C Compilers (Development Environment)

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- I suppose you **don't ask the lecturer how to use your coding tools**, e.g. *Visual Studio*, especially during the lectures. Because **it is not in the main scope of this module** and we need to study and discuss much more important and valuable topics, such as pointers, data structures.
- You can use any C compilers. The module does not depend on a specific compiler.

Installation of *C* Compilers (free)

- **Visual Studio** (standard, professional):

  https://visualstudio.microsoft.com/downloads/

- **NewbieIDE** (Windows, very simple and easy)

  Download from *Resources* on *LEARN*

  [Installation version] or [Portable (non-installation) version]

- **Code::blocks** (Windows, currently not for Mac OS)

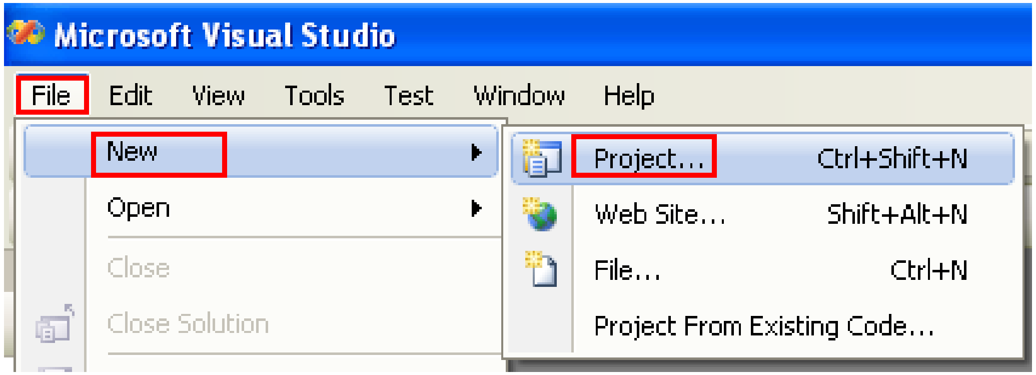
  Download *codeblocks-17.12mingw-setup* or *codeblocks-17.12mingw-nosetup* at http://www.codeblocks.org/downloads/26

