C++ in our world

8.12. 2014 FI MUNI
Brno
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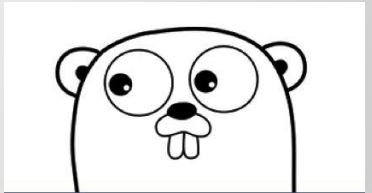
http://www.ysofters.com

Grab the source code

https://github.com/ysoftdevs/cpp-examples

Who am I?

Blog: http://georgik.sinusgear.com



C++ today
NuGet
REST communication
Gradle & C++
Jenkins
IDEs
Go language

Programming languages we know **strongly** influence the way we think about programming.

- JS Conf 2014 - Jenna Zeigen

Breeze of fresh ideas starts blowing from NodeJS, AngularJS and others

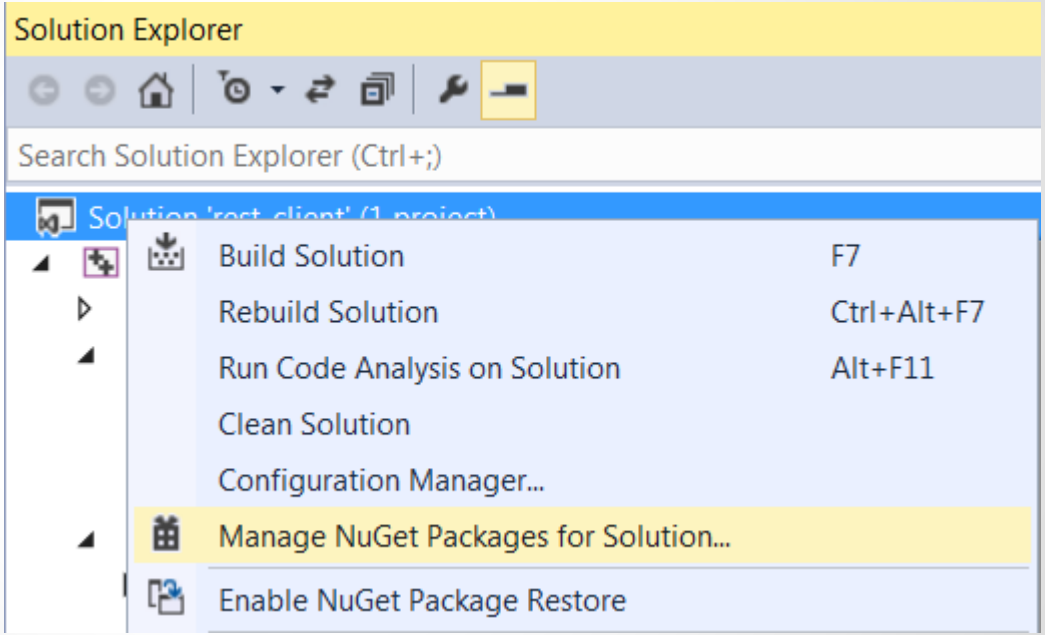
Old rust is falling apart

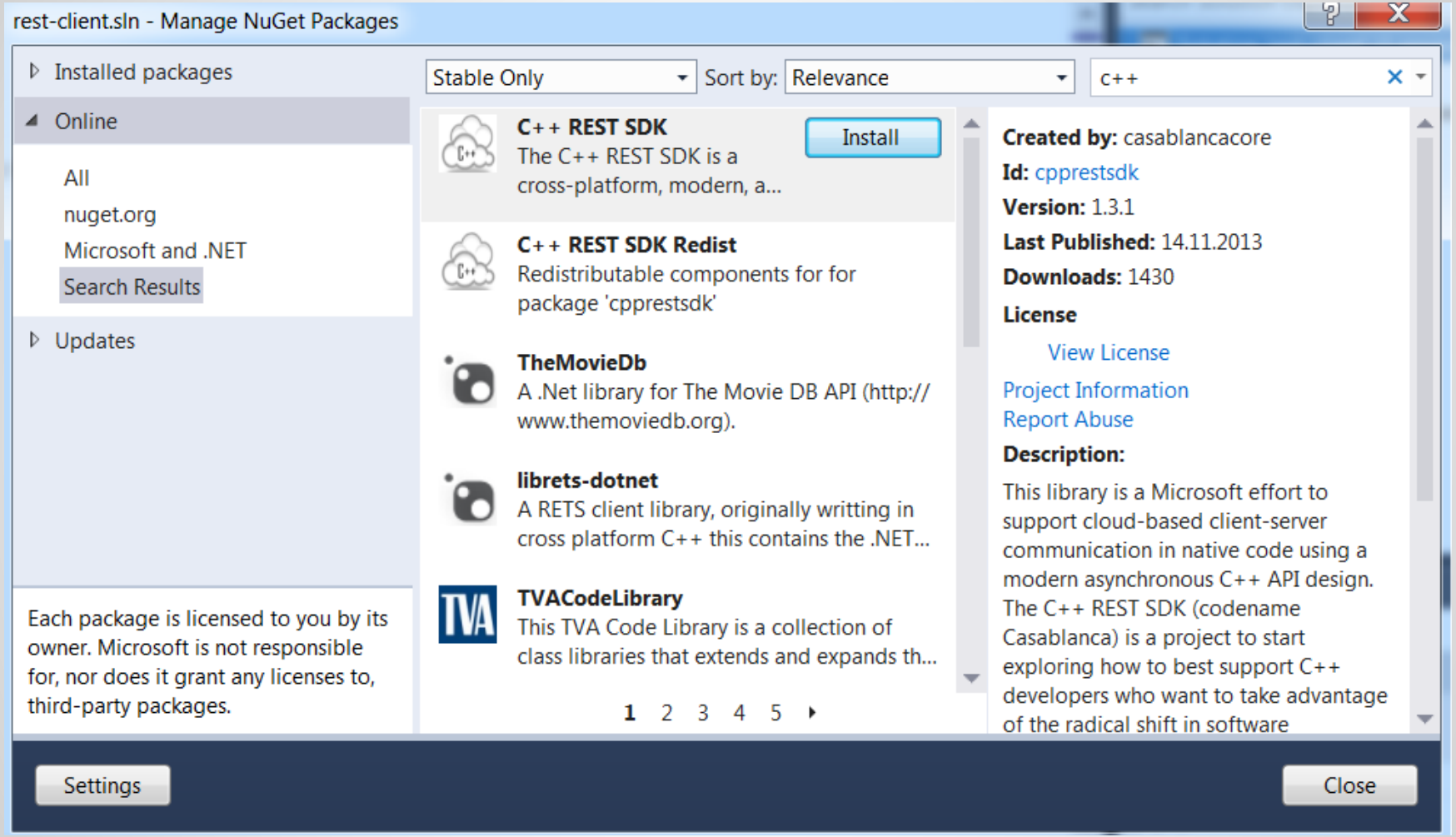
New shiny tools and libraries


Visual Studio
2013

NuGet - http://www.nuget.org

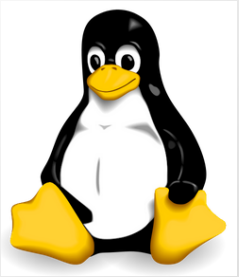

NuGet.Tools.2013


Solution Explorer
Search Solution Explorer (Ctrl+;)
Build Solution F7
Rebuild Solution Ctrl+Alt+F7
Run Code Analysis on Solution Alt+F11
Clean Solution
Configuration Manager...
Manage NuGet Packages for Solution...
Enable NuGet Package Restore


rest-client.sln - Manage NuGet Packages
Installed packages
Online
All
nuget.org
Microsoft and .NET
Search Results
Updates
Each package is licensed to you by its owner. Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.
Stable Only
Sort by: Relevance
c++
C++ REST SDK
The C++ REST SDK is a cross-platform, modern, a...
Install
C++ REST SDK Redist
Redistributable components for for package 'cpprestsdk'
TheMovieDb
A .Net library for The Movie DB API (http://www.themoviedb.org).
librets-dotnet
A RETS client library, originally writting in cross platform C++ this contains the .NET...
TVACodeLibrary
