CE103 Algorithms and Programming I

Week-2

Fall Semester, 2021-2022

Download DOC, SLIDE, PPTX

Algorithm Basics

Flowgorithm

http://www.flowgorithm.org/

Pseudocode

Pseudocode - Wikipedia

Pseudocode Examples

How to write a Pseudo Code? - GeeksforGeeks

Introduction to Analysis of Algorithms

In this course we will learn how to code with several development environments and next term we will see analysis of algorithms in details.

This topic is covered in the following link :
CE100 Introduction to Analysis of Algorithms

Programming Environment Setup and Configuration

Programming life is not about only learning how to code. Mostly you need to use several code development environments and you need to learn how to use them efficiently.

C / C++ Environment and Development

DevCpp (Install / Compile / Run / Debug) (1)

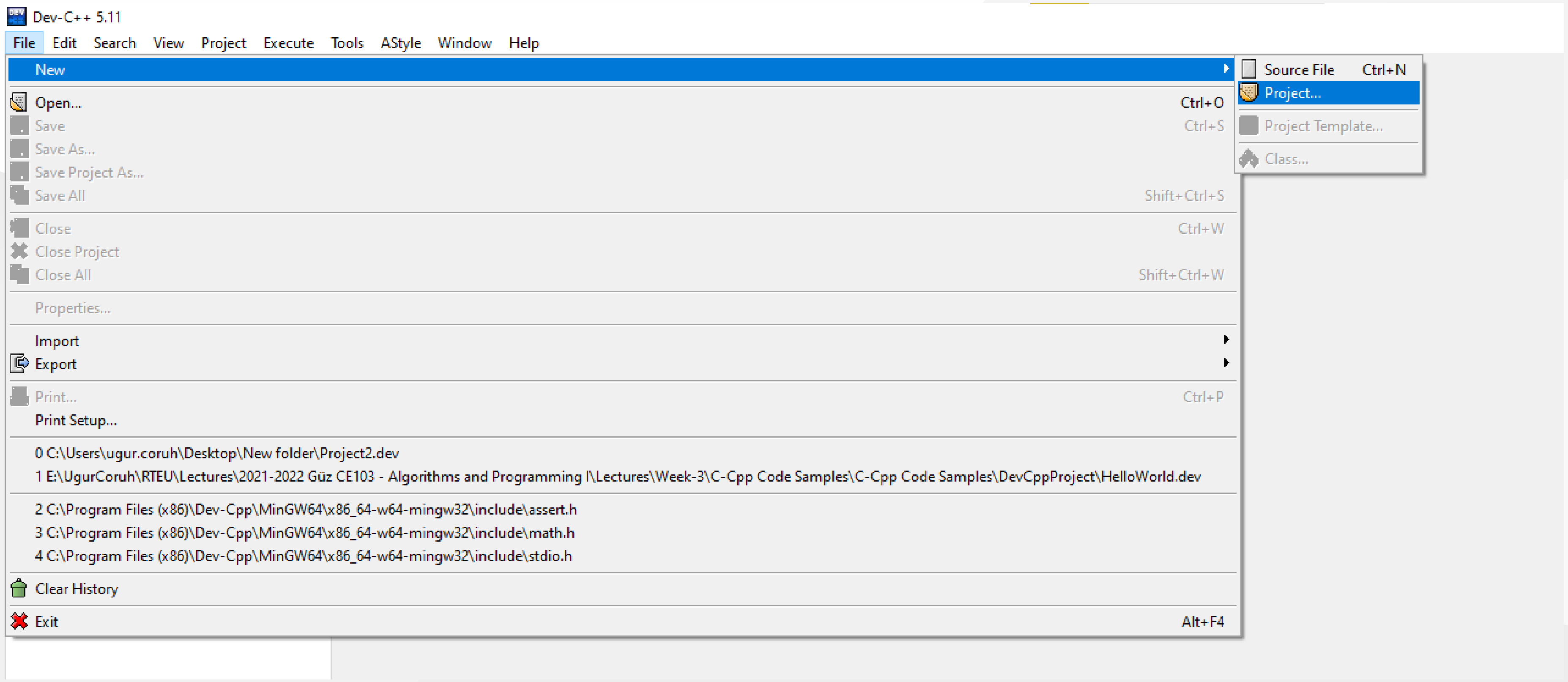
Download DevC++ IDE from following link

https://www.bloodshed.net/

DevCpp (Install / Compile / Run / Debug) (2)

Open DevC++ IDE for C Project Generation

Open File->New->Project



0 C:\Users\ugur.coruh\Desktop\New folder\Project2.dev
1 E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103 - Algorithms and Programming I\Lectures\Week-3\C-Cpp Code Samples\C-Cpp Code Samples\DevCppProject\HelloWorld.dev
2 C:\Program Files (x86)\Dev-Cpp\MinGW64\x86_64-w64-mingw32\include\assert.h
3 C:\Program Files (x86)\Dev-Cpp\MinGW64\x86_64-w64-mingw32\include\math.h
4 C:\Program Files (x86)\Dev-Cpp\MinGW64\x86_64-w64-mingw32\include\stdio.h

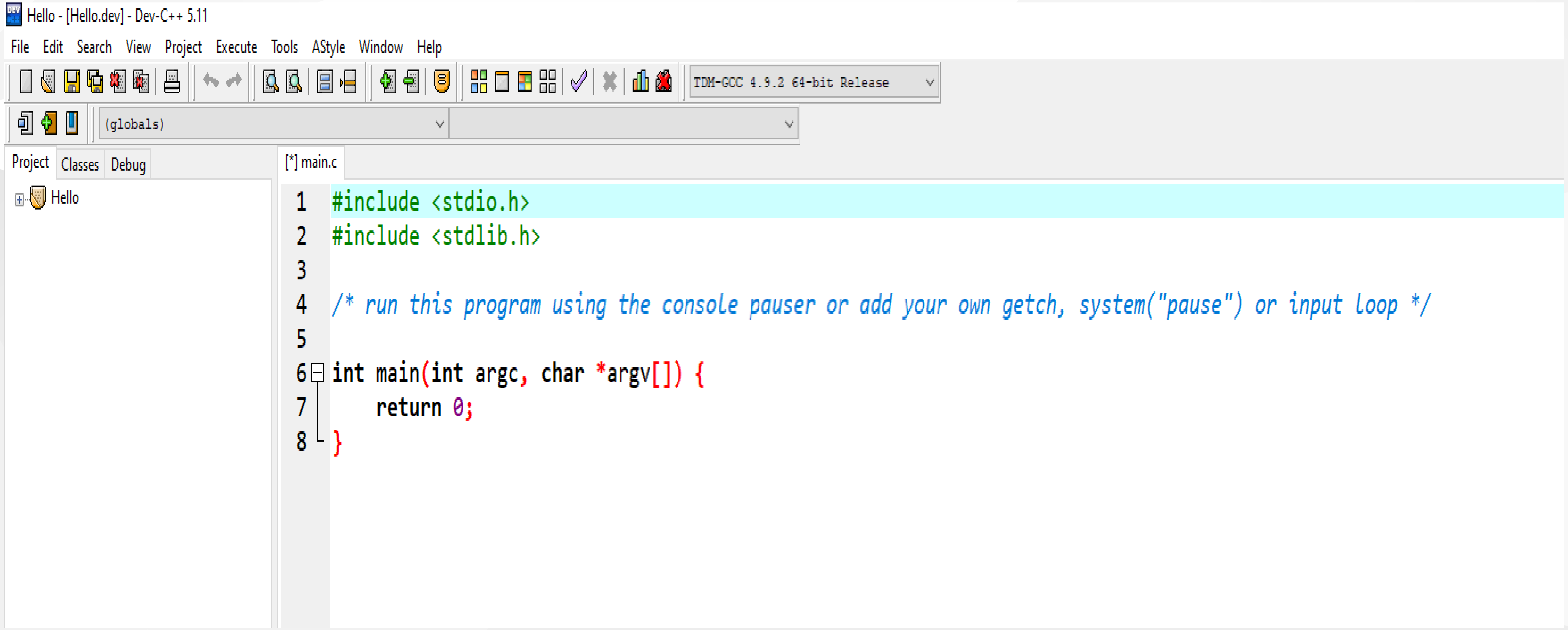
DevCpp (Install / Compile / Run / Debug) (3)

Select **Console Application** from **Basic** tab and with **C Project** Option and write a project name such as "**Hello**" then press OK

Select a folder and save **Hello.dev** project file.

DevCpp (Install / Compile / Run / Debug) (4)

You will see a sample main with empty body


Hello - [Hello.dev] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Hello
[*] main.c

```c
#include <stdio.h>
#include <stdlib.h>

/* run this program using the console pauser or add your own getch, system("pause") or input loop */

int main(int argc, char *argv[]) {
    return 0;
}
```

DevCpp (Install / Compile / Run / Debug) (5)

```
#include <stdio.h>
#include <stdlib.h>

/* run this program using the console pauser or add your own getch, s,ystem("pause") or input loop */
int main(int argc, char *argv[]) {
    retAdd 0;
}
```

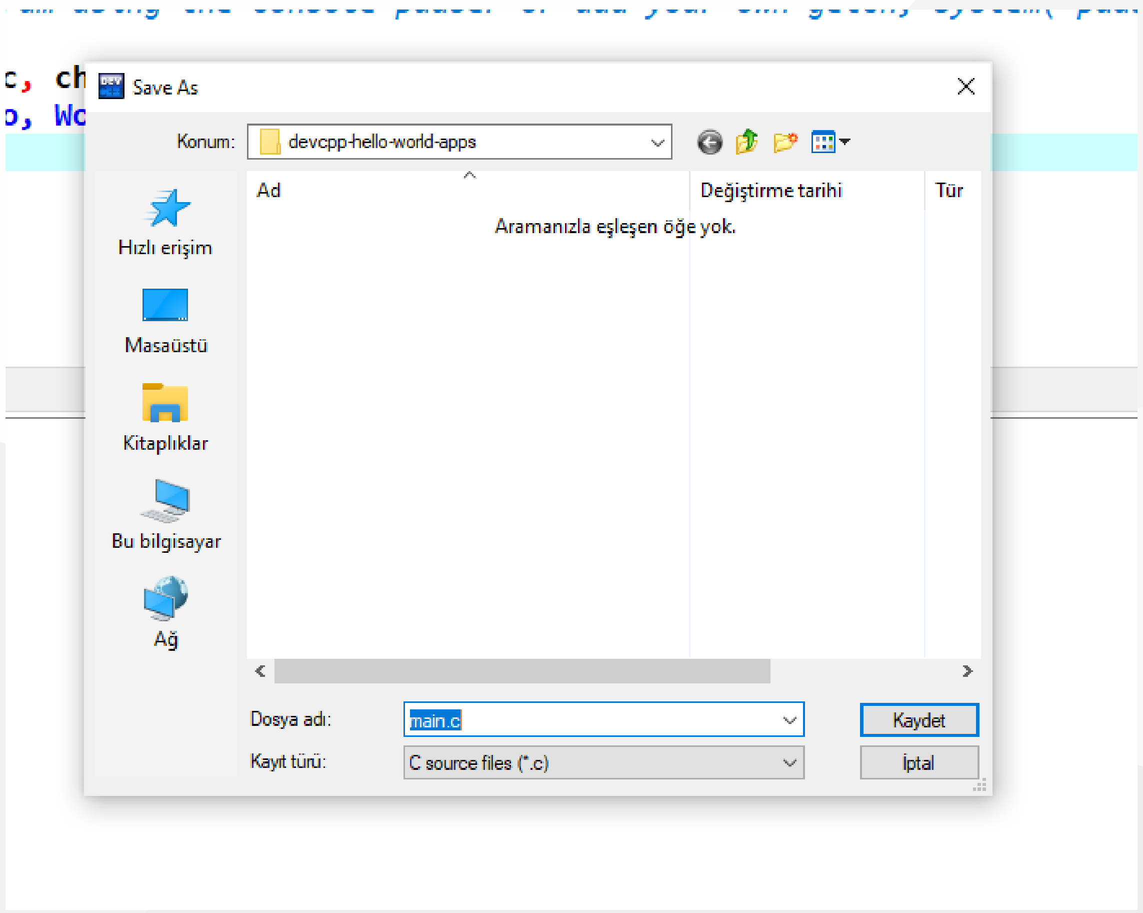
DevCpp (Install / Compile / Run / Debug) (6)

add the following line in main function. This will write "Hello, World!" on the screen and then wait a keypress to exit from application

```c
#include <stdio.h>
#include <stdlib.h>

/* run this program using the console pauser or add your own getch, system("pause") or input loop */

int main(int argc, char *argv[]) {
    printf("Hello, World!");
    getchar();
    return 0;
}
```

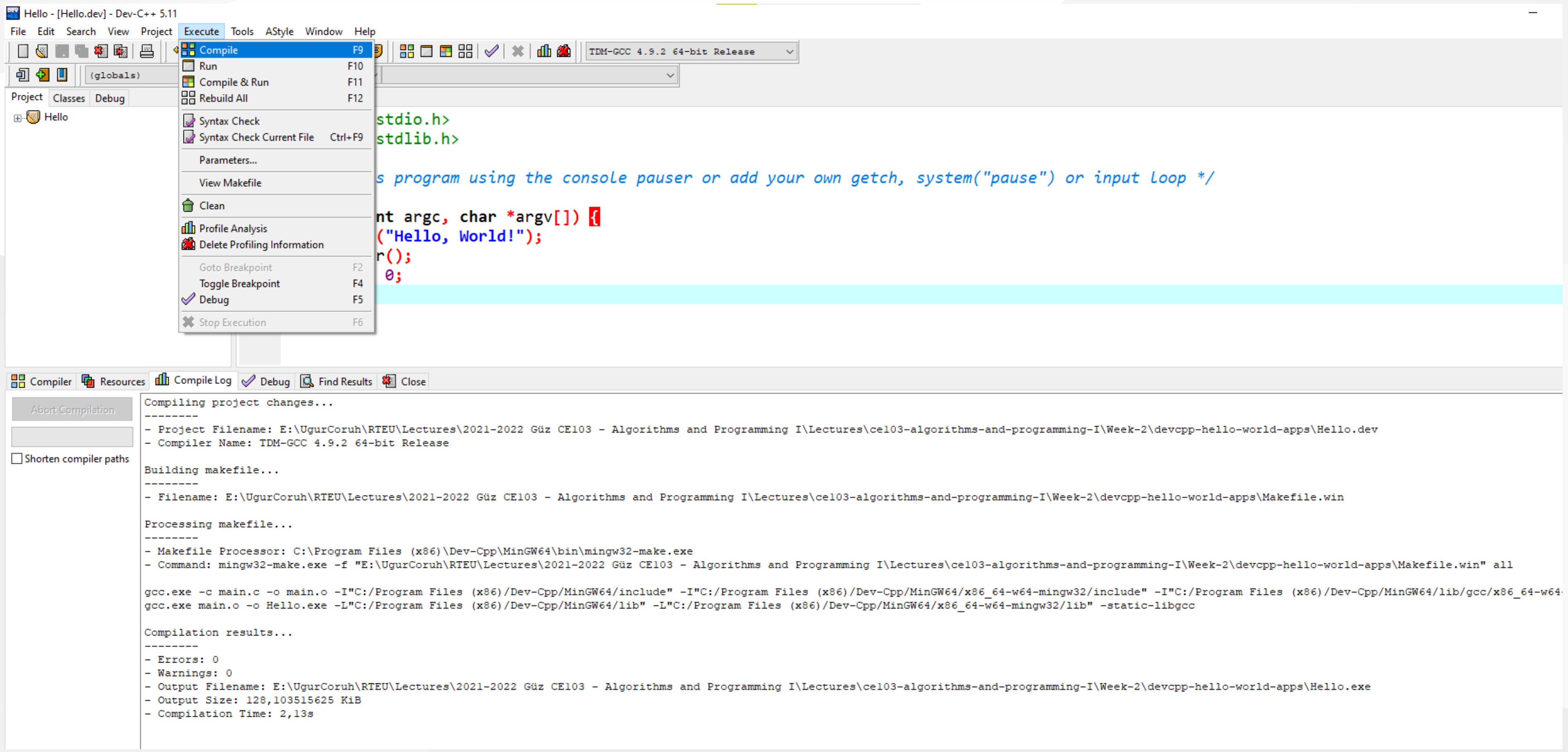
DevCpp (Install / Compile / Run / Debug) (7)

Then save the file



DevCpp (Install / Compile / Run / Debug) (8)

Use from menu *Execute->Compile F5* to generate Hello.exe



```
stdio.h>
stdlib.h>

s program using the console pauser or add your own getch, system("pause") or input loop */

nt argc, char *argv[]) {
("Hello, World!");
r();
 0;
```

```
Compiling project changes...
--------
- Project Filename: E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103 - Algorithms and Programming I\Lectures\ce103-algorithms-and-programming-I\Week-2\devcpp-hello-world-apps\Hello.dev
- Compiler Name: TDM-GCC 4.9.2 64-bit Release

Building makefile...
--------
- Filename: E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103 - Algorithms and Programming I\Lectures\ce103-algorithms-and-programming-I\Week-2\devcpp-hello-world-apps\Makefile.win

Processing makefile...
--------
- Makefile Processor: C:\Program Files (x86)\Dev-Cpp\MinGW64\bin\mingw32-make.exe
- Command: mingw32-make.exe -f "E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103 - Algorithms and Programming I\Lectures\ce103-algorithms-and-programming-I\Week-2\devcpp-hello-world-apps\Makefile.win" all

gcc.exe -c main.c -o main.o -I"C:/Program Files (x86)/Dev-Cpp/MinGW64/include" -I"C:/Program Files (x86)/Dev-Cpp/MinGW64/x86_64-w64-mingw32/include" -I"C:/Program Files (x86)/Dev-Cpp/MinGW64/lib/gcc/x86_64-w64-
gcc.exe main.o -o Hello.exe -L"C:/Program Files (x86)/Dev-Cpp/MinGW64/lib" -L"C:/Program Files (x86)/Dev-Cpp/MinGW64/x86_64-w64-mingw32/lib" -static-libgcc

Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103 - Algorithms and Programming I\Lectures\ce103-algorithms-and-programming-I\Week-2\devcpp-hello-world-apps\Hello.exe
- Output Size: 128,103515625 KiB
- Compilation Time: 2,13s
```

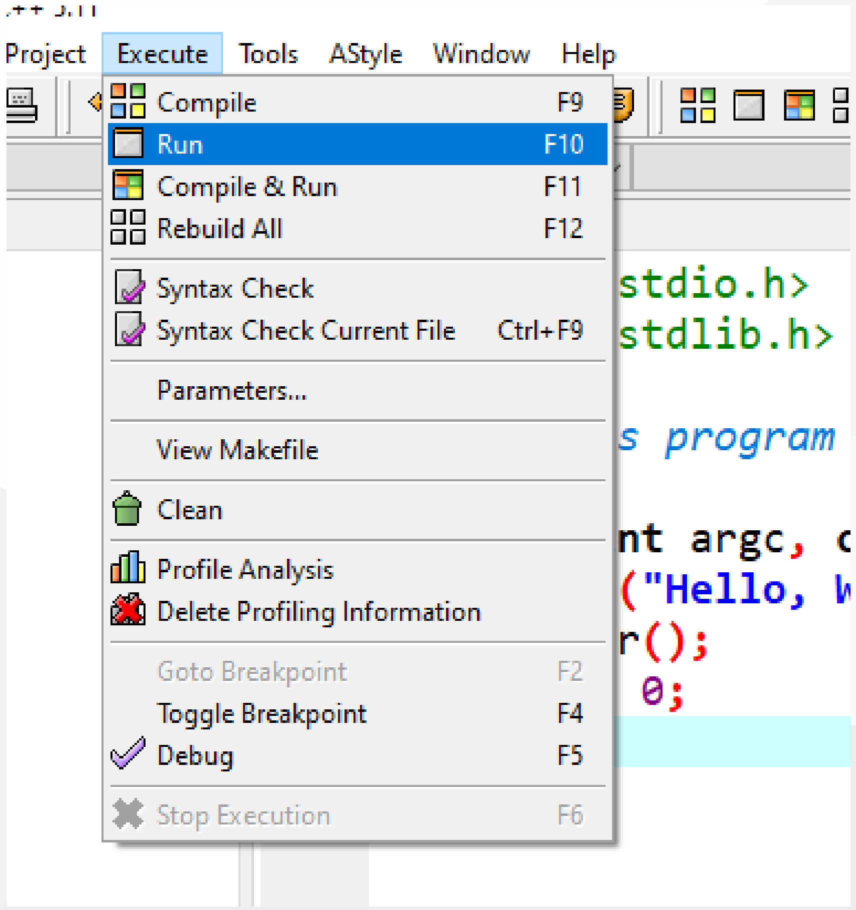
DevCpp (Install / Compile / Run / Debug) (9)

You can find the generated Hello.exe path from Compile.log as follow. Check the Output Filename

```
Compiling project changes...
--------
- Project Filename: E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103 - Algorithms and Programming I\Lectures\ce103-algorithms-and-programming-I\Week-2\devcpp-hello-world-apps\Hello.dev
- Compiler Name: TDM-GCC 4.9.2 64-bit Release

Building makefile...
--------
- Filename: E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103 - Algorithms and Programming I\Lectures\ce103-algorithms-and-programming-I\Week-2\devcpp-hello-world-apps\Makefile.win

Processing makefile...
--------
- Makefile Processor: C:\Program Files (x86)\Dev-Cpp\MinGW64\bin\mingw32-make.exe
- Command: mingw32-make.exe -f "E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103 - Algorithms and Programming I\Lectures\ce103-algorithms-and-programming-I\Week-2\devcpp-hello-world-apps\Makefile.win" all

gcc.exe -c main.c -o main.o -I"C:/Program Files (x86)/Dev-Cpp/MinGW64/include" -I"C:/Program Files (x86)/Dev-Cpp/MinGW64/x86_64-w64-mingw32/include" -I"C:/Program Files (x86)/Dev-Cpp/MinGW64/lib/gcc/x86_64-w64-mingw32/4.9.2/include"

gcc.exe main.o -o Hello.exe -L"C:/Program Files (x86)/Dev-Cpp/MinGW64/lib" -L"C:/Program Files (x86)/Dev-Cpp/MinGW64/x86_64-w64-mingw32/lib" -static-libgcc


Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103 - Algorithms and Programming I\Lectures\ce103-algorithms-and-programming-I\Week-2\devcpp-hello-world-apps\Hello.exe
- Output Size: 128,103515625 KiB
- Compilation Time: 2,13s
```

DevCpp (Install / Compile / Run / Debug) (10)

Then you can run with Execute->Run F10 or Directly Compile&Run F11



```
stdio.h>
stdlib.h>

s program

nt argc, c
("Hello, W
r();
 0;
```

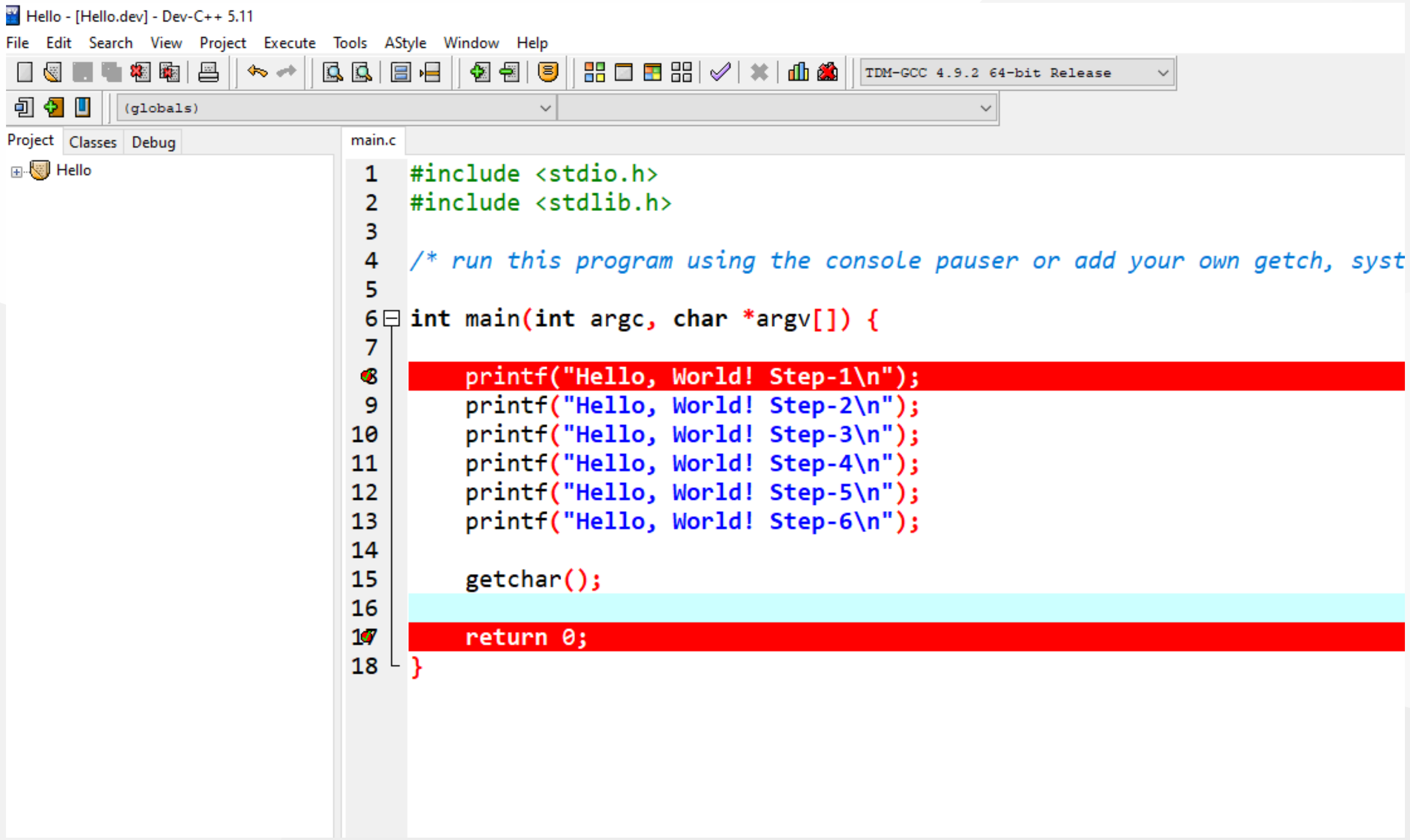
DevCpp (Install / Compile / Run / Debug) (11)

for debugging operations, just change the code and add more statements as follow

```c
#include <stdio.h>
#include <stdlib.h>

/* run this program using the console pauser or add your getch, system(",pause") or input loop */

int main(int argc, char *argv[]) {

    printf("Hello, World! Step-1\n");
    printf("Hello, World! Step-2\n");
    printf("Hello, World! Step-3\n");
    printf("Hello, World! Step-4\n");
    printf("Hello, World! Step-5\n");
    printf("Hello, World! Step-6\n");

    getchar();

    return 0;
}
```

DevCpp (Install / Compile / Run / Debug) (12)

