How to install Code::Blocks

Alexandra Stefan

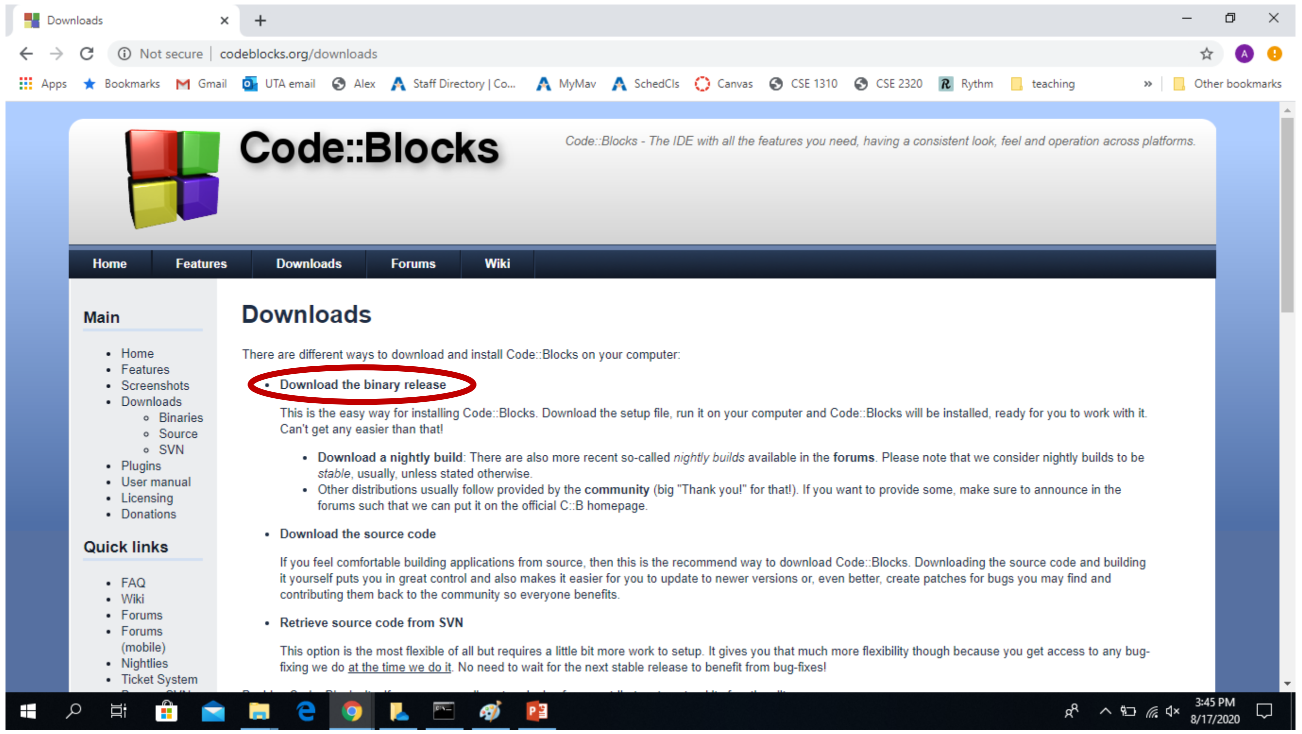
Code::Blocks and C compiler

- C compiler
  - In order to run C code a C compiler is needed.
  - Programmers write code in a “human readable form”. A compiler will generate a corresponding special program that the computer can run.
- IDE (Integrated Development Environment)
  - is a program that is used to edit, compile, run and debug code, BUT it still needs a C compiler in order to do that.
- Code::Blocks is an IDE. It is NOT a C compiler
  - You need both Code::Blocks itself and a C compiler.
  - I have selected Code::Blocks because it has an option to download and install at the same time both the IDE and a C compiler. It has other options that do NOT include the compiler so pay attention to which installer you download.
- Other IDEs are available (e.g. Apache NetBeans, Microsoft Visual Studio).
  - Any IDE is fine, but you need to have a C compiler and set-up the IDE to find it.
  - NOTE: Code::Blocks does not work for Mac. Instructions for working IDE for Mac are in Canvas

Downloading Code::Blocks

Here is a **good video with instructions for installing Code::Blocks and creating projects**

The slides below also have the steps for installing Code::Blocks.
From the Code::Blocks download page: http://www.codeblocks.org/downloads
Click "Download the binary release"



Code::Blocks - The IDE with all the features you need, having a consistent look, feel and operation across platforms.

Downloads

There are different ways to download and install Code::Blocks on your computer:

- **Download the binary release**

  This is the easy way for installing Code::Blocks. Download the setup file, run it on your computer and Code::Blocks will be installed, ready for you to work with it. Can't get any easier than that!

  - **Download a nightly build**: There are also more recent so-called *nightly builds* available in the **forums**. Please note that we consider nightly builds to be *stable*, usually, unless stated otherwise.
  - Other distributions usually follow provided by the **community** (big "Thank you!" for that!). If you want to provide some, make sure to announce in the forums such that we can put it on the official C::B homepage.

- **Download the source code**

  If you feel comfortable building applications from source, then this is the recommend way to download Code::Blocks. Downloading the source code and building it yourself puts you in great control and also makes it easier for you to update to newer versions or, even better, create patches for bugs you may find and contributing them back to the community so everyone benefits.

- **Retrieve source code from SVN**

  This option is the most flexible of all but requires a little bit more work to setup. It gives you that much more flexibility though because you get access to any bug-fixing we do at the time we do it. No need to wait for the next stable release to benefit from bug-fixes!

