

What's New for You in Visual Studio Code

Clang-Tidy, makefile, CMake, GitHub and More



MARIAN LUPARU & SINEM AKINCI 20 September 12th-16th



What's New In Visual Studio Code

Clang-tidy, makefile, CMake, GitHub and More

Sinem Akinci (she/her) @sinem_akinci Marian Luparu (he/him) @mluparu

C++ Product Team, Microsoft @VisualC https://aka.ms/cpp



Welcome to CppCon 2022!

Join #visual_studio channel on CppCon Discord https://aka.ms/cppcon/discord

- Meet the Microsoft C++ team
- Ask any questions
- Discuss the latest announcements

Take our survey https://aka.ms/cppcon

Mission of the C++ product team at Microsoft

Empower every C++ developer and their teams to achieve more

- by participating in the creation of the C++ Standards
- by investing in the Microsoft Visual C++ (MSVC) Compiler & Libraries
- by improving the Visual Studio IDE

- Our agenda today

 4. by simplifying acquisition in C++ via vcpkg

 5. by continuing to enhance the C++ experiences for Visual Studio Code



Session coming up!

















Free & lightweight

- Git commands built-in
- Debug code right from the editor
- Go beyond editing with IntelliSense
- Build system integrations (CMake, makefile)

Cross-platform









- **∀** SSH
- ∇ontainers
- **∀** WSL
- ▼ Embedded

Extensible and customizable







Source Stack Overflow Developer Survey 2022

C++ in Visual Studio Code



Adds language support for C++, including IntelliSense and debugging features

NEW Clang-tidy integration

NEW Inlay hints

Doxygen integration

NEW Sticky headers

NEW Data breakpoints

Learn more at https://aka.ms/cpptools

Build system integrations



Enables full-featured workflows for CMake-based projects

NEW CMake task support
NEW CMake presets

Learn more at https://aka.ms/cmake-tools



OSS extension provides
IntelliSense config for
makefile projects and
convenient tasks to build &
debug

View problems in 'Problems' tab

Learn more at https://aka.ms/makefile-tools





Setting up a vanilla Mac machine with Visual Studio Code



CMake Presets

- Share common configure, build, test, install, and clean options with the whole team
- Invoke CMake in the same way across VS, VS Code, CLI, CI or remote machines
- Get help from Visual Studio Code with adding presets and debug problems with them
- ✓ Have high fidelity C++ IntelliSense and debugging for all CMake targets

Learn more at https://aka.ms/vscode-cmakepresets



Simplify C++ dependency management with vcpkg

Open-source package manager for Windows, Linux, and macOS

1900+ open-source libraries available for installation

- Largest open-source catalog
- Built from source, on-demand
- 50+ unique build targets available by default, including support for Windows, Linux, macOS, iOS, Android, wasm, x86, x64, arm, and arm64
- Avoid diamond dependency conflicts with curated, tested catalog for x86, x64, arm64, and UWP targets
 - Or add your own custom targets



Mon 09/12 – 2:00pm

C++ Dependencies Don't Have To Be Painful Why You Should Use a Package Manager Augustin Popa

Learn more at https://vcpkg.io

Introducing



GitHub Copilot

General availability

Earlier this summer

- Start your free trial today
- Free for students and verified OSS contributors

Copilot for Companies

Coming later this year

Sign up your organization today

Get AI based coding suggestions

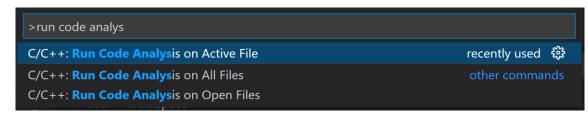
- Suggestions that match the project's context and style conventions
- Use your preferred environments
 - Integrate with popular environments like Neovim, Visual Studio, Visual Studio Code and JetBrains IDEs
- Code confidently in unfamiliar territory
 - Spend more time learning by doing.
 - Code in new languages or try something new