- Refer to *Resources* on *LEARN*

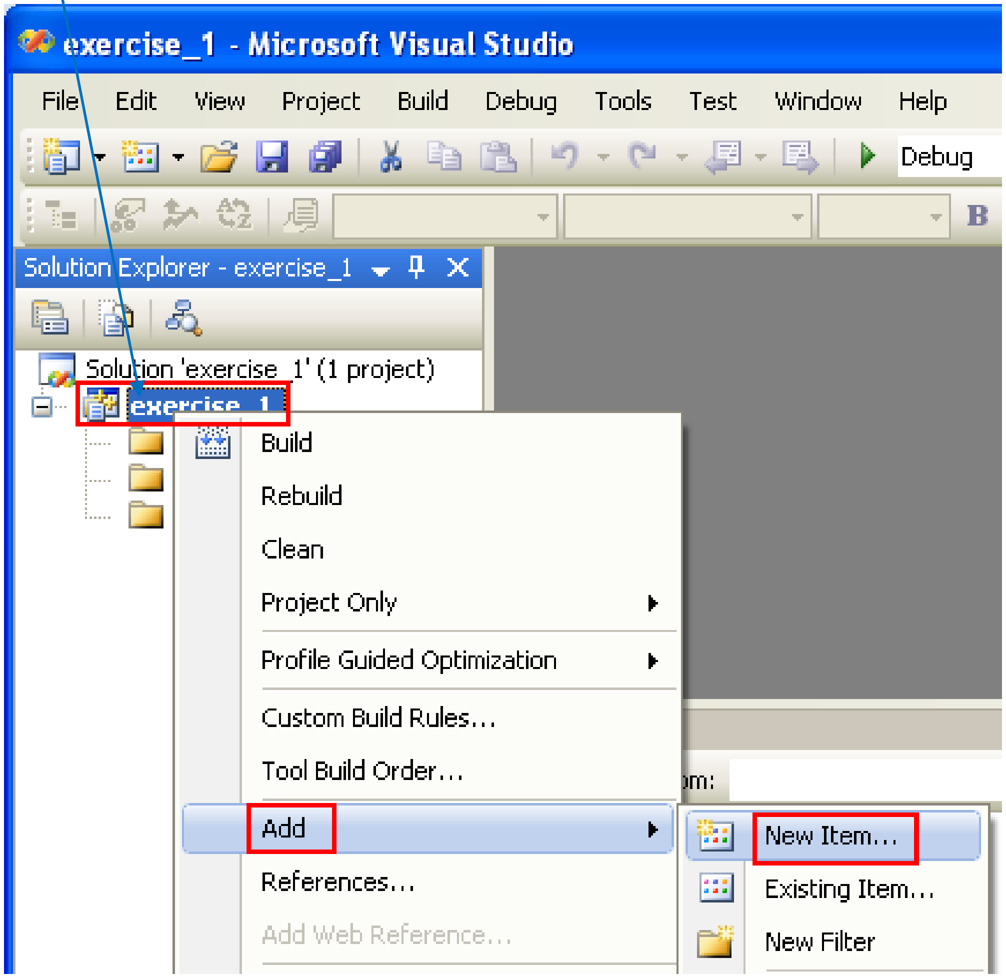
C Compilers -

Visual Studio (VS), Code::blocks

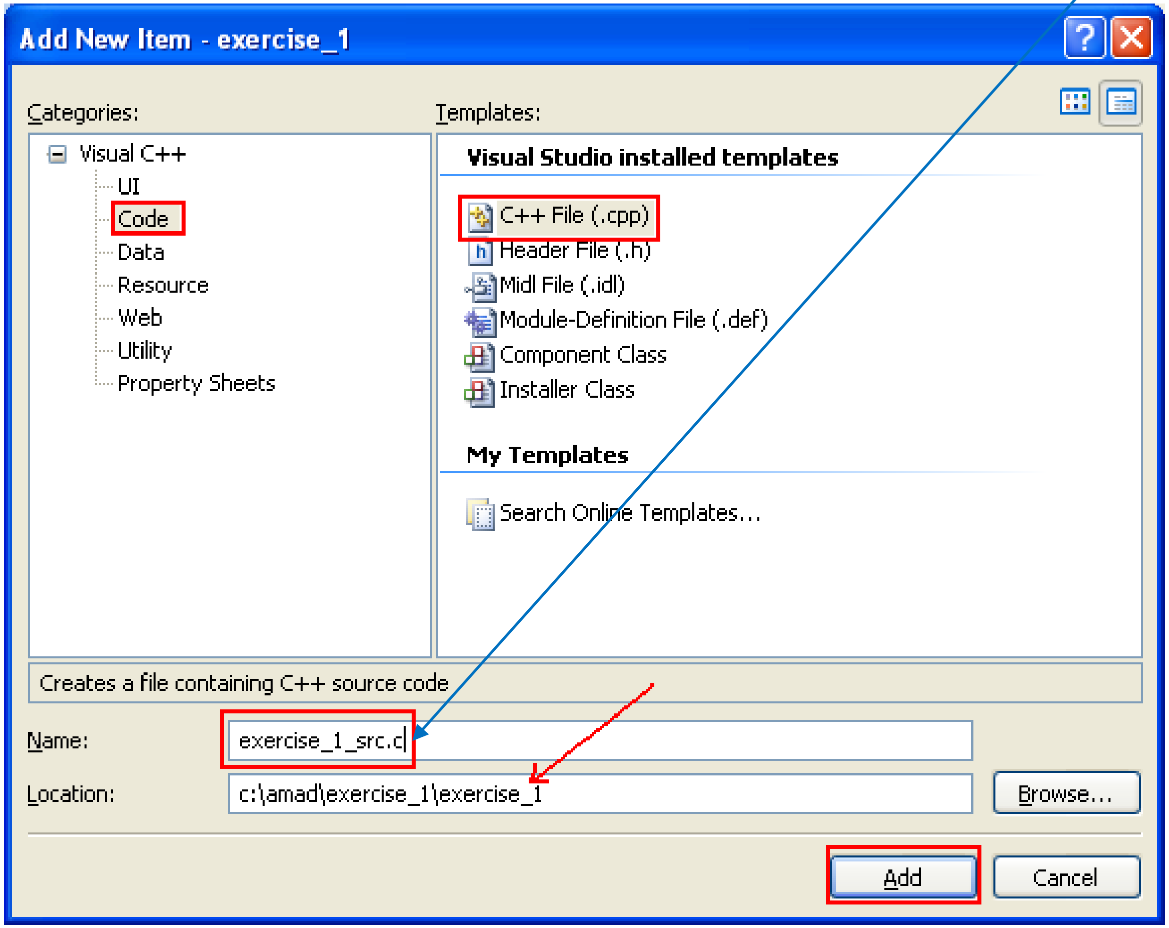
- Launch VS.
- Click **File** > select **New** > **Project** > **Visual C++** > **Empty project**
- (Give **any** name of your program in your folder, anywhere)