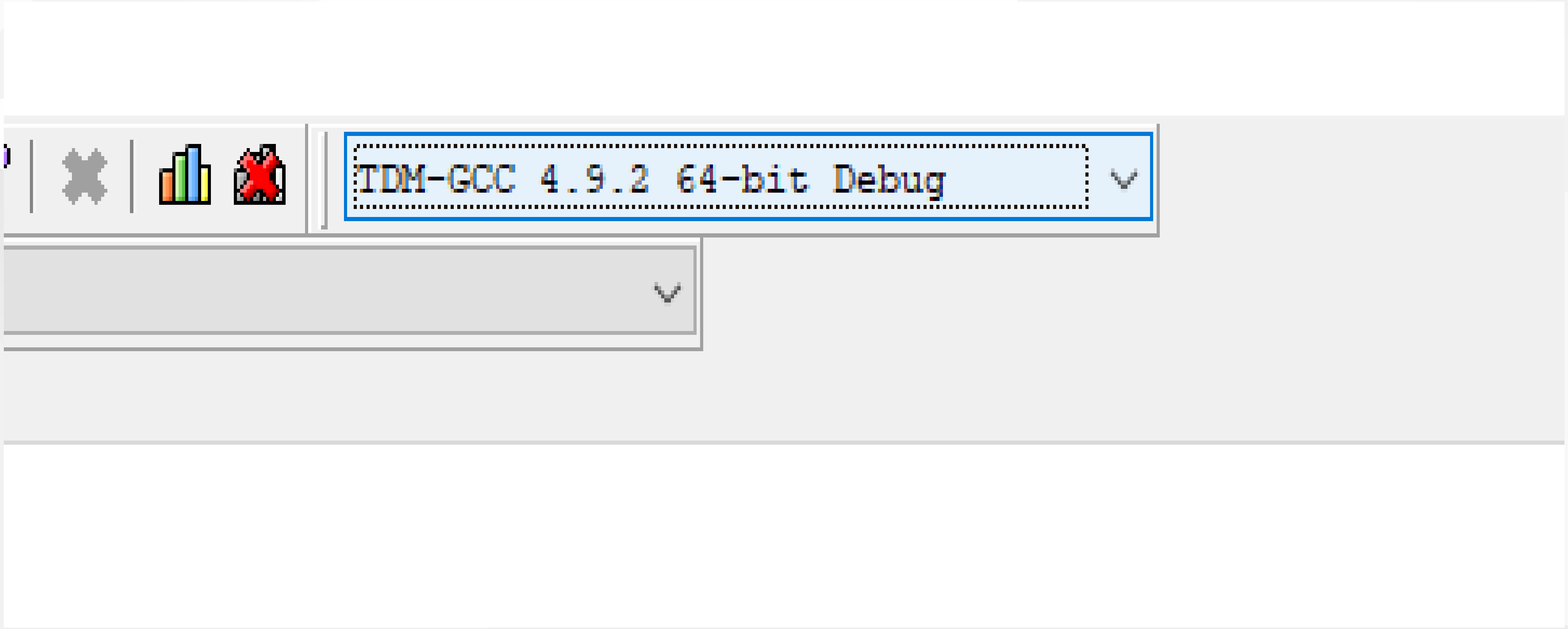
Click on line numbers and add breakpoints for debugger. This red point will be debugger stop points


Hello - [Hello.dev] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Hello
main.c

```
1  #include <stdio.h>
2  #include <stdlib.h>
3
4  /* run this program using the console pauser or add your own getch, syst
5
6  int main(int argc, char *argv[]) {
7
8      printf("Hello, World! Step-1\n");
9      printf("Hello, World! Step-2\n");
10     printf("Hello, World! Step-3\n");
11     printf("Hello, World! Step-4\n");
12     printf("Hello, World! Step-5\n");
13     printf("Hello, World! Step-6\n");
14
15     getchar();
16
17     return 0;
18 }
```

DevCpp (Install / Compile / Run / Debug) (13)

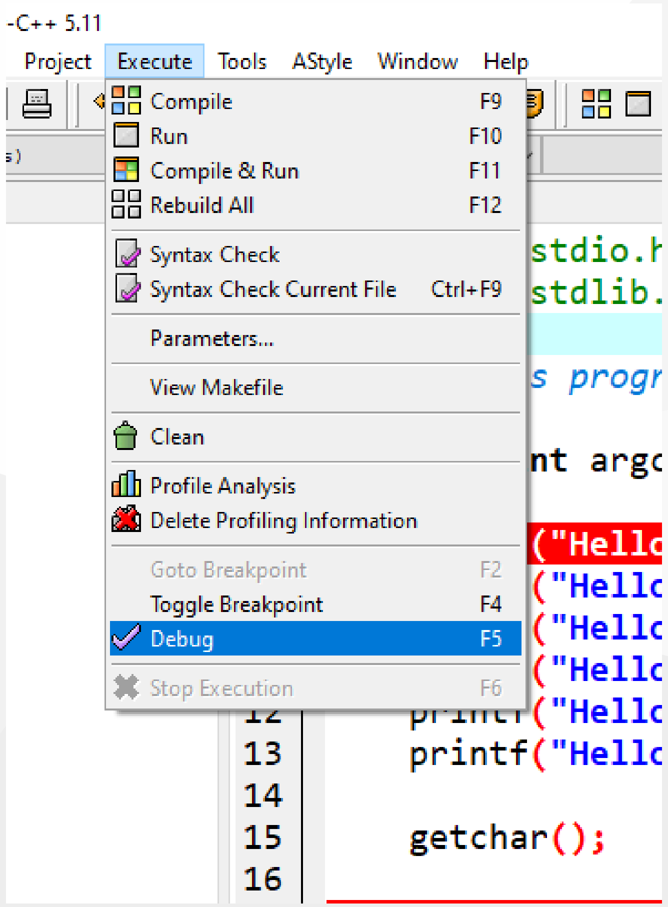
In the ,menu section select compiler with debug option



TDM-GCC 4.9.2 64-bit Debug

DevCpp (Install / Compile / Run / Debug) (14)

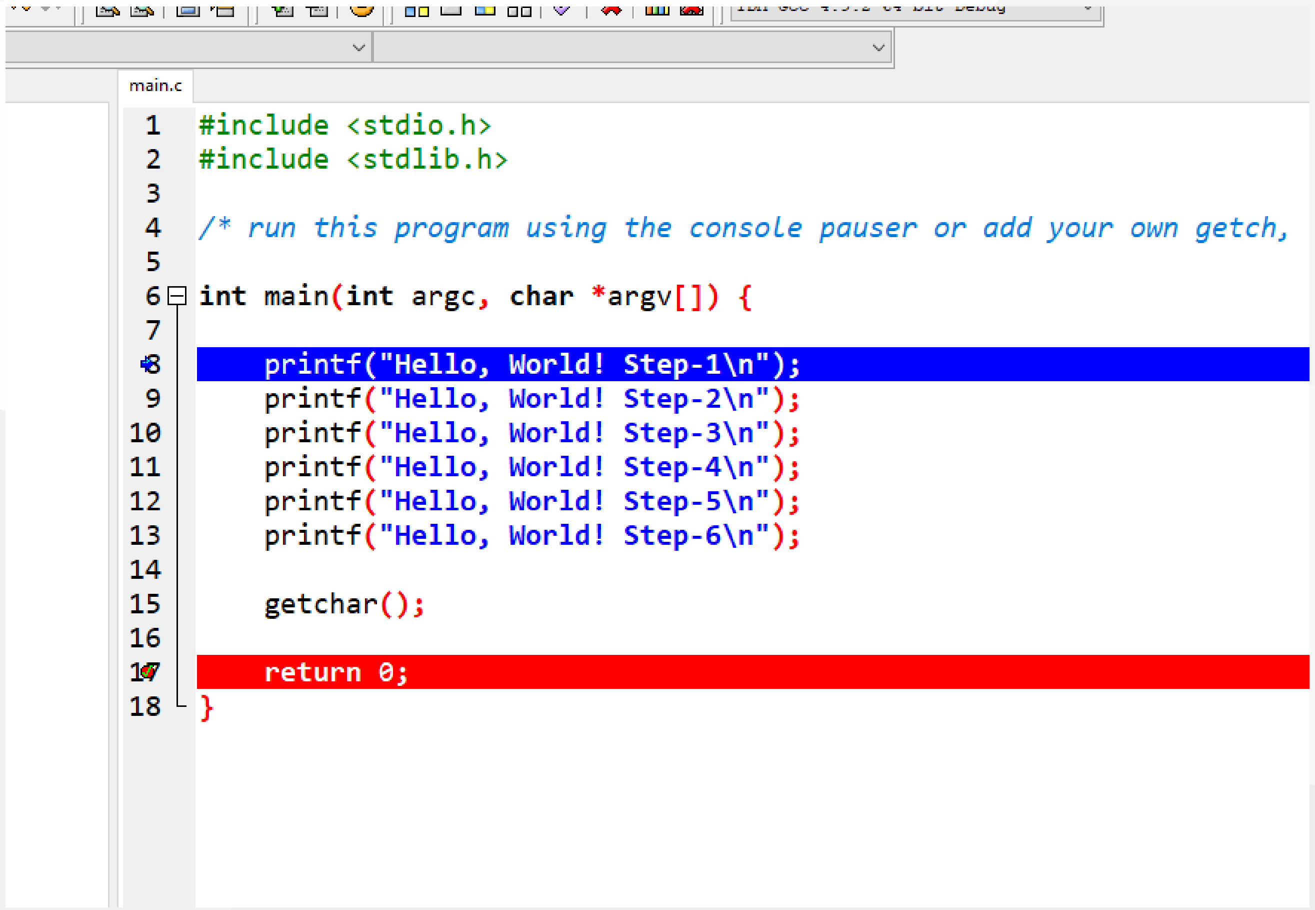
Compile application with debug setting and in Execute Section use Debug F5 to start debugging



```
stdio.h
stdlib.

s progr

nt argc

("Hello
("Hello
("Hello
("Hello
printf("Hello
printf("Hello

getchar();
```

DevCpp (Install / Compile / Run / Debug) (15)

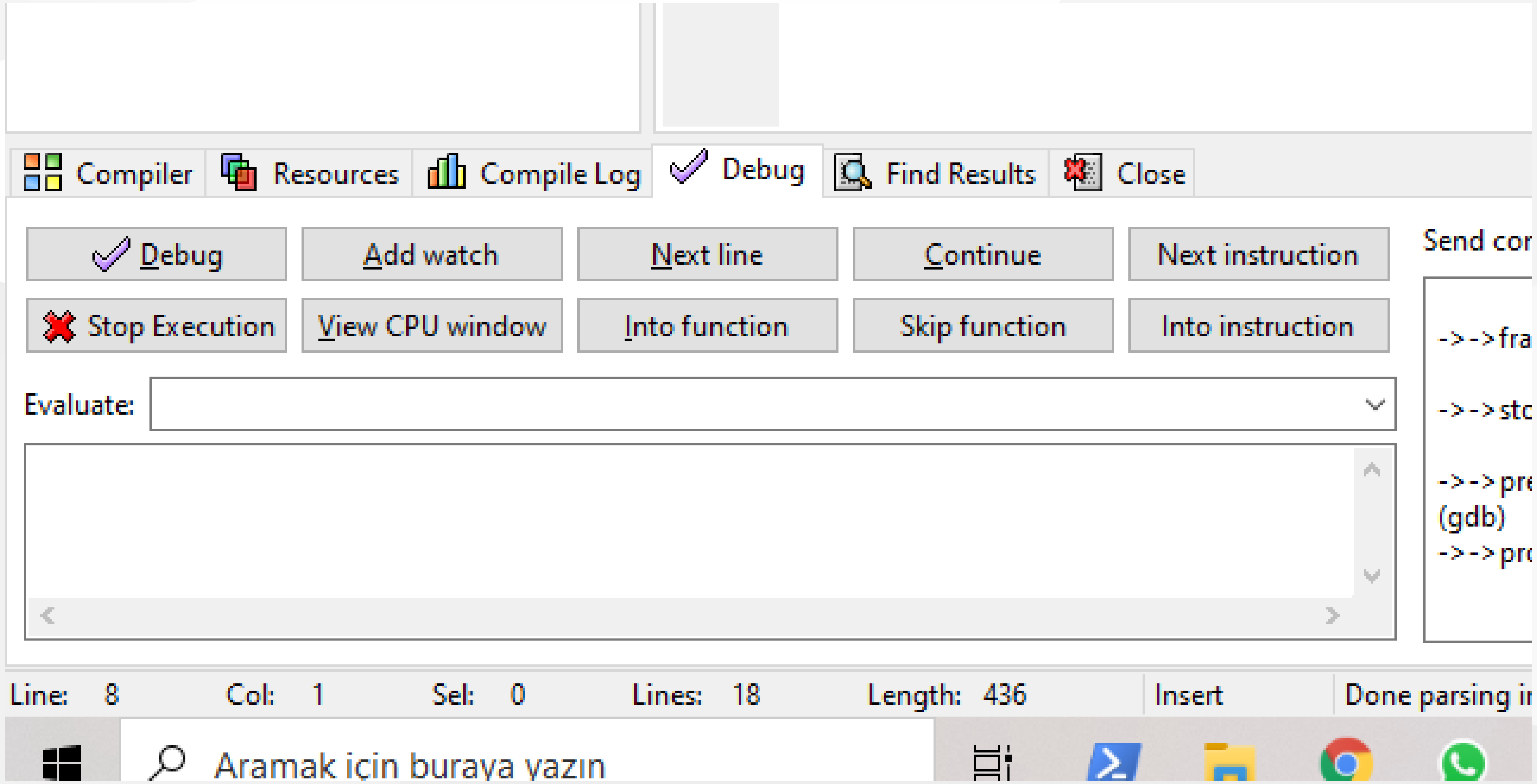
Debugger will stop at breakpoint at the debug point (blue line)



```
#include <stdio.h>
#include <stdlib.h>

/* run this program using the console pauser or add your own getch,

int main(int argc, char *argv[]) {

    printf("Hello, World! Step-1\n");
    printf("Hello, World! Step-2\n");
    printf("Hello, World! Step-3\n");
    printf("Hello, World! Step-4\n");
    printf("Hello, World! Step-5\n");
    printf("Hello, World! Step-6\n");

    getchar();

    return 0;
}
```

DevCpp (Install / Compile / Run / Debug) (16)

Moving to next statement can be done via control buttons or shortcuts



Line: 8 Col: 1 Sel: 0 Lines: 18 Length: 436 Insert Done parsing i

DevCpp (Install / Compile / Run / Debug) (17)

Press F8 to step-by-step continue

Then go to Project Options - Compiler - Linker and set Generate debugging information to "yes", and make sure you are not using any optimization options (they're not good for debug mode). Also check the Parameters tab, make sure you don't have any optimization options (like -O2 or -O3, but -O0 is ok because it means no optimization) or strip option (-s).

DevCpp (Install / Compile / Run / Debug) (18)

After that, do a full rebuild (Ctrl-F11), then set breakpoint(s) where you want the debugger to stop (otherwise it will just run the program). To set a breakpoint on a line, just click on the gutter (the gray band on the left), or press Ctrl-F5.

DevCpp (Install / Compile / Run / Debug) (19)

Now you are ready to launch the debugger, by pressing F8 or clicking the debug button. If everything goes well, the program will start, and then stop at the first breakpoint. Then you can step through the code, entering function calls, by pressing Shift-F7 or the "step into" button, or stepping over the function calls, by pressing F7 or the "next step" button. You can press Ctrl-F7 or the "continue" button to continue execution till the next breakpoint. At any time, you can add or remove breakpoints.

DevCpp (Install / Compile / Run / Debug) (20)

When the program stopped at a breakpoint and you are stepping through the code, you can display the values of various variables in your program by putting your mouse over them, or you can display variables and expressions by pressing F4 or the "add watch" button and typing the expression.

DevCpp (Install / Compile / Run / Debug) (21)

How do I debug using Dev-C++

Code Blocks (Install / Compile / Run / Debug) (1)

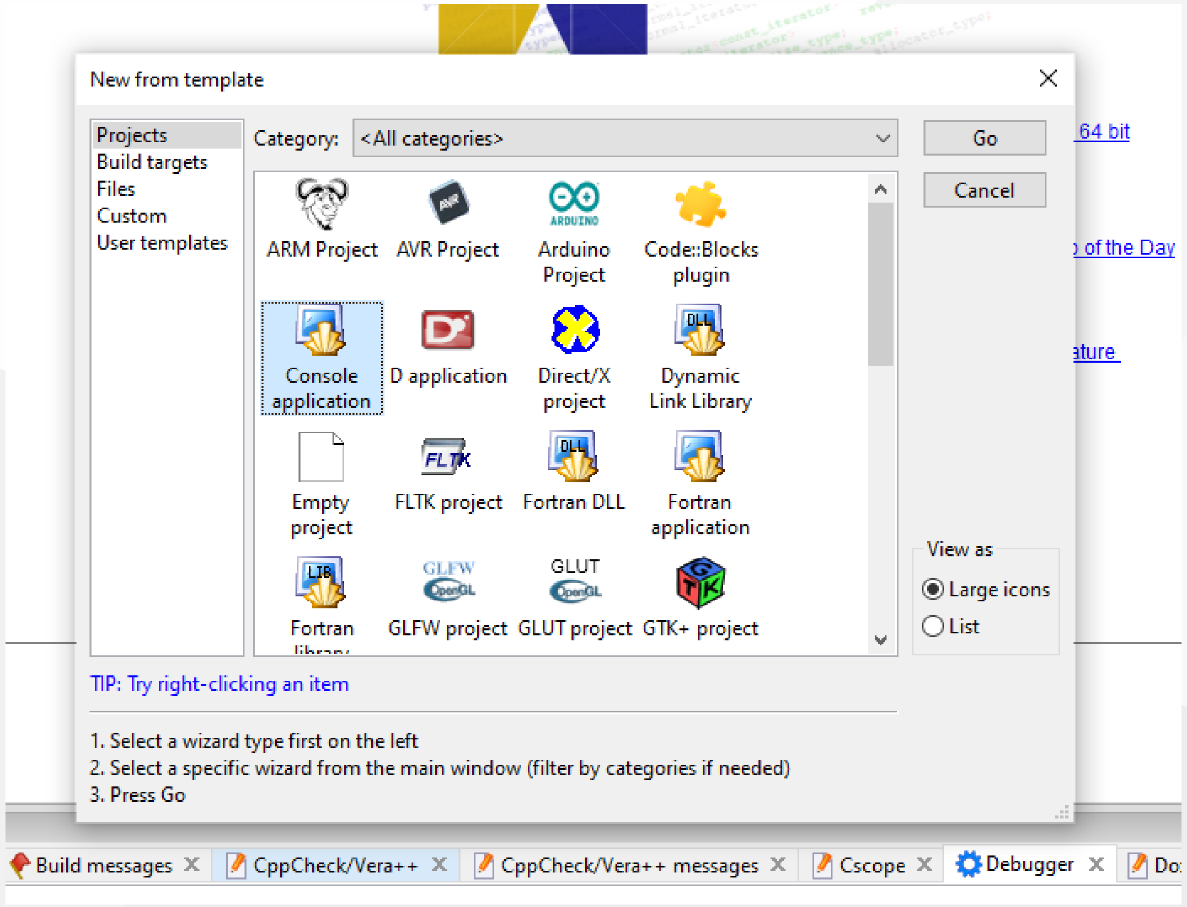
Download Code Blocks from the following link

Binary releases - Code::Blocks

Code Blocks (Install / Compile / Run / Debug) (2)

Open Code Blocks and

Select File->New->Project

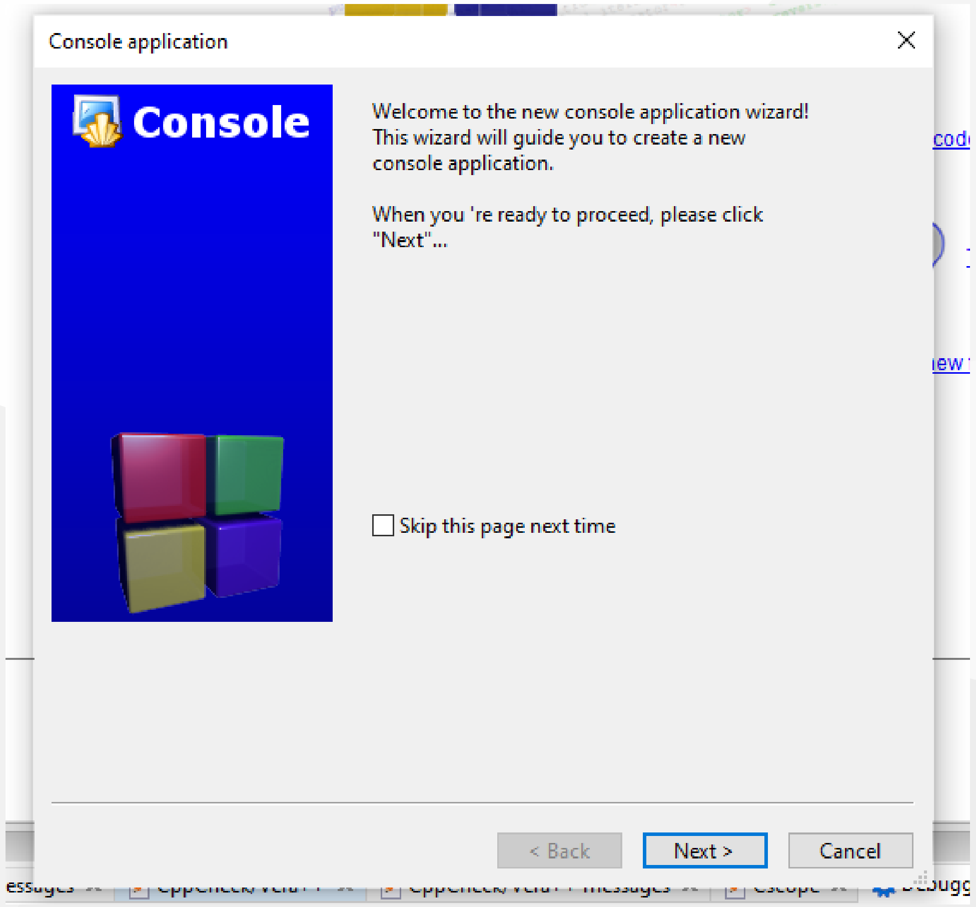


1. Select a wizard type first on the left
2. Select a specific wizard from the main window (filter by categories if needed)
3. Press Go

Code Blocks (Install / Compile / Run / Debug) (3)

Select Console Application

Click Next from Opening Window



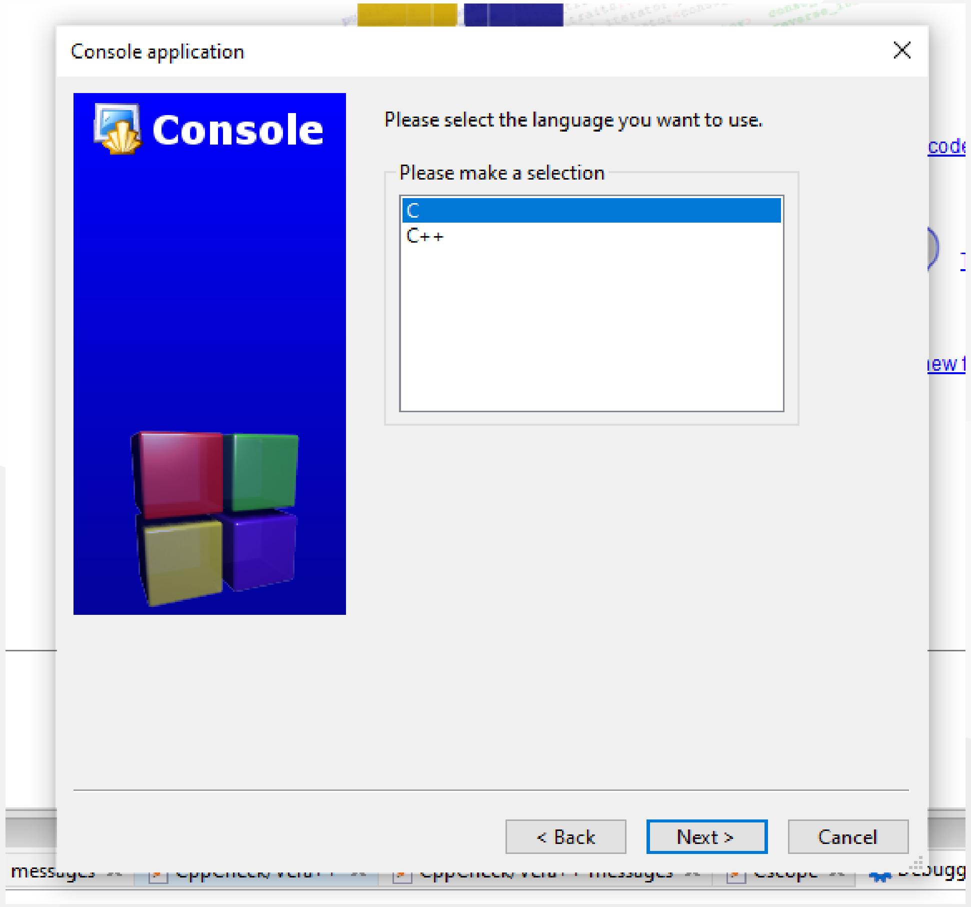
Welcome to the new console application wizard!
This wizard will guide you to create a new console application.

When you 're ready to proceed, please click "Next"...

☐ Skip this page next time

Code Blocks (Install / Compile / Run / Debug) (4)

Select C for Sample Project



Console application

Please select the language you want to use.