This TVA Code Library is a collection of class libraries that extends and expands th...
1 2 3 4 5
Created by: casablancacore
Id: cpprestsdk
Version: 1.3.1
Last Published: 14.11.2013
Downloads: 1430
License
View License
Project Information
Report Abuse
Description:
This library is a Microsoft effort to support cloud-based client-server communication in native code using a modern asynchronous C++ API design. The C++ REST SDK (codename Casablanca) is a project to start exploring how to best support C++ developers who want to take advantage of the radical shift in software
Settings
Close

C++ REST SDK (codename "Casablanca")

http://casablanca.codeplex.com/



C++ Rest SDK

Talk: http://youtu.be/mvDDHxBrwU8

Slides: https://www.codeplex.com/Download?ProjectName=casablanca&DownloadId=683527

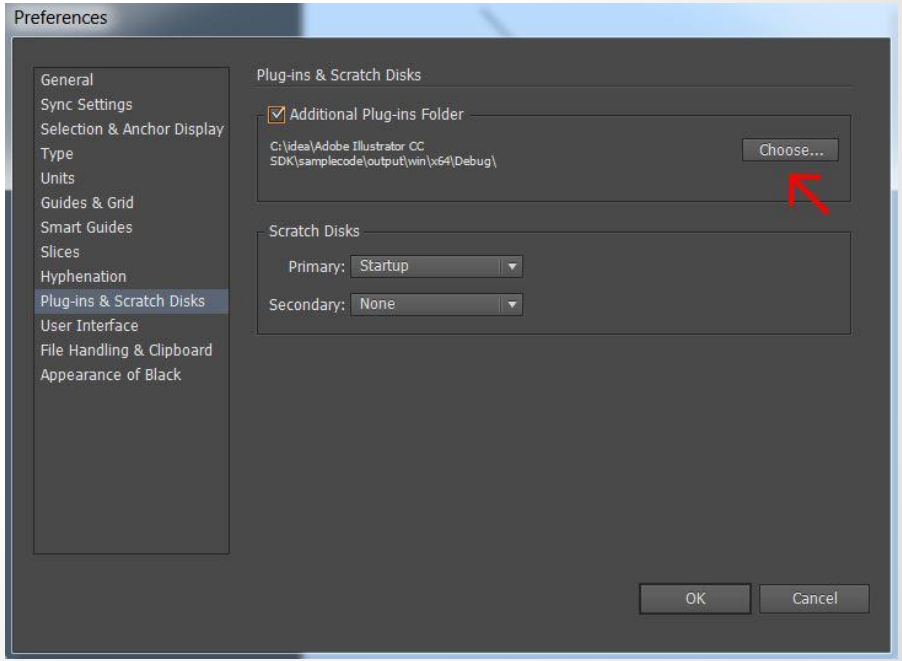
Example: rest-client

```
http_client client(L"http://feeds.feedburner.com/PythonInsider?format=xml");
http_request request(methods::GET);
std::wcout << "Initializing client" << std::endl;
client.request(request).then([](http_response response)
{
    // Perform actions here to inspect the HTTP response...
    if (response.status_code() == status_codes::OK)
    {
        std::wcout << "Ok.";
    } else {
        std::wcout << "Error.";
    }

    std::wcout << " Result code : " << response.status_code() << std::endl;
    std::wcout << "Response, reading 512 bytes" << std::endl;
    istream bodyStream = response.body();
    container_buffer<std::string> inStringBuffer;

    return bodyStream.read(inStringBuffer, 512).then([inStringBuffer](size_t bytesRead){
        const std::string &text = inStringBuffer.collection();
        std::wcout << text.c_str();
    });
}).wait();
```

