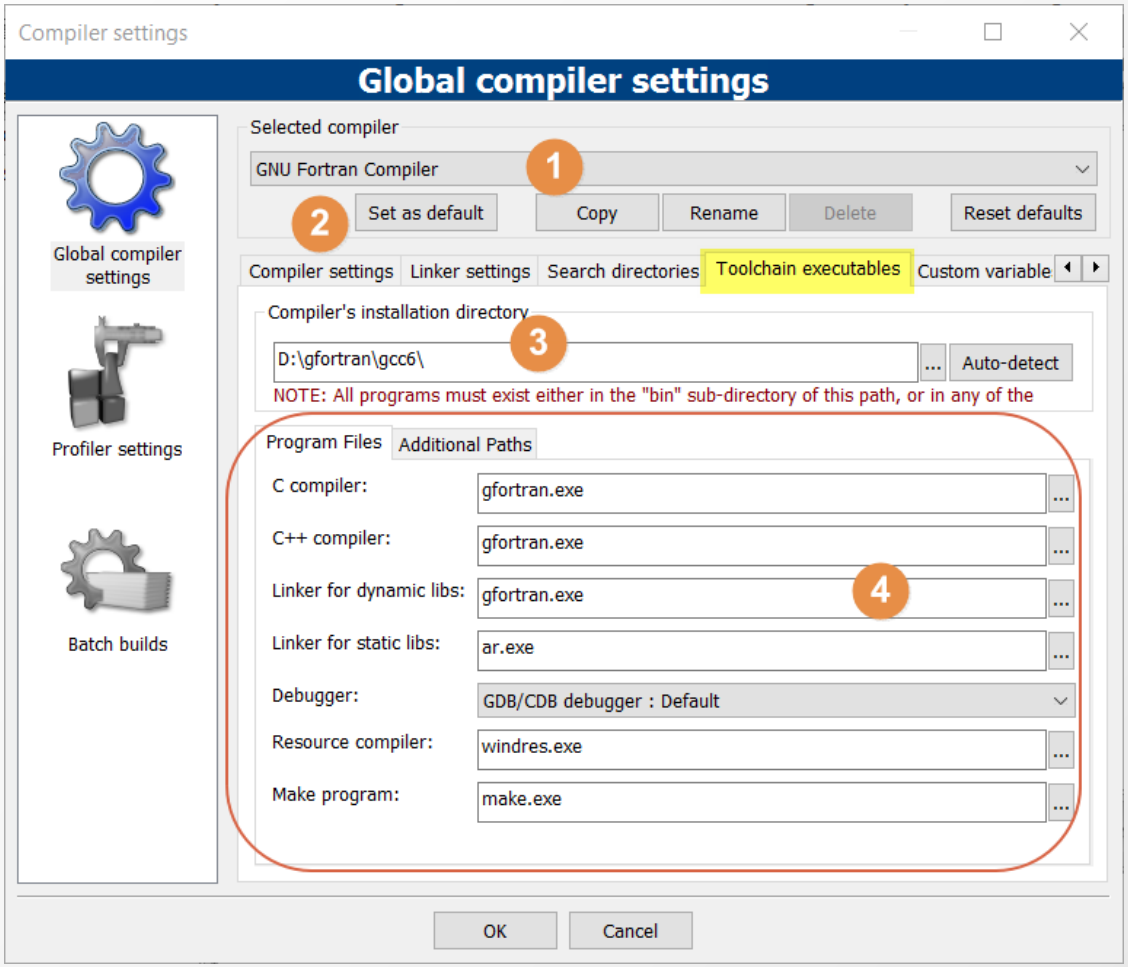
Set compiler path …

- In CB, click on setting
- Select ‘Compiler’



Set compiler path

- From selected compiler, choose “GNU Fortran Compiler”
- Click on “Set as default”