- select the ***Project*** (or ***Source Files***)folder > (right-click mouse) > select **`Add`** > **`New Item`**…
- (We want to add a **C** source file to the project.)



- select `C++ File(.cpp)` > put your file name (any name) with **.C** extension > click `Add`
- If we do not put the `.c` extension, the file will be defaulted to `.cpp`, i.e. C++ code.
- Some rules are different between C and C++.

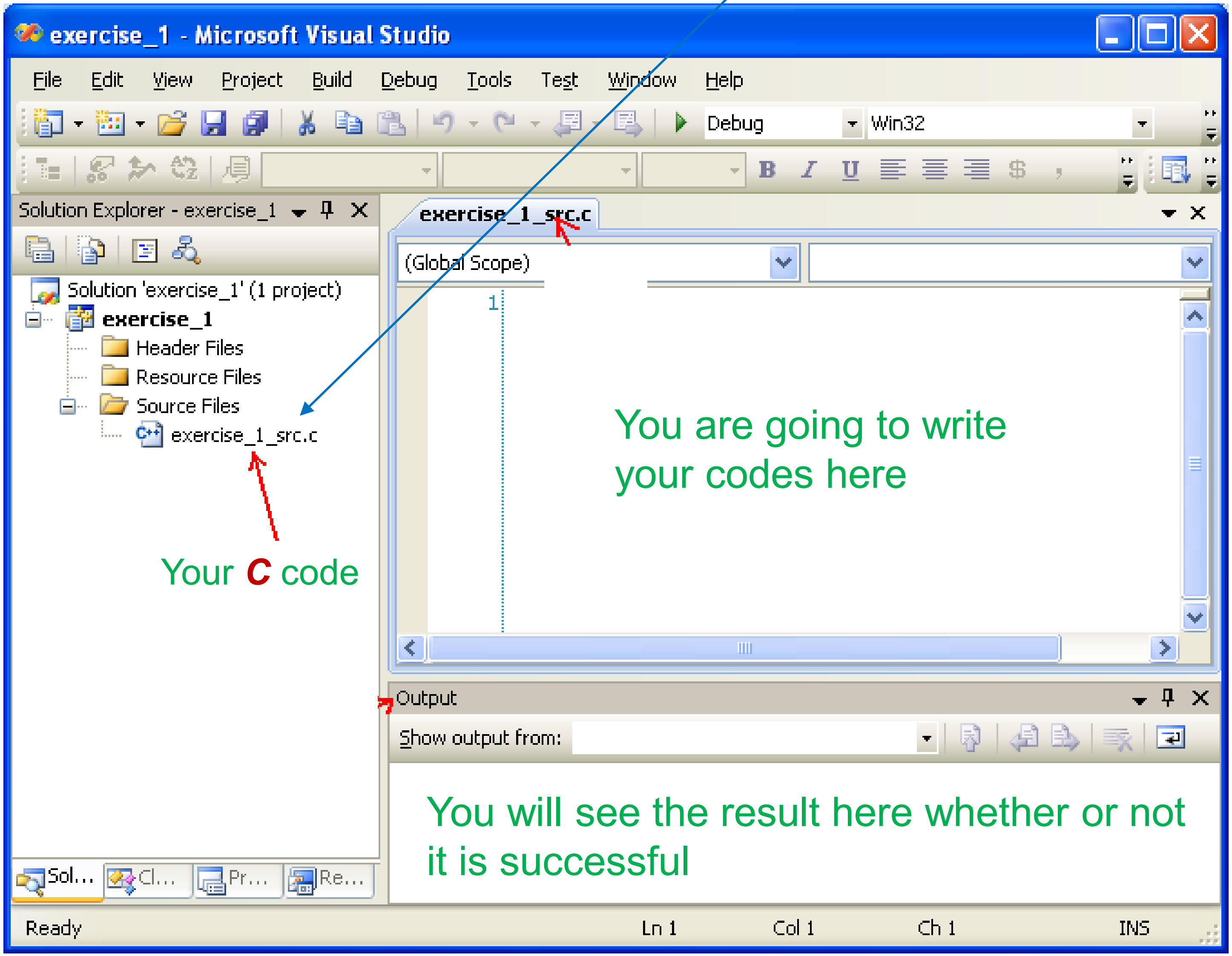


Creates a file containing C++ source code

Name: exercise_1_src.c

Location: c:\amad\exercise_1\exercise_1

- If the file is not opened, just *double-click* the file link on the *Solution Explore*.



Your *C* code

You are going to write your codes here

You will see the result here whether or not it is successful

main function

start/ end

- Any C program must have a ***main()*** function.

```
int main()
{
  ………………
  return 0;
}
```

// **New** standard: C99 (ISO)

```
void main()
{
  ………………
}
```

// Old standard: C89 (ANSI-C)