Adobe Creative Cloud

Illustrator plugin

http://www.adobe.com/devnet/illustrator/sdk.html

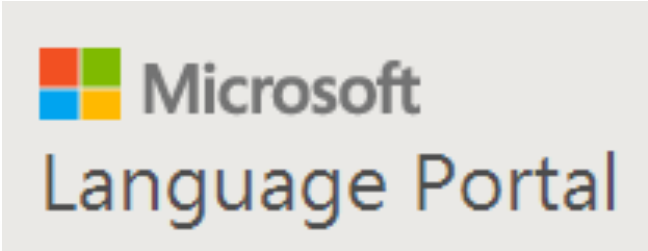


Demo: LiveDropShadow
Fix for VS2013: http://bit.ly/1w0IxZ8

Photoshop plugin

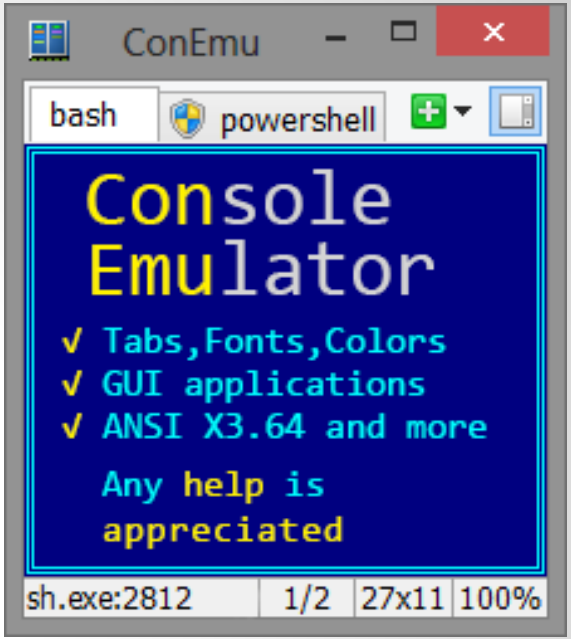
http://www.adobe.com/devnet/photoshop/sdk.html

L10N - verify your translations



http://www.microsoft.com/Language

Conemu Maximus 5



Powerful terminal for Windows

use with PowerShell, Python, Ruby…

https://code.google.com/p/conemu-maximus5/

chocolatey

CMake 3.0.2

By: scaftw

```
C:\> choco install cmake
```

CMake is a family of tools designed to build, test and package software. CMake is used to control the software compilation process using simple platform and compiler independent configuration files. CMake generates native makefiles and workspaces that can be used in the compiler environment of your choice.

3,884 downloads | Tags make build test package

Yum/Apt-like installation of Win packages

https://chocolatey.org

Gradle Native Builds
C/C++, Objective-C

http://www.gradle.org/docs/current/userguide/nativeBinaries.html

Build tool

Exensible by plugins

Power of Domain Specific Language

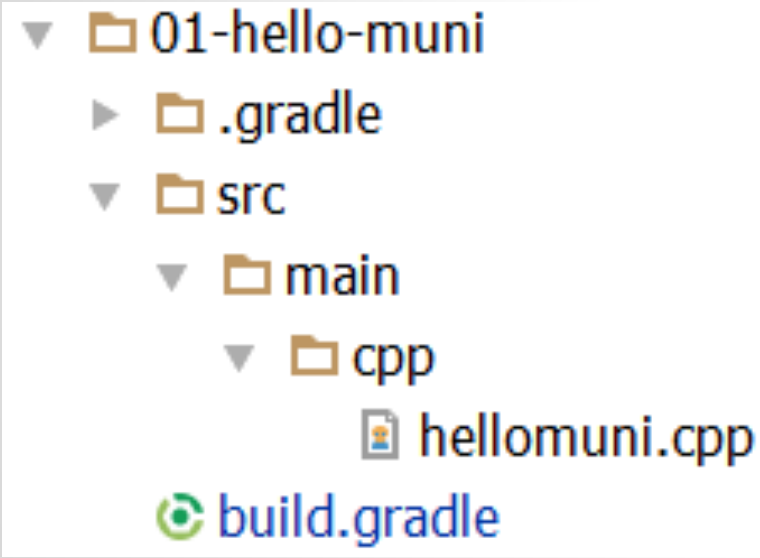
Plugin system

Motivation

- focussed functionality is added by plugins
- reuse patterns and practices
- avoiding boilerplate build code