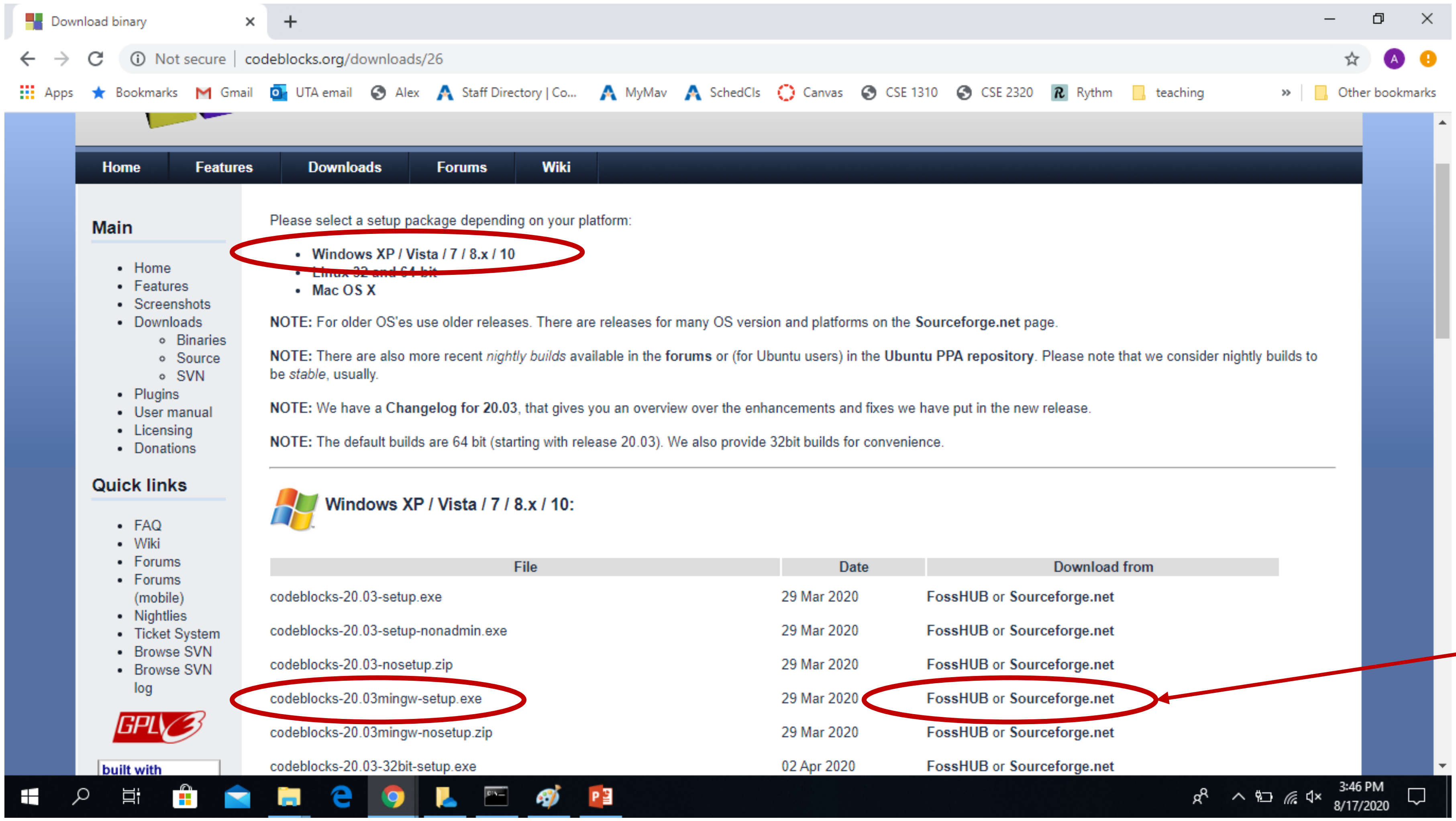
Unix and Mac

- Mac users:
  - See Canvas->Modules->”M2-System Set-up”

- Unix/Linus users:
  - Install the GCC (GNU Compiler Collection) compiler – E.g. search “install gcc compiler on Unix” and follow instructions that seem clear to you.
  - Download and install Code::Blocks for your system

Windows

Download **codeblocks-20.03mingw-setup.exe** - this is the package that **has both Code::Blocks and a C compiler (the MinGW C compiler)**. If you already have a C compiler or prefer to install the C compiler separate, download the appropriate package (e.g. codeblocks-20.03-setup.exe).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Forums (mobile)
Nightlies
Ticket System
Browse SVN
Browse SVN log

Please select a setup package depending on your platform:

- Windows XP / Vista / 7 / 8.x / 10
- Linux 32 and 64-bit
- Mac OS X

NOTE: For older OS'es use older releases. There are releases for many OS version and platforms on the Sourceforge.net page.

NOTE: There are also more recent *nightly builds* available in the forums or (for Ubuntu users) in the Ubuntu PPA repository. Please note that we consider nightly builds to be *stable*, usually.

NOTE: We have a Changelog for 20.03, that gives you an overview over the enhancements and fixes we have put in the new release.

NOTE: The default builds are 64 bit (starting with release 20.03). We also provide 32bit builds for convenience.

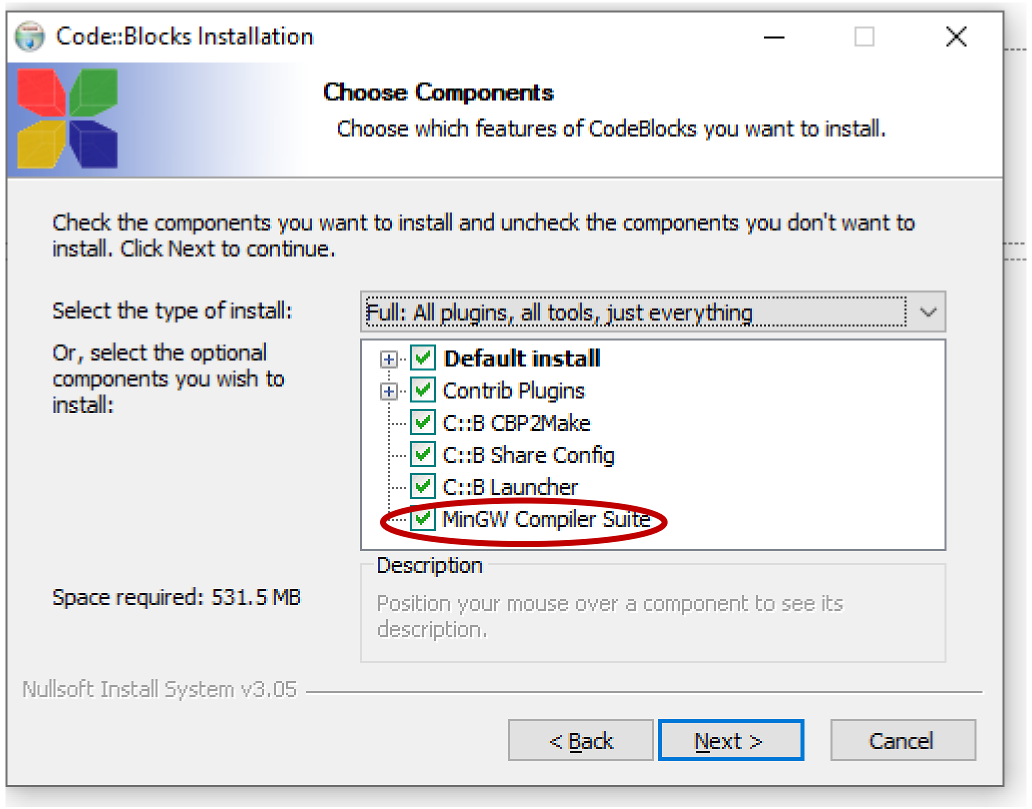
Windows XP / Vista / 7 / 8.x / 10:

File	Date	Download from
codeblocks-20.03-setup.exe	29 Mar 2020	FossHUB or Sourceforge.net
codeblocks-20.03-setup-nonadmin.exe	29 Mar 2020	FossHUB or Sourceforge.net
codeblocks-20.03-nosetup.zip	29 Mar 2020	FossHUB or Sourceforge.net
codeblocks-20.03mingw-setup.exe	29 Mar 2020	FossHUB or Sourceforge.net
codeblocks-20.03mingw-nosetup.zip	29 Mar 2020	FossHUB or Sourceforge.net
codeblocks-20.03-32bit-setup.exe	02 Apr 2020	FossHUB or Sourceforge.net

Select the site to download from.
From FossHUB the download started by default after clicking FossHUB.