“Hello World!” in C

input/ output

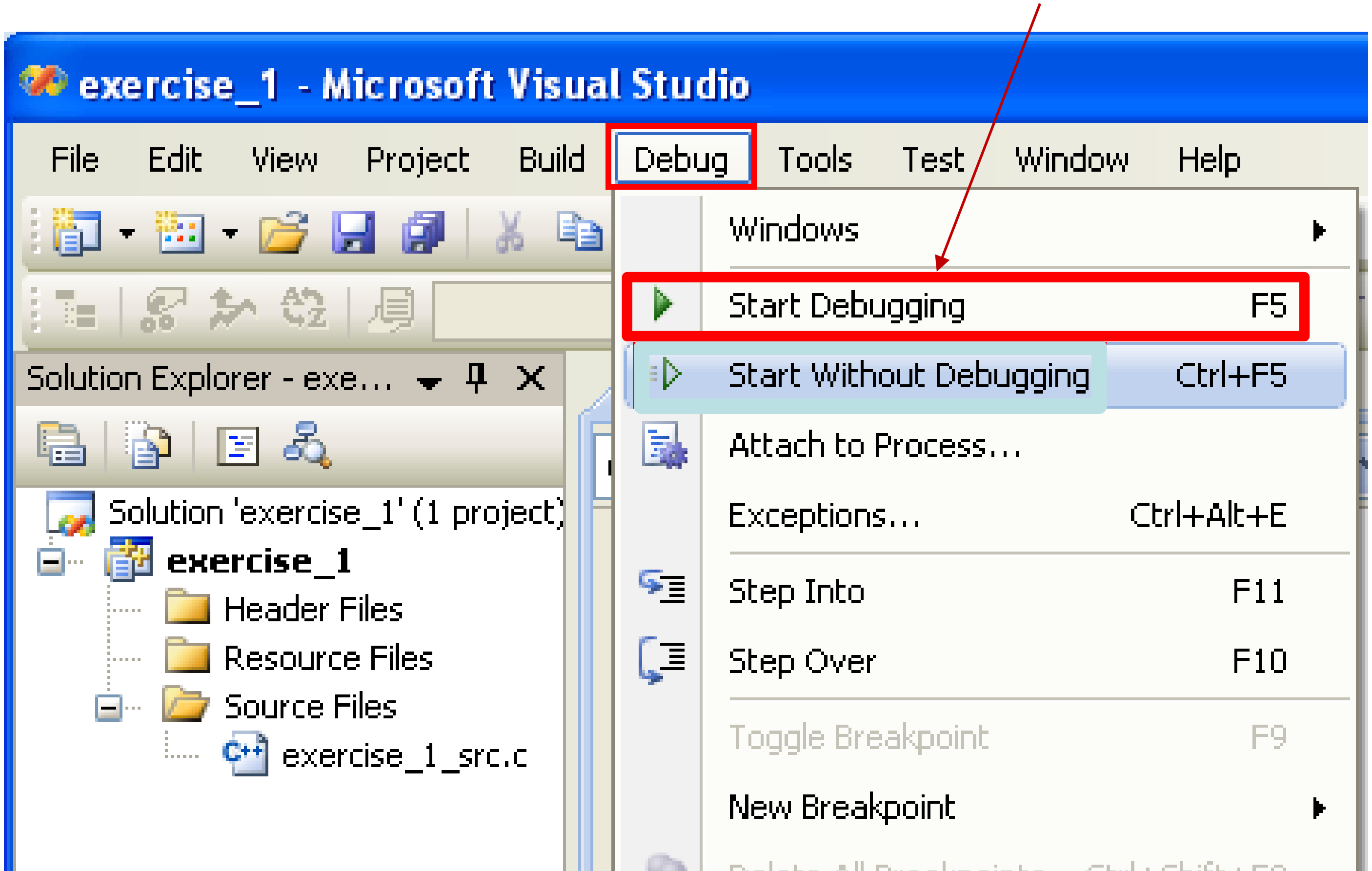
```
#include <stdio.h>

 int main( )    // C99 (ISO)
  {