Detect *and fix* common errors in your code with **Clang- tidy**

"C_Cpp.codeAnalysis.runAutomatically": true

"C Cpp.codeAnalysis.clangTidy.enabled": true

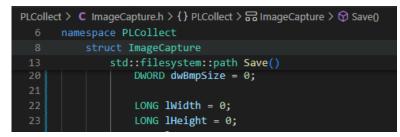


Quick Fix... Fix this cppcoreguidelines-prefer-member-initializer problem Fix all code analysis problems Clear this cppcoreguidelines-prefer-member-initializer problem Clear all code analysis problems Disable all cppcoreguidelines-prefer-member-initializer problems Show documentation for cppcoreguidelines-prefer-member-initializer

Brace pair colorization

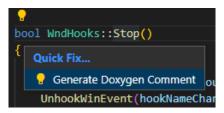
"editor.bracketPairColorization.enabled": true

Sticky headers "editor.stickyScroll.enabled": true



Doxygen comment generation

"C Cpp.doxygen.generateOnType": true



Inlay hints "editor.inlayHints.enabled": "on"

```
this->SendPackets(closing_down: true);
```

Learn more at https://aka.ms/code/relnotes





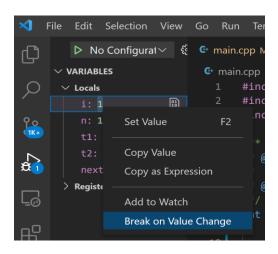
Setting up Visual Studio Code on Windows and Linux





Data breakpoints

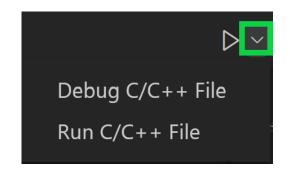
Set breakpoints in GDB for when a value stored in a memory address changes



Learn more at https://aka.ms/cpptools-databreakpoints

Apple Silicon ARM64 (M1 chip) debugging

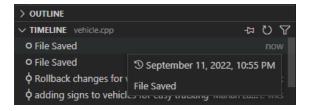
Quick run/debug play button



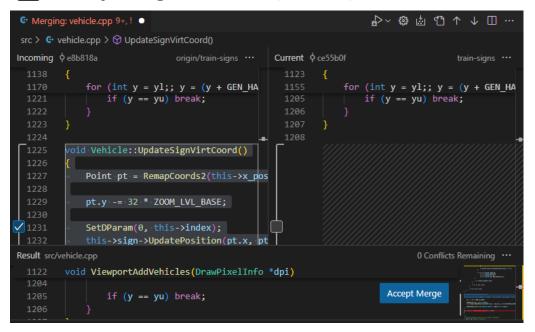


Git in Visual Studio Code

Local History "workbench.localHistory.enabled": true



3-way merge editor "git.mergeEditor": true



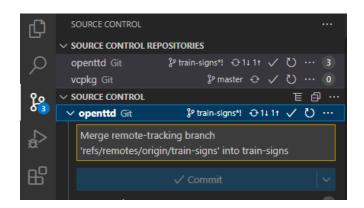
Hide Explorer files using .gitignore

"explorer.excludeGitIgnore": true

Git branch protection "git.branchProtection":["main"]



Multi-root workspace – supporting multiple SCM providers (e.g., an Azure DevOps repo side-by-side a GitHub one)





Remote development in Visual Studio Code



WSL2 – Spin up a Linux environment on Windows

Learn more at https://aka.ms/vscode-remote



VS Code Live Share – View and edit code in real time with others by sharing a link and following along