Install run the executable file you downloaded, agree to the terms.

When installing it, double-check that the MinGW compiler is checked/included


Code::Blocks Installation

Choose Components

Choose which features of CodeBlocks you want to install.

Check the components you want to install and uncheck the components you don't want to install. Click Next to continue.

Select the type of install: Full: All plugins, all tools, just everything

Or, select the optional components you wish to install:

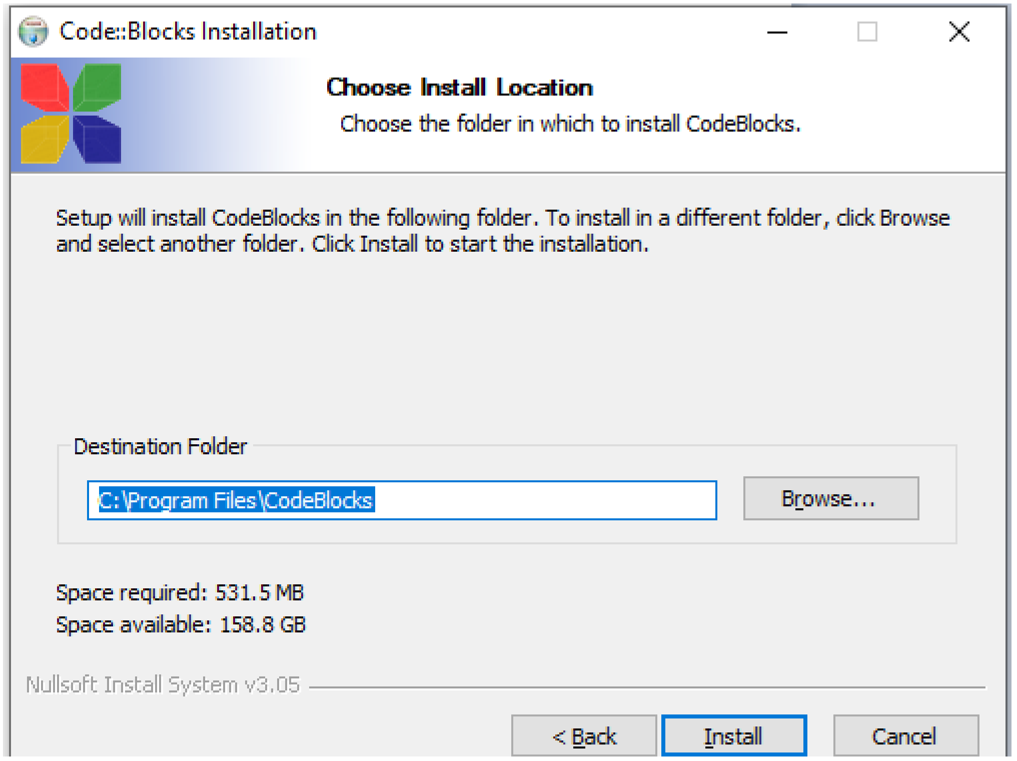
- ✓ **Default install**
- ✓ Contrib Plugins
- ✓ C::B CBP2Make
- ✓ C::B Share Config
- ✓ C::B Launcher
- ✓ MinGW Compiler Suite

Description

Position your mouse over a component to see its description.

Space required: 531.5 MB

Nullsoft Install System v3.05


Code::Blocks Installation

Choose Install Location

Choose the folder in which to install CodeBlocks.

Setup will install CodeBlocks in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.

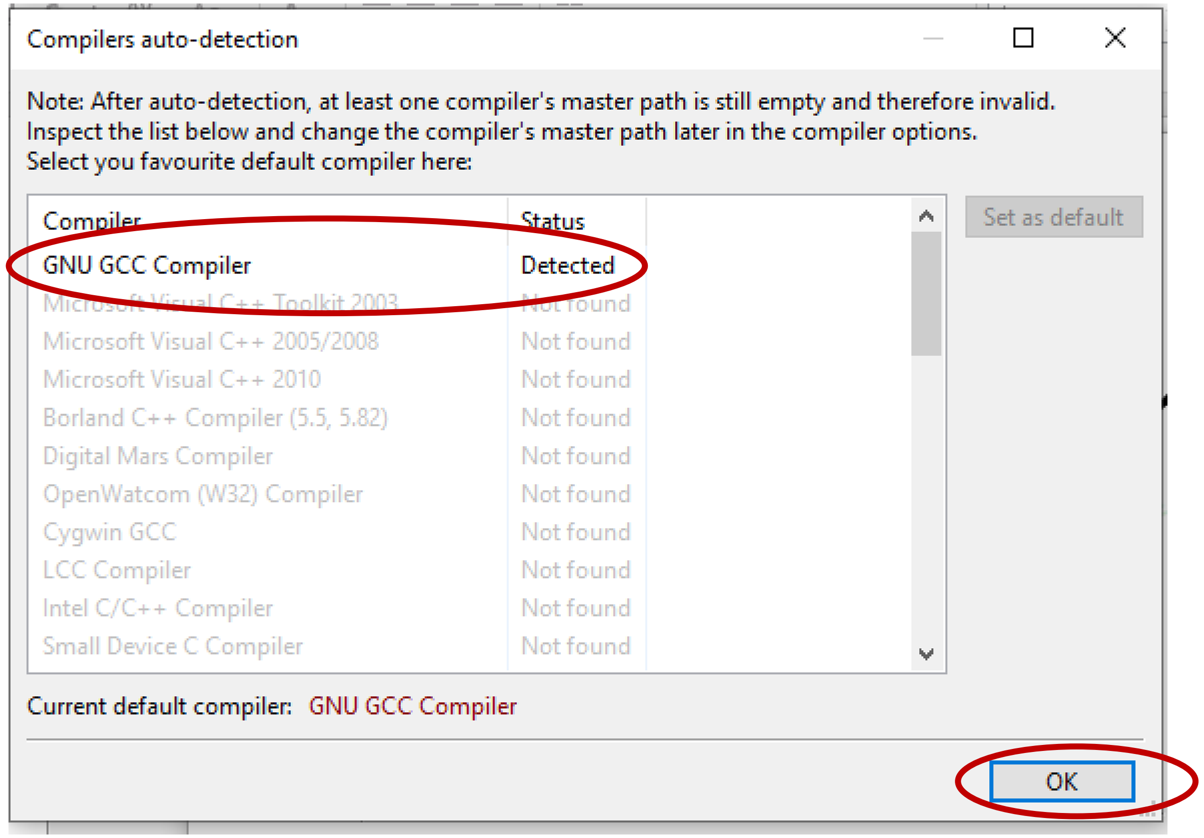
Destination Folder

C:\Program Files\CodeBlocks

Space required: 531.5 MB
Space available: 158.8 GB

Nullsoft Install System v3.05

We will use the GNU GCC Compiler.
(other C compilers should also be ok, but if available, choose the GNU one for consistency.)