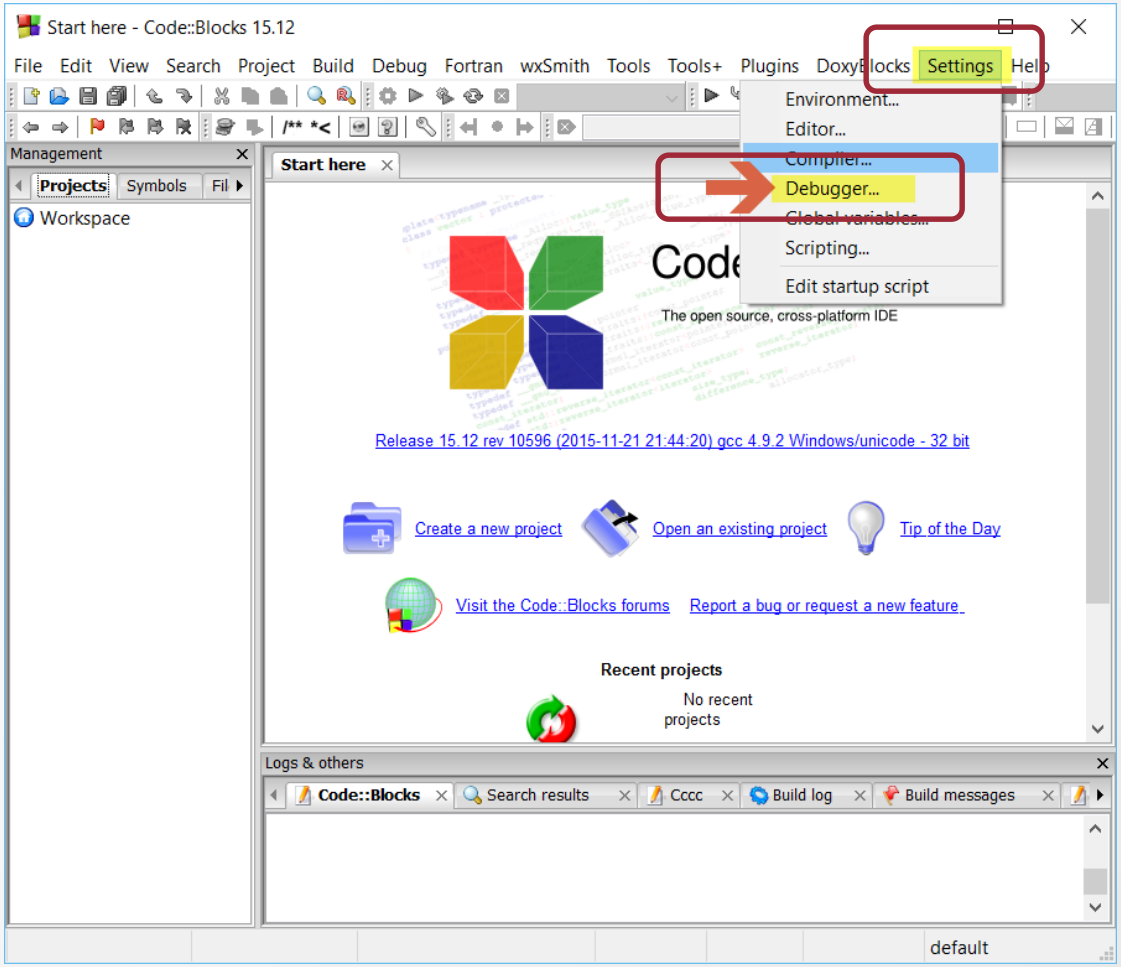


1. Click on ‘Toolchain executables’ and set the ptah
2. For this demo, the path is as D:\gfortran\gcc (3)! Correct it based on your installation
3. Correct the program files as shown in step 4 in figure.