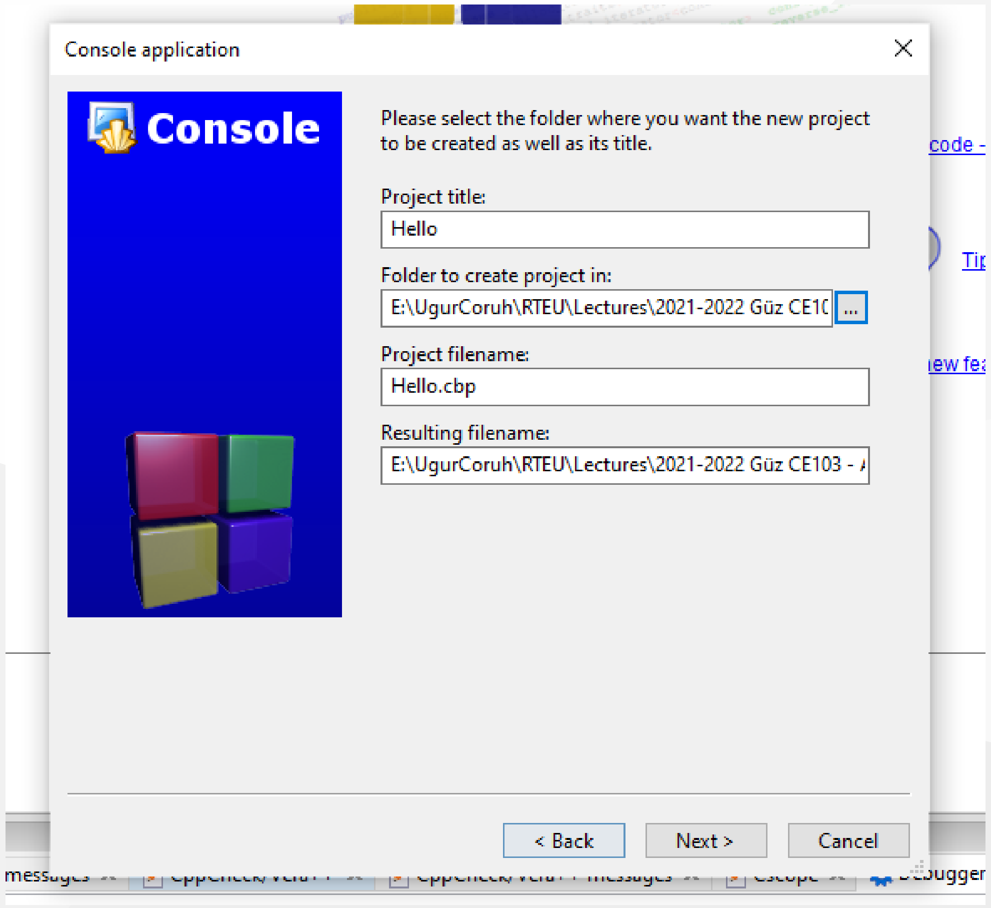
Please make a selection

C

C++

Code Blocks (Install / Compile / Run / Debug) (5)

Write a project name and title also set a project folder



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

Project title: Hello

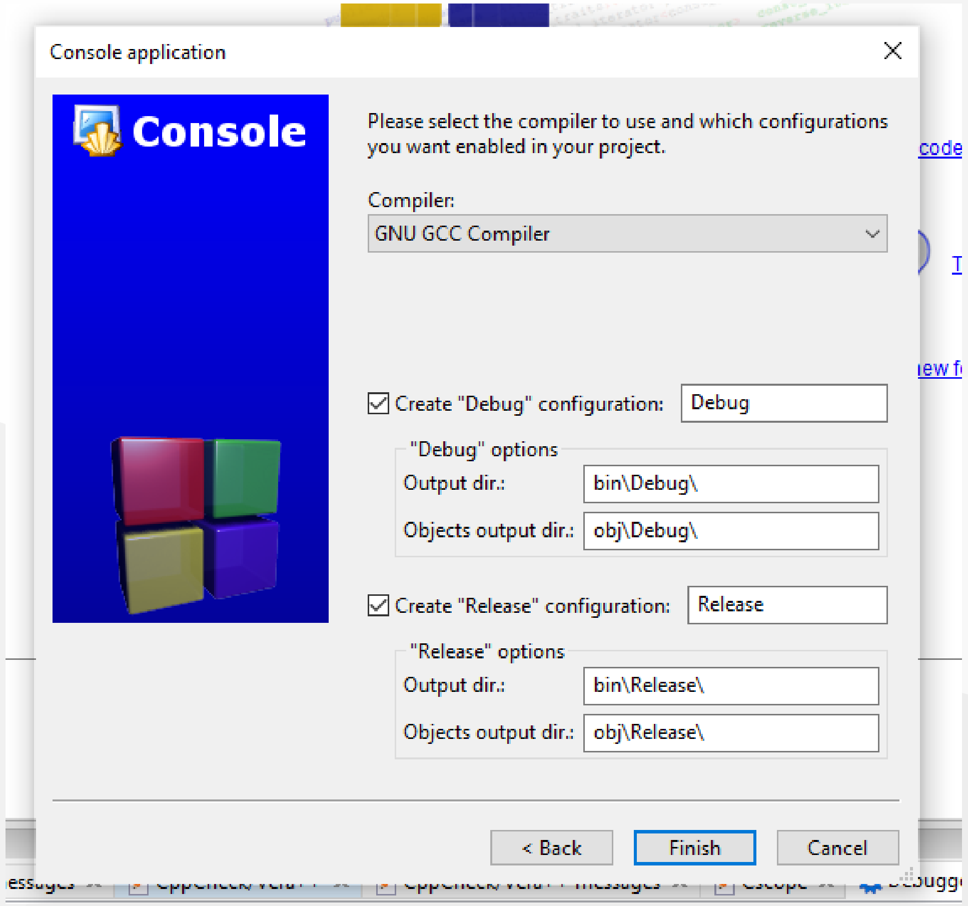
Folder to create project in: E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE1(

Project filename: Hello.cbp

Resulting filename: E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103 - /

Code Blocks (Install / Compile / Run / Debug) (6)

Select complier for this project we selected GCC but you can select C compliers from list. Set Debug and Release executable output folders.



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\

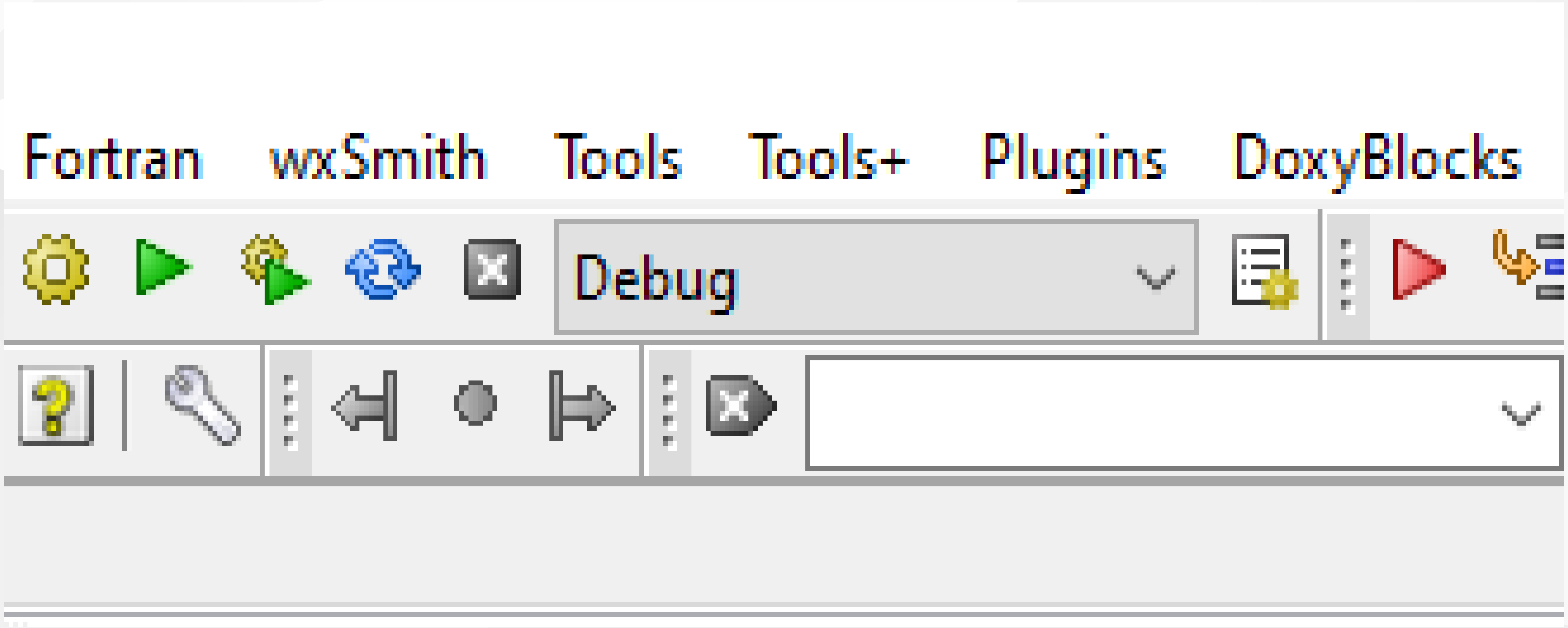
Code Blocks (Install / Compile / Run / Debug) (7)

After this wizard you will have the following code

```c
#include <stdio.h>
#include <stdlib.h>

int main()
{
    printf("Hello world!\n");
    return 0;
}
```

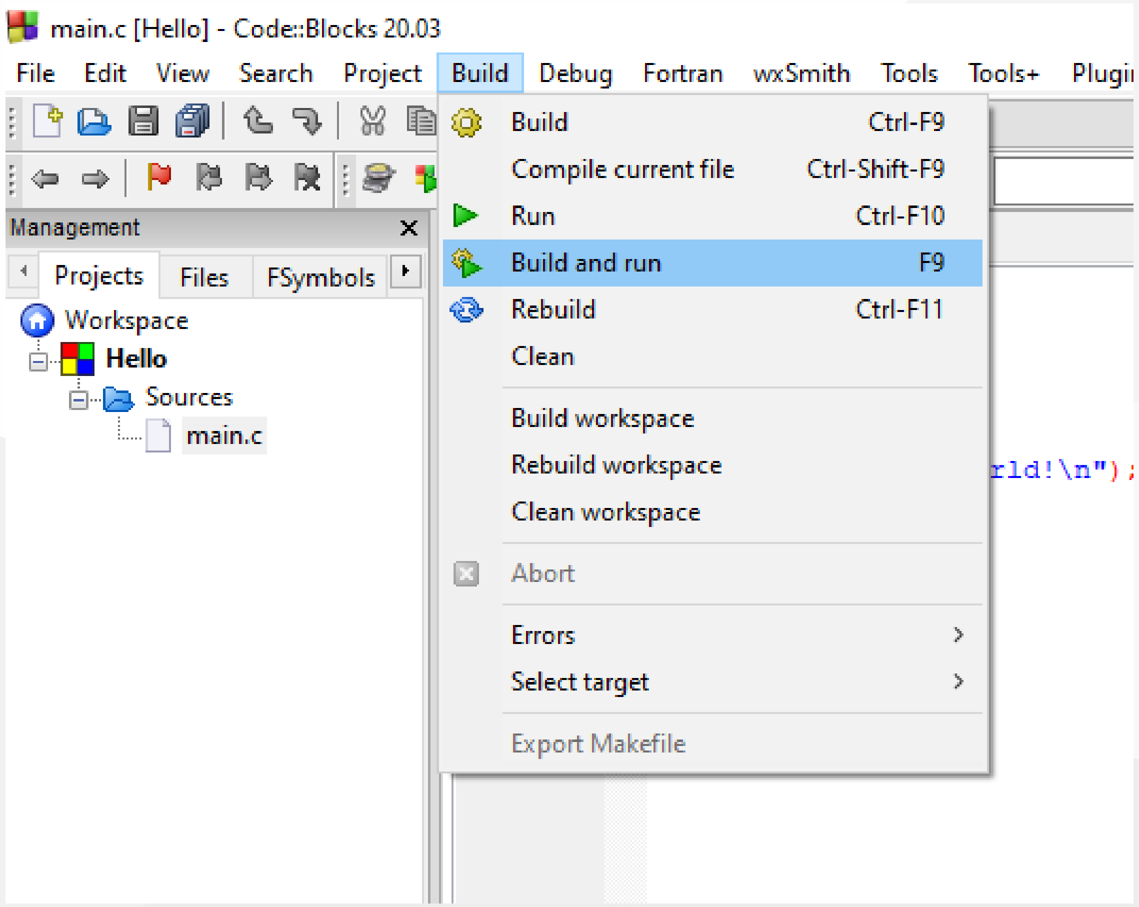
Code Blocks (Install / Compile / Run / Debug) (8)

Select Debug Build from menu



Code Blocks (Install / Compile / Run / Debug) (9)

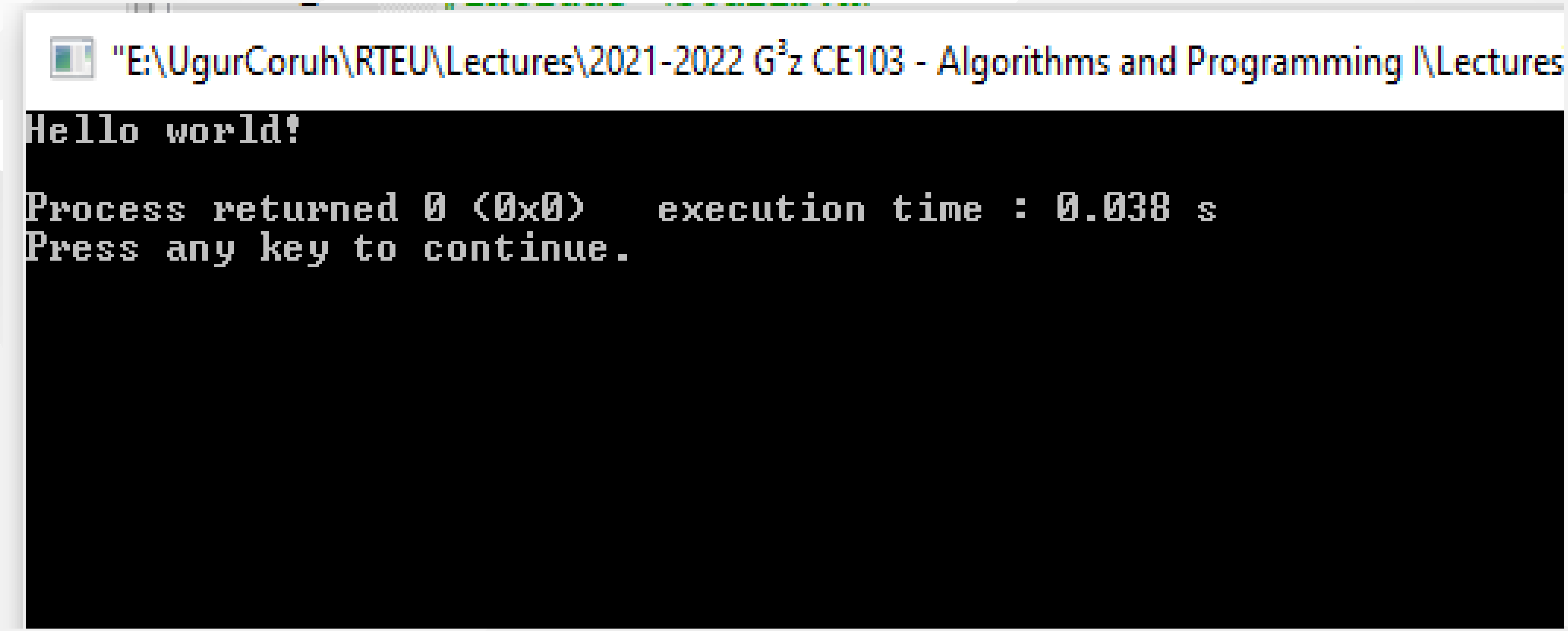
Run with Build and Run F9



```
rld!\n");
```

Code Blocks (Install / Compile / Run / Debug) (10)

You should see the following output



"E:\UgurCoruh\RTEU\Lectures\2021-2022 G³z CE103 - Algorithms and Programming I\Lectures

```
Hello world!

Process returned 0 (0x0)   execution time : 0.038 s
Press any key to continue.
```

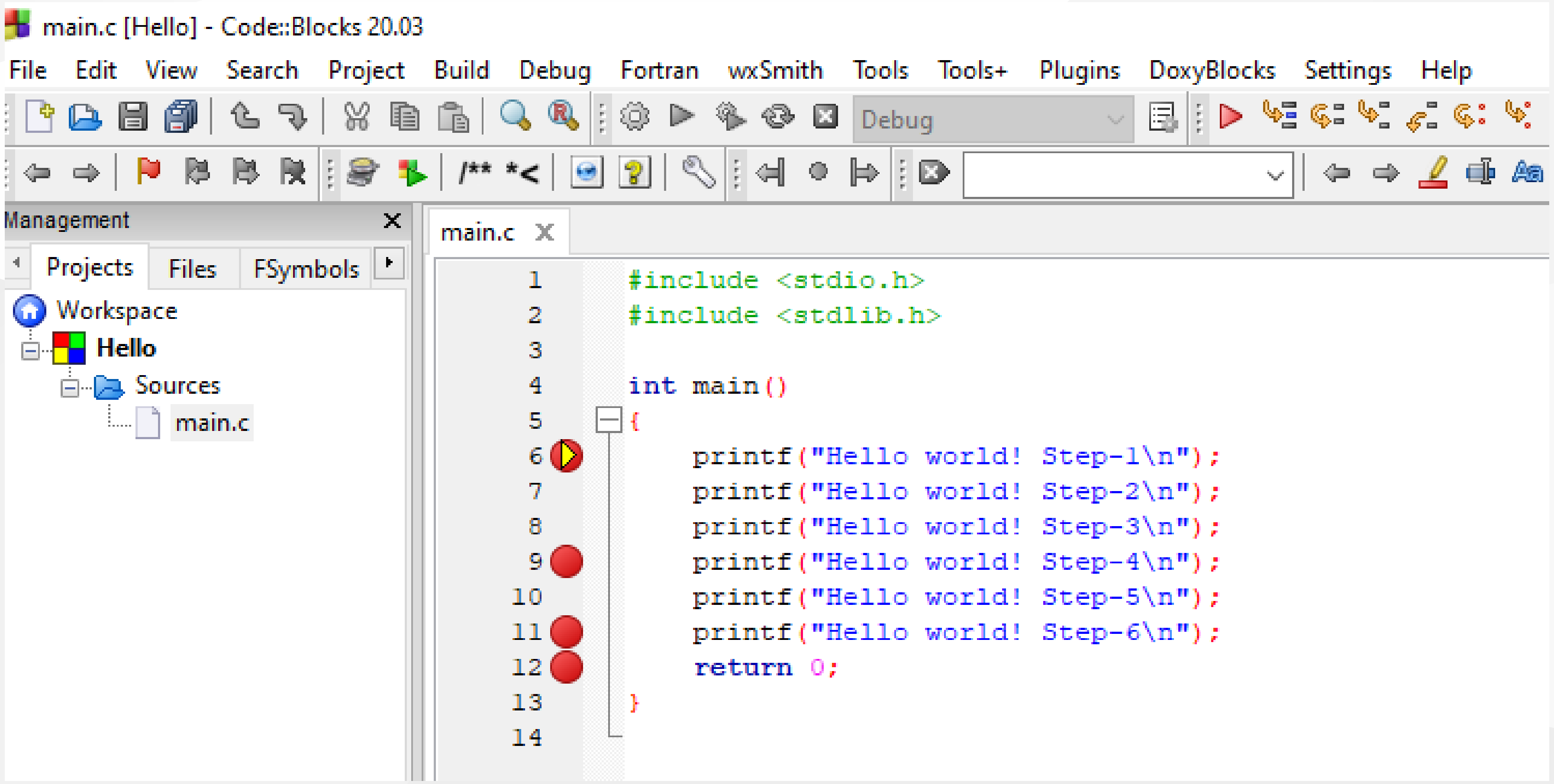
Code Blocks (Install / Compile / Run / Debug) (11)

Add the following lines to your source code for debugging

```c
#include <stdio.h>
#include <stdlib.h>

int main()
{
    printf("Hello world! Step-1\n");
    printf("Hello world! Step-2\n");
    printf("Hello world! Step-3\n");
    printf("Hello world! Step-4\n");
    printf("Hello world! Step-5\n");
    printf("Hello world! Step-6\n");
    return 0;
}
```

Code Blocks (Install / Compile / Run / Debug) (12)

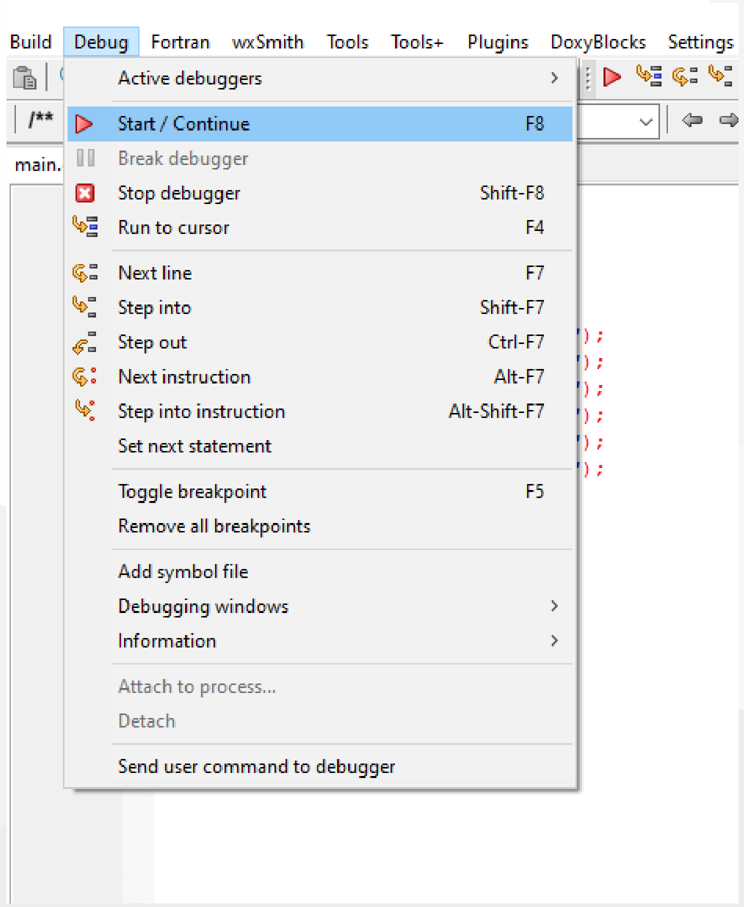
and add break points with F5 or mouse click


main.c [Hello] - Code::Blocks 20.03
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
Debug
Management
Projects Files FSymbols
Workspace
Hello
Sources
main.c
main.c

```
#include <stdio.h>
#include <stdlib.h>

int main()
{
    printf("Hello world! Step-1\n");
    printf("Hello world! Step-2\n");
    printf("Hello world! Step-3\n");
    printf("Hello world! Step-4\n");
    printf("Hello world! Step-5\n");
    printf("Hello world! Step-6\n");
    return 0;
}
```

Code Blocks (Install / Compile / Run / Debug) (13)

select Debug->Start/Continue to start debugger



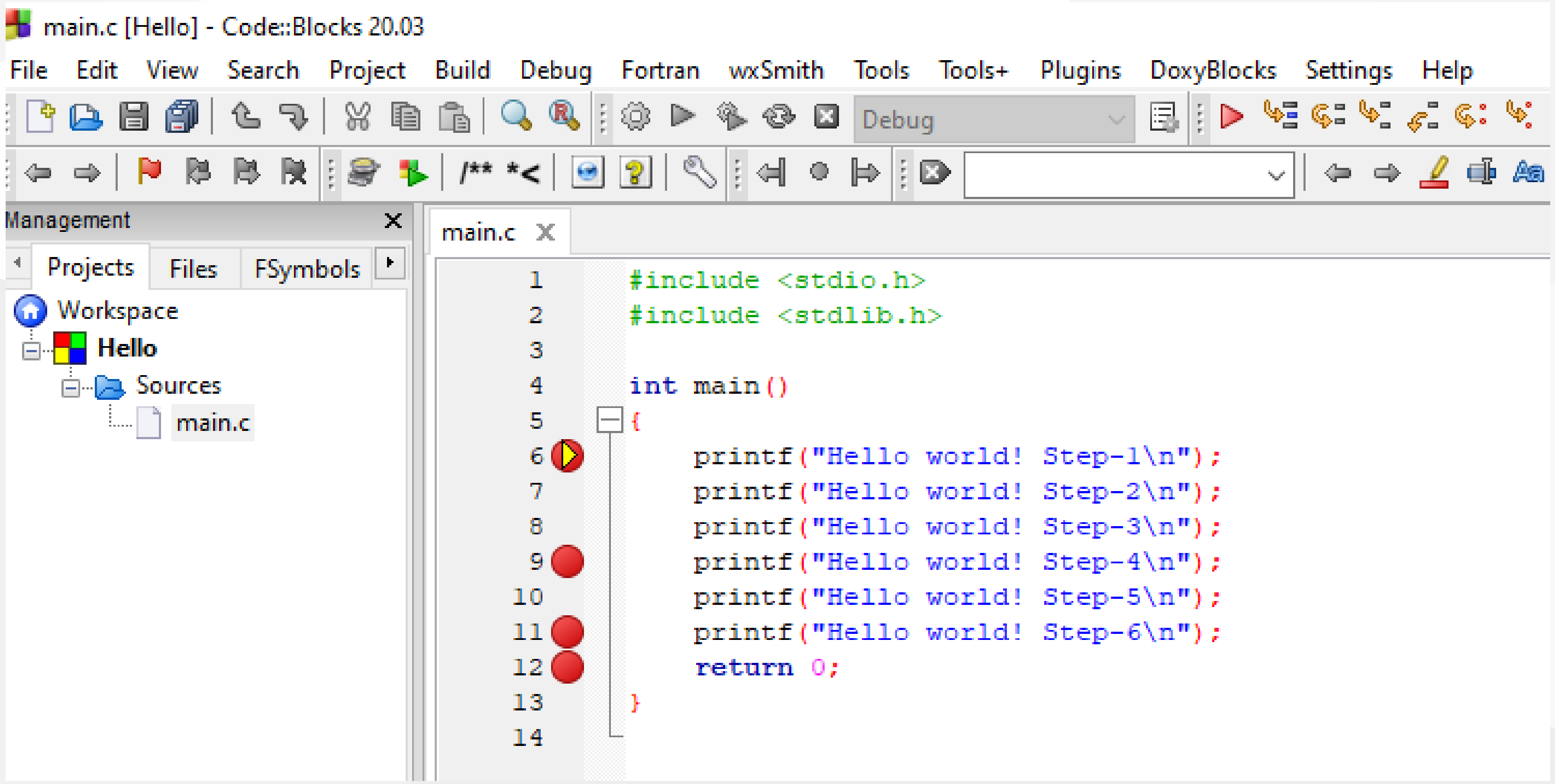
Code Blocks (Install / Compile / Run / Debug) (14)

If you see the following error this is related with long or turkish character including path. Just move project to a shorter path and try again

```
Setting breakpoints
Debugger name and version: GNU gdb (GDB) 8.1
Starting the debuggee failed: No executable specified, use `target exec'.
Debugger finished with status 0
```

Code Blocks (Install / Compile / Run / Debug) (15)

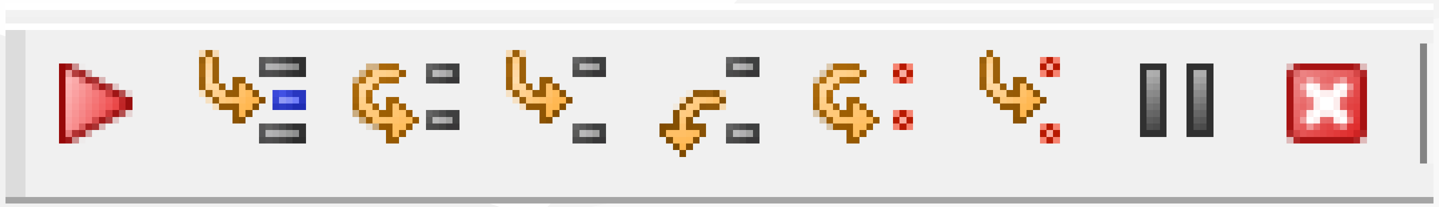
You will see the following yellow pointer for debugger


main.c [Hello] - Code::Blocks 20.03
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
Debug
Management
Projects Files FSymbols
Workspace
Hello
Sources
main.c
main.c

```c
#include <stdio.h>
#include <stdlib.h>

int main()
{
    printf("Hello world! Step-1\n");
    printf("Hello world! Step-2\n");
    printf("Hello world! Step-3\n");
    printf("Hello world! Step-4\n");
    printf("Hello world! Step-5\n");
    printf("Hello world! Step-6\n");
    return 0;
}
```

Code Blocks (Install / Compile / Run / Debug) (16)

You can use the following menu or shortcuts for step-by-step debugging.