     printf( "Hello World!" );
     getchar();
  }
```

You don’t need to type:

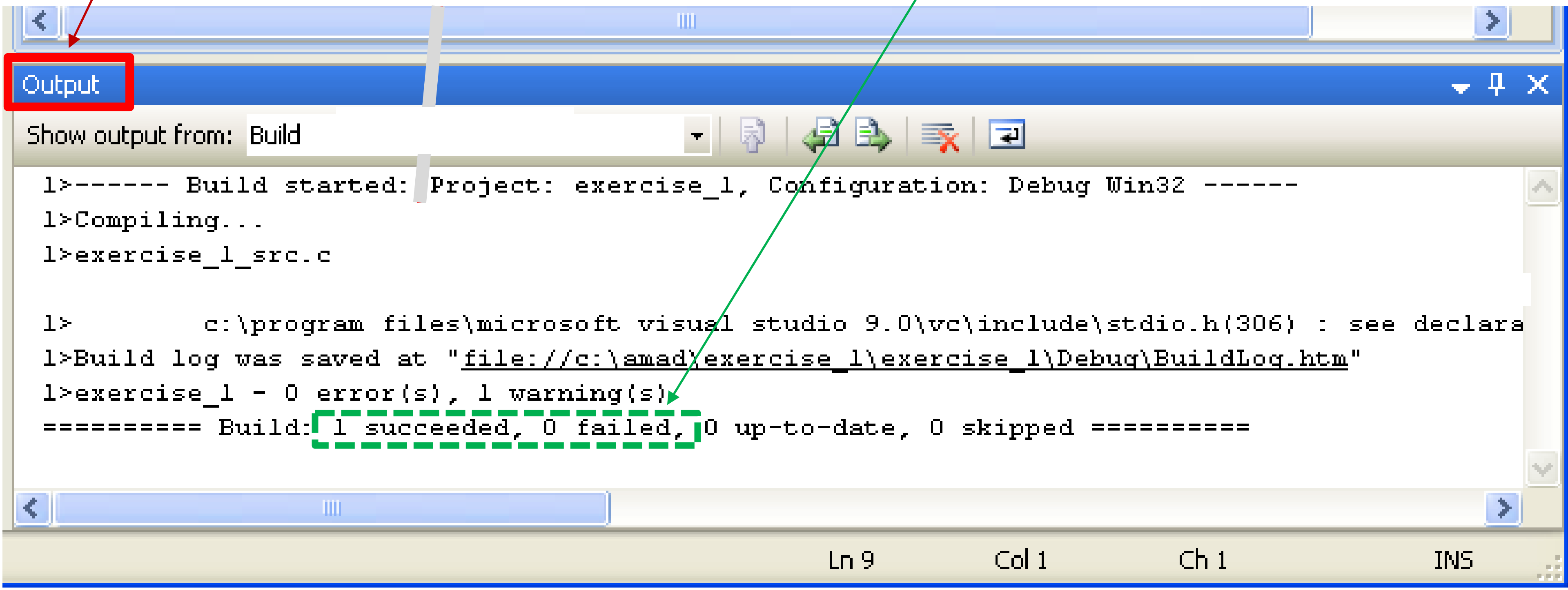
//.......