Tons of plugins: http://plugins.gradle.org/

Project structure

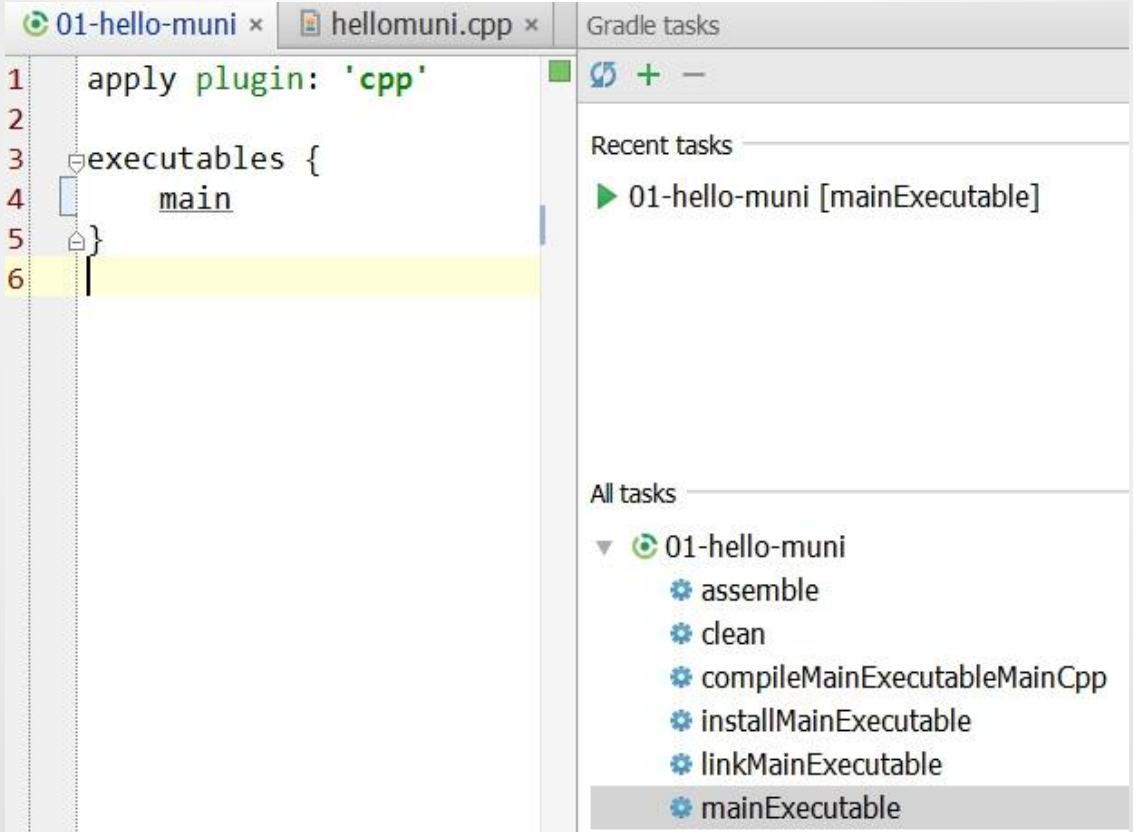


Convention over configuration

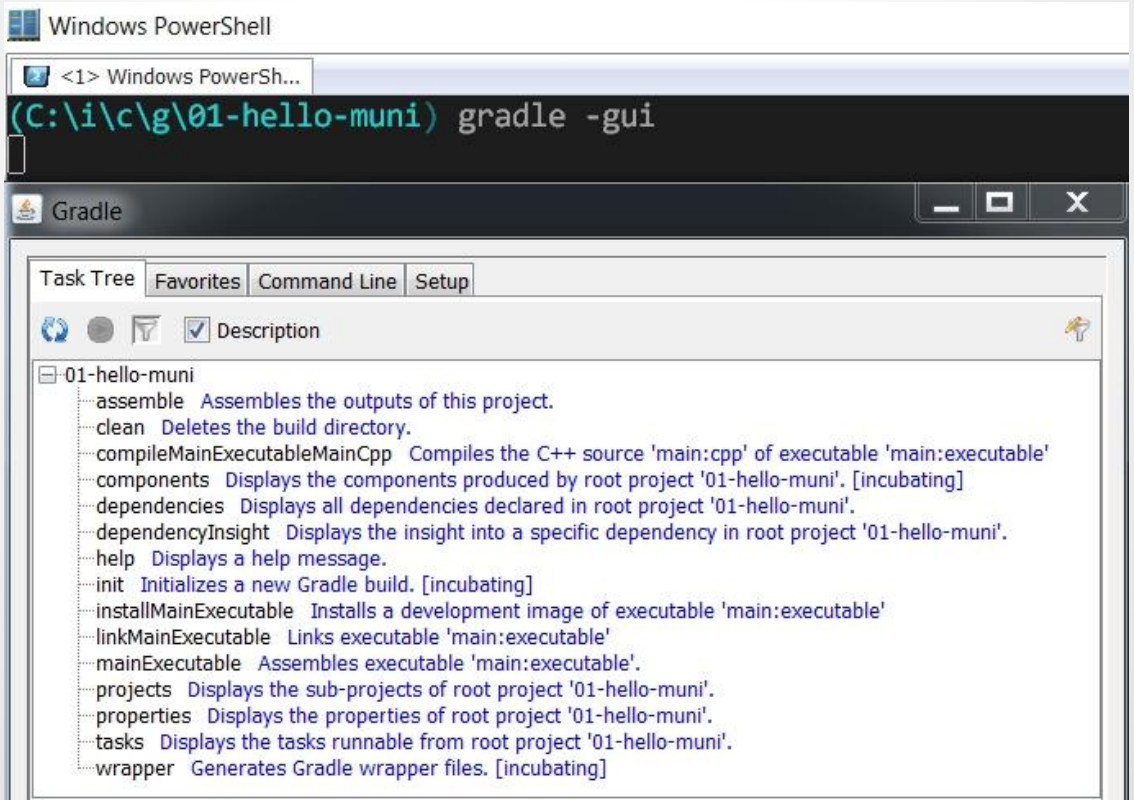
Decrease number of decisions that developers need to make