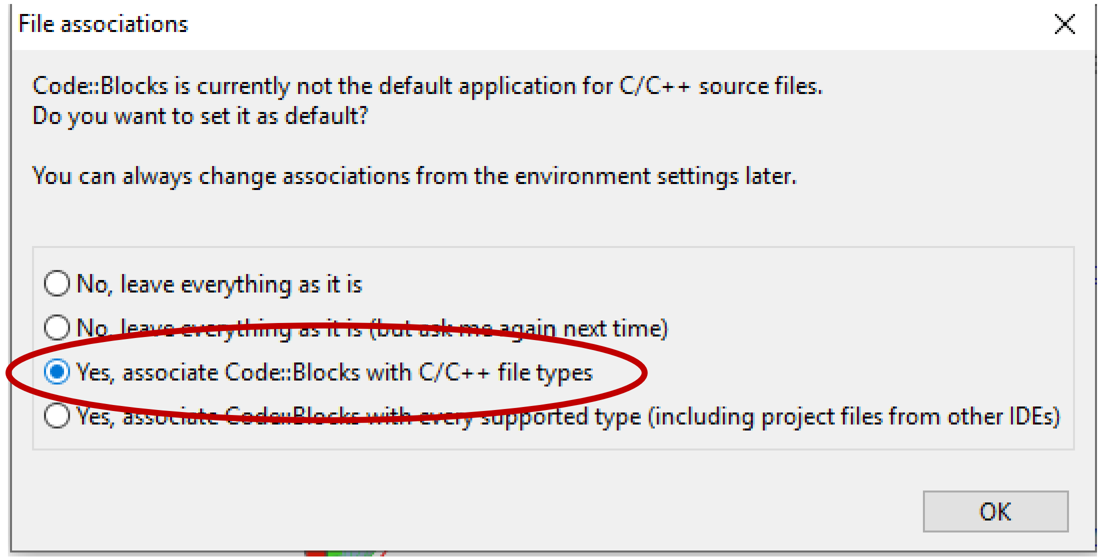


Compilers auto-detection

Note: After auto-detection, at least one compiler's master path is still empty and therefore invalid.
Inspect the list below and change the compiler's master path later in the compiler options.
Select you favourite default compiler here:

Compiler	Status
GNU GCC Compiler	Detected
Microsoft Visual C++ Toolkit 2003	Not found
Microsoft Visual C++ 2005/2008	Not found
Microsoft Visual C++ 2010	Not found
Borland C++ Compiler (5.5, 5.82)	Not found
Digital Mars Compiler	Not found
OpenWatcom (W32) Compiler	Not found
Cygwin GCC	Not found
LCC Compiler	Not found
Intel C/C++ Compiler	Not found
Small Device C Compiler	Not found

Current default compiler: GNU GCC Compiler



File associations

Code::Blocks is currently not the default application for C/C++ source files.
Do you want to set it as default?

You can always change associations from the environment settings later.

- ○ No, leave everything as it is
- ○ No, leave everything as it is (but ask me again next time)
- ● Yes, associate Code::Blocks with C/C++ file types [✓]
- ○ Yes, associate Code::Blocks with every supported type (including project files from other IDEs)

Check that you can “Build and run” a file. Follow the next pages to create a file and try to “Build and run” it. If it does not work, it could be because Code::Blocks cannot find the C compiler. See page 14 (after the section on creating and running a C file) that shows how to make Code::Blocks.

Create a C file, compile it and run it.

Project or no project?

- Larger pieces of code consist of multiple files and are developed using a project that organizes all those files.
- You do NOT need to create a project for now. We will do that later on so that we can Debug our code. (Method 2 below will be used to add the file to a Project in order to debug it.)
- We will create just a C file.

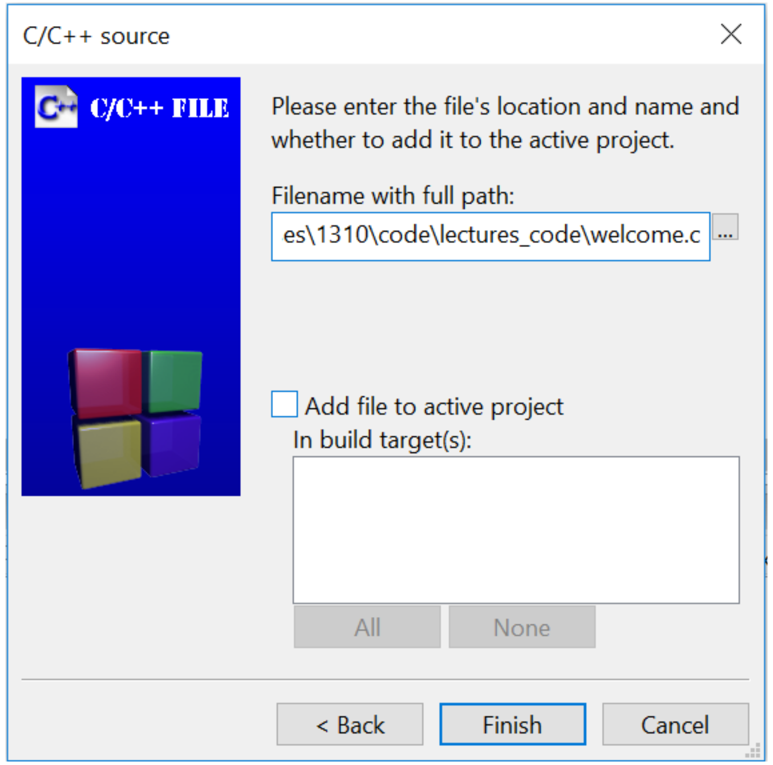
Create an empty C file

Method 1:

- File -> New -> Empty file (This will create a file called Untiltled)
- File->Save file as…
- Navigate to the location where you will store your code from this class (e.g. \courses\1310\code\lectures_code) and enter the desired file name: welcome.c

Method 2:

- File -> New -> File …
- Select *C/C++ source* and click *Go*
- Select *C*
- Navigate to the location where you will store your code from this class (e.g. \courses\1310\code\lectures_code) and enter the desired file name: *welcome.c* and click *Save*
- Do NOT select *Add file to active project* click *Finish* (Later we will need to add the file to a project in order to be able to debug it, but for now, we will just create a file.)


C/C++ source

Please enter the file's location and name and whether to add it to the active project.