Click, OK, that’s all

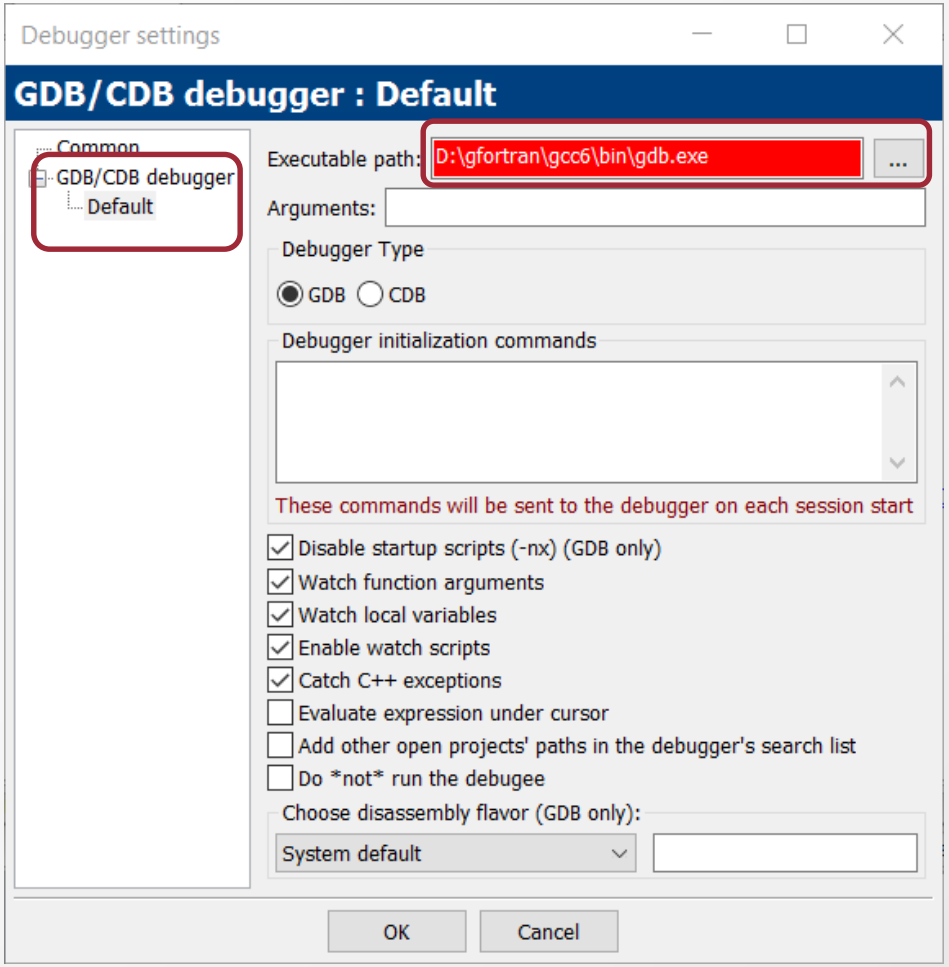
Set debugger path …

- In CB, click on setting
- Select ‘Debugger’



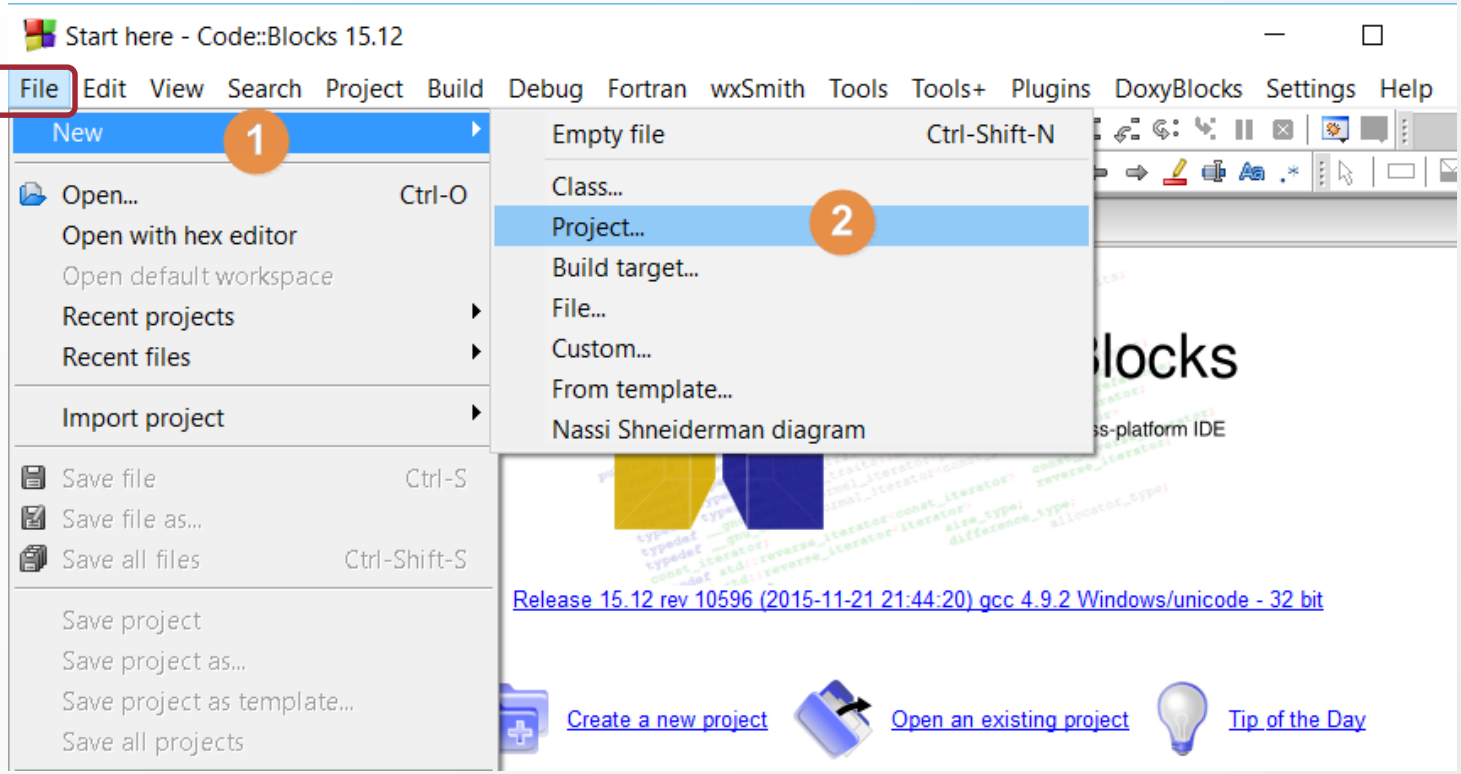
Set debugger path …

- Set the Executable path for debugger (gdb.exe)
- In this demo our path is as D:\gfortran\gcc6\bin\gdb.exe
- Click OK