http://en.wikipedia.org/wiki/Convention_over_configuration

CPP plugin


01-hello-muni
hellomuni.cpp
Gradle tasks
1 apply plugin: 'cpp'
2
3 executables {
4 main
5 }
6
Recent tasks
01-hello-muni [mainExecutable]
All tasks
01-hello-muni
assemble
clean
compileMainExecutableMainCpp
installMainExecutable
linkMainExecutable
mainExecutable

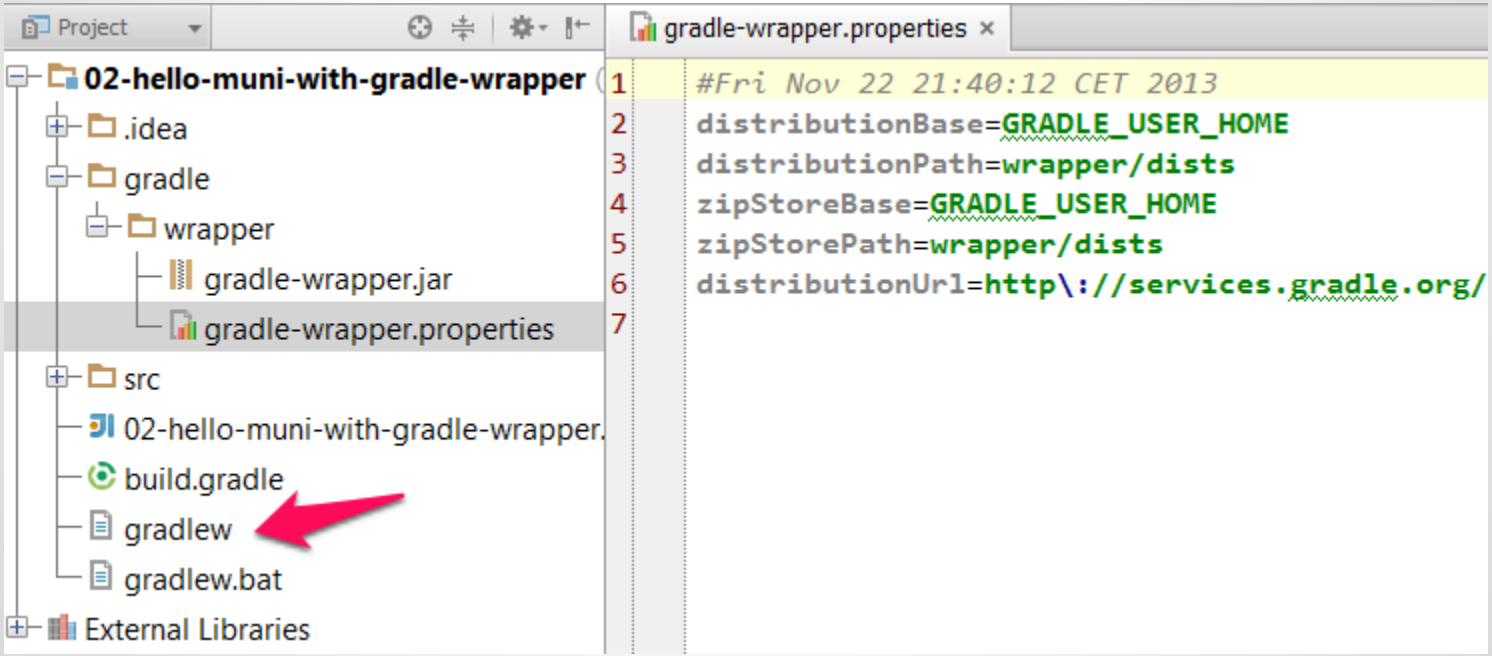
Gradle command line & GUI



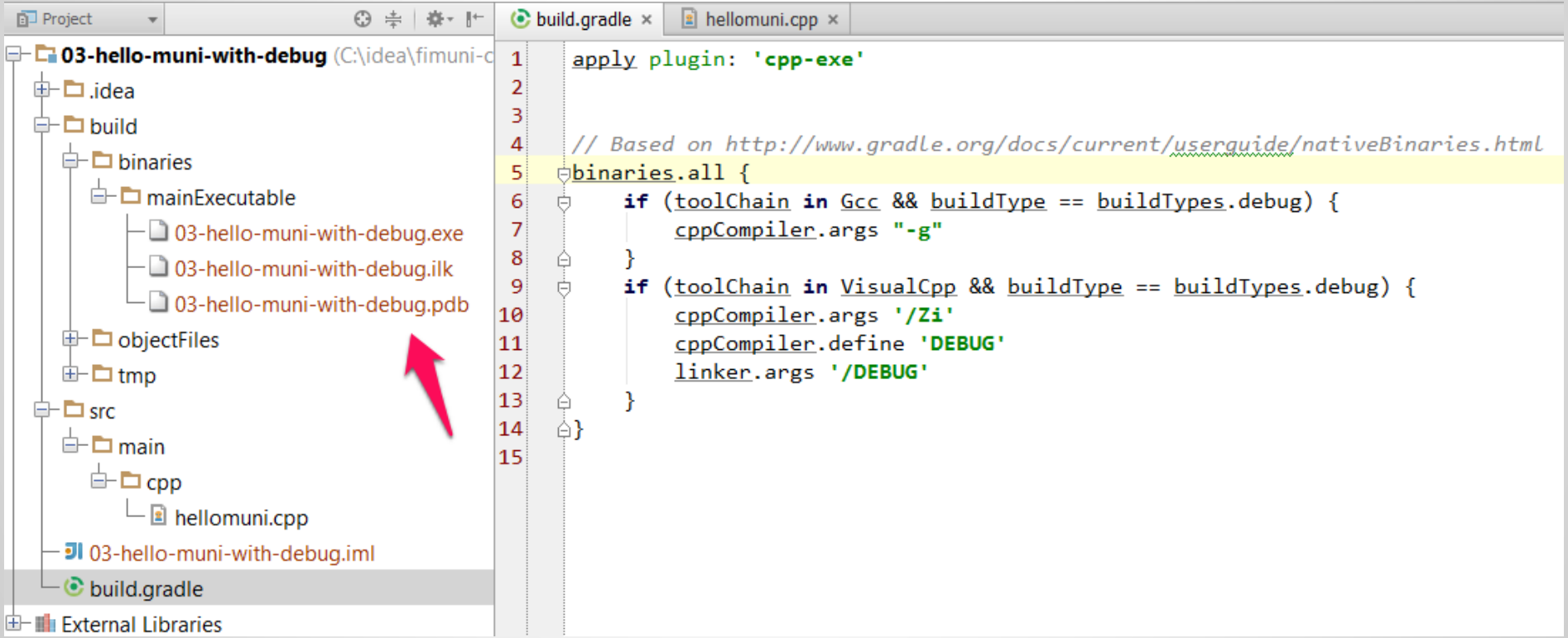
gradle components

```
(C:\i\c\g\01-hello-muni) gradle components
:components

------------------------------------------------------------
Root project
------------------------------------------------------------

Native executable 'main'
------------------------

Source sets
    C++ source 'main:cpp'
        src\main\cpp

Binaries
    Executable 'main:executable'
        build using task: :mainExecutable