GCC/G++ Complier (MinGW) / Clang-cl (LLVM) (1)

Download and install MinGW or LLVM compiler (if you downloded then skip this step)

MinGW installer (clang)

Download MinGW-w64 - for 32 and 64 bit Windows from SourceForge.net

LLVM installer (gcc / g++)

Download LLVM releases

Also use the following notes

https://llvm.org/devmtg/2014-04/PDFs/Talks/clang-cl.pdf

GCC/G++ Complier (MinGW) / Clang-cl (LLVM) (2)

Open a console with "cmd" and test the following commands if commands are not recognized then set the system environment variable add gcc and g++ exe paths to path variable (add to both system and user path variable)

```
gcc --version

g++ --version
```

```
C:\Users\ugur.coruh>gcc --version
gcc (x86_64-win32-seh-rev0, Built by MinGW-W64 project) 8.1.0
Copyright (C) 2018 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
```

```
clang --version
```

GCC/G++ Complier (MinGW) / Clang-cl (LLVM) (3)

for gcc.exe, g++.exe and gdb.exe

```
C:\Program Files\mingw-w64\x86_64-8.1.0-win32-seh-rt_v6-rev0\mingw64\bin
```

for clang.exe , lldb.exe

```
C:\Program Files\LLVM\bin
```

This folder paths changes according to your setup

VSCode (Install / Compile / Run / Debug) (1)

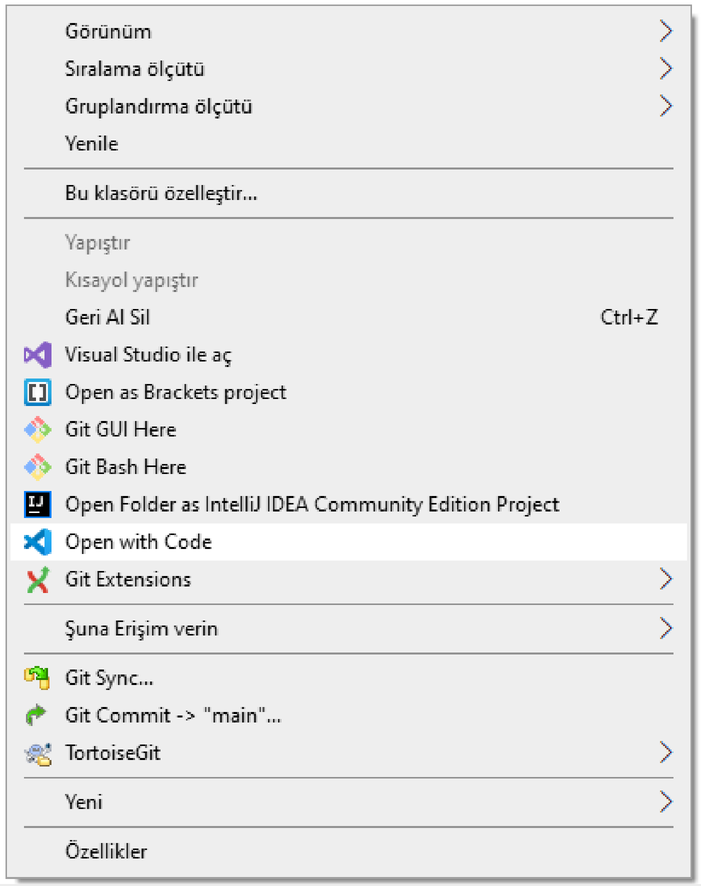
Download Visual Studio Code from the following link

Download Visual Studio Code - Mac, Linux, Windows

VSCode (Install / Compile / Run / Debug) (2)

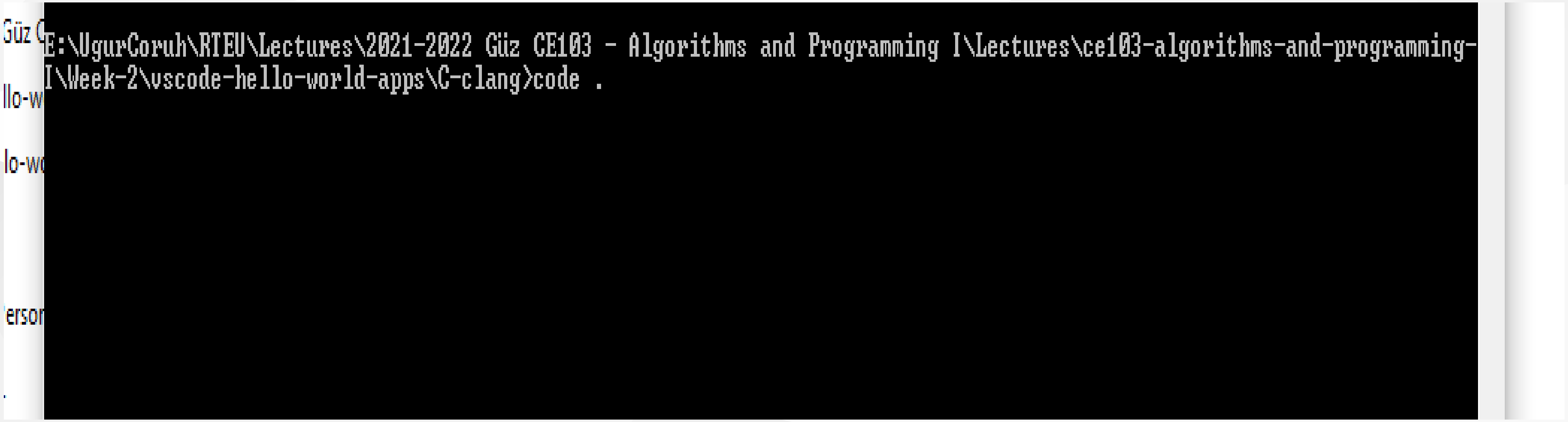
In this sample you will find MinGW and LLVM compiler combinations for C and C++

Create a folder and enter this folder then open this folder with vscode by right click



VSCode (Install / Compile / Run / Debug) (3)

or enter the folder via console



```
E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103 - Algorithms and Programming I\Lectures\ce103-algorithms-and-programming-
I\Week-2\vscode-hello-world-apps\C-clang>code .
```

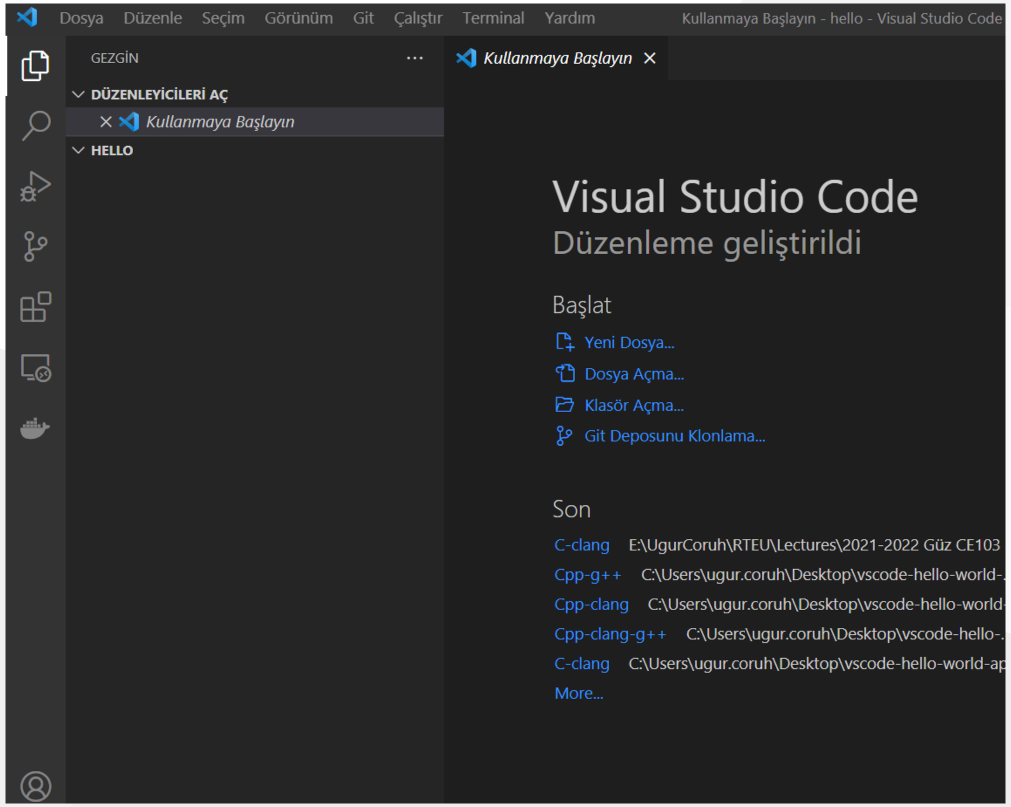
write

```
code .
```

VSCode (Install / Compile / Run / Debug) (4)

This will open vscode for current folder . dot present current folder.

You will see a empty folder in the right window

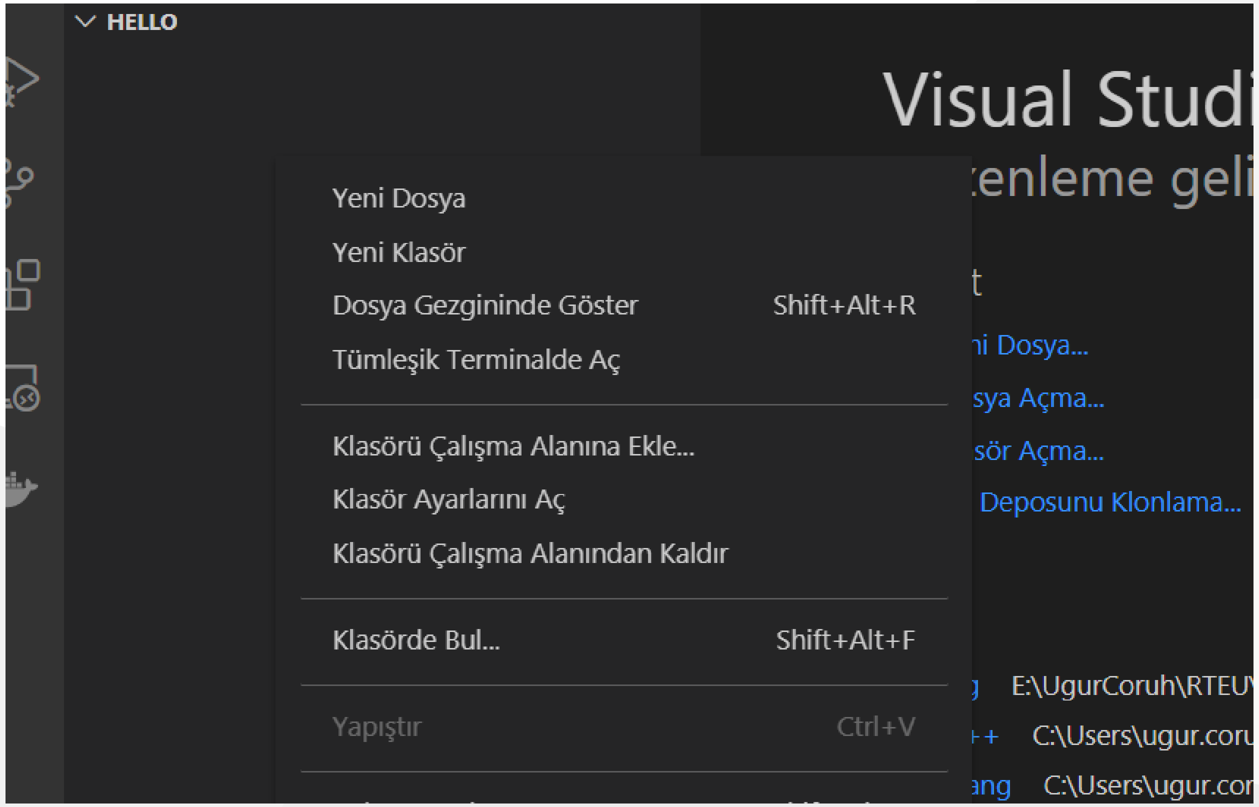


Visual Studio Code
Düzenleme geliştirildi

Başlat
Yeni Dosya...
Dosya Açma...
Klasör Açma...
Git Deposunu Klonlama...

Son
C-clang E:\UgurCoruh\RTEU\Lectures\2021-2022 Güz CE103
Cpp-g++ C:\Users\ugur.coruh\Desktop\vscode-hello-world-
Cpp-clang C:\Users\ugur.coruh\Desktop\vscode-hello-world
Cpp-clang-g++ C:\Users\ugur.coruh\Desktop\vscode-hello-
C-clang C:\Users\ugur.coruh\Desktop\vscode-hello-world-ap
More...

VSCode (Install / Compile / Run / Debug) (5)



Yeni Dosya	
Yeni Klasör	
Dosya Gezgininde Göster	Shift+Alt+R
Tümleşik Terminalde Aç	
Klasörü Çalışma Alanına Ekle...	
Klasör Ayarlarını Aç	
Klasörü Çalışma Alanından Kaldır	
Klasörde Bul...	Shift+Alt+F
Yapıştır	Ctrl+V

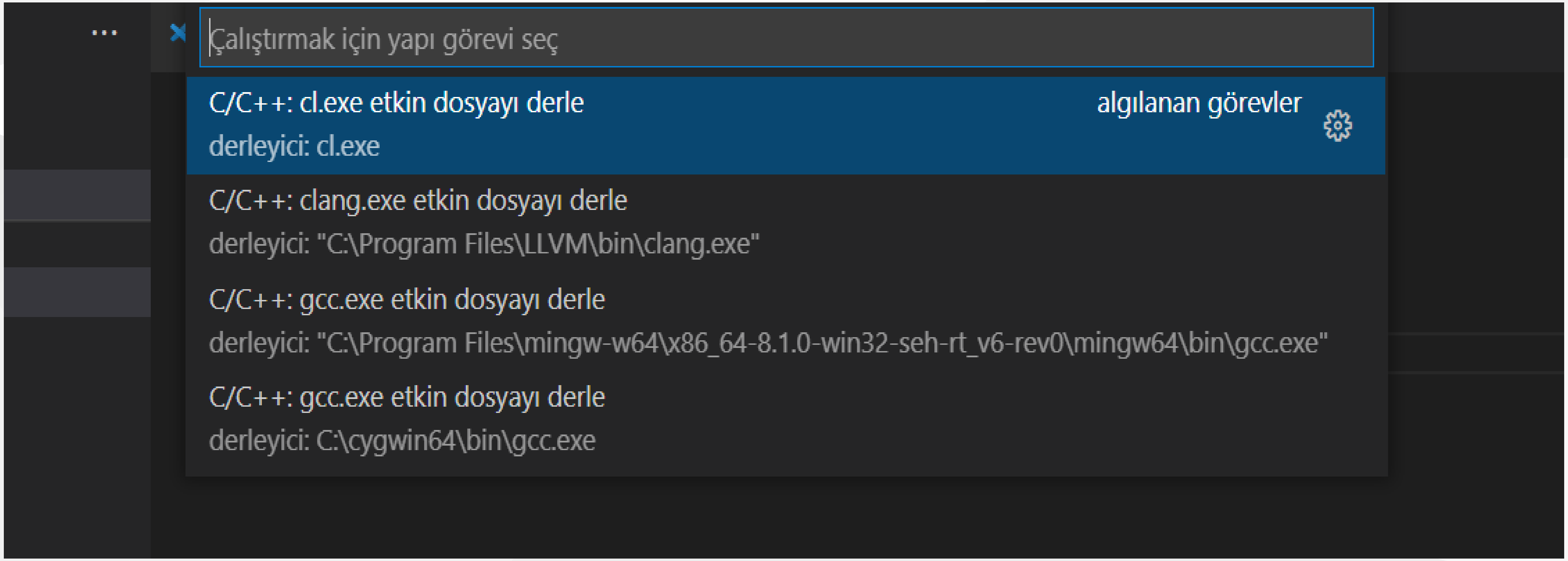
VSCode (Install / Compile / Run / Debug) (6)

Create a hello.c file and write following content

```c
#include <stdio.h>
int main() {
   // printf() displays the string inside quotation
   printf("Hello, World!");
   return 0;
}
```

VSCode (Install / Compile / Run / Debug) (7)

use CTRL+SHIFT+B (you should be on source code section) to build file



Çalıştırmak için yapı görevi seç

C/C++: cl.exe etkin dosyayı derle — algılanan görevler
derleyici: cl.exe

C/C++: clang.exe etkin dosyayı derle
derleyici: "C:\Program Files\LLVM\bin\clang.exe"

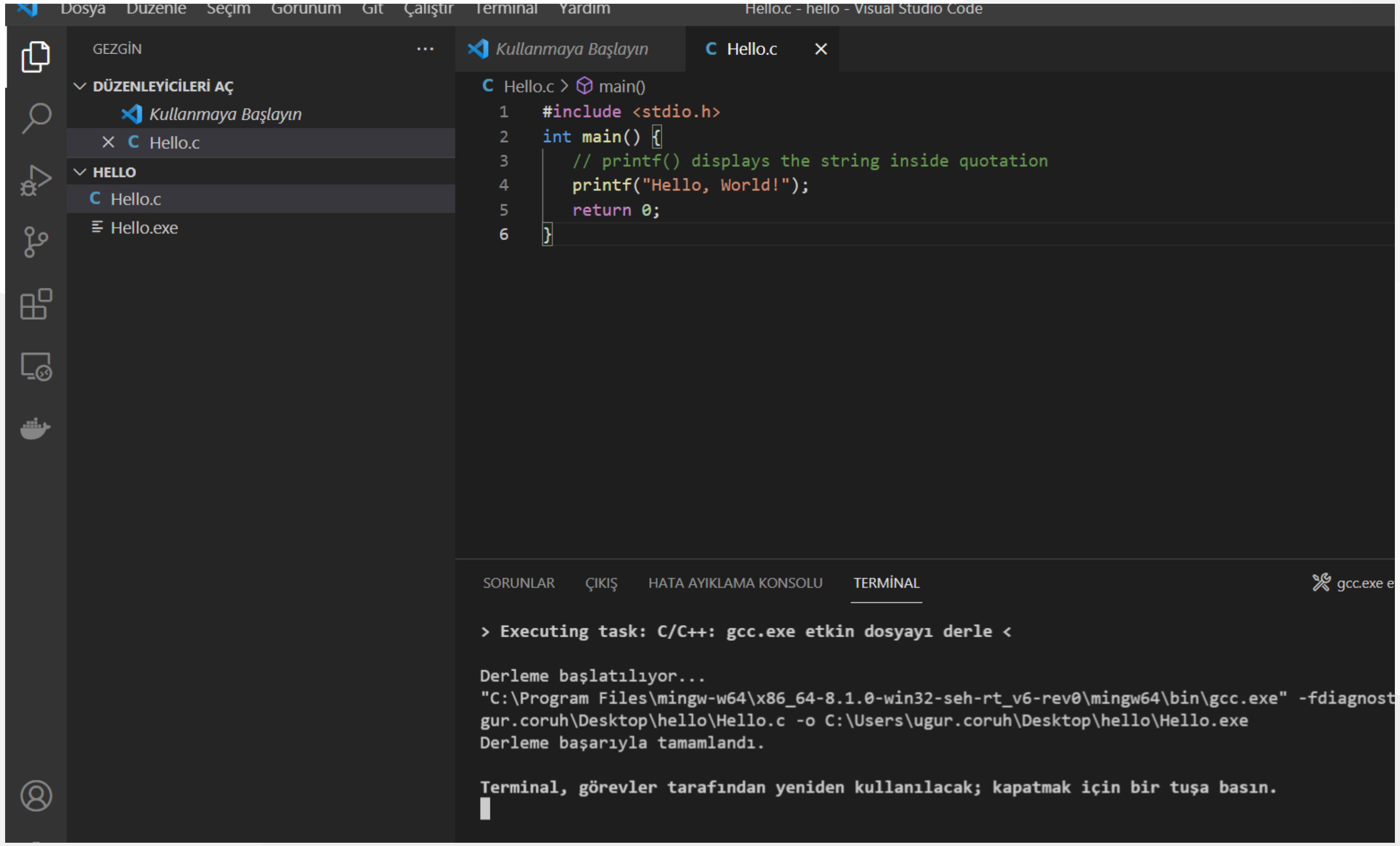
C/C++: gcc.exe etkin dosyayı derle
derleyici: "C:\Program Files\mingw-w64\x86_64-8.1.0-win32-seh-rt_v6-rev0\mingw64\bin\gcc.exe"

C/C++: gcc.exe etkin dosyayı derle
derleyici: C:\cygwin64\bin\gcc.exe

VSCode (Install / Compile / Run / Debug) (8)

Select GCC or CLANG for this sample we can use GCC

You will see output generated Hello.exe

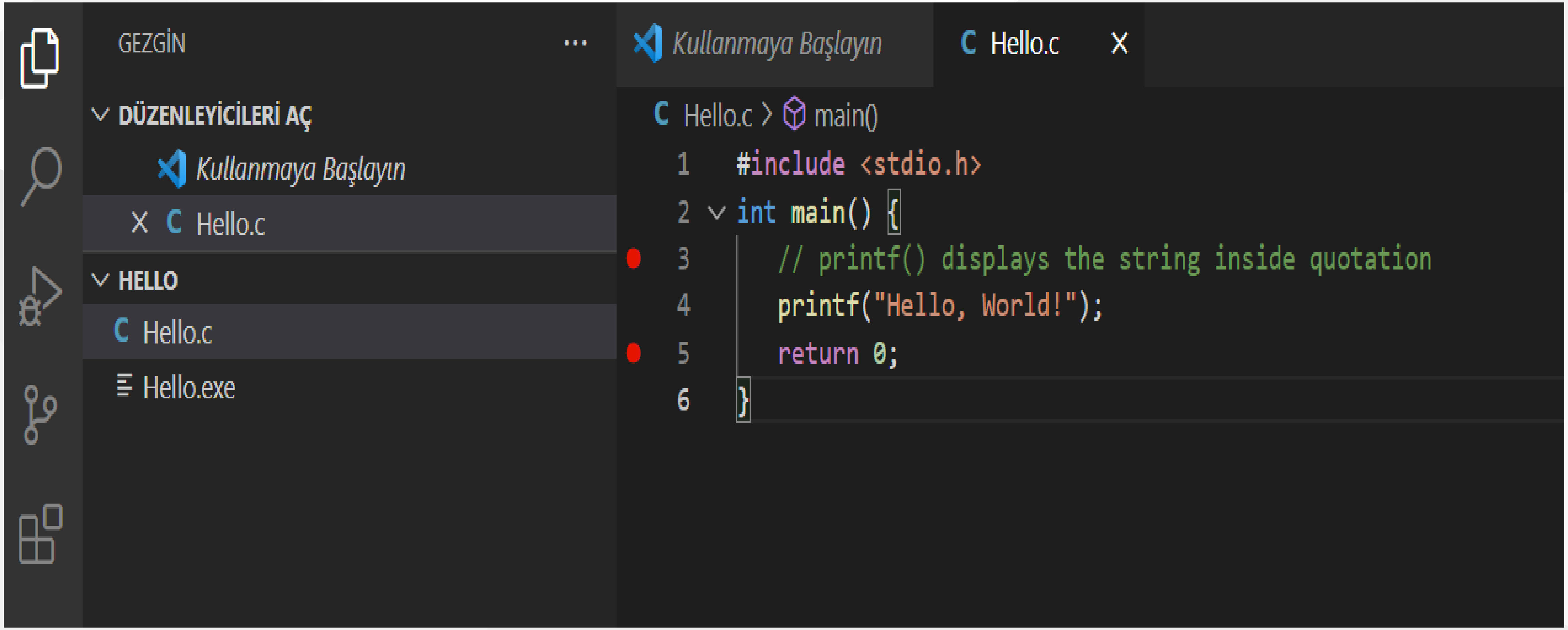


```c
#include <stdio.h>
int main() {
   // printf() displays the string inside quotation
   printf("Hello, World!");
   return 0;
}
```

```
> Executing task: C/C++: gcc.exe etkin dosyayı derle <

Derleme başlatılıyor...
"C:\Program Files\mingw-w64\x86_64-8.1.0-win32-seh-rt_v6-rev0\mingw64\bin\gcc.exe" -fdiagnost
gur.coruh\Desktop\hello\Hello.c -o C:\Users\ugur.coruh\Desktop\hello\Hello.exe
Derleme başarıyla tamamlandı.

Terminal, görevler tarafından yeniden kullanılacak; kapatmak için bir tuşa basın.
```

VSCode (Install / Compile / Run / Debug) (9)

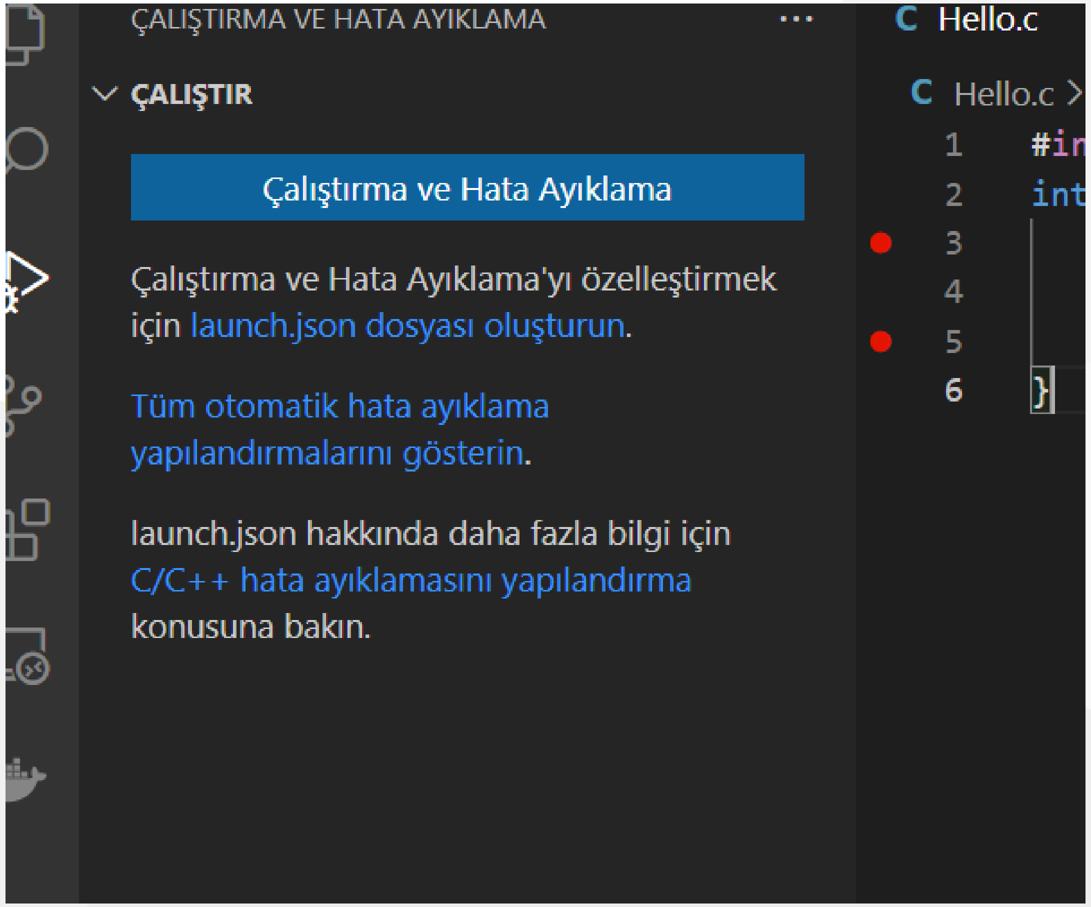
for debugging just put breakpoint and build again



```c
#include <stdio.h>
int main() {
    // printf() displays the string inside quotation
    printf("Hello, World!");
    return 0;
}
```

VSCode (Install / Compile / Run / Debug) (10)

after build for debug press CTRL+SHIFT+D (you should be on source code section)and in the right window select create launch.json



Çalıştırma ve Hata Ayıklama'yı özelleştirmek için launch.json dosyası oluşturun.