Filename with full path: es\1310\code\lectures_code\welcome.c

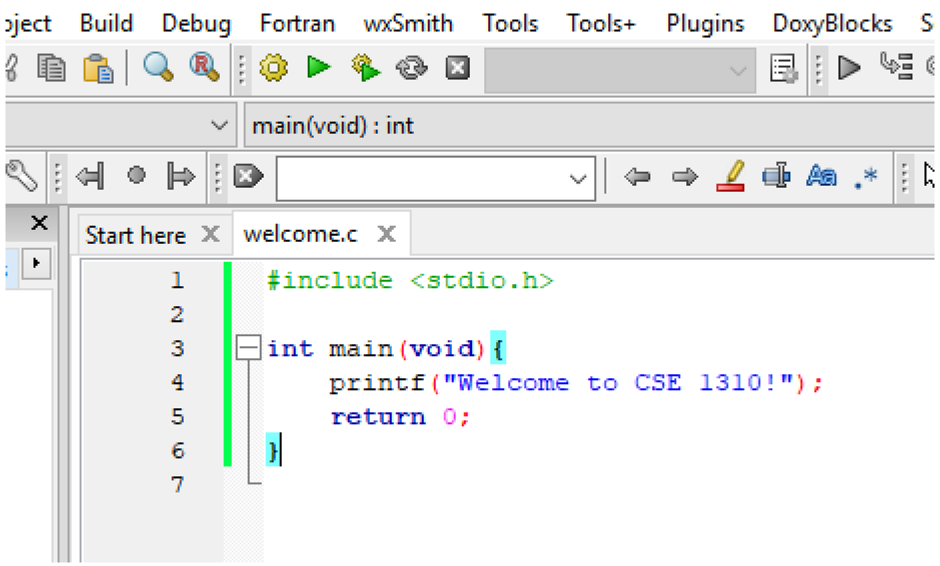
☐ Add file to active project

In build target(s):

Write code in the C file

Type the text below in the file (the text will be colored):

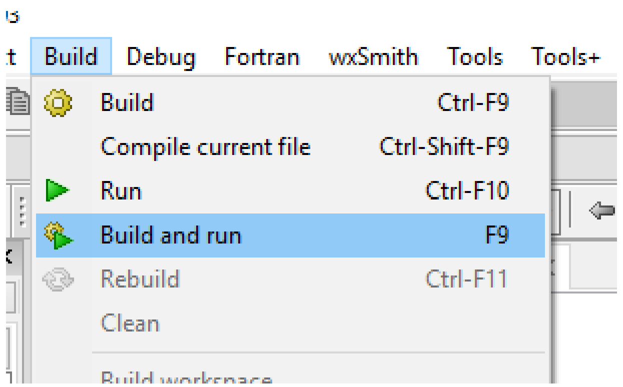
```
#include <stdio.h>

int main(void)
{
    printf("Welcome to CSE 1310!");
    return 0;
}
```



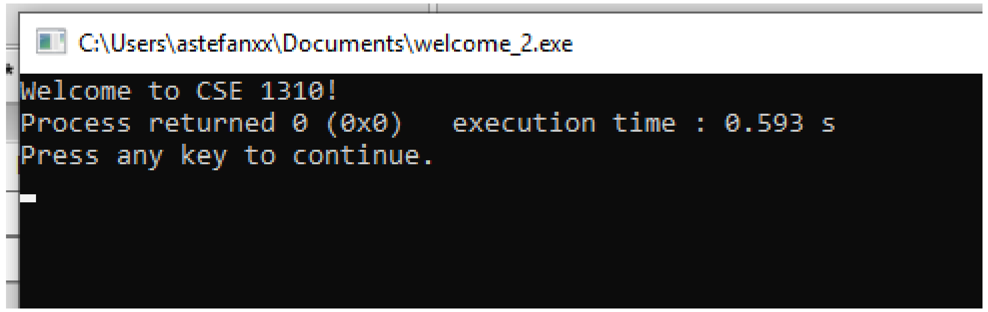
```
#include <stdio.h>

int main(void) {
    printf("Welcome to CSE 1310!");
    return 0;
}
```

Select: Build->"*Build and run*"

Note for future: **make sure every time you need to compile and run your code you select "*Build and run*", not just "*Run*".** This way the new (most recent) code is compiled, as opposed to running the previously compiled code. It is similar to refreshing a webpage to enforce viewing the updated version.



You should see this window pop up. Notice that the first line prints what you wanted.



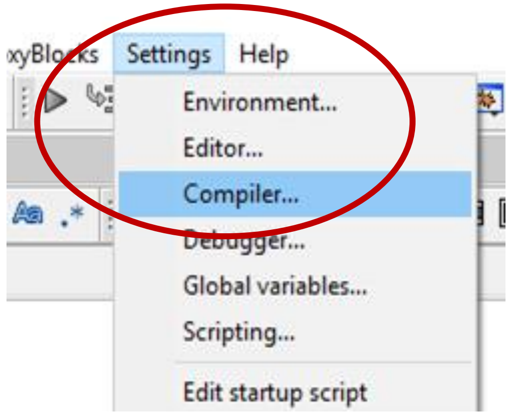
C:\Users\astefanxx\Documents\welcome_2.exe

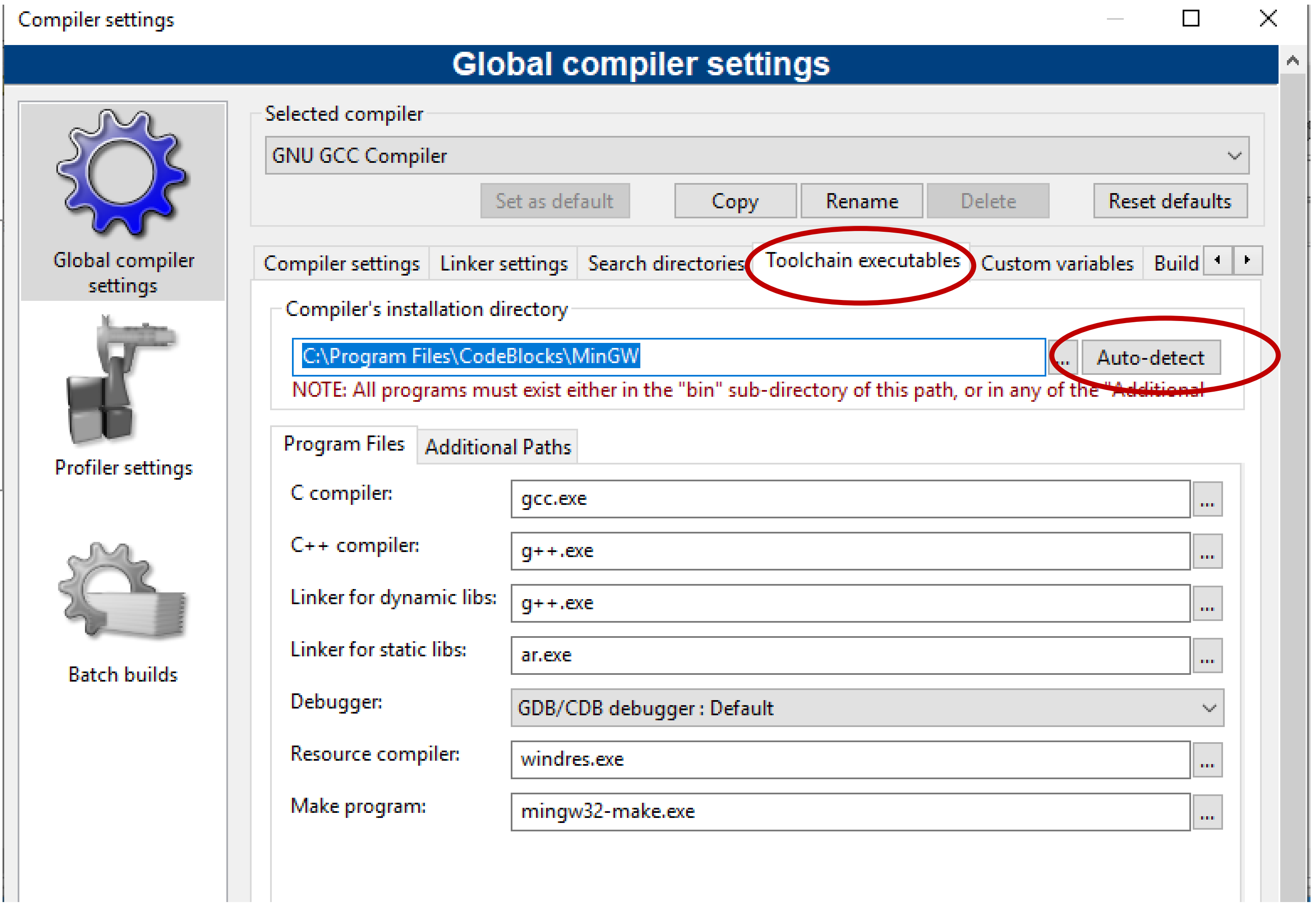
```
Welcome to CSE 1310!
Process returned 0 (0x0)   execution time : 0.593 s
Press any key to continue.
```

You are all set.