        platform: current
        build type: debug
        flavor: default
        tool chain: Tool chain 'visualCpp' (Visual Studio)
        executable file: build\binaries\mainExecutable\main.exe
```

Gradle wrapper



Gradle - compile with debug



Gradle build Linux package

Netflix Nebula OS Package plugin:

http://plugins.gradle.org/plugin/nebula.os-package

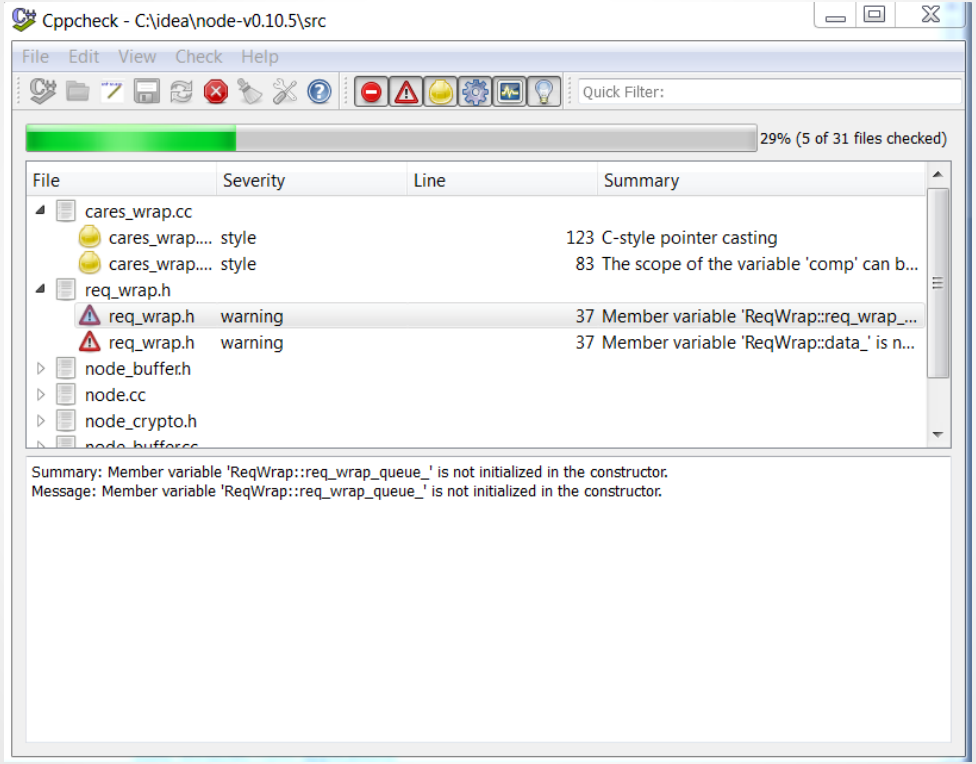
```
plugins {
  id "nebula.os-package" version "2.0.3"
}

apply plugin: 'cpp'

executables {
    hello {}
}

ospackage {
    packageName = "hello"
    version = "1.0"
    release = 1
    os = LINUX
    packageDescription = "Linux Gradle hello package"
    summary = "contains binary with hello world example"

    from("build/binaries/helloExecutable") {
        into "/usr/bin/"
    }
}

buildDeb {
    requires("libc6")
}

buildRpm {
    requires("libc6")
}
```