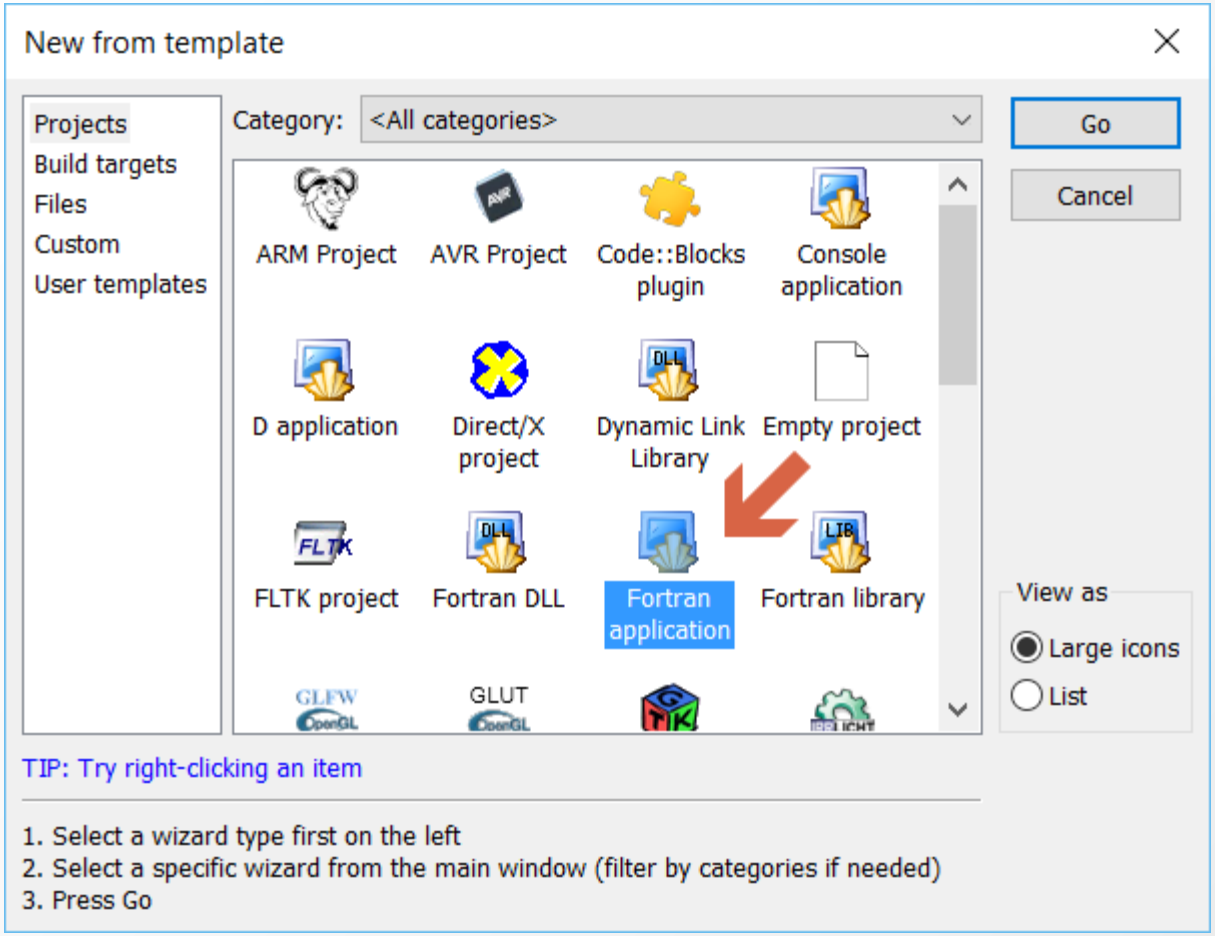
V. Create a simple Fortran program …

- Click on ‘New’ from File on Menu bar
- Select ‘Project’