“Build and run” does not work

If you still can not build and run the C code, make sure the C compiler is detected by Code::Blocks. Go to:
Settings-> Compiler-> “Toolchain Executables” and click the “Auto-detect” box





Selected compiler: GNU GCC Compiler

Compiler's installation directory: C:\Program Files\CodeBlocks\MinGW

NOTE: All programs must exist either in the "bin" sub-directory of this path, or in any of the "Additional

C compiler:	gcc.exe
C++ compiler:	g++.exe
Linker for dynamic libs:	g++.exe
Linker for static libs:	ar.exe
Debugger:	GDB/CDB debugger : Default
Resource compiler:	windres.exe
Make program:	mingw32-make.exe

If it could not auto-detect the compiler:

- If you DO know where the compiler is, navigate to that location in the “Compiler’s installation directory” box
- If you do NOT know where the compiler is, there may not be a compiler on your machine. For Mac and Unix/Linux, you need to install that separately. For Windows you can also install the compiler separately, but it is simpler to uninstall Code::Blocks and then make sure you download the version that has the compiler (MinGW) together with Code::Blocks (e.g. codeblocks-20.03-setup.exe). See slide 5.

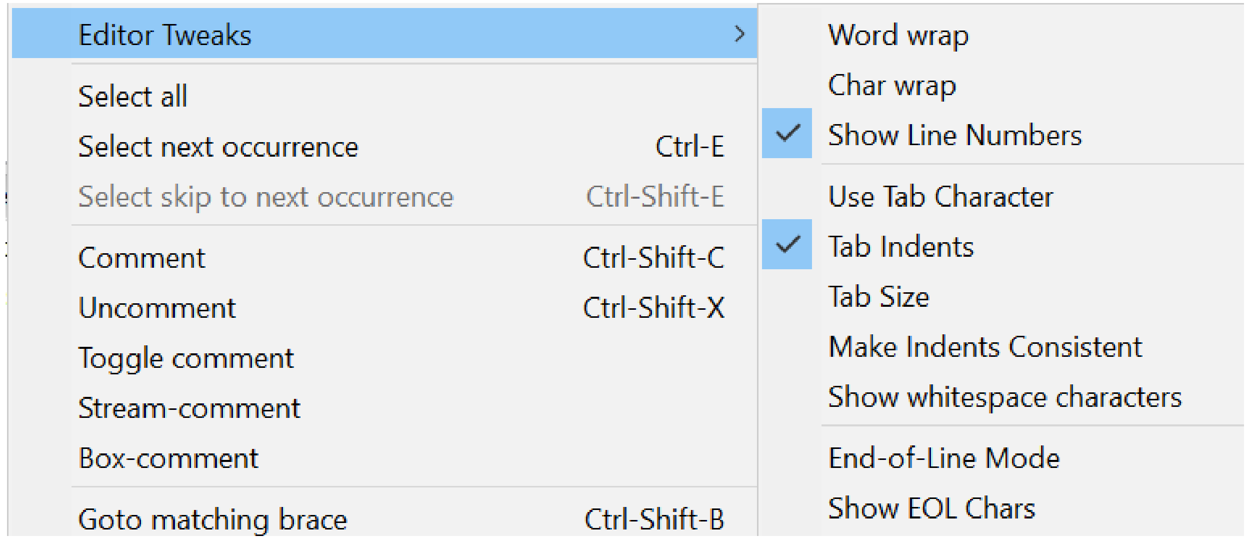
Other problems during installation?

- There should not be any problems during installation, but if you do get some error messages, search the web. Include the error message and your system (e.g. Windows 10).

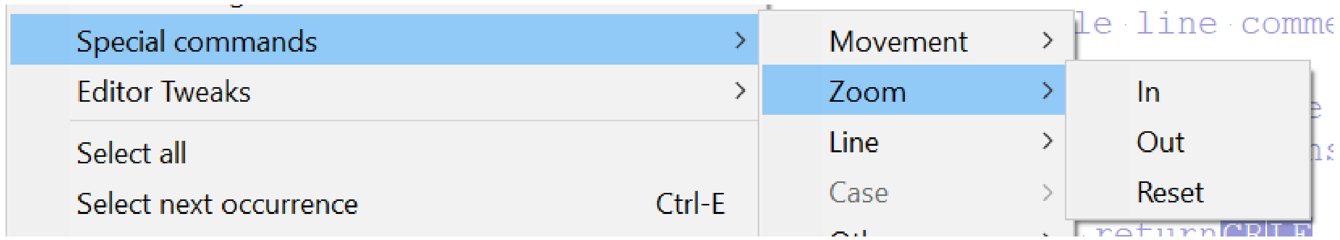
Code::Blocks Settings

To show line numbers and change other settings go to: Edit -> "Editor Tweaks"

- And then "Show Line Numbers"
- Also note the "Show EOL Chars". EOL stands for End Of Line. Files from different Operating Systems will have different EOL characters: Windows - CRLF, Mac – CR, Unix – LF . See also the table from the Wikipedia page https://en.wikipedia.org/wiki/Newline.