Build package

```
┌─(georgik@pidi:pts/5)──(...-plugin/04-hello-linux-package)─┐
└─(17:33:%)── gradle hE bD                          ──(Sat,Dec06)─┘
:compileHelloExecutableHelloCpp
:linkHelloExecutable
:helloExecutable
:buildDeb

BUILD SUCCESSFUL

Total time: 7.12 secs
┌─(georgik@pidi:pts/5)──(...-plugin/04-hello-linux-package)─┐
└─(17:33:%)── dpkg -c build/distributions/hello_1.0-1_all.deb
drwxr-xr-x georgik/0         0 2014-12-06 17:33 ./usr/
drwxr-xr-x georgik/0         0 2014-12-06 17:33 ./usr/bin/
-rwxr-xr-x georgik/0      6367 2014-12-06 17:33 ./usr/bin/hello
```

Note: Gradle supports abbreviation. You can write hE instead of helloExecutable

Cppcheck


Cppcheck - C:\idea\node-v0.10.5\src
File Edit View Check Help
Quick Filter:
29% (5 of 31 files checked)
File
Severity
Line
Summary
cares_wrap.cc
cares_wrap.... style 123 C-style pointer casting
cares_wrap.... style 83 The scope of the variable 'comp' can b...
req_wrap.h
req_wrap.h warning 37 Member variable 'ReqWrap::req_wrap_...
req_wrap.h warning 37 Member variable 'ReqWrap::data_' is n...
node_buffer.h
node.cc
node_crypto.h
Summary: Member variable 'ReqWrap::req_wrap_queue_' is not initialized in the constructor.
Message: Member variable 'ReqWrap::req_wrap_queue_' is not initialized in the constructor.