Debug/ Run

- **Press F5** (on Windows): The process of removing bugs (so-called ***debug***) and converting the whole program into machine language, *i.e.* high-level language translated into low-level language.
- Or, in the top menu bar: go to **Debug** > **Start Debugging**



- The output of the process can be seen in the `Output` window.
- We have to make sure there is no **error** (with or without warning(s)).

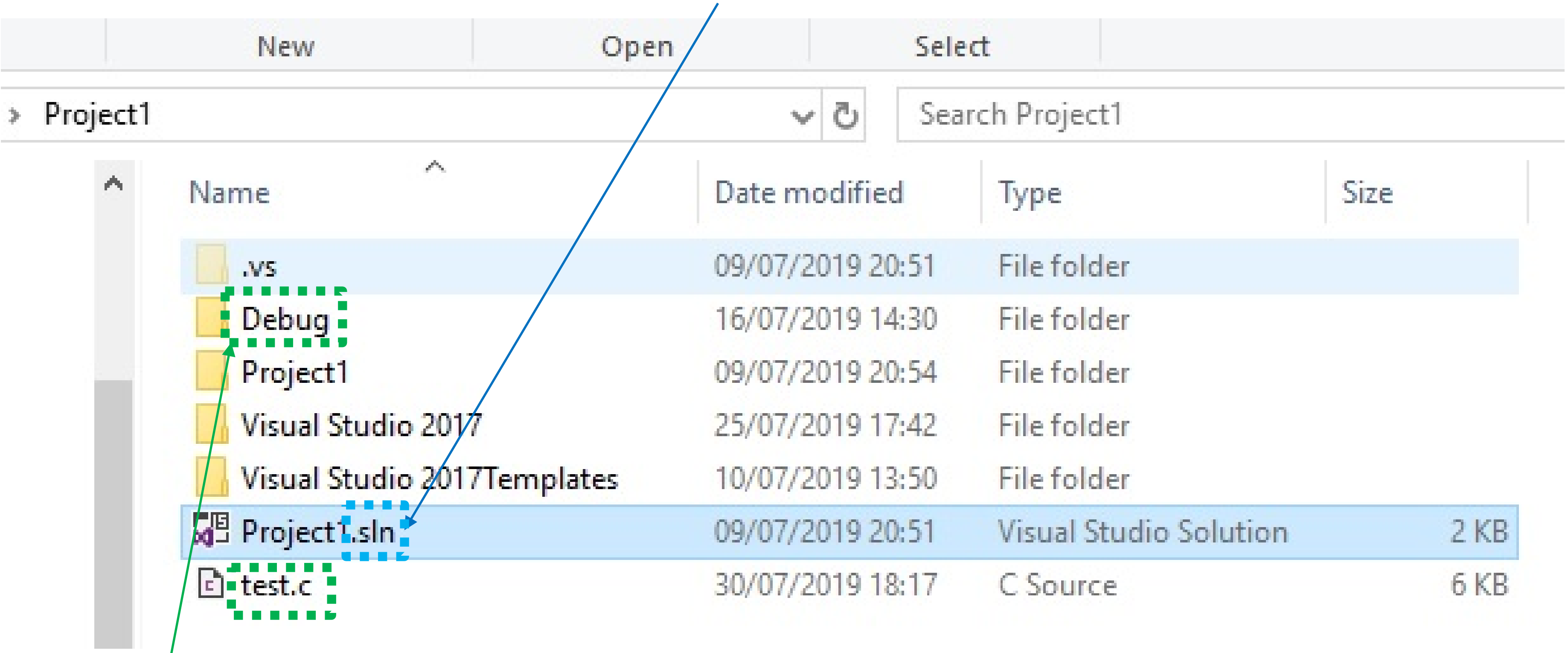


```
1>------ Build started: Project: exercise_1, Configuration: Debug Win32 ------
1>Compiling...
1>exercise_1_src.c

1>        c:\program files\microsoft visual studio 9.0\vc\include\stdio.h(306) : see declara
1>Build log was saved at "file://c:\amad\exercise_1\exercise_1\Debug\BuildLog.htm"
1>exercise_1 - 0 error(s), 1 warning(s)
========== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========
```