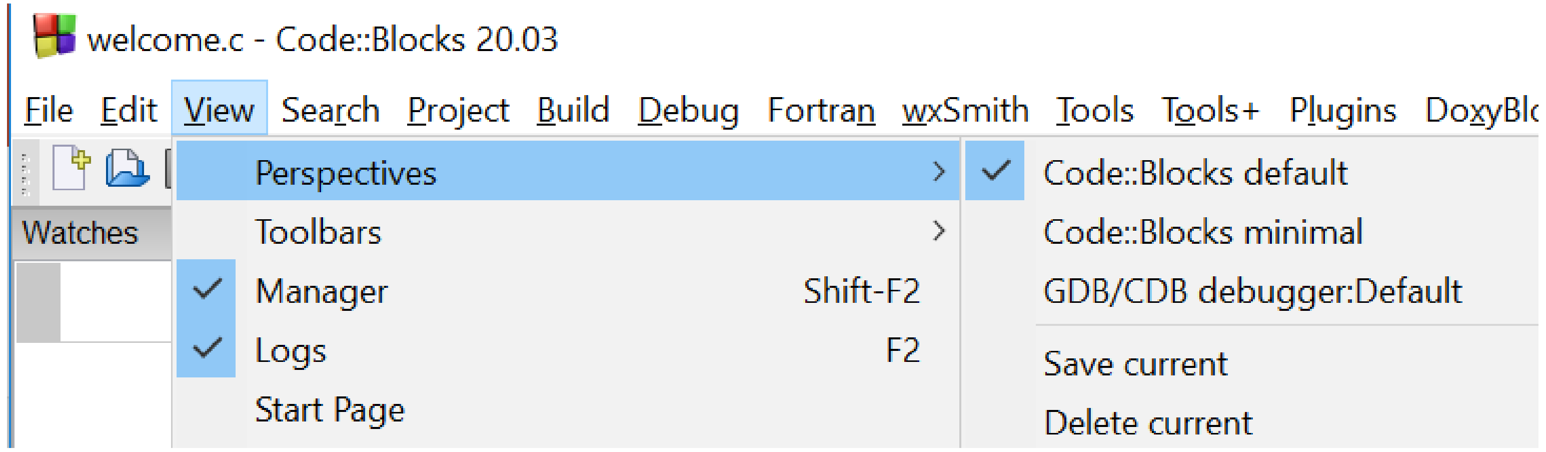
To change font size in Editor window:
Edit -> "Special commands"-> Zoom -> In/Out



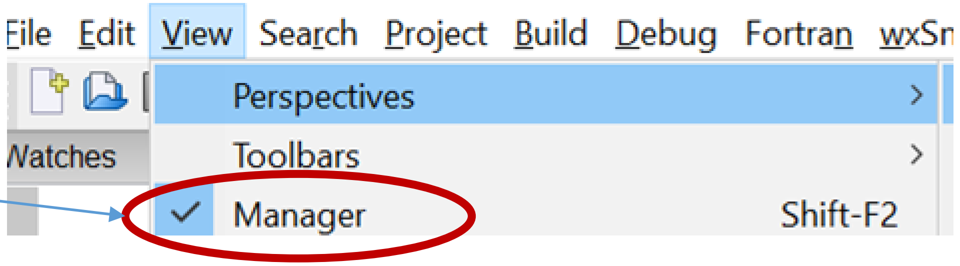
To indent a group of instructions: select the instructions and then click:
- TAB – to indent
- Shift + TAB – to decrease the indent

Code::Blocks Settings

To restore the original perspective or select other perspectives:
View -> Perspectives
You would need this if you closed some windows (e.g. Debugger, Build Messages) and want them to be visible again.
You can also create your own perspective.

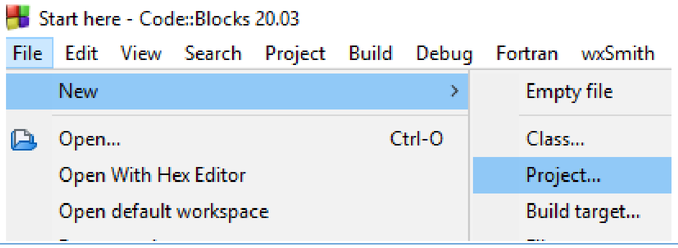


If you cannot see the Projects Panel:
View and check the Manager



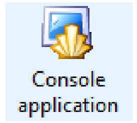
Create a project

- File -> New -> Project

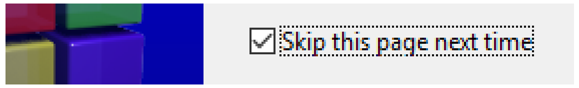


- Select: "Console Application"

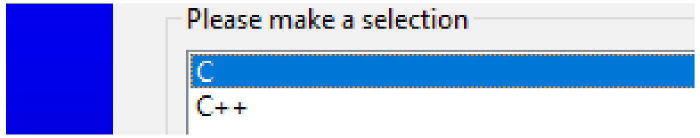
  and click Next



- Check the "Skip this page next time" - You will not see this welcome page next time

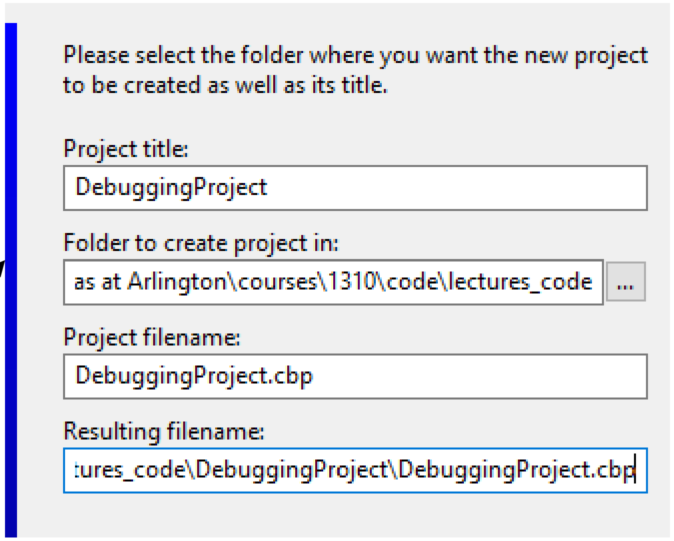


- Select *C* for the language to use.



Click *Go*

- Give the project a title (e.g. DebuggingProject) and select a folder to place it in (e.g. lecture_code)



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

Project title: DebuggingProject

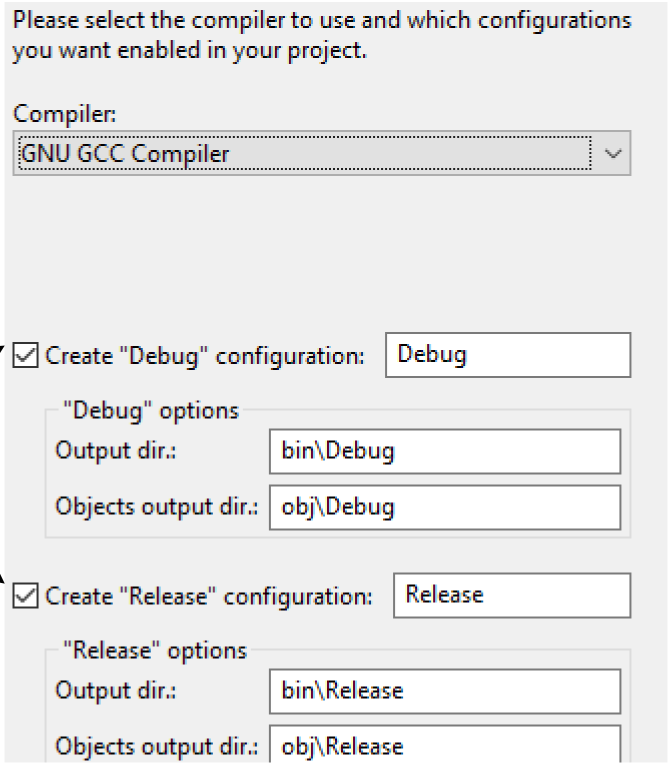
Folder to create project in: as at Arlington\courses\1310\code\lectures_code

Project filename: DebuggingProject.cbp

Resulting filename: :ures_code\DebuggingProject\DebuggingProject.cbp

- The default configurations should work. Double check that the *Debug* and *Release* check-boxes are checked

  Click *Finish*



Please select the compiler to use and which configurations you want enabled in your project.