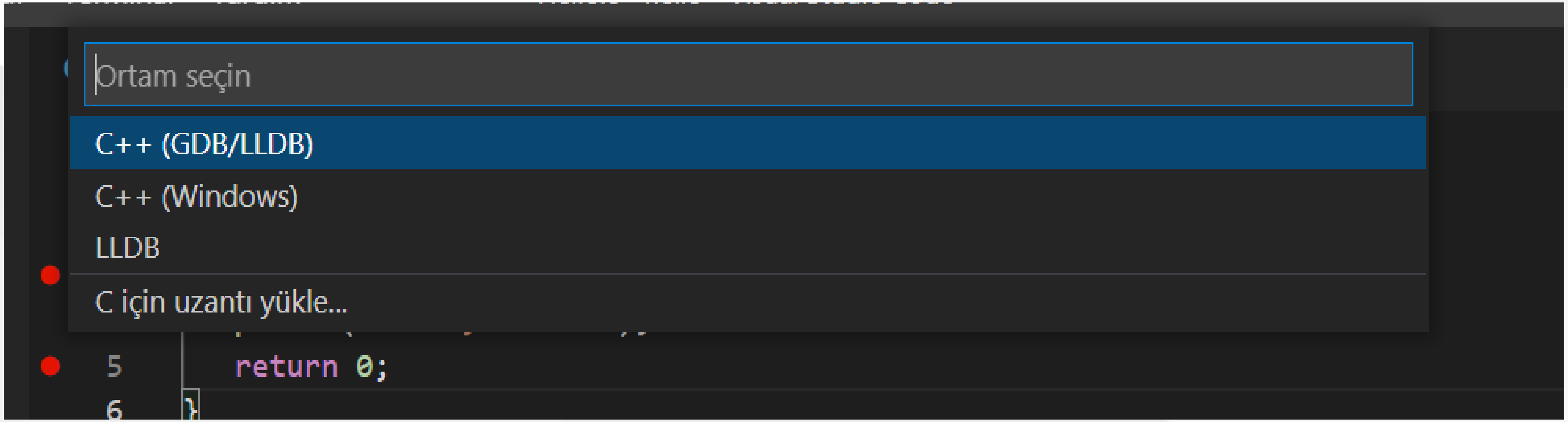
Tüm otomatik hata ayıklama yapılandırmalarını gösterin.

launch.json hakkında daha fazla bilgi için C/C++ hata ayıklamasını yapılandırma konusuna bakın.

```
#in
int


}
```

VSCode (Install / Compile / Run / Debug) (11)

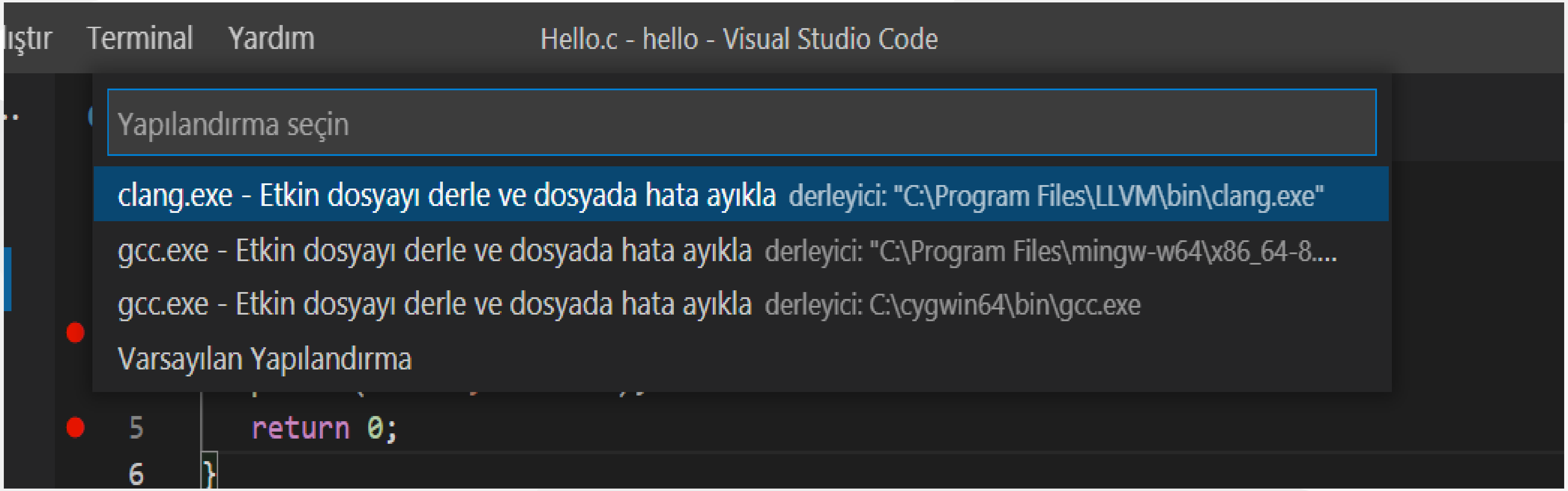
from opening window select C++ GDB/LLDB



```
    return 0;
}
```

VSCode (Install / Compile / Run / Debug) (12)

from next opening menu select mingw-w64 gcc.exe

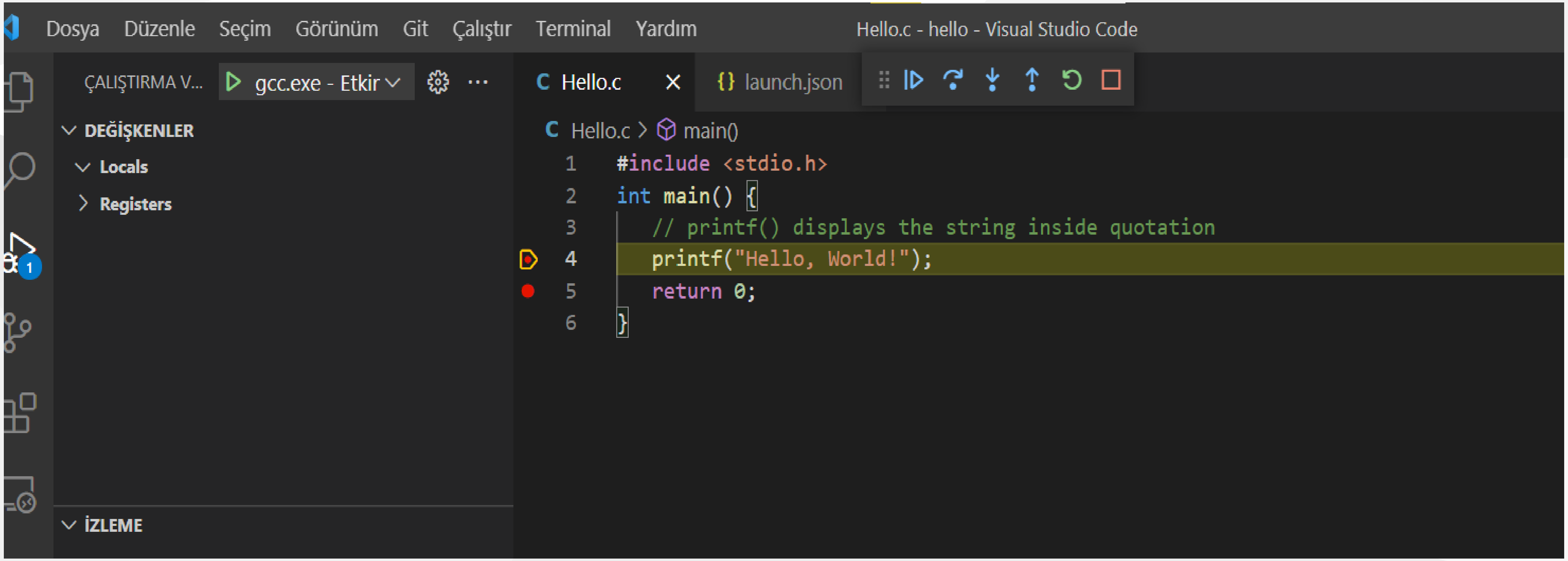


clang.exe - Etkin dosyayı derle ve dosyada hata ayıkla derleyici: "C:\Program Files\LLVM\bin\clang.exe"
gcc.exe - Etkin dosyayı derle ve dosyada hata ayıkla derleyici: "C:\Program Files\mingw-w64\x86_64-8....
gcc.exe - Etkin dosyayı derle ve dosyada hata ayıkla derleyici: C:\cygwin64\bin\gcc.exe
Varsayılan Yapılandırma

```
    return 0;
}
```

VSCode (Install / Compile / Run / Debug) (13)

this will run debugger and you will see debug points activated

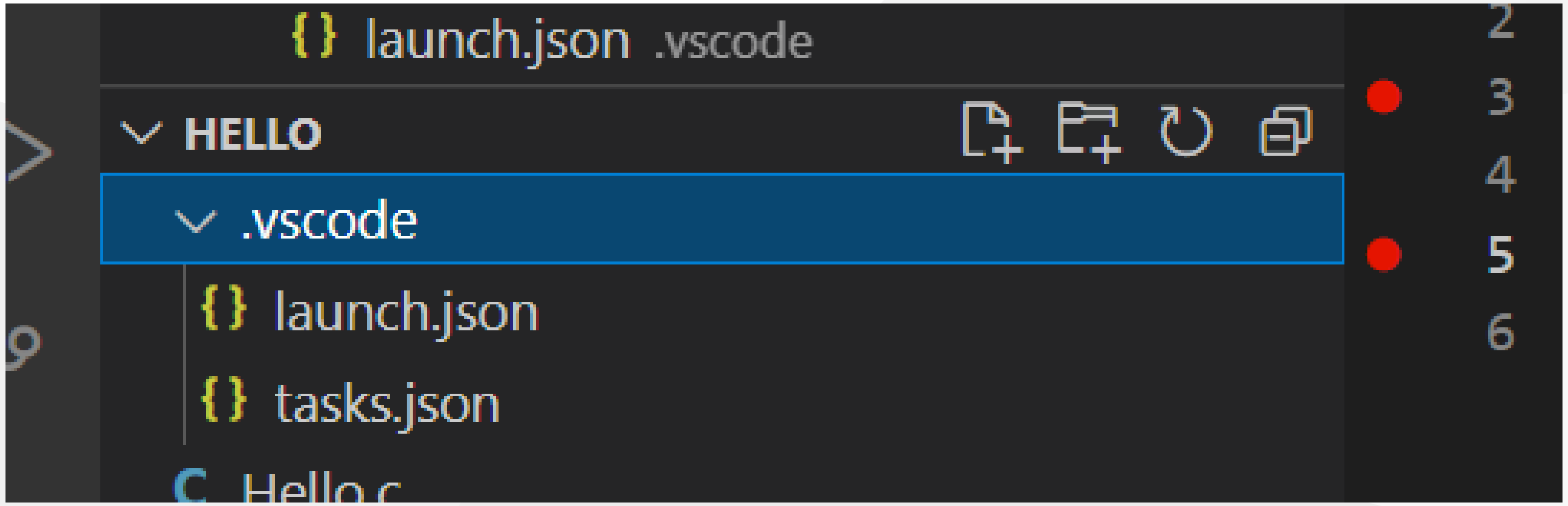


```c
#include <stdio.h>
int main() {
    // printf() displays the string inside quotation
    printf("Hello, World!");
    return 0;
}
```

VSCode (Install / Compile / Run / Debug) (14)

then you can step-by-step debug your code.

the following task.json and launch.json automatically generated with your selections



VSCode (Install / Compile / Run / Debug) (15)

launch.json

```
{
    // Olası öznitelikler hakkında bilgi edinmek için IntelliSense kullanın.
    // Mevcut özniteliklerin açıklamalarını görüntülemek için üzerine gelin.
    // Daha fazla bilgi için şu adresi ziyaret edin: https://go.microsoft.com/fwlink/?linkid=830387
    "version": "0.2.0",
    "configurations": [
        {
            "name": "gcc.exe - Etkin dosyayı derle ve dosyada hata ayıkla",
            "type": "cppdbg",
            "request": "launch",
            "program": "${fileDirname}\\${fileBasenameNoExtension}.exe",
            "args": [],
            "stopAtEntry": false,
            "cwd": "${fileDirname}",
            "environment": [],
            "externalConsole": false,
            "MIMode": "gdb",
            "miDebuggerPath": "C:\\Program Files\\mingw-w64\\x86_64-8.1.0-win32-seh-rt_v6-rev0\\mingw64\\bin\\gdb.exe",
            "setupCommands": [
                {
                    "description": "gdb için düzgün yazdırmayı etkinleştir",
                    "text": "-enable-pretty-printing",
                    "ignoreFailures": true
                }
            ],
            "preLaunchTask": "C/C++: gcc.exe etkin dosyayı derle"
        }
    ]
}
```

VSCode (Install / Compile / Run / Debug) (16)

task.json

```
{
    "tasks": [
        {
            "type": "cppbuild",
            "label": "C/C++: gcc.exe etkin dosyayı derle",
            "command": "C:\\Program Files\\mingw-w64\\x86_64-8.1.0-win32-seh-rt_v6-rev0\\mingw64\\bin\\gcc.exe",
            "args": [
                "-fdiagnostics-color=always",
                "-g",
                "${file}",
                "-o",
                "${fileDirname}\\${fileBasenameNoExtension}.exe"
            ],
            "options": {
                "cwd": "${fileDirname}"
            },
            "problemMatcher": [
                "$gcc"
            ],
            "group": {
                "kind": "build",
                "isDefault": true
            },
            "detail": "Hata Ayıklayıcısı tarafından oluşturulan görev."
        }
    ],
    "version": "2.0.0"
}
```

VSCode (Install / Compile / Run / Debug) (17)

you can do the same thing for other compilers and c++ source codes. LLVM do not support debug on vscode now.

for C++ VsCode you can check the following links

for Windows

https://code.visualstudio.com/docs/cpp/config-mingw

for Linux

https://code.visualstudio.com/docs/cpp/config-linux

for WSL

https://code.visualstudio.com/docs/cpp/config-wsl

VSCode (Install / Compile / Run / Debug) (18)

in the launch file if you start debugging with F5

(you can select debugger with CTRL+SHIFT+P and then writing Debug and Selecting Configure Debugger Option)

VSCode (Install / Compile / Run / Debug) (19)

following line will be your debugging application path

if you start debugging with F5 in Hello.c file this will set `<Hello.c base path>/Hello.exe`

VSCode (Install / Compile / Run / Debug) (20)

You should set this correct for both LLVM and GCC configuration in launch.json

```
"program": "${fileDirname}\\${fileBasenameNoExtension}.exe",
```

Also you should set your installed debugger paths

for GCC

```
"miDebuggerPath": "C:\\Program Files\\mingw-w64\\x86_64-8.1.0-win32-seh-rt_v6-rev0\\mingw64\\bin\\gdb.exe",
```

for LLVM

```
"miDebuggerPath": "C:\\Program Files\\LLVM\\bin\\lldb.exe",
```

for more details please check the sample source codes.

Visual Studio Community Edition (Install / Compile / Run / Debug)

//TODO//

Notepad++ (Install / Compile) (1)

Please download Notepad++ from the following link

Downloads | Notepad++

Notepad++ (Install / Compile) (2)

Download and install MinGW or LLVM compiler (if you downloded then skip this step)

MinGW installer (clang)

Download MinGW-w64 - for 32 and 64 bit Windows from SourceForge.net

LLVM installer (gcc / g++)

Download LLVM releases

Also use the following notes

https://llvm.org/devmtg/2014-04/PDFs/Talks/clang-cl.pdf

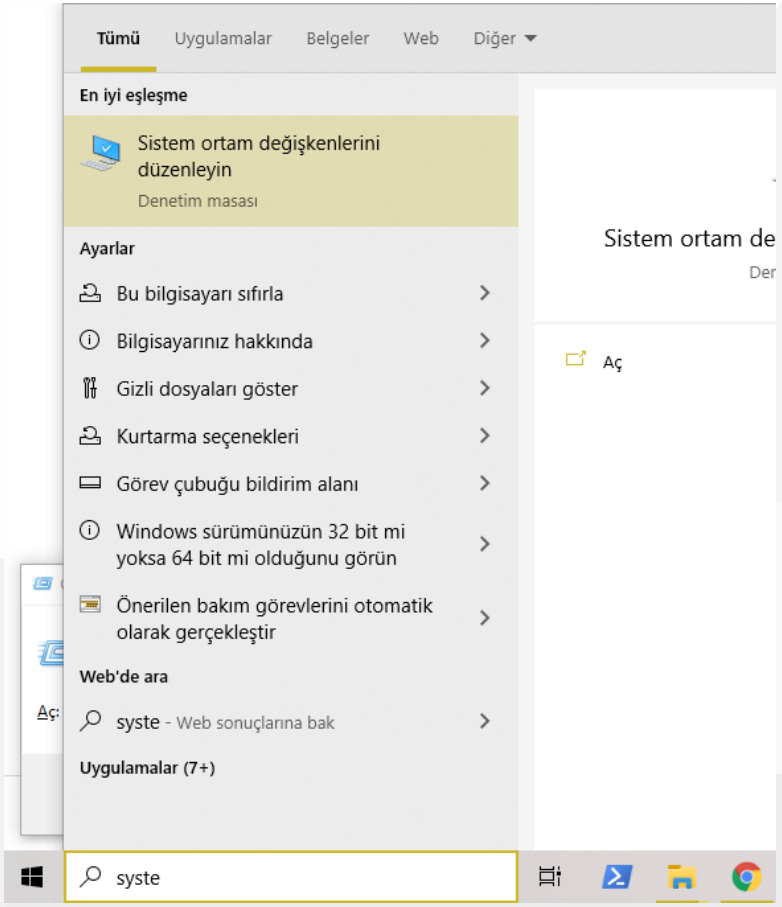
Notepad++ (Install / Compile) (3)

Open a console with "cmd" and test the following commands if commands are not recognized then set the system environment variable add gcc and g++ exe paths to path variable (add to both system and user path variable)

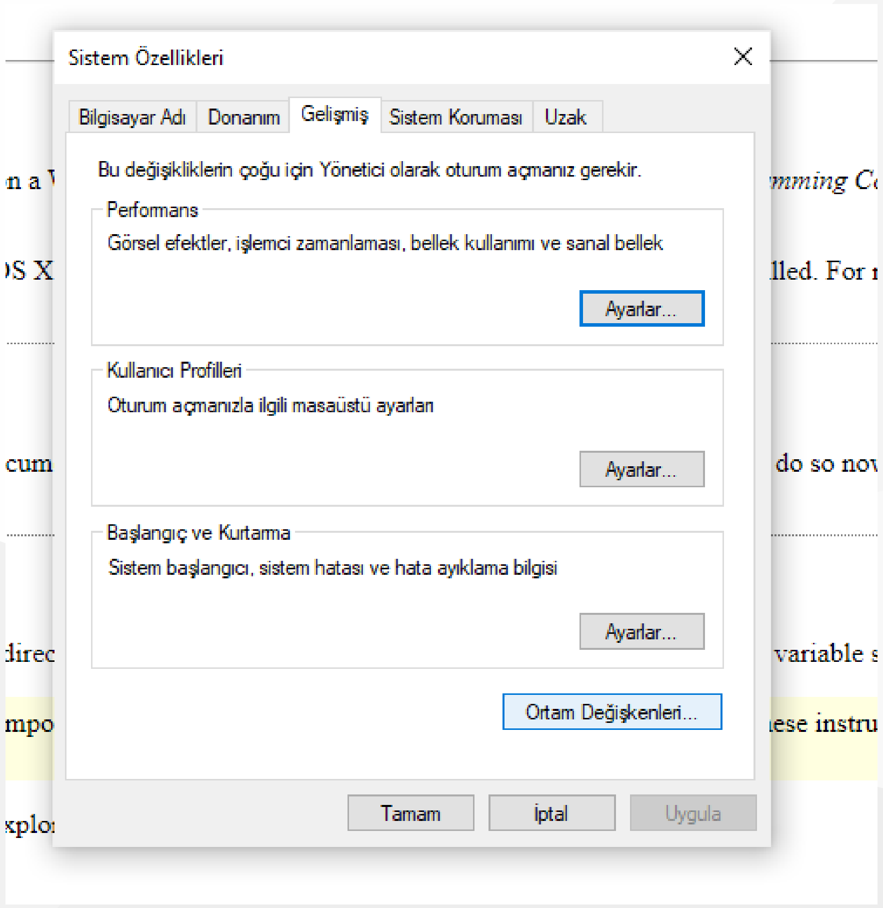
```
gcc --version

g++ --version
```

```
C:\Users\ugur.coruh>gcc --version
gcc (x86_64-win32-seh-rev0, Built by MinGW-W64 project) 8.1.0
Copyright (C) 2018 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
```

Notepad++ (Install / Compile) (4)


Tümü
Uygulamalar
Belgeler
Web
Diğer
En iyi eşleşme
Sistem ortam değişkenlerini düzenleyin
Denetim masası
Ayarlar
Bu bilgisayarı sıfırla
Bilgisayarınız hakkında
Gizli dosyaları göster
Kurtarma seçenekleri
Görev çubuğu bildirim alanı
Windows sürümünüzün 32 bit mi yoksa 64 bit mi olduğunu görün
Önerilen bakım görevlerini otomatik olarak gerçekleştir
Web'de ara
syste - Web sonuçlarına bak
Uygulamalar (7+)
Sistem ortam de
Der
Aç
Aç
syste

Notepad++ (Install / Compile) (5)



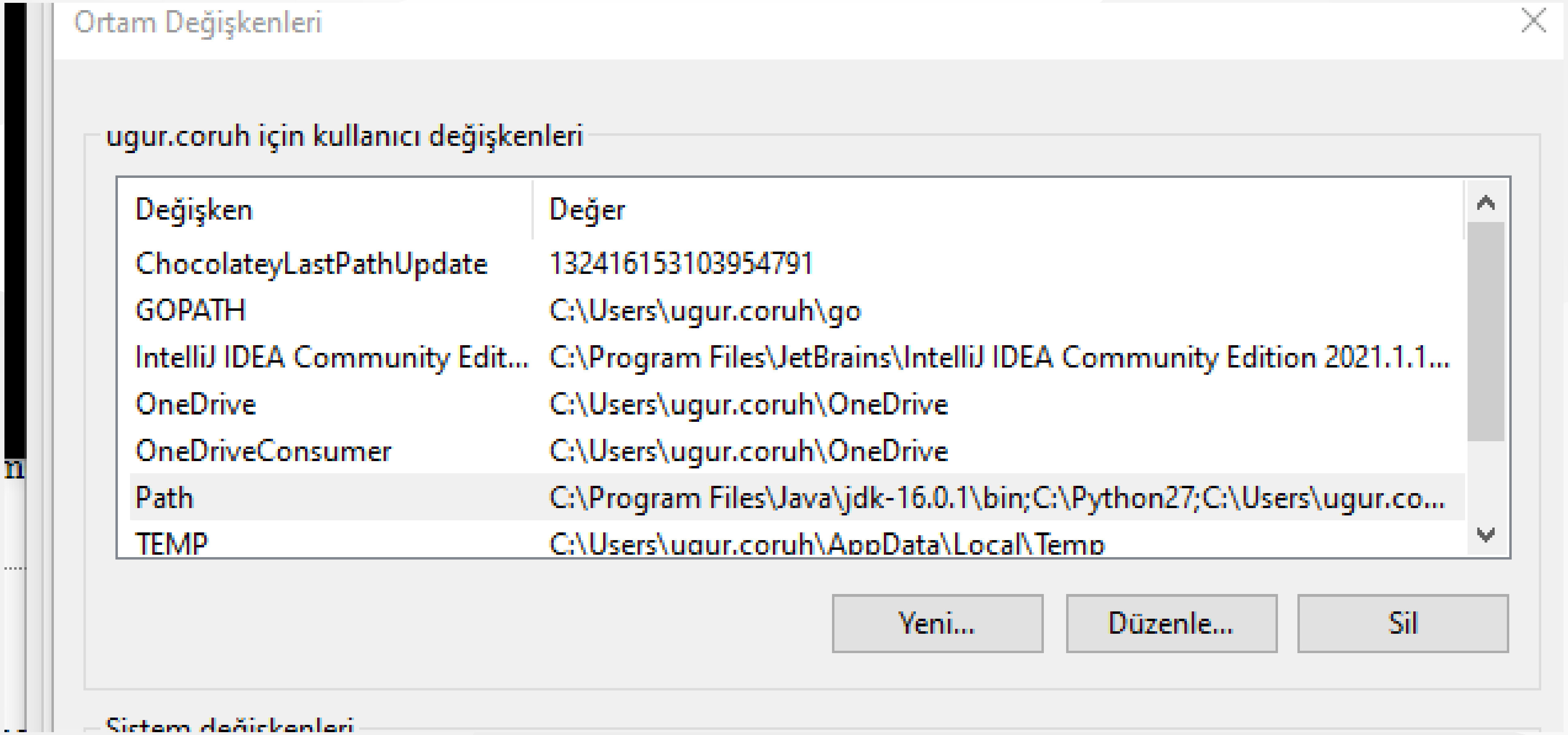
Bu değişikliklerin çoğu için Yönetici olarak oturum açmanız gerekir.