- It will produce an **exe**cutable file (**.exe**) that can be found in the **Debug folder**) if the process is successful.

Reopen your *C* code later in ***VS*** (or ***Code::blocks***)

- Go to the folder where you saved your code
- Double-click *your_c_code.**sln*** file.



Name	Date modified	Type	Size
.vs	09/07/2019 20:51	File folder	
Debug	16/07/2019 14:30	File folder	
Project1	09/07/2019 20:54	File folder	
Visual Studio 2017	25/07/2019 17:42	File folder	
Visual Studio 2017Templates	10/07/2019 13:50	File folder	
Project1.sln	09/07/2019 20:51	Visual Studio Solution	2 KB
test.c	30/07/2019 18:17	C Source	6 KB

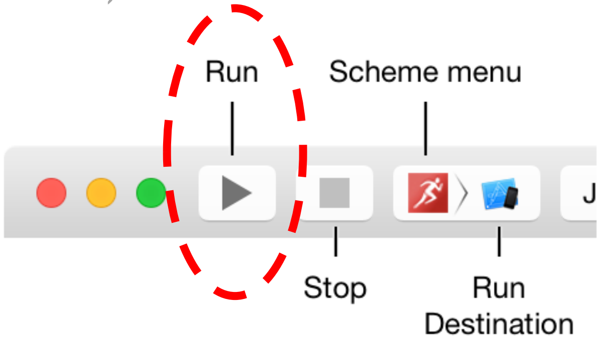
- If you want to run **.exe** file independently, it can be found in the **Debug** folder. Try to run it by double-clicking it.

NewbieIDE
(very simple & easy alternative option on Windows, instead of VS)