Learn more at https://aka.ms/liveshare



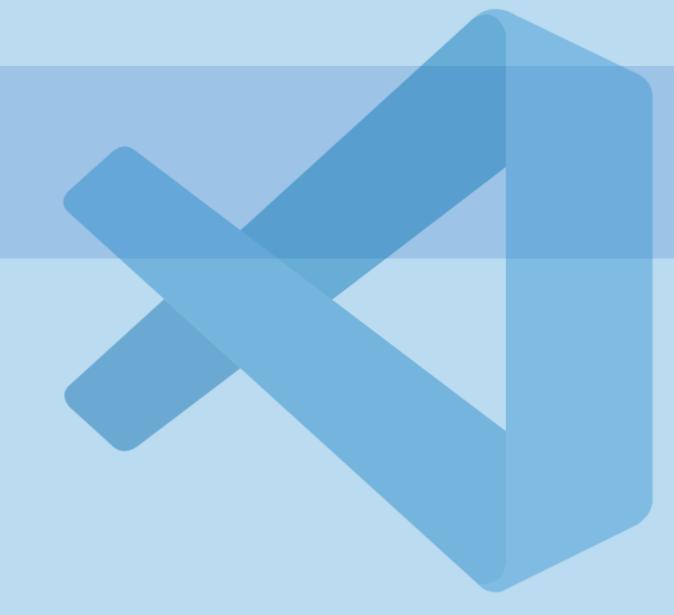
Github Codespaces - debug your C++ projects from the browser, collaborate with colleagues easily using config files

Learn more at https://aka.ms/cpp/codespaces





Visual Studio Code in the browser and cloud





GitHub Codespaces

Cloud-hosted, versioned developer environments for your GitHub repository Spins up within seconds-to-minutes

Teams and Enterprises – GA release earlier in 2022

Individuals – public preview extended

https://aka.ms/cpp/codespaces



Thurs 09/15 – 3:15pm

Reproducible Developer Environments

Michael Price



Friday 09/16 - 7:45am

GitHub Features Every C++ Developer Should Know

Michael Price



Embedded development in Visual Studio Code



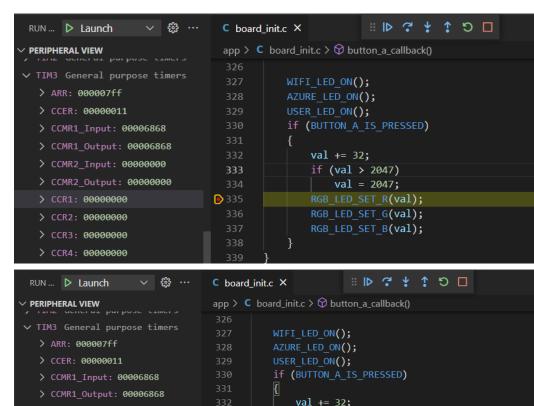
- On Chip Debugging with hardware breakpoint limits
- Peripheral and RTOS object views
- Serial monitor
- IAR official support
 - Project and build
 - CSPY debugging





Thurs 09/15 - 10:30am

Overcoming Embedded Development Tooling Challenges Marc Goodner



D 336

if (val > 2047)

val = 2047;RGB LED SET R(val);

RGB LED SET G(val);

RGB LED SET B(val);

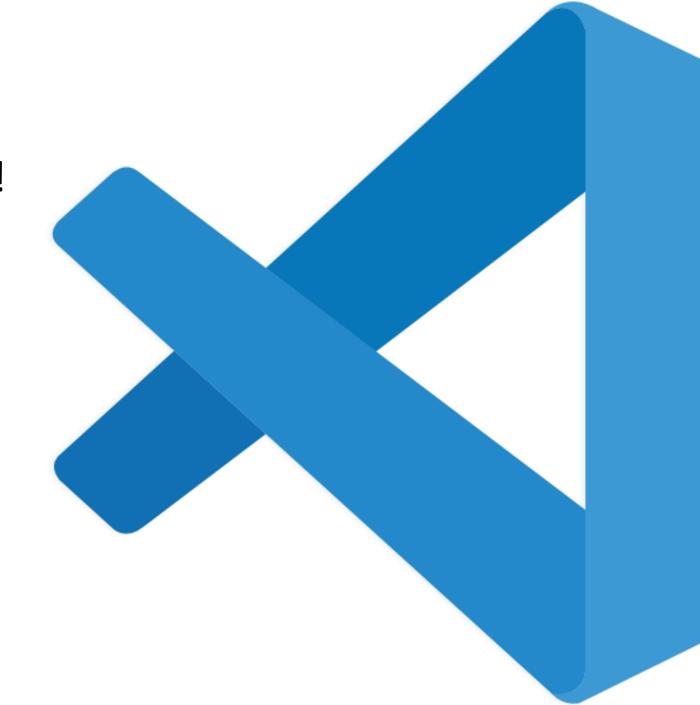
> CCMR2_Input: 00000000

> CCMR2_Output: 00000000

> CCR1: 00000020

Install Visual Studio Code!