Görsel efektler, işlemci zamanlaması, bellek kullanımı ve sanal bellek

Oturum açmanızla ilgili masaüstü ayarları

Sistem başlangıcı, sistem hatası ve hata ayıklama bilgisi

Notepad++ (Install / Compile) (6)

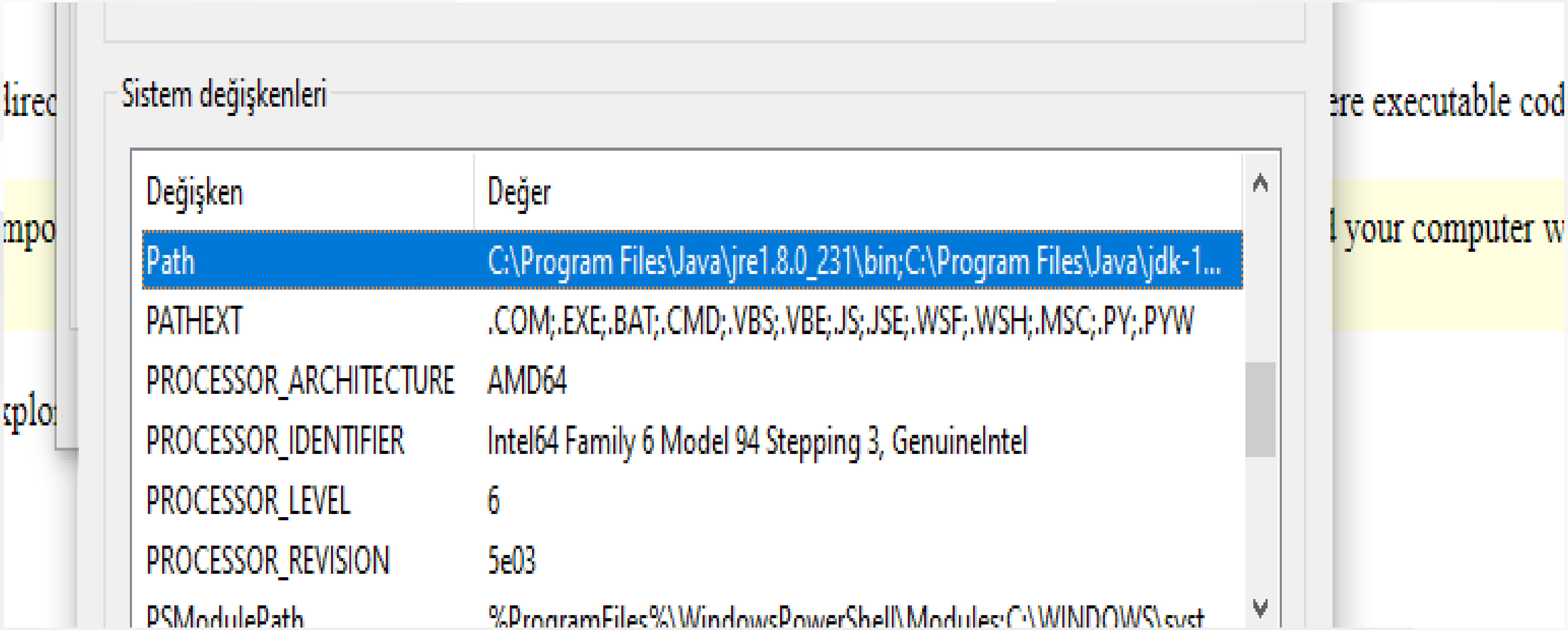


Ortam Değişkenleri

ugur.coruh için kullanıcı değişkenleri

Değişken	Değer
ChocolateyLastPathUpdate	132416153103954791
GOPATH	C:\Users\ugur.coruh\go
IntelliJ IDEA Community Edit...	C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.1.1...
OneDrive	C:\Users\ugur.coruh\OneDrive
OneDriveConsumer	C:\Users\ugur.coruh\OneDrive
Path	C:\Program Files\Java\jdk-16.0.1\bin;C:\Python27;C:\Users\ugur.co...
TEMP	C:\Users\ugur.coruh\AppData\Local\Temp

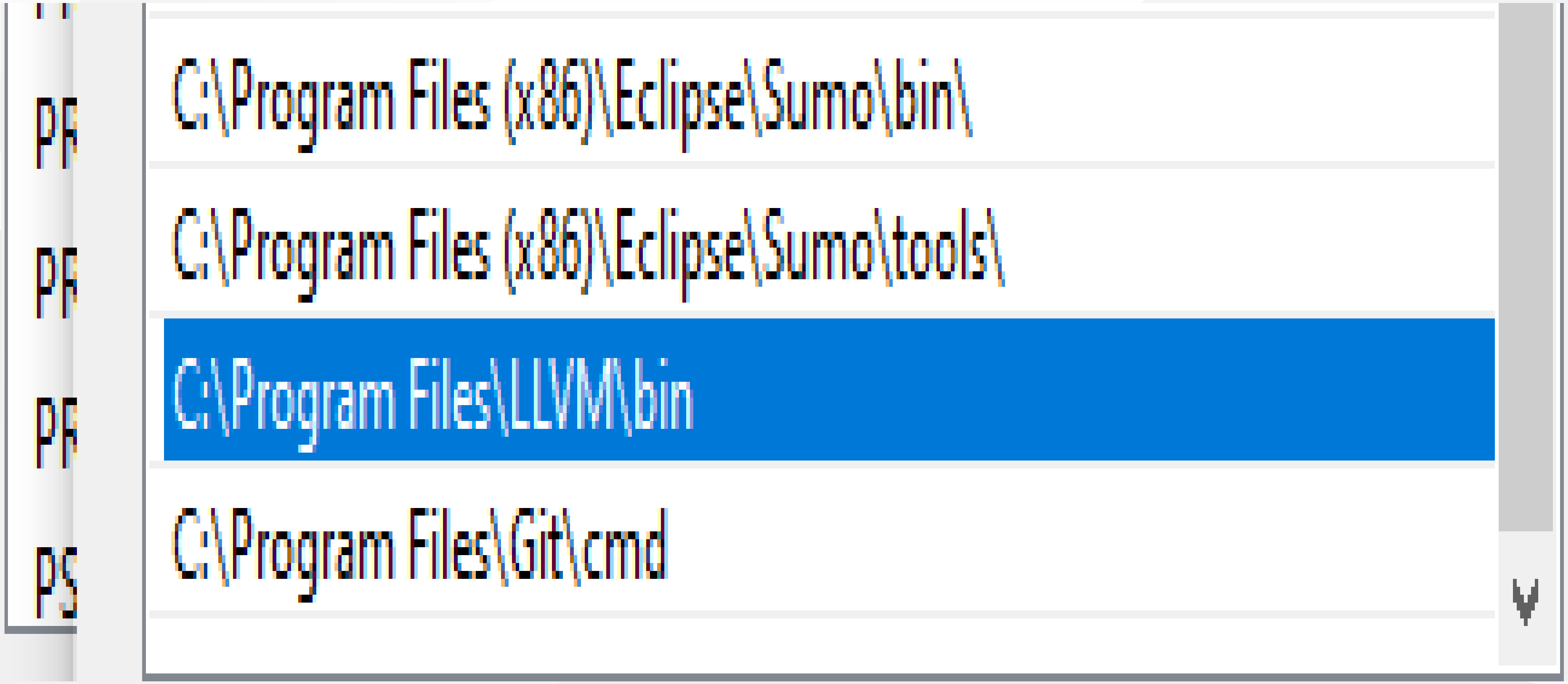
Notepad++ (Install / Compile) (7)



Sistem değişkenleri

Değişken	Değer
Path	C:\Program Files\Java\jre1.8.0_231\bin;C:\Program Files\Java\jdk-1...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC;.PY;.PYW
PROCESSOR_ARCHITECTURE	AMD64
PROCESSOR_IDENTIFIER	Intel64 Family 6 Model 94 Stepping 3, GenuineIntel
PROCESSOR_LEVEL	6
PROCESSOR_REVISION	5e03
PSModulePath	%ProgramFiles%\WindowsPowerShell\Modules;C:\WINDOWS\syst

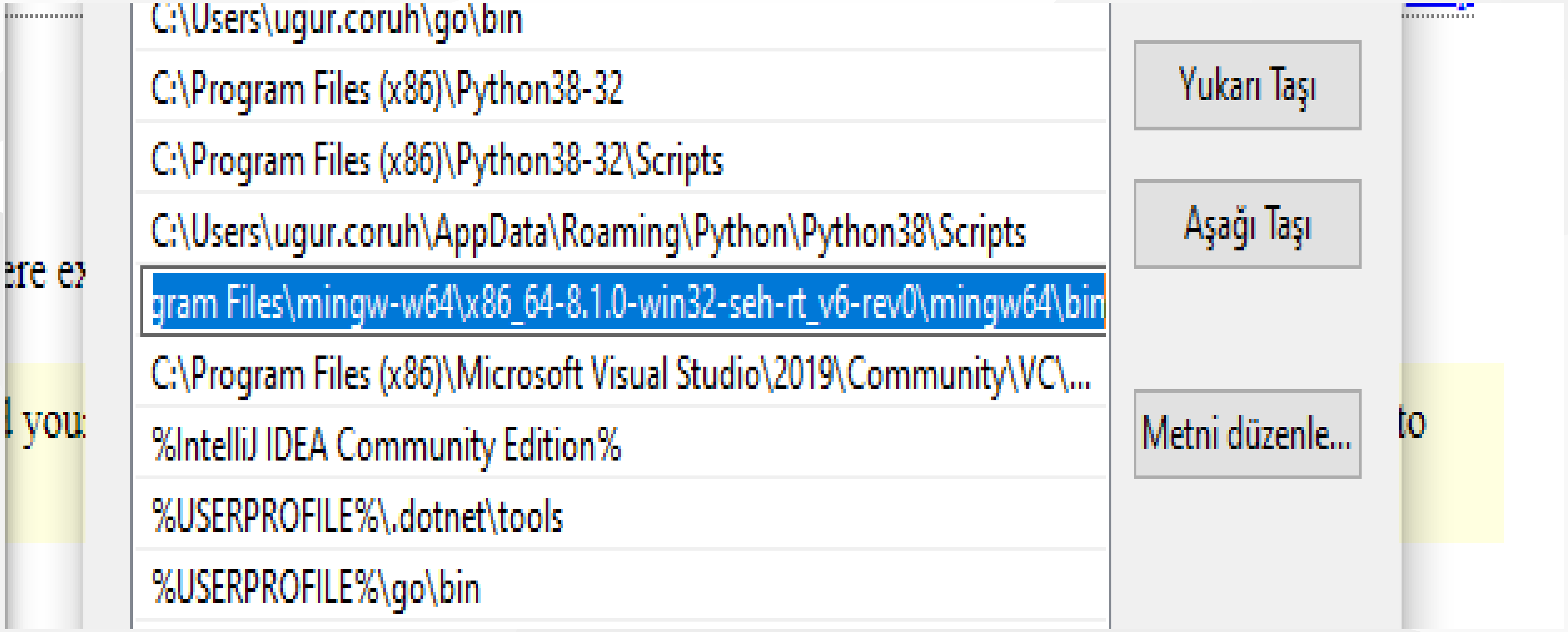
Notepad++ (Install / Compile) (8)



PR
PR
PR
PS

```
C:\Program Files (x86)\Eclipse\Sumo\bin\
C:\Program Files (x86)\Eclipse\Sumo\tools\
C:\Program Files\LLVM\bin
C:\Program Files\Git\cmd
```

Notepad++ (Install / Compile) (9)



```
C:\Users\ugur.coruh\go\bin
C:\Program Files (x86)\Python38-32
C:\Program Files (x86)\Python38-32\Scripts
C:\Users\ugur.coruh\AppData\Roaming\Python\Python38\Scripts
gram Files\mingw-w64\x86_64-8.1.0-win32-seh-rt_v6-rev0\mingw64\bin
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\VC\...
%IntelliJ IDEA Community Edition%
%USERPROFILE%\.dotnet\tools
%USERPROFILE%\go\bin
```

Notepad++ (Install / Compile) (10)

for gcc.exe, g++.exe and gdb.exe

```
C:\Program Files\mingw-w64\x86_64-8.1.0-win32-seh-rt_v6-rev0\mingw64\bin
```

Notepad++ (Install / Compile) (11)

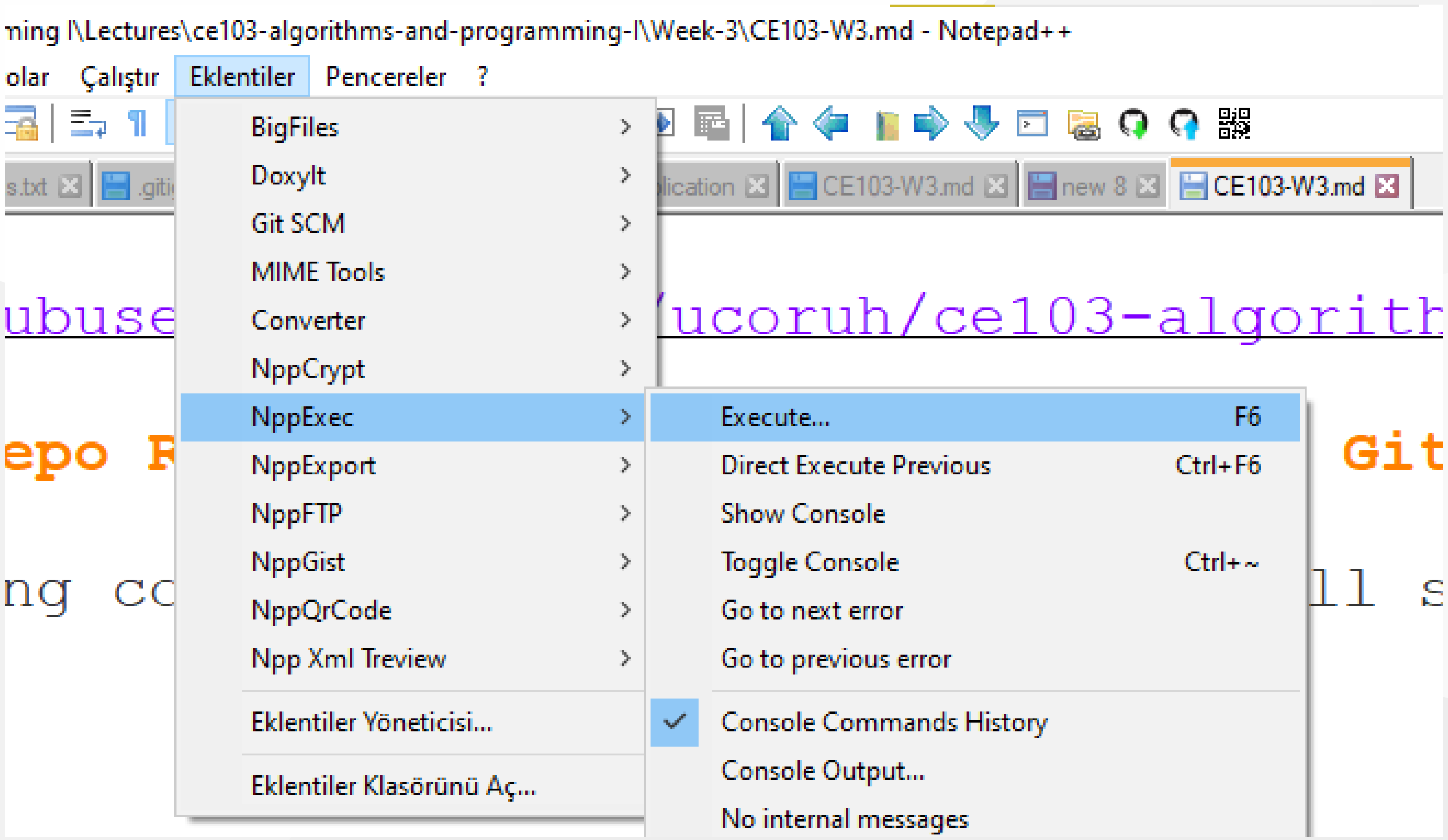
for clang.exe , lldb.exe

```
C:\Program Files\LLVM\bin
```

Notepad++ (Install / Compile) (12)

This folder paths changes according to your setup

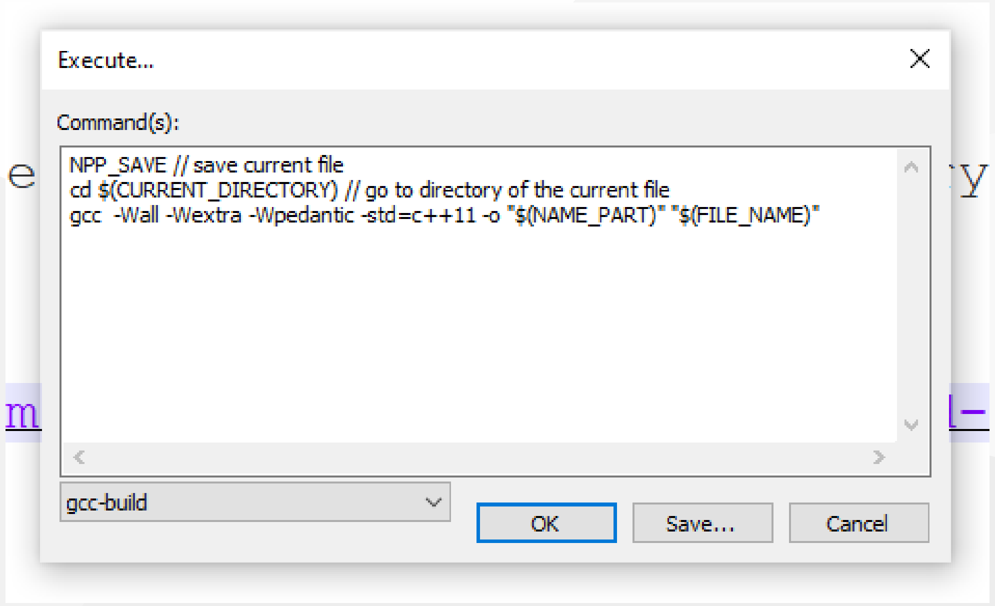
Open NppExec extension (install from extension manager if not exist)



Notepad++ (Install / Compile) (13)

write the following commands in box

```
NPP_SAVE // save current file
cd $(CURRENT_DIRECTORY) // go to directory of the current file
gcc  -Wall -Wextra -Wpedantic -std=c++11 -o "$(NAME_PART)" "$(FILE_NAME)"
```



```
NPP_SAVE // save current file
cd $(CURRENT_DIRECTORY) // go to directory of the current file
gcc  -Wall -Wextra -Wpedantic -std=c++11 -o "$(NAME_PART)" "$(FILE_NAME)"
```

Notepad++ (Install / Compile) (14)

save script as gcc-build and for more information check the following link

How To Setup Notepad for Writing C++ Programs

You can modify or add multiple scripts for another tasks.

Vi/Vim (C/C++)

//TODO//

Eclipse (C/C++)

//TODO//

Netbeans (C/C++)

//TODO//

Turbo C++/C

//TODO//

Cmake (C++/C) (1)

CMake (http://www.cmake.org/) is a program which generates the **Makefiles** used by **Make**.

Cmake (C++/C) (2)

Why use **CMake** ?

- Eases **Make** use
  - but the same way of thinking
  - generate the **Makefile**
- Separate the compilation from the sources
- Multi-platfoms
- Very flexible

Cmake (C++/C) (3)

- Check if the libraries/programs are available on your system
- File generator (**configure_file**)
- Calling programs or scripts (**doxygen**)
- One of the new standards

Cmake (C++/C) (4) (Download and Install)

use the following link for download

Download | CMake

Cmake (C++/C) (5) (WSL and Linux Environment)

Hello world with CMake

Cmake (C++/C) (6) (Windows Environment)

main.c

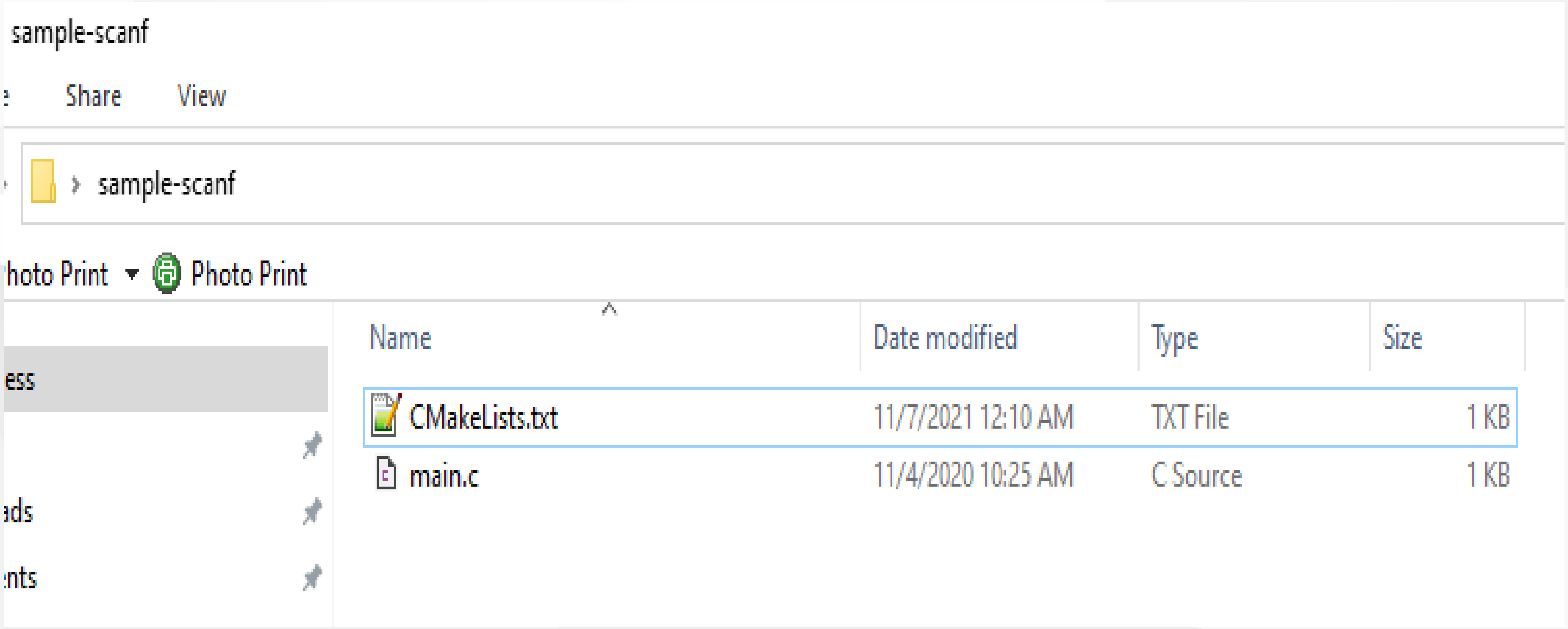
```c
#include <stdio.h>
int main()
{
    char name[20];
    printf("Enter name: ");
    scanf("%s", name);
    printf("Your name is %s.", name);
    return 0;
}
```

CMakeLists.txt

```cmake
cmake_minimum_required(VERSION 3.7.2)
project(scanf-sample)
add_executable(scanf-sample main.c)
```

Cmake (C++/C) (7) (Windows Environment)

put main.c and CMakeLists.txt file in sample-scanf folder and from command line


sample-scanf

Share View

sample-scanf

Photo Print

Name	Date modified	Type	Size
CMakeLists.txt	11/7/2021 12:10 AM	TXT File	1 KB
main.c	11/4/2020 10:25 AM	C Source	1 KB

run the following cmake command with dot (.) to create solution file for c project

```
C:\Users\ugur.coruh\Desktop\sample-scanf>cmake .
```

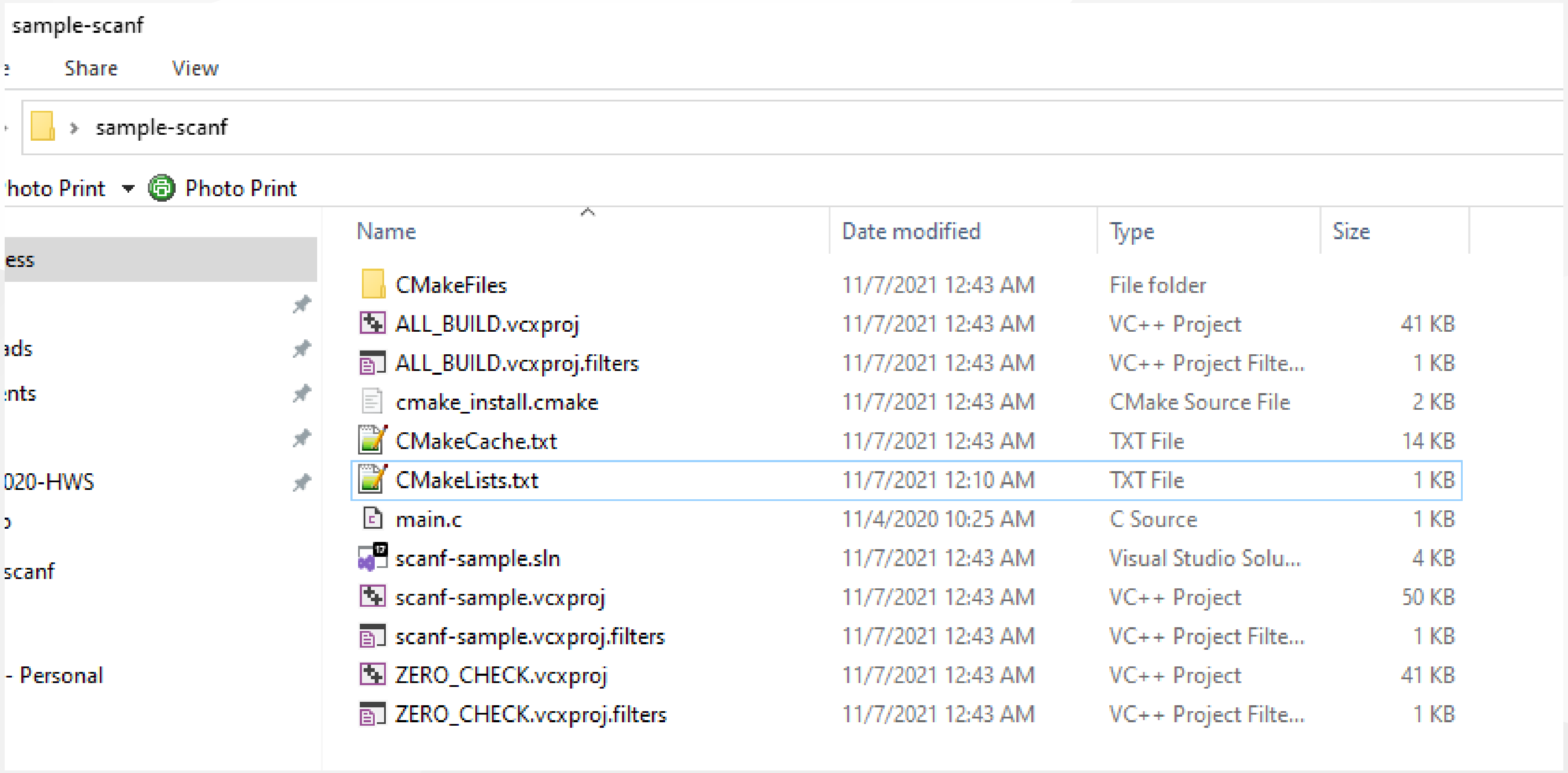
Cmake (C++/C) (8) (Windows Environment)

I have Visual Studio 2022 Community Edition Installed on My Computer, for these reason build tools are selected for visual studio environment and the following outputs are generated

```
C:\Users\ugur.coruh\Desktop\sample-scanf>cmake .
-- Building for: Visual Studio 17 2022
-- Selecting Windows SDK version 10.0.22000.0 to target Windows 10.0.19043.
-- The C compiler identification is MSVC 19.30.30704.0
-- The CXX compiler identification is MSVC 19.30.30704.0
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working C compiler: C:/Program Files/Microsoft Visual Studio/2022/Community/VC/Tools/MSVC/14.30.30704/bin/Hostx64/x64/cl.exe - skipped
-- Detecting C compile features
-- Detecting C compile features - done
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Check for working CXX compiler: C:/Program Files/Microsoft Visual Studio/2022/Community/VC/Tools/MSVC/14.30.30704/bin/Hostx64/x64/cl.exe - skipped
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Configuring done
-- Generating done
-- Build files have been written to: C:/Users/ugur.coruh/Desktop/sample-scanf

C:\Users\ugur.coruh\Desktop\sample-scanf>
```

Cmake (C++/C) (9) (Windows Environment)