Continuous integration

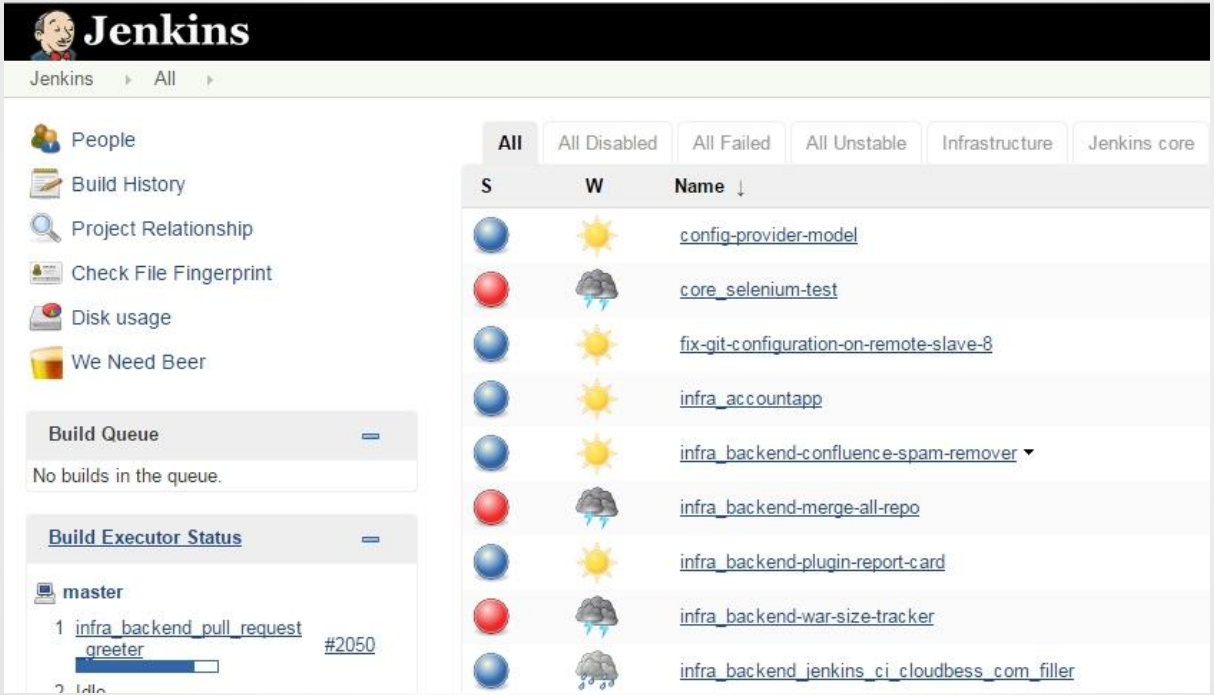
Jenkins

Atlassian

Bamboo

TeamCity

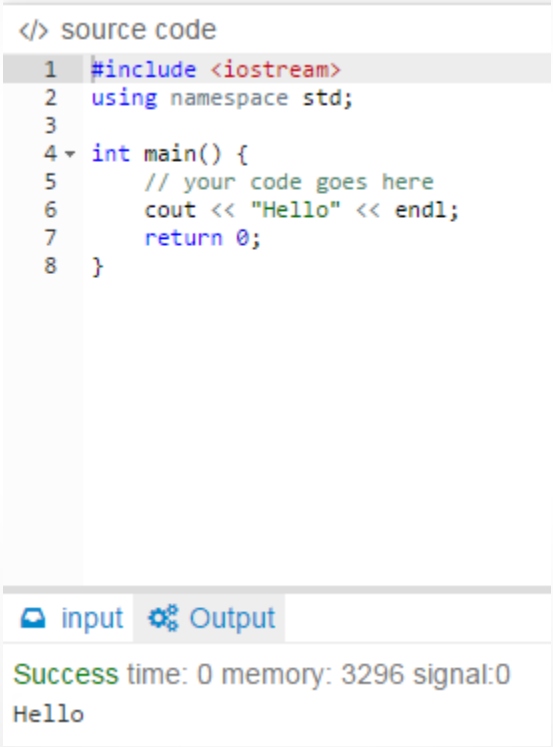
Jenkins



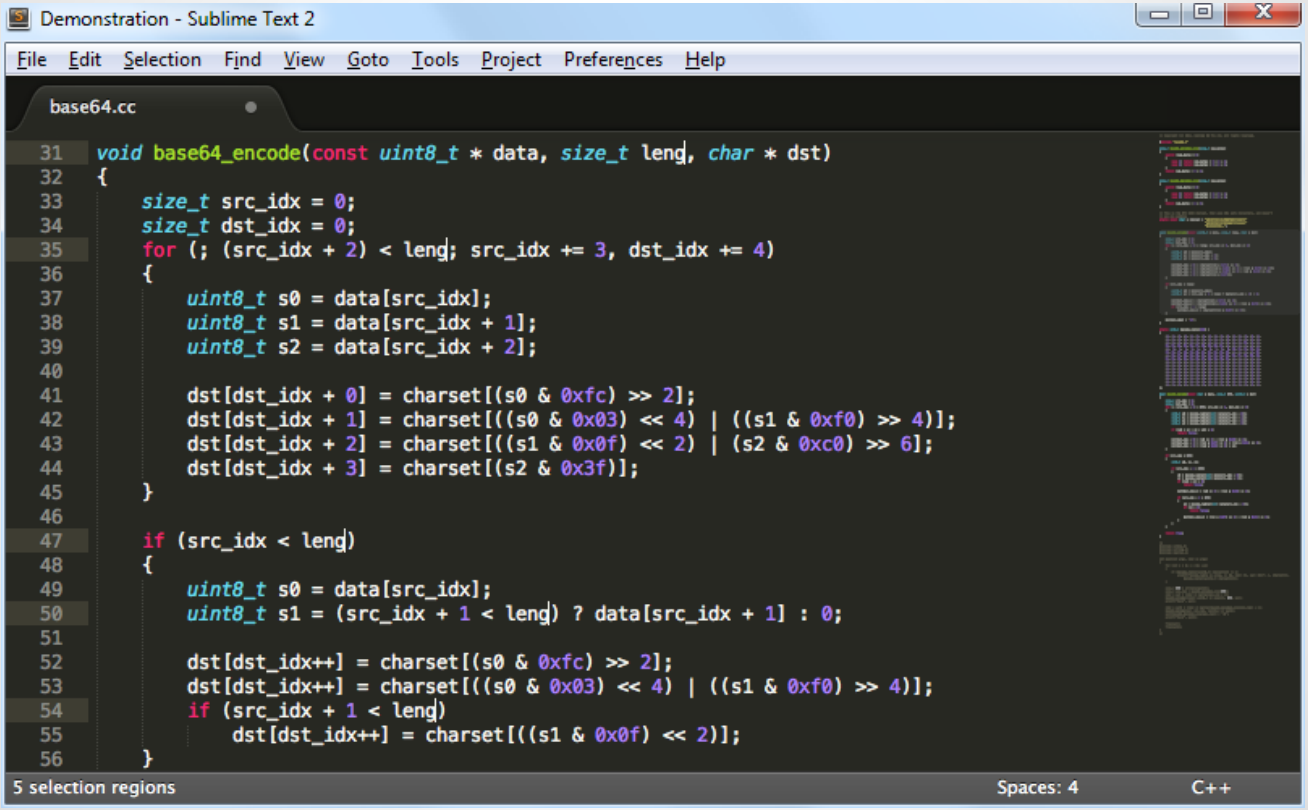
Hit for Windows users: Do not install Jenkins into path with special characters and blank space.
E.g: Wrong: C:\Program Files (x86)\Jenkins. Correct: Use C:\projects\jenkins

IDE & Text editors