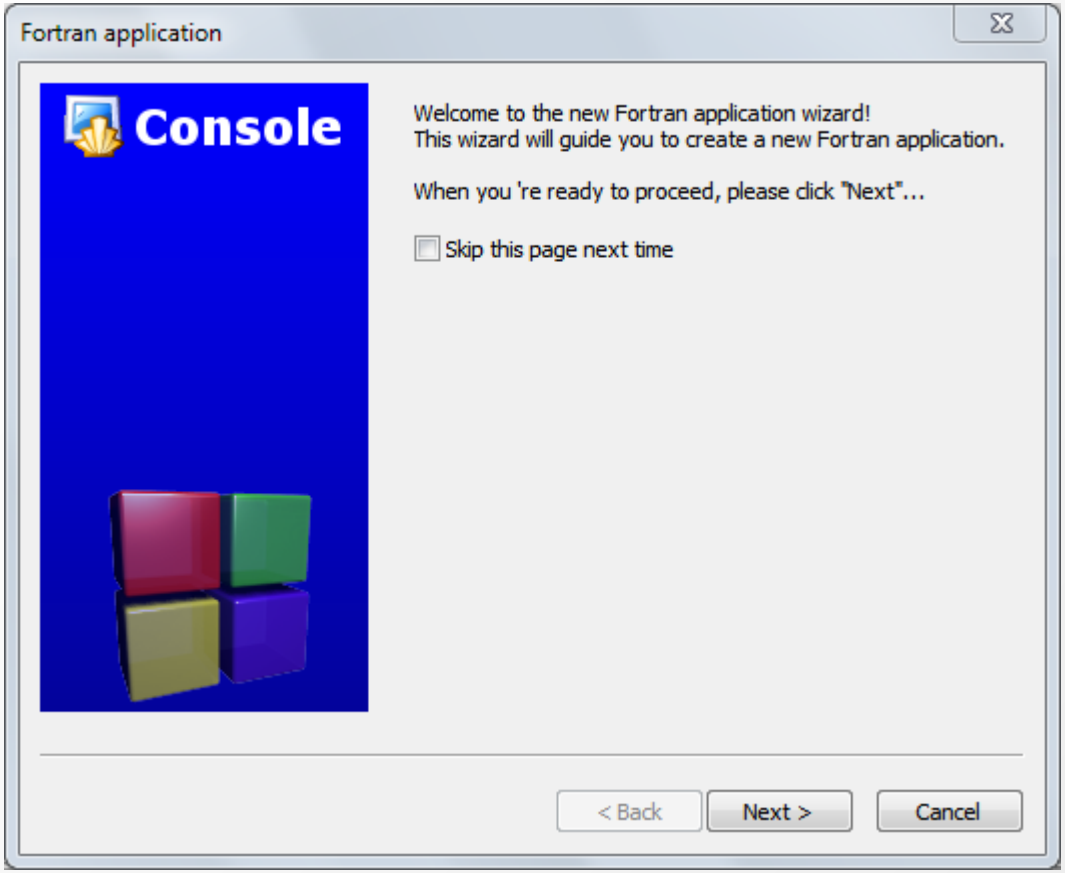
Fortran Application

- In the window appears, select ‘Fortran Application’



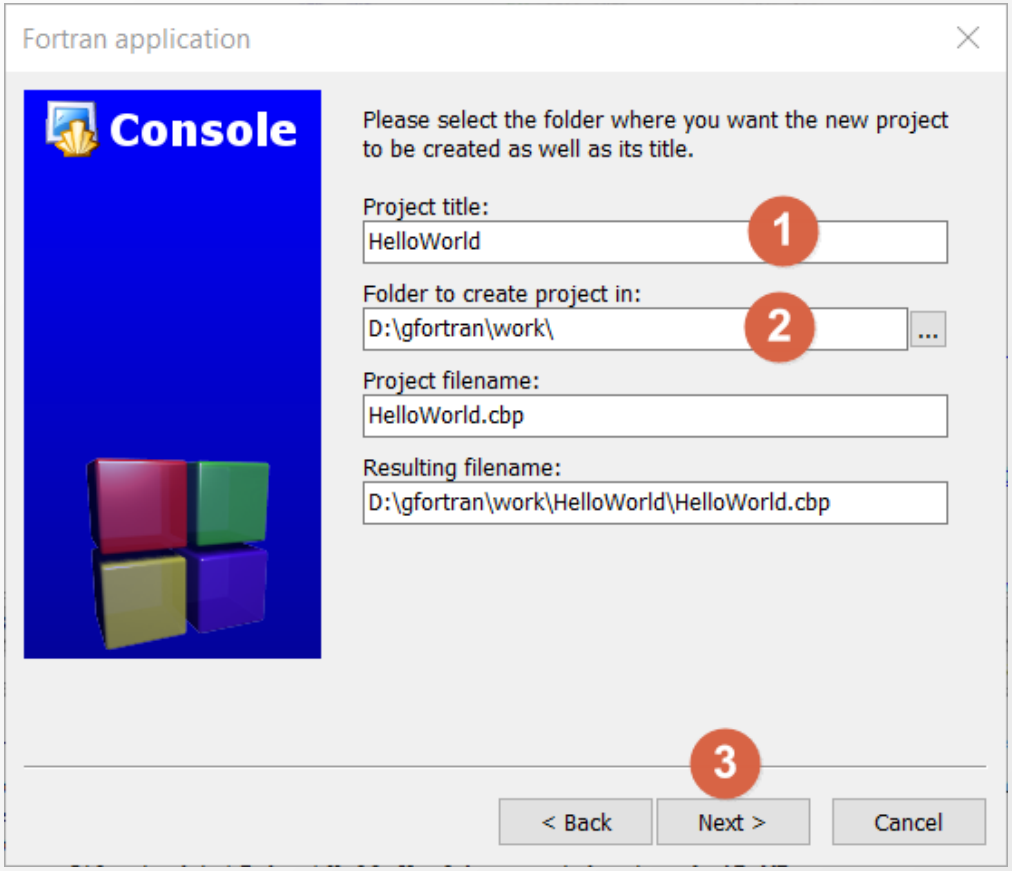
Welcome window

- Select ‘Next’