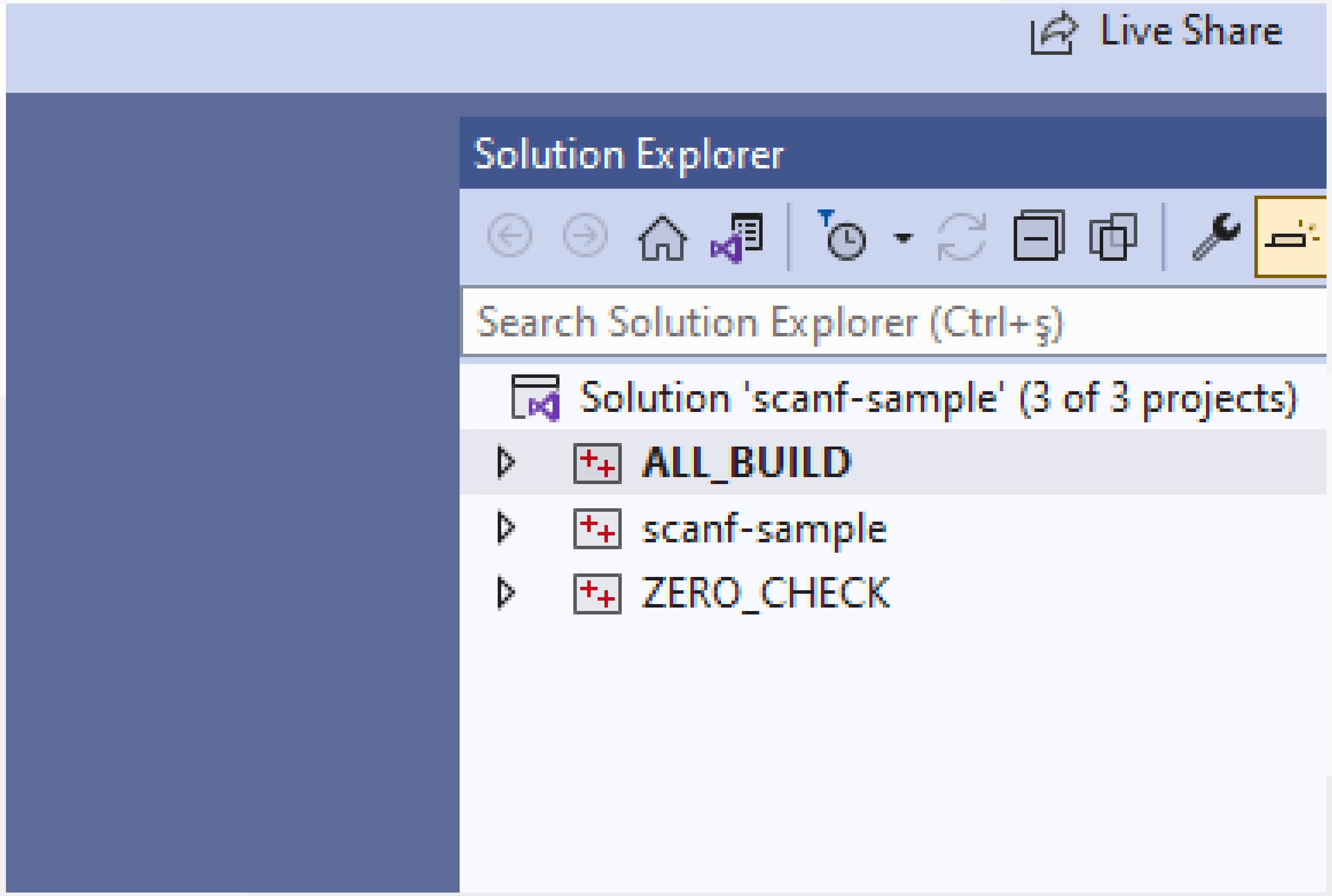
also following files are generated



Name	Date modified	Type	Size
CMakeFiles	11/7/2021 12:43 AM	File folder	
ALL_BUILD.vcxproj	11/7/2021 12:43 AM	VC++ Project	41 KB
ALL_BUILD.vcxproj.filters	11/7/2021 12:43 AM	VC++ Project Filte...	1 KB
cmake_install.cmake	11/7/2021 12:43 AM	CMake Source File	2 KB
CMakeCache.txt	11/7/2021 12:43 AM	TXT File	14 KB
CMakeLists.txt	11/7/2021 12:10 AM	TXT File	1 KB
main.c	11/4/2020 10:25 AM	C Source	1 KB
scanf-sample.sln	11/7/2021 12:43 AM	Visual Studio Solu...	4 KB
scanf-sample.vcxproj	11/7/2021 12:43 AM	VC++ Project	50 KB
scanf-sample.vcxproj.filters	11/7/2021 12:43 AM	VC++ Project Filte...	1 KB
ZERO_CHECK.vcxproj	11/7/2021 12:43 AM	VC++ Project	41 KB
ZERO_CHECK.vcxproj.filters	11/7/2021 12:43 AM	VC++ Project Filte...	1 KB

Cmake (C++/C) (10) (Windows Environment)

if we open scanf-sample.sln file we will have automated generated project files

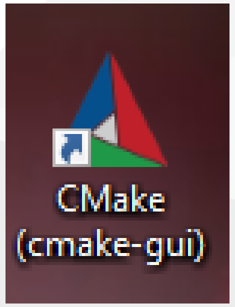


Solution 'scanf-sample' (3 of 3 projects)
ALL_BUILD
scanf-sample
ZERO_CHECK

Cmake (C++/C) (11) (Windows Environment)

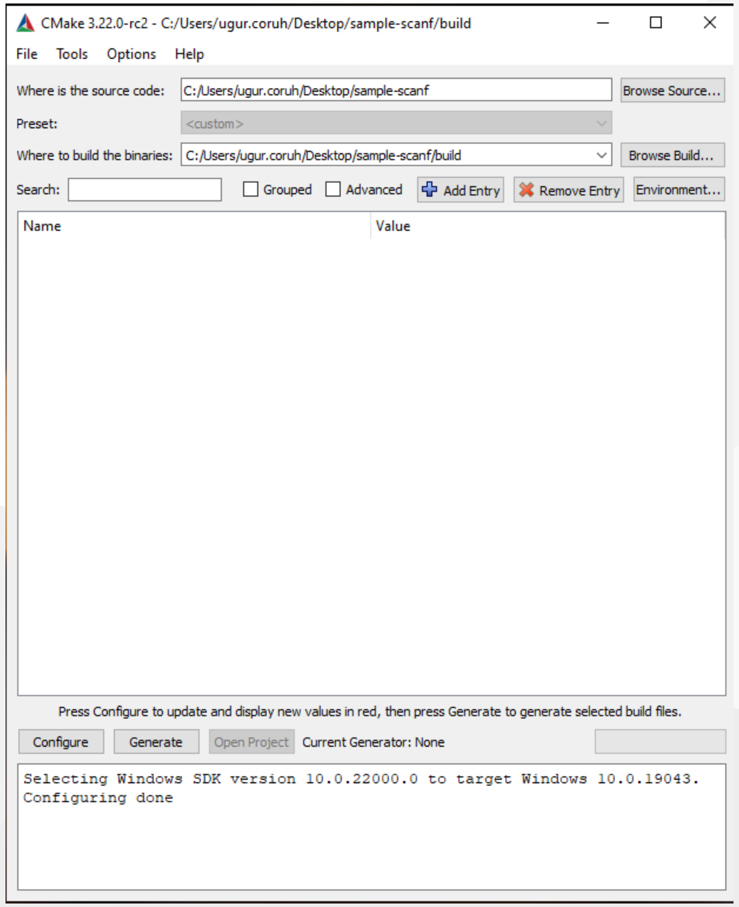
you can make scanf-sample with startup project with right click and then run on visual studio.

if you want to configure for another build tool you can use Cmake-GUI installed with setup on your computer



Cmake (C++/C) (12) (Windows Environment)

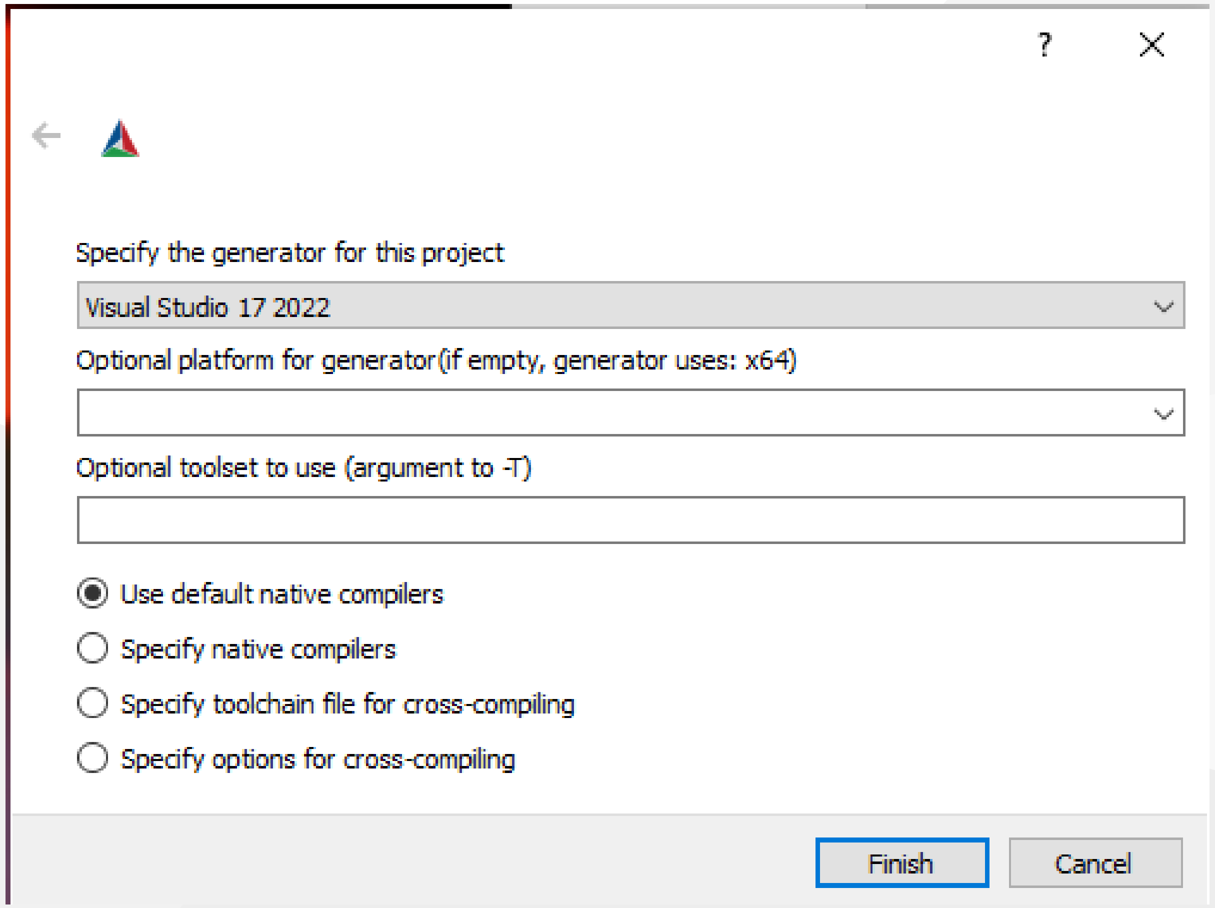
Open GUI and Select *File-> Delete Cache*


CMake 3.22.0-rc2 - C:/Users/ugur.coruh/Desktop/sample-scanf/build
File
Tools
Options
Help
Where is the source code:
C:/Users/ugur.coruh/Desktop/sample-scanf
Browse Source...
Preset:
<custom>
Where to build the binaries:
C:/Users/ugur.coruh/Desktop/sample-scanf/build
Browse Build...
Search:
Grouped
Advanced
Add Entry
Remove Entry
Environment...
Name
Value
Press Configure to update and display new values in red, then press Generate to generate selected build files.
Configure
Generate
Open Project
Current Generator: None

```
Selecting Windows SDK version 10.0.22000.0 to target Windows 10.0.19043.
Configuring done
```

Cmake (C++/C) (13) (Windows Environment)

then you can click "Configure" to select build tool


Specify the generator for this project

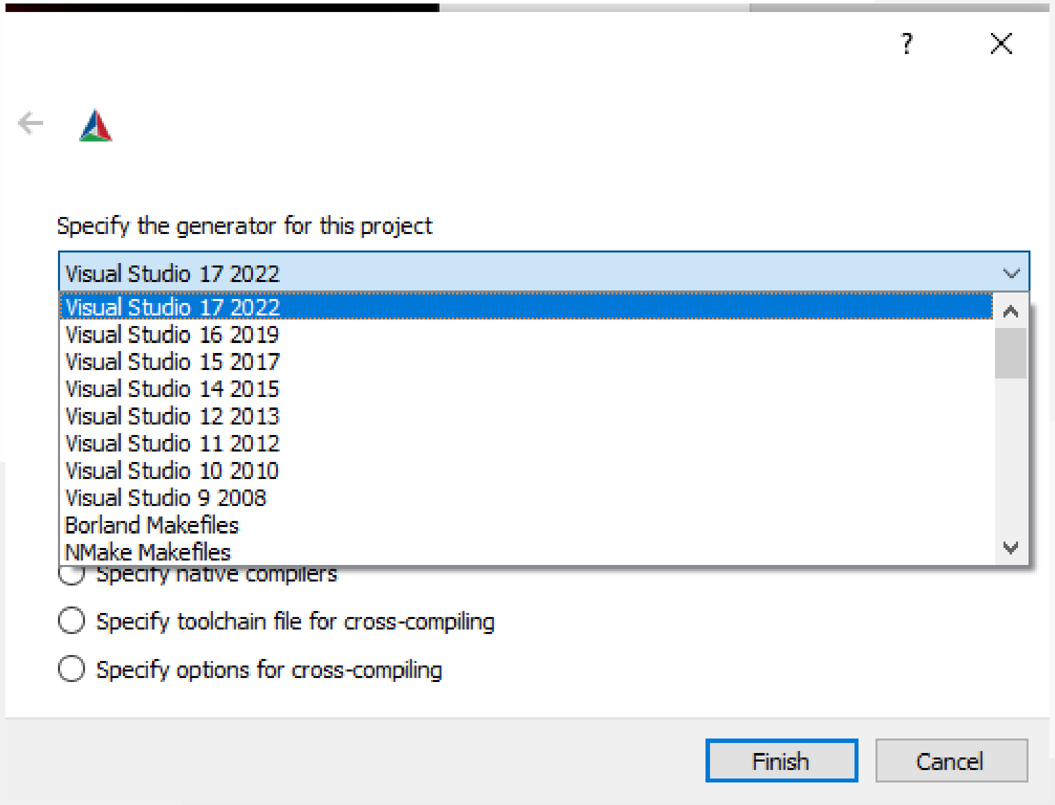
Visual Studio 17 2022

Optional platform for generator(if empty, generator uses: x64)

Optional toolset to use (argument to -T)

(● Use default native compilers) ○ Specify native compilers ○ Specify toolchain file for cross-compiling ○ Specify options for cross-compiling

Cmake (C++/C) (14) (Windows Environment)


Specify the generator for this project

Visual Studio 17 2022

- Visual Studio 17 2022
- Visual Studio 16 2019
- Visual Studio 15 2017
- Visual Studio 14 2015
- Visual Studio 12 2013
- Visual Studio 11 2012
- Visual Studio 10 2010
- Visual Studio 9 2008
- Borland Makefiles
- NMake Makefiles

Specify native compilers
Specify toolchain file for cross-compiling
Specify options for cross-compiling
Finish
Cancel

Cmake (C++/C) (15) (Windows Environment)

if you click "Configure" twice it will generate the visual studio solution in build folder

for more detailed examples that include also docker and travis-ci sample you can check the following repo

GitHub - ttroy50/cmake-examples: Useful CMake Examples

Make (1)

Sample

hello.c

```c
#include <stdio.h>

int main(void)
{
    printf("hello, world\n");
}
```

Make (2)

Makefile

```
# This is the default target, which will be built when
# you invoke make
.PHONY: all
all: hello

# This rule tells make how to build hello from hello.cpp
hello: hello.c
    g++ -o hello hello.c

# This rule tells make to copy hello to the binaries subdirectory,
# creating it if necessary
.PHONY: install
install:
    mkdir -p binaries
    cp -p hello binaries

# This rule tells make to delete hello and hello.o
.PHONY: clean
clean:
    rm -f hello
```

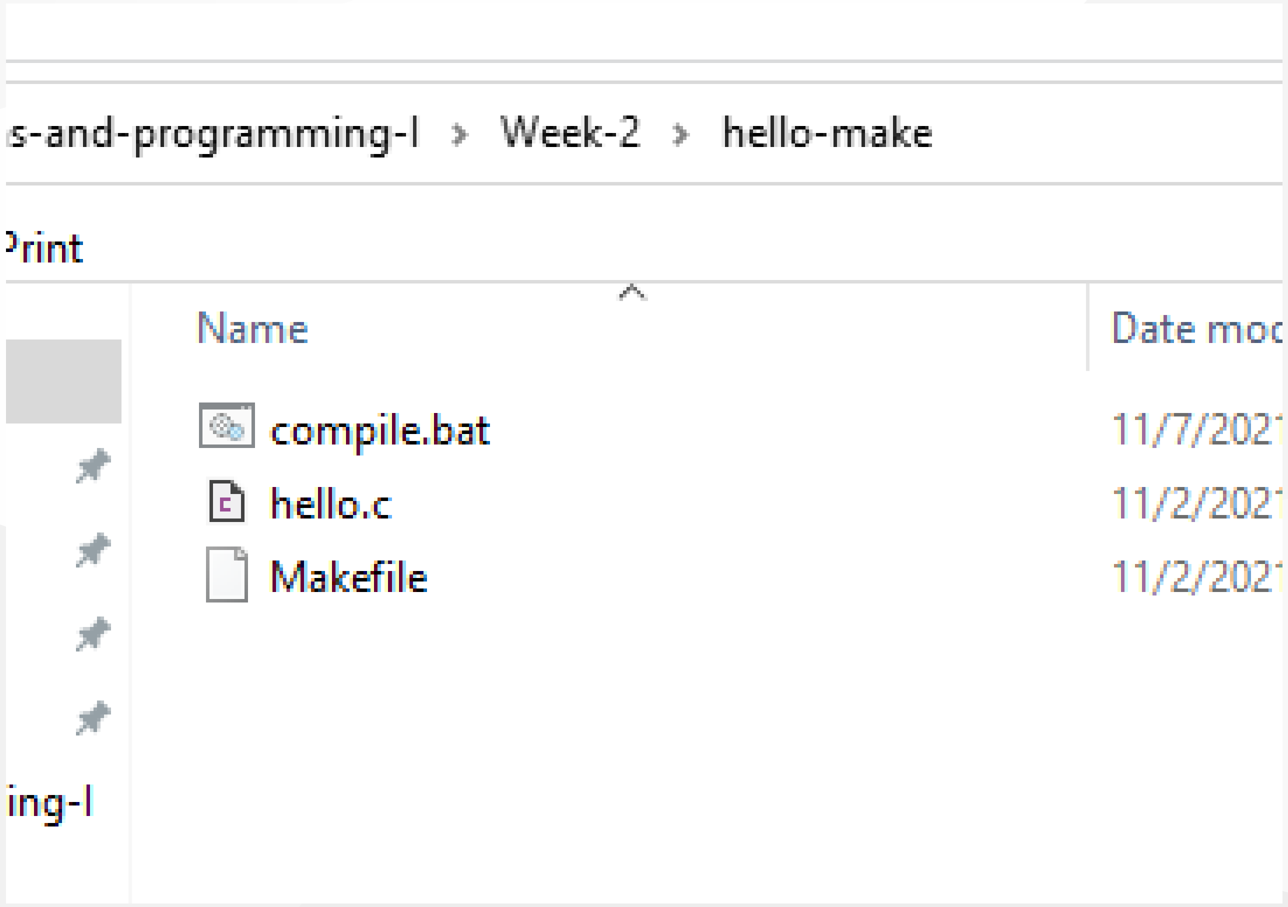
Make (3)

compile.bat

```
make all .
```

will create hello.exe

check hello-make sample


s-and-programming-I › Week-2 › hello-make

Print

Name	Date moc
compile.bat	11/7/2021
hello.c	11/2/2021
Makefile	11/2/2021

ing-I

JAVA Environment and Development

//TODO//

JDK and JRE Setup

//TODO//

System Environments and Paths for Java

//TODO//

Netbeans (Java)

//TODO//

Eclipse (Java)

//TODO//

Intellij Idea (Jet Brains) (Java)

//TODO//

VSCode (Java)

//TODO//

Notepad++ (Java)

//TODO//

Cmake (Java)

ASTERICS_HPC

C# Environment and Development

Visual Studio Community Edition (C#)

//TODO//

Notepad++ (C#)

//TODO//

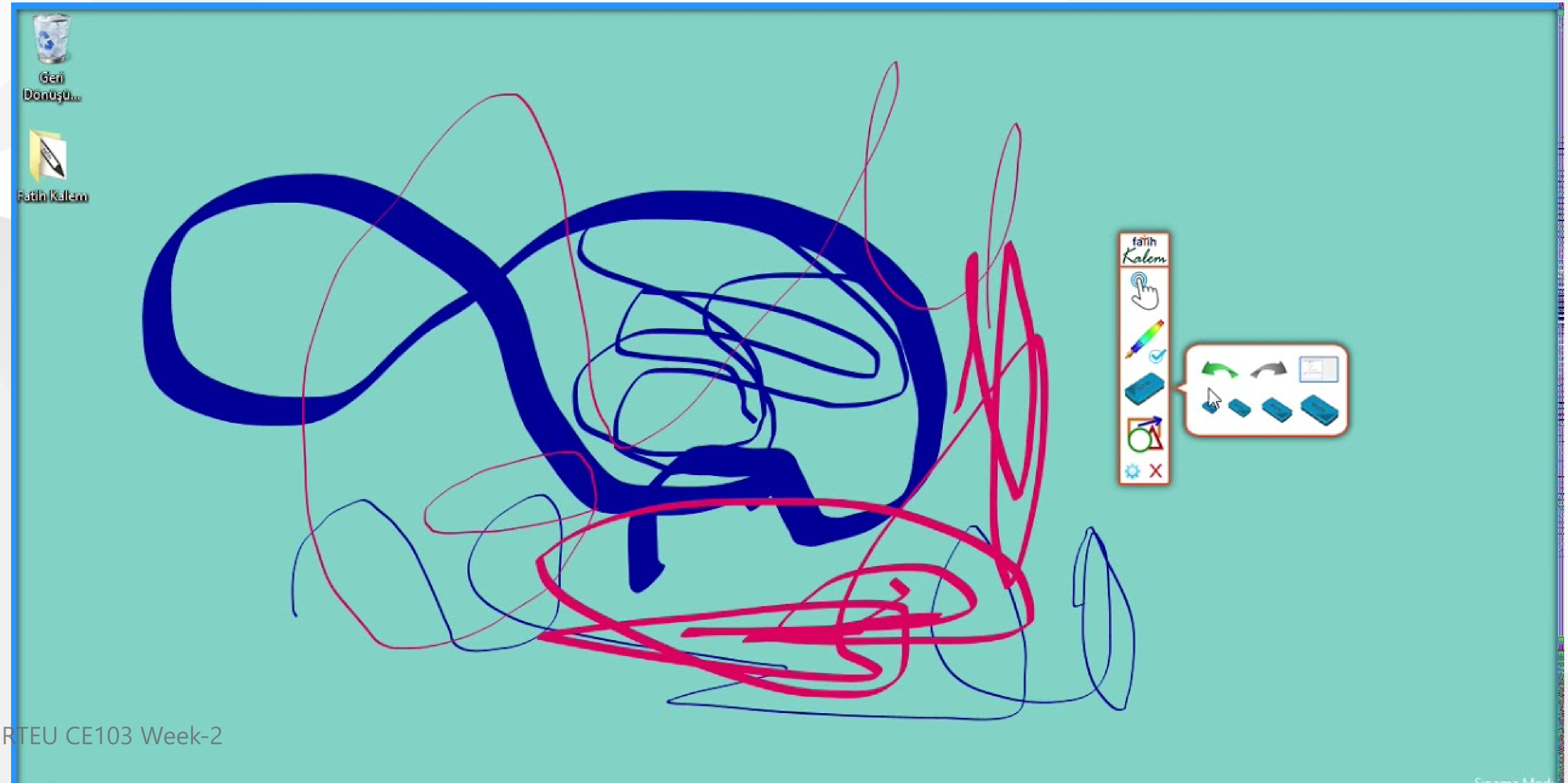
Cmake (C#)

Outline

Common Tools and Platforms

https://cdnvideo.eba.gov.tr/fatihkalem/fatihkalem_portable.zip

https://cdnvideo.eba.gov.tr/fatihkalem/fatihkalem_setup.exe



Notepad++ (Notepad for Source Code)

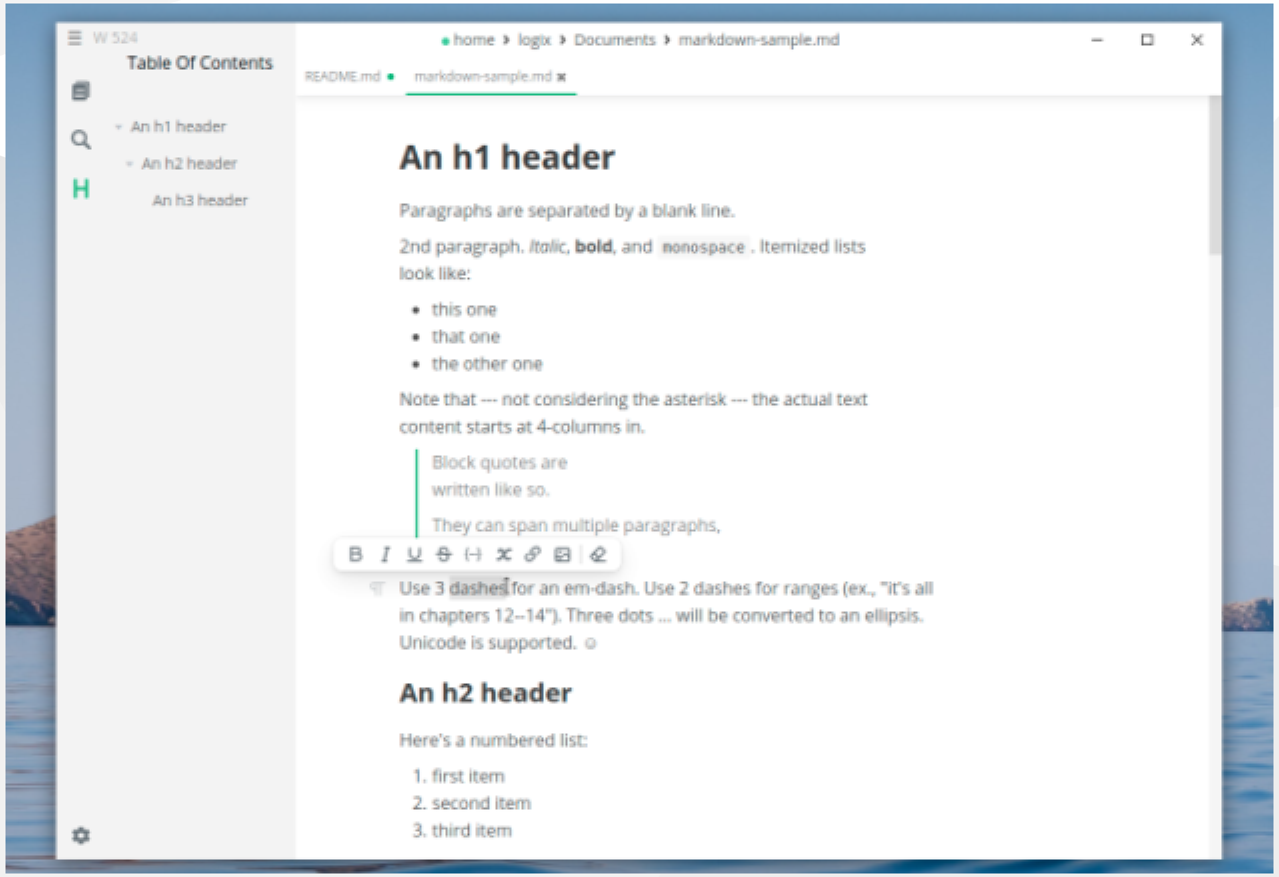
Downloads | Notepad++

HxD (Hex Editor)

HxD - Freeware Hex Editor and Disk Editor | mh-nexus

Marktext (Markdown Syntax Editor)

https://marktext.app/



An h1 header

Paragraphs are separated by a blank line.

2nd paragraph. *Italic*, **bold**, and `monospace`. Itemized lists look like:

- this one
- that one
- the other one

Note that --- not considering the asterisk --- the actual text content starts at 4-columns in.