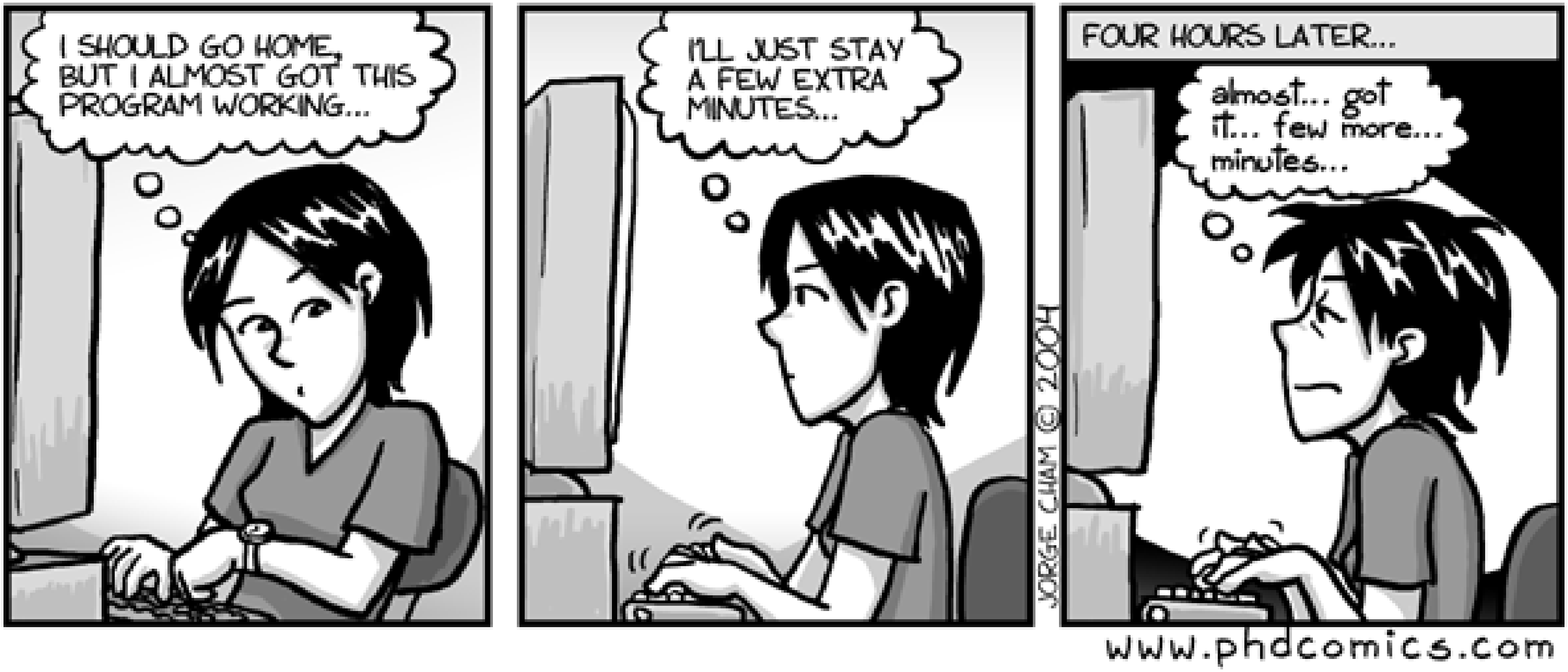
- Download Portable (non-installation) version:
  https://learn.lboro.ac.uk/pluginfile.php/574889/course/section/128003/NewbieIDE 0.1.13_portable.zip
- Unzip and save the entire ***NewbieIDE*** folder somewhere in your PC or usb drive.
- Run **NewbieIDE.exe** in the folder
- In the top menu, Click ***File***> ***New File***> ***Quick .c file***> (*Write your own code*) > **Save/ Save as** (*any name* with **.c**)> Press **Run**
- **libgcc_s_dw2-1.dll** (can be found in the NewbieIDE folder) may be required to run your .exe file independently.

- Any C compiler can be fine. **Installation is your responsibility.**
- (1) **Windows** users: Visual Studio, or ***NewbieIDE*** that is very simple to use and available from [Resources] on LEARN.
- (2) **Mac** users: "***Clang***" can be another good choice. ***Xcode*** can be just fine. Refer to the video instruction on LEARN

  Open **Xcode** > Create **a new Xcode project** > **Command Line Tool** > (write your_project_name) > language: **C** > Organisation ID: (give an org_id) > ... > (... follow the simple direction) > (Write **your code**) > **Produce** in the top menu > **Run** or (just press the triangular button in the top menu)



- For those who still find it difficult to use **Python**, please arrange a meeting with me.


I SHOULD GO HOME, BUT I ALMOST GOT THIS PROGRAM WORKING...
I'LL JUST STAY A FEW EXTRA MINUTES...
FOUR HOURS LATER...
almost... got it... few more... minutes...
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