Select project title and folder

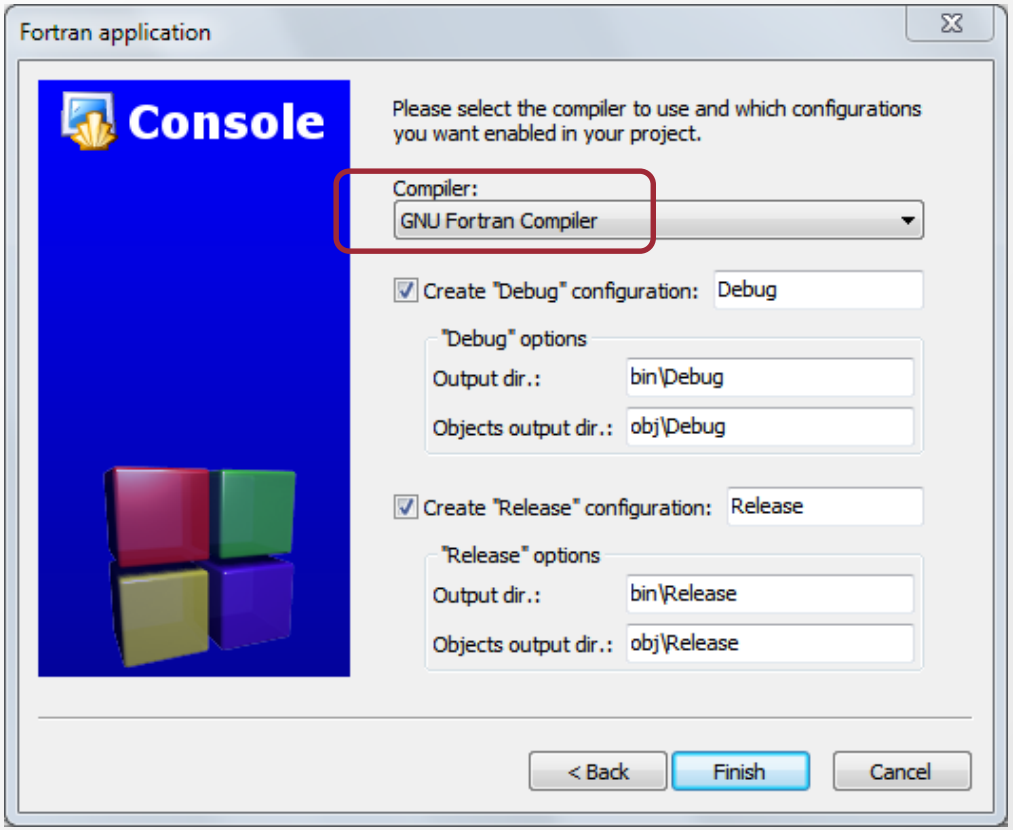
- Enter a project title (1)
- Select a project folder (2)
- Click next (3)



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

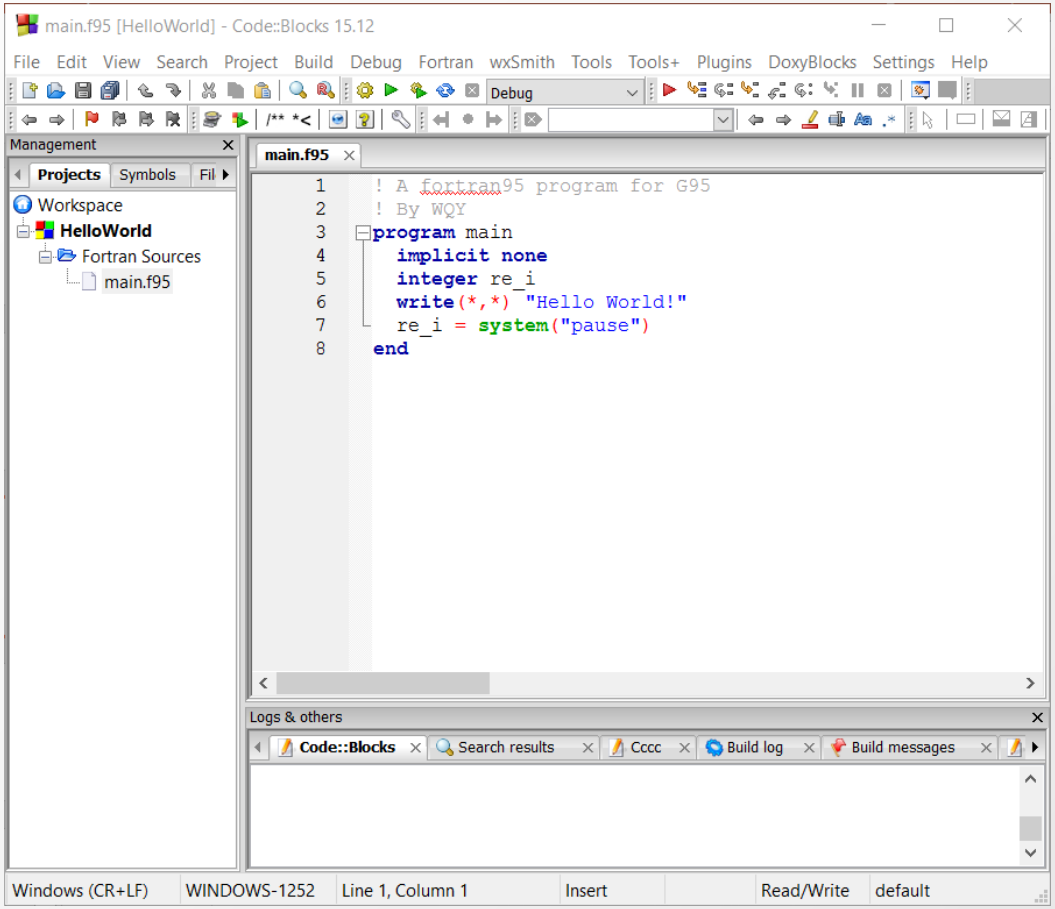
Fortran project configuration

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



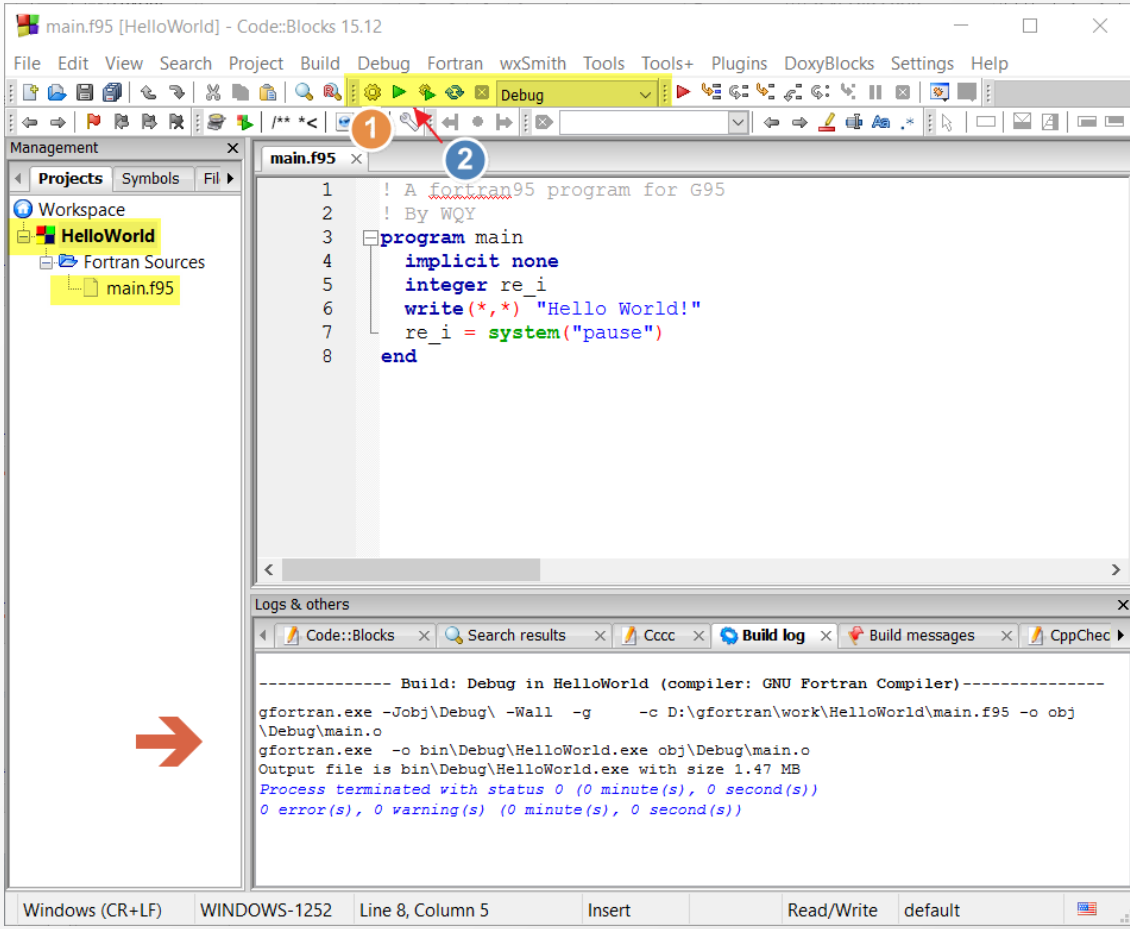
The Fortran source file

- By default a ‘main.f95’ is created
- You can edit it and put your own code inside ‘main.f95’
- You can also rename it, if you like
- …

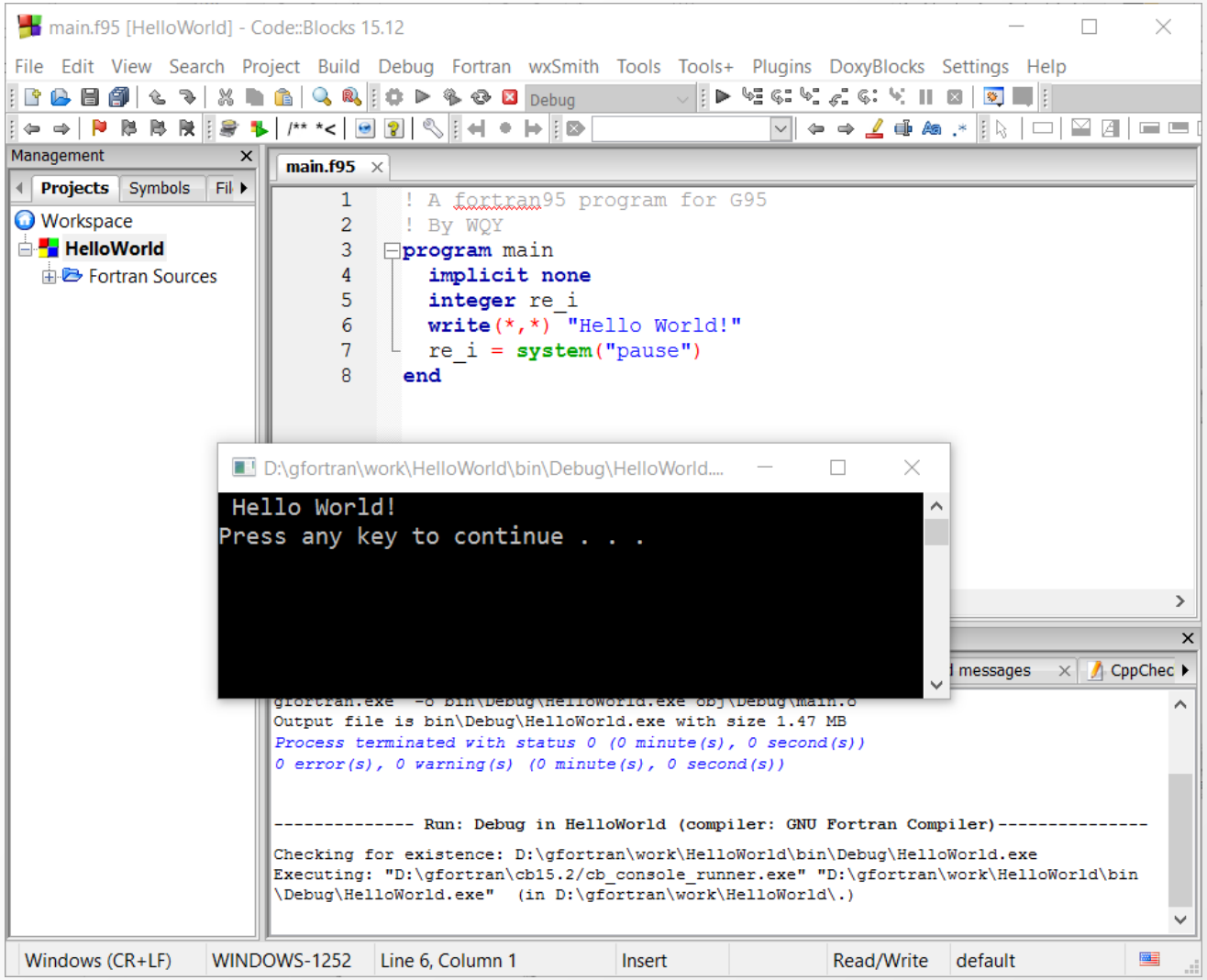


Compile, build and run your first program

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



See the result



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 toolsbar 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