> Block quotes are written like so.
>
> They can span multiple paragraphs,

Use 3 dashes for an em-dash. Use 2 dashes for ranges (ex., "it's all in chapters 12--14"). Three dots ... will be converted to an ellipsis. Unicode is supported. ☺

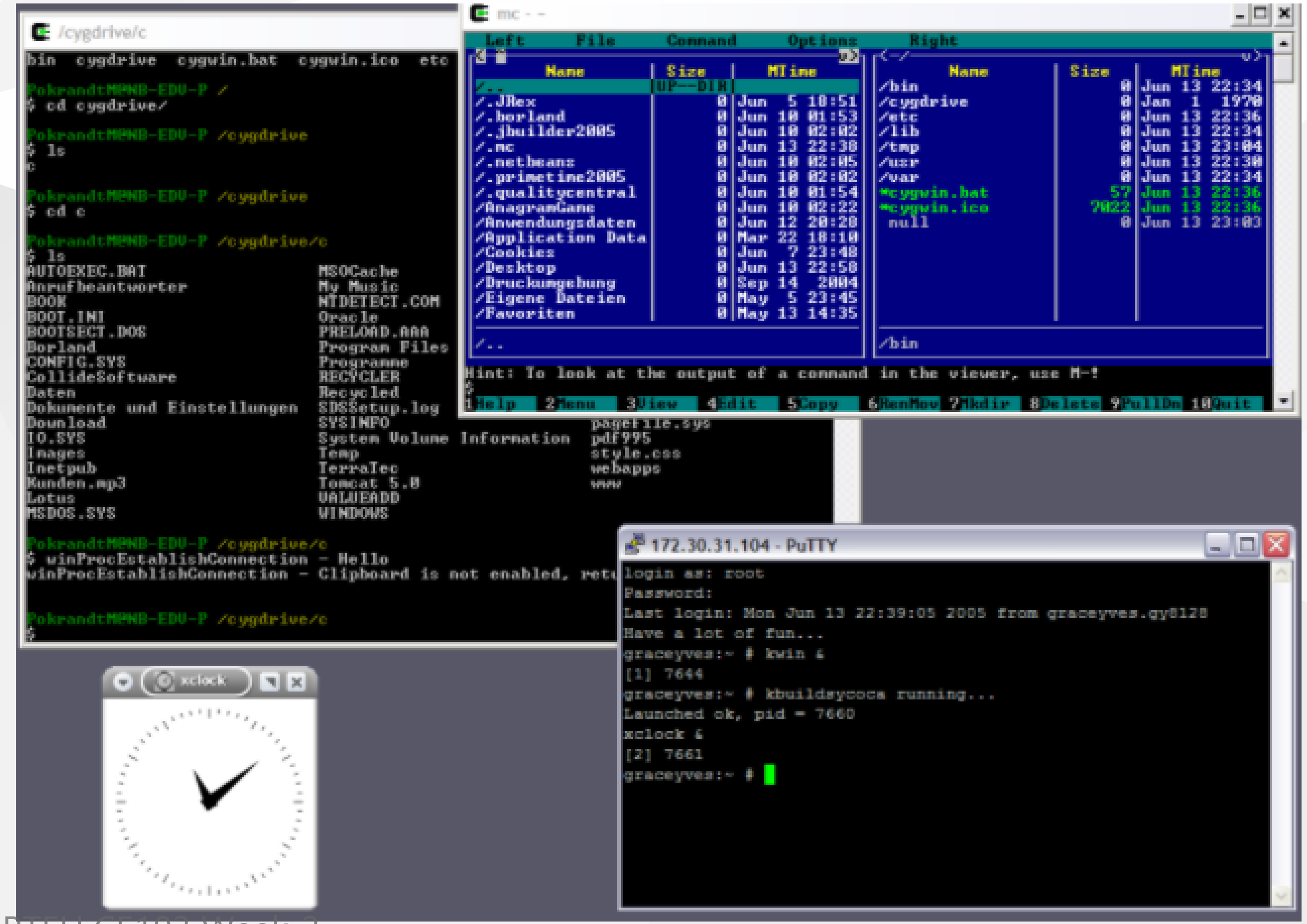
An h2 header

Here's a numbered list:

1. first item
2. second item
3. third item

Cygwin (Linux environment for Windows)

https://www.cygwin.com/



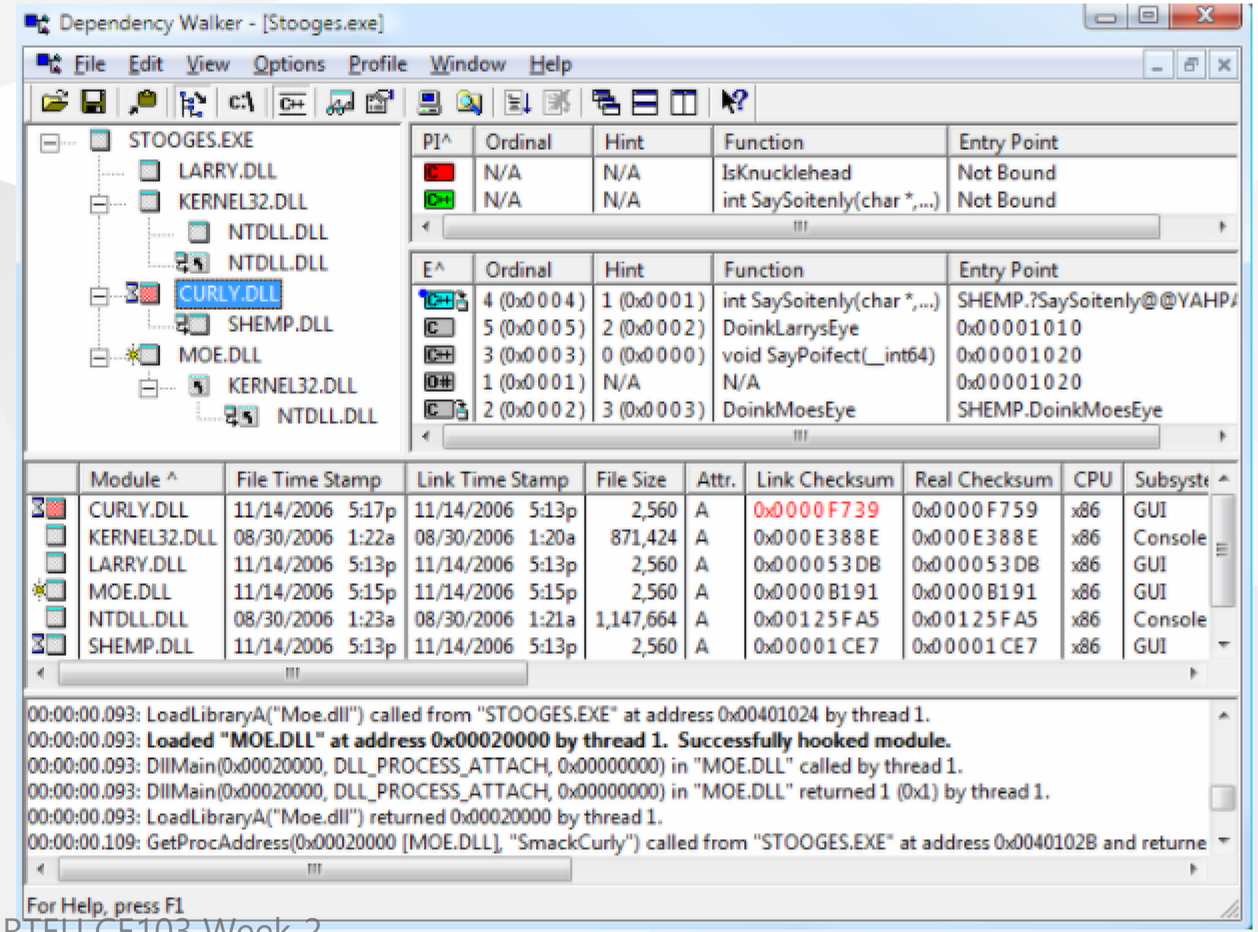
```
bin  cygdrive  cygwin.bat  cygwin.ico  etc

PokrandtM@NB-EDU-P /
$ cd cygdrive/

PokrandtM@NB-EDU-P /cygdrive
$ ls
c

PokrandtM@NB-EDU-P /cygdrive
$ cd c

PokrandtM@NB-EDU-P /cygdrive/c
$ ls
AUTOEXEC.BAT                 MSOCache
Anrufbeantworter             My Music
BOOK                         NTDETECT.COM
BOOT.INI                     Oracle
BOOTSECT.DOS                 PRELOAD.AAA
Borland                      Program Files
CONFIG.SYS                   Programme
CollideSoftware              RECYCLER
Daten                        Recycled
Dokumente und Einstellungen  SDSSetup.log
Download                     SYSINFO                     pagefile.sys
IO.SYS                       System Volume Information   pdf995
Images                       Temp                        style.css
Inetpub                      TerraTec                    webapps
Kunden.mp3                   Tomcat 5.0                  www
Lotus                        VALUEADD
MSDOS.SYS                    WINDOWS

PokrandtM@NB-EDU-P /cygdrive/c
$ winProcEstablishConnection - Hello
winProcEstablishConnection - Clipboard is not enabled, retu

PokrandtM@NB-EDU-P /cygdrive/c
$
```

```
  Left     File     Command     Options     Right
     Name          | Size  |   MTime          |       Name        | Size |   MTime
/..                |UP--DIR|                  |/bin               |     0|Jun 13 22:34
/.JRex             |      0|Jun  5 10:51      |/cygdrive          |     0|Jan  1  1970
/.borland          |      0|Jun 10 01:53      |/etc               |     0|Jun 13 22:36
/.jbuilder2005     |      0|Jun 10 02:02      |/lib               |     0|Jun 13 22:34
/.mc               |      0|Jun 13 22:38      |/tmp               |     0|Jun 13 23:04
/.netbeans         |      0|Jun 10 02:05      |/usr               |     0|Jun 13 22:30
/.primetime2005    |      0|Jun 10 02:02      |/var               |     0|Jun 13 22:34
/.qualitycentral   |      0|Jun 10 01:54      |*cygwin.bat        |    57|Jun 13 22:36
/AnagramGame       |      0|Jun 10 02:22      |*cygwin.ico        |  7022|Jun 13 22:36
/Anwendungsdaten   |      0|Jun 12 20:20      | null              |     0|Jun 13 23:03
/Application Data  |      0|Mar 22 18:10      |
/Cookies           |      0|Jun  7 23:48      |
/Desktop           |      0|Jun 13 22:58      |
/Druckumgebung     |      0|Sep 14  2004      |
/Eigene Dateien    |      0|May  5 23:45      |
/Favoriten         |      0|May 13 14:35      |
/..                                           |/bin
Hint: To look at the output of a command in the viewer, use M-!
$
1Help 2Menu 3View 4Edit 5Copy 6RenMov 7Mkdir 8Delete 9PullDn 10Quit
```

```
login as: root
Password:
Last login: Mon Jun 13 22:39:05 2005 from graceyves.gy0128
Have a lot of fun...
graceyves:~ # kwin &
[1] 7644
graceyves:~ # kbuildsycoca running...
Launched ok, pid = 7660
xclock &
[2] 7661
graceyves:~ #
```

Dependency Walker (32-bit or 64-bit Windows module dependency checker)

https://www.dependencywalker.com/


Dependency Walker - [Stooges.exe]
File Edit View Options Profile Window Help

```
STOOGES.EXE
    LARRY.DLL
    KERNEL32.DLL
        NTDLL.DLL
        NTDLL.DLL
    CURLY.DLL
        SHEMP.DLL
    MOE.DLL
        KERNEL32.DLL
            NTDLL.DLL
```

PI^	Ordinal	Hint	Function	Entry Point
C	N/A	N/A	IsKnucklehead	Not Bound
C++	N/A	N/A	int SaySoitenly(char *,...)	Not Bound

E^	Ordinal	Hint	Function	Entry Point
C++	4 (0x0004)	1 (0x0001)	int SaySoitenly(char *,...)	SHEMP.?SaySoitenly@@YAHP
C	5 (0x0005)	2 (0x0002)	DoinkLarrysEye	0x00001010
C++	3 (0x0003)	0 (0x0000)	void SayPoifect(__int64)	0x00001020
O#	1 (0x0001)	N/A	N/A	0x00001020
C	2 (0x0002)	3 (0x0003)	DoinkMoesEye	SHEMP.DoinkMoesEye

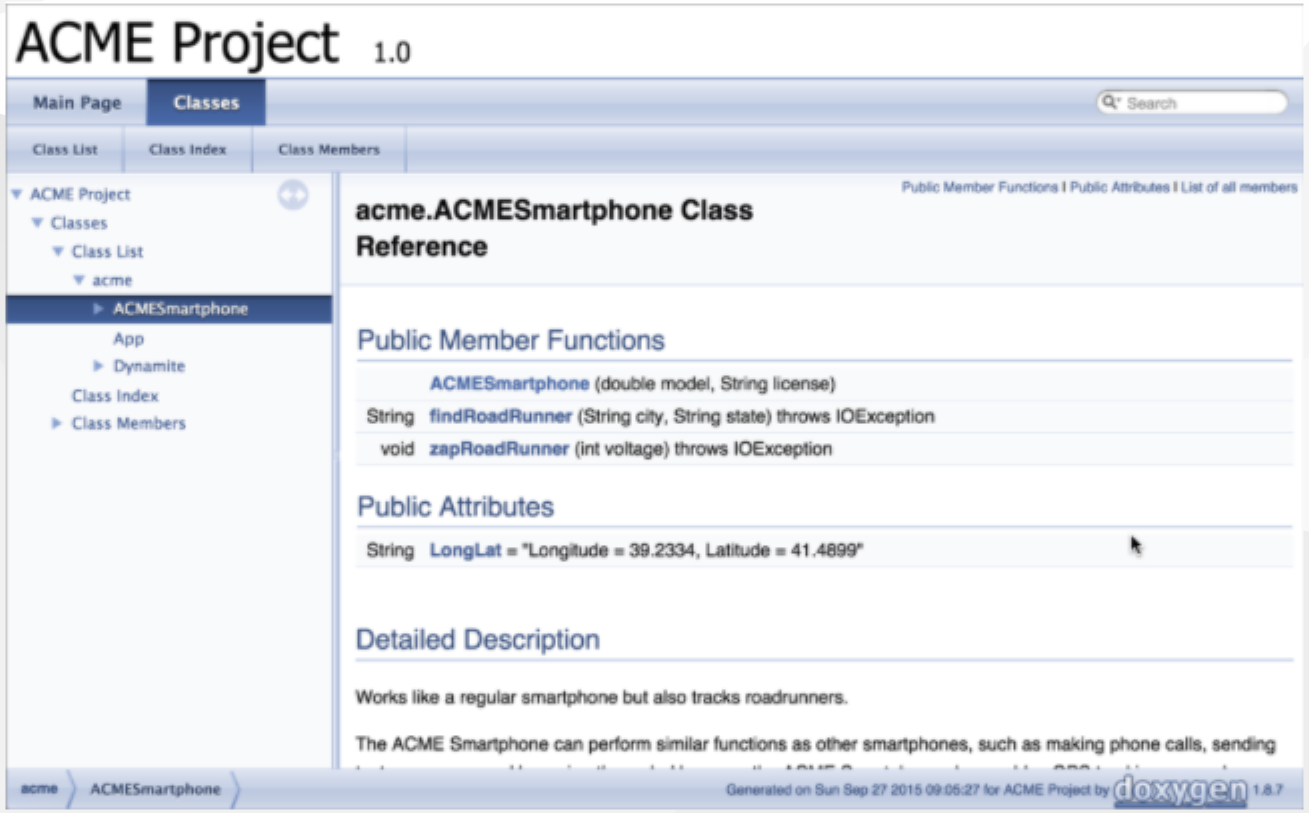
	Module ^	File Time Stamp	Link Time Stamp	File Size	Attr.	Link Checksum	Real Checksum	CPU	Subsyste
	CURLY.DLL	11/14/2006 5:17p	11/14/2006 5:13p	2,560	A	0x0000F739	0x0000F759	x86	GUI
	KERNEL32.DLL	08/30/2006 1:22a	08/30/2006 1:20a	871,424	A	0x000E388E	0x000E388E	x86	Console
	LARRY.DLL	11/14/2006 5:13p	11/14/2006 5:13p	2,560	A	0x000053DB	0x000053DB	x86	GUI
	MOE.DLL	11/14/2006 5:15p	11/14/2006 5:15p	2,560	A	0x0000B191	0x0000B191	x86	GUI
	NTDLL.DLL	08/30/2006 1:23a	08/30/2006 1:21a	1,147,664	A	0x00125FA5	0x00125FA5	x86	Console
	SHEMP.DLL	11/14/2006 5:13p	11/14/2006 5:13p	2,560	A	0x00001CE7	0x00001CE7	x86	GUI

```
00:00:00.093: LoadLibraryA("Moe.dll") called from "STOOGES.EXE" at address 0x00401024 by thread 1.
00:00:00.093: Loaded "MOE.DLL" at address 0x00020000 by thread 1.  Successfully hooked module.
00:00:00.093: DllMain(0x00020000, DLL_PROCESS_ATTACH, 0x00000000) in "MOE.DLL" called by thread 1.
00:00:00.093: DllMain(0x00020000, DLL_PROCESS_ATTACH, 0x00000000) in "MOE.DLL" returned 1 (0x1) by thread 1.
00:00:00.093: LoadLibraryA("Moe.dll") returned 0x00020000 by thread 1.
00:00:00.109: GetProcAddress(0x00020000 [MOE.DLL], "SmackCurly") called from "STOOGES.EXE" at address 0x0040102B and returne
```

For Help, press F1

Doxygen (Code Documentation)

Doxygen: Doxygen



acme.ACMESmartphone Class Reference

Public Member Functions

	ACMESmartphone (double model, String license)
String	findRoadRunner (String city, String state) throws IOException
void	zapRoadRunner (int voltage) throws IOException

Public Attributes

String	LongLat = "Longitude = 39.2334, Latitude = 41.4899"

Detailed Description

Works like a regular smartphone but also tracks roadrunners.

The ACME Smartphone can perform similar functions as other smartphones, such as making phone calls, sending

acme 〉 ACMESmartphone 〉 Generated on Sun Sep 27 2015 09:05:27 for ACME Project by doxygen 1.8.7

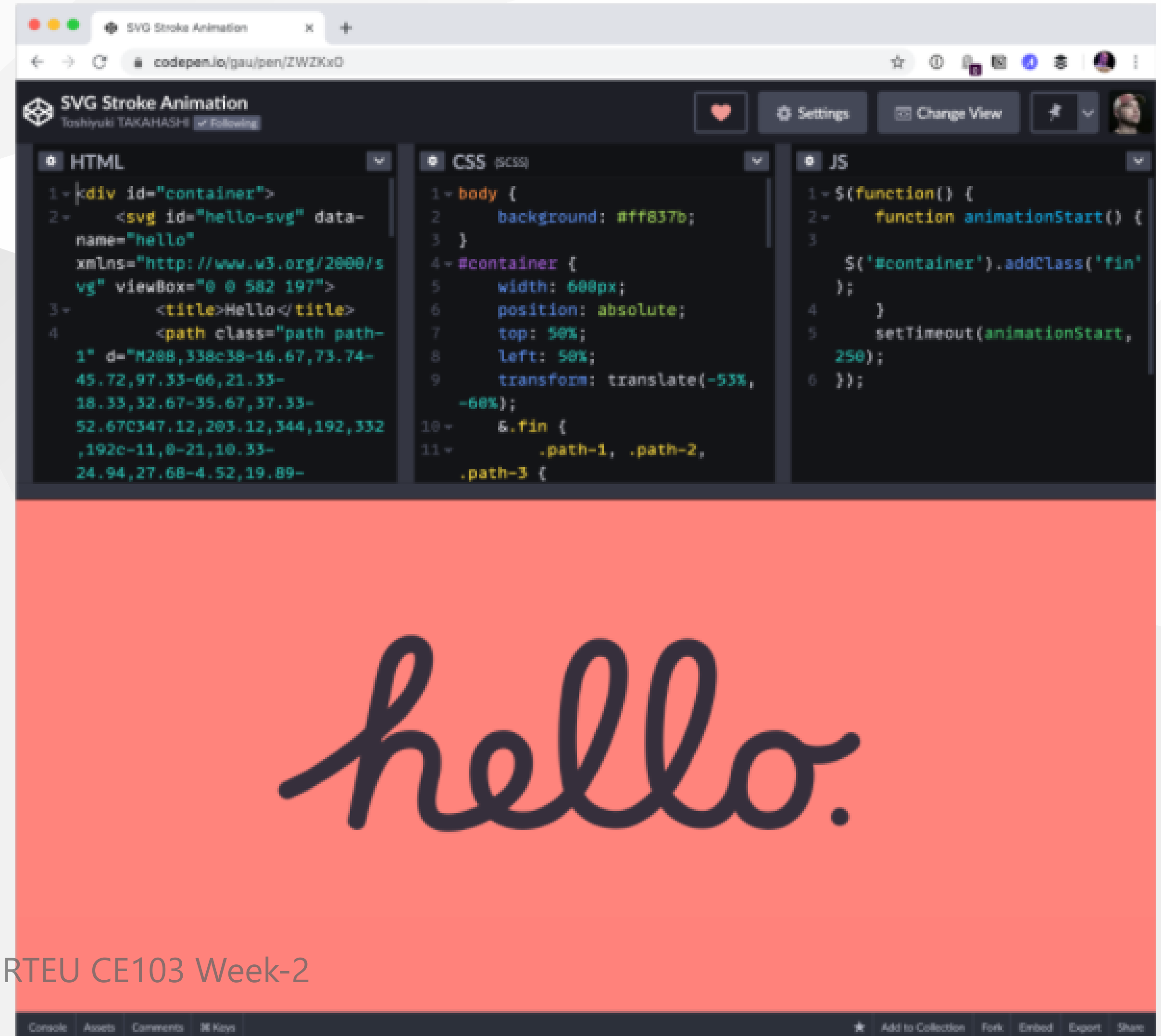
Sonarlint (Code Quality and Code Security Extension)

sonarlint

https://www.sonarlint.org/

Codepen.io (online code sharing)

https://codepen.io/


SVG Stroke Animation
codepen.io/gau/pen/ZWZKxO
SVG Stroke Animation
Toshiyuki TAKAHASHI ✓ Following
Settings
Change View
HTML
CSS (SCSS)
JS
Console Assets Comments ⌘ Keys
Add to Collection Fork Embed Export Share

```html
<div id="container">
    <svg id="hello-svg" data-
name="hello"
xmlns="http://www.w3.org/2000/s
vg" viewBox="0 0 582 197">
        <title>Hello</title>
        <path class="path path-
1" d="M208,338c38-16.67,73.74-
45.72,97.33-66,21.33-
18.33,32.67-35.67,37.33-
52.67C347.12,203.12,344,192,332
,192c-11,0-21,10.33-
24.94,27.68-4.52,19.89-
```

```scss
body {
    background: #ff837b;
}
#container {
    width: 600px;
    position: absolute;
    top: 50%;
    left: 50%;
    transform: translate(-53%,
-60%);
    &.fin {
        .path-1, .path-2,
.path-3 {
```

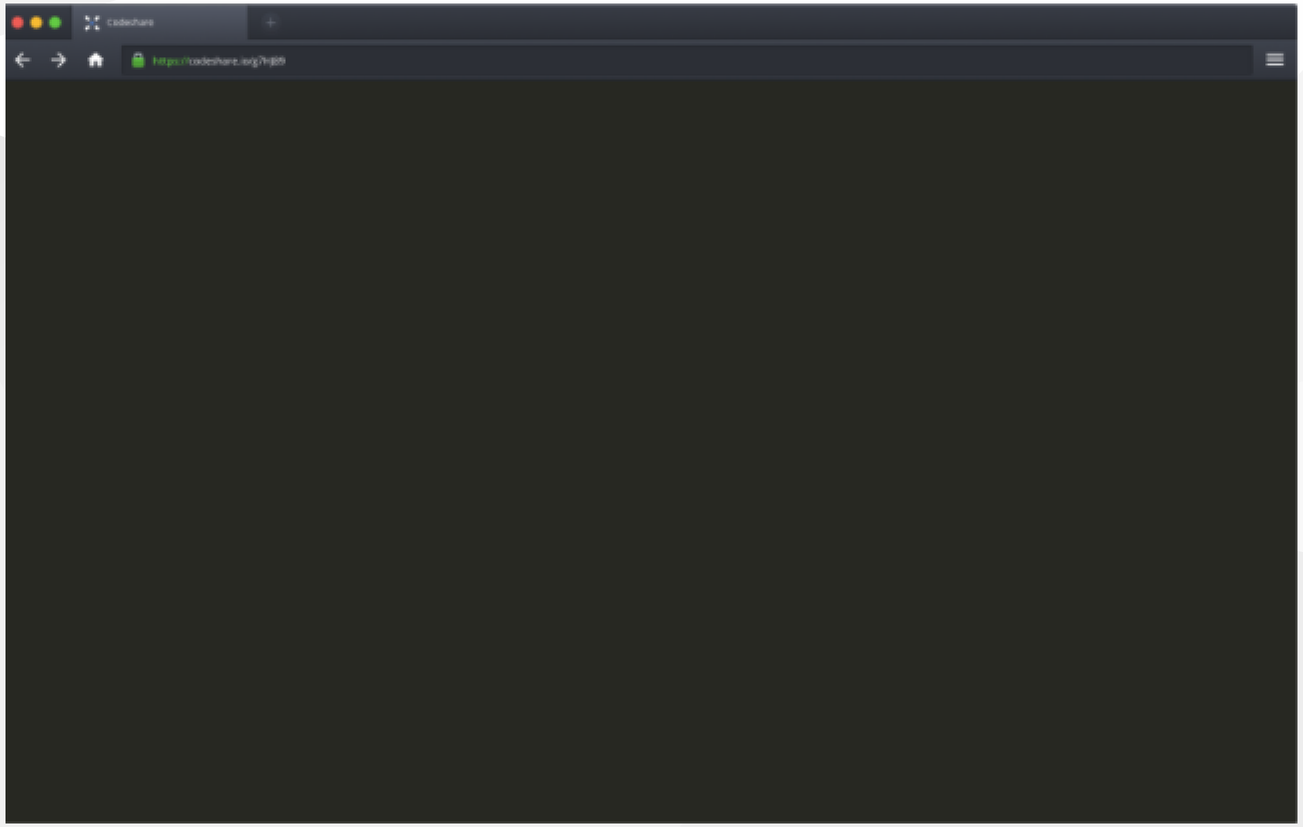
```js
$(function() {
    function animationStart() {

  $('#container').addClass('fin'
);
    }
    setTimeout(animationStart,
250);
});
```

Credit Card Sample

https://codepen.io/quinlo/pen/YONMEa

Codeshare.io (real time code sharing)

https://codeshare.io/



Codebeautify.org (online data conversion tools)

https://codebeautify.org/

AsciiFlow.com (ASCII drawing tool)

//TODO//

Freemind (opensource mindmap application)

//TODO//

Wireflow (user flow designer)

//TODO//

PlantUML (software designer)

//TODO//

Drawio (drawing tool)

//TODO//

Putty (Remote Connection)

//TODO//

MobaXterm (Remote Connection)

//TODO//

Teamviewer (Remote Connection)

//TODO//

Paletton.com (Color Chooser)

//TODO//

Understand (Static Code Analysis)

//TODO//

JD Project (Java Decompiler)

//TODO//

Cutter (Multi-Platform Reverse Engineering Tool)

//TODO//

IDA Pro / Freeware (Native Reverse Engineering Tool)

//TODO//

Code Visualization (Python, C , C++ , Java)

https://pythontutor.com/

//TODO//

Assembly of C Code

https://godbolt.org/

//TODO//

Mobile Device Screen Sharing for Demo

GitHub - Genymobile/scrcpy: Display and control your Android device

Travis-CI

- Travis.yml

//TODO//

Jenkins

//TODO//

Valgrind

//TODO//

Docker

```
- https://www.youtube.com/watch?v=nBwJm0onzeo&ab_channel=GaryExplains  Dockerfile
```

- DockerHub
- Docker Compose Yaml
- Dockerrun.aws.json (AWS)

//TODO//

Nuget Packages

//TODO//

Vim for Windows

- vim/vim-wim32-installer (windows vim installer)

//TODO//

SCV Cryptomanager

//TODO//

Addario CryptoBench

//TODO//

Raymond's MD5 & SHA Checksum Utility

//TODO//

SlavaSoft HashCalc

//TODO//

Portable PGP

//TODO//

Online Programming Envoriments

i. Hackerrank

ii. CS50 Sandbox

iii. Programiz C Online Complier

//TODO//