Get started today at https://aka.ms/cpp/code



Thank you!

Our sessions at CppCon 2022

Monday 12th

- The Imperatives Must Go Victor Ciura
- What's New in C++ 23 Sy Brand
- C++ Dependencies Don't Have to Be Painful Augustin Popa
- How Microsoft Uses C++ to Deliver Office Zachary Henkel

Tuesday 13th

- High-performance Load-time Implementation
 Selection Joe Bialek, Pranav Kant
- C++ MythBusters Victor Ciura

Wednesday 14th

• memory-safe C++ - Jim Radigan

Thursday 15th

- What's New for You in Visual Studio Code Marian Luparu, Sinem Akinci
- Overcoming Embedded Development Tooling Challenges – Marc Goodner
- Reproducible Developer Environments Michael Price

Friday 16th

- GitHub Features Every C++ Developer Should Know
 Michael Price
- What's New in Visual Studio 2022 Marian Luparu, Sy Brand
- C++ Complexity (Keynote) Herb Sutter

Enjoy the rest of the conference!

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Backup

Initial Setup



Install **Homebrew** following instructions from

```
https://brew.sh
```

```
xcode-select -install
brew doctor
brew install cmake ninja pkg-config
```

Install Visual Studio Code from https://code.visualstudio.com

Install Visual Studio Code extensions

```
code --install-extension

ms-vscode.cpptools-extension-pack
ms-vscode.makefile-tools
ms-vsliveshare.vsliveshare-pack
ms-vscode-remote.vscode-remote-extensionpack
github.copilot
github.vscode-pull-request-github

# C/C++ Extension Pack
# Makefile Tools
# Live Share Extension Pack
# Remote Development
# GitHub Copilot
# GitHub Pull Requests and Issues
```

Initial Setup



Windows

Install **Homebrew** following instructions from

https://brew.sh

```
xcode-select -install
brew doctor
brew install cmake ninja pkg-config
```

Install **Visual Studio 2022** with C++ workload from https://visualstudio.com

– or –

Install MSys2 & mingw-w64 from https://msys2.org

pacman -S mingw-w64-x86_64-gcc mingw-w64-x86_64-cmake mingw-w64-x86_64-ninja

Install Visual Studio Code from https://code.visualstudio.com

Install Visual Studio Code extensions

```
code --install-extension

ms-vscode.cpptools-extension-pack
ms-vscode.makefile-tools
ms-vsliveshare.vsliveshare-pack
ms-vscode-remote.vscode-remote-extensionpack
github.copilot
github.vscode-pull-request-github

# C/C++ Extension Pack
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Initial Setup







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Install **Visual Studio 2022** with C++ workload from

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– or –

Install MSys2 & mingw-w64 from

https://msys2.org

```
pacman -S mingw-w64-x86_64-gcc
mingw-w64-x86_64-cmake mingw-
w64-x86 64-ninja
```

Install **WSLg on Windows 11** following instructions from https://aka.ms/wslg-ubuntu

sudo apt install

build-essential

cmake ninja-build pkg-config

bison gdb archive libsdl2-dev

autoconf autoconf-archive

Install Visual Studio Code from https://code.visualstudio.com

Install Visual Studio Code extensions

```
code --install-extension
   ms-vscode.cpptools-extension-pack
   ms-vscode.makefile-tools
   ms-vsliveshare.vsliveshare-pack
   ms-vscode-remote.vscode-remote-extensionpack
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# C/C++ Extension Pack
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```