Compiler: GNU GCC Compiler

☑ Create "Debug" configuration: Debug

"Debug" options

Output dir.: bin\Debug

Objects output dir.: obj\Debug

☑ Create "Release" configuration: Release

"Release" options

Output dir.: bin\Release

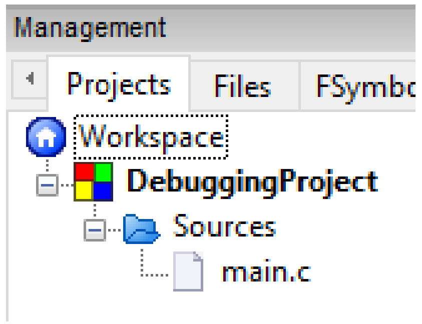
Objects output dir.: obj\Release

- Done. You will see the project. (continue to next page) (in the Management panel under the Projects view)

Using a project

- You will see the project in the IDE.

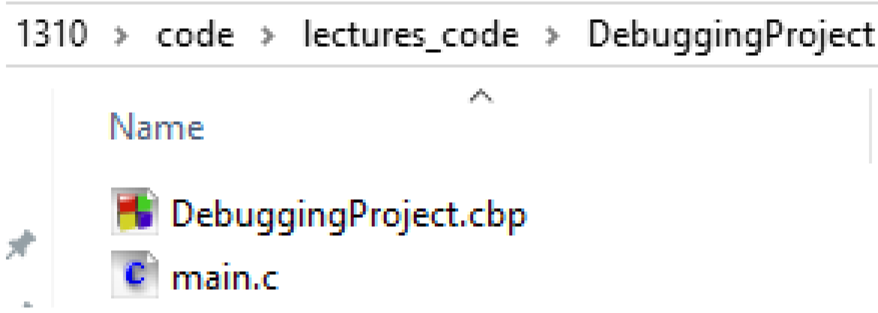
(It is in the *Management* panel under the *Projects* tab.)



- By default a file called main.c was created in the project. To see it, click + next to *Sources*
- Double-click on main.c and it will open in the editor. It already contains starter code to print *hello world!*
- Click *Build and Run* and see the program output
- You can edit the file main.c (write any valid C code in it) and run and DEBUG that code.

Where are the project files?

- Use a file explorer program and navigate to the folder where you created the project (e.g. 1310/code/lectures_code). You will find a folder with the project name and inside there the project file (with extension .cbp) and the main.c file
- Note: If you are using a different IDE, the location of the files and the project file extension (.cbp) will be different.

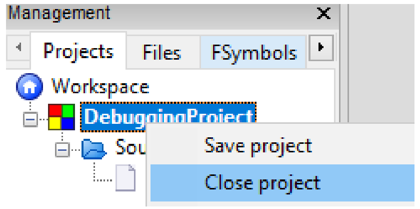


Using a project

- A project is a way to organize multiple files needed for a larger application.
- You can close and reopen the project. This is convenient when you have multiple projects.

Close a project

- *When you close the project it simply does not SHOW in the panel. All the code is still on your computer*.
- To close a project right click on it and select *Close Project*



Open a project

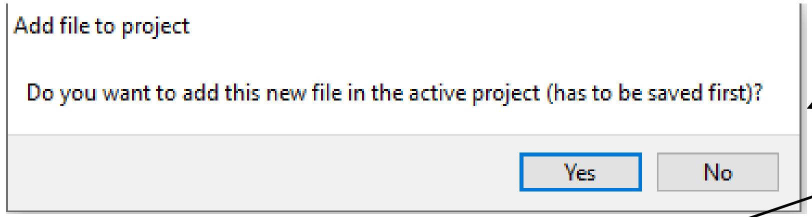
- When you open a project, it makes it visible in Code::Blocks and you can run and debug the code in that project from Code::Blocks.
- To open go to: File-> Open and then navigate to where the .cbp file is for the project you want to open

Project: add/remove files

You can **add or remove files from a project.**

Remove a file from a project

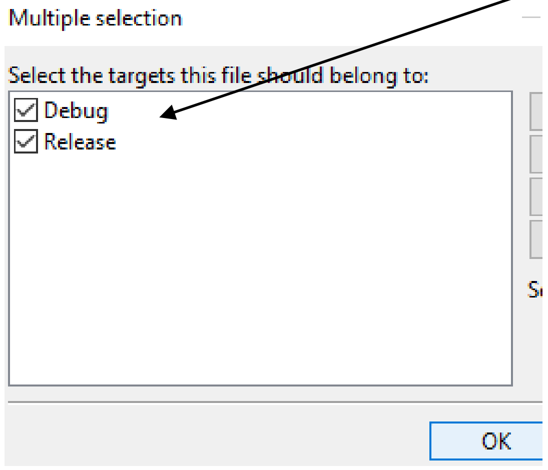
- To remove a file: right-click on it and select *Remove file…*
- If you remove a file from a project *it does NOT delete* the file, it simply removes it from the IDE's list of files associated with that project.



Add file to project

Do you want to add this new file in the active project (has to be saved first)?

Yes No



Multiple selection

Select the targets this file should belong to:

☑ Debug
☑ Release

OK

Add a file to a project

- To add a existing file:
  right-click on the project name
  select *Add files* … and
  navigate to the file you want to add

- To create a new file and make it part of the project:

Make sure this project is active (it is listed and its name is in bold font. If not, right-click on it and select *Activate Project*)

Go to *File -> New -> Empty file*

Click *Yes* to add this new file in the active project

Enter the file name

Double-check that the *Debug* and *Release* boxes are checked and click *Ok*

There are other ways to add files or rename files from a project.

There can be many .c files part of a project but ONLY ONE `int main()` function.

If multiple .c files belong to a project, only one file can have a `main` function in it.

For our class, you only need to have one .c file part of a project.

Using a project to Debug code

- Debug - The IDE provides a convenient framework to examine what is happening with the program (what line is being executed at any time and the value of the data in the program at that time). This is done in DEBUG mode.
- In order to debug a program, it must be part of a project. (We can run an individual file, but we can only debug a project)

- You have 2 options:

Option 1: Create a project for every program you need to run. If that is for a homework, make sure you name the .c file with the required name. The name of the project can be whatever you want.

Option 2: Create one project that will be used for debugging only. When working on a program, add it to the Debugging project and debug it as needed. Remove it from the project when you are done.

- You can have several .c file in a project, but only one of those files can have a main() function in it (because that is where the program execution will start and it cannot have multiple start points.)

Running individual files vs projects

- When you Build and Run… it will be done for the ACTIVE PROJECT.
- If you have multiple projects, make sure the one you want to work on is active. (You can close the others, or explicitly make this one the active one – right click on the project name to get that option)
- If you want to run a single file, then ALL your projects must be closed (there should not be any project in the list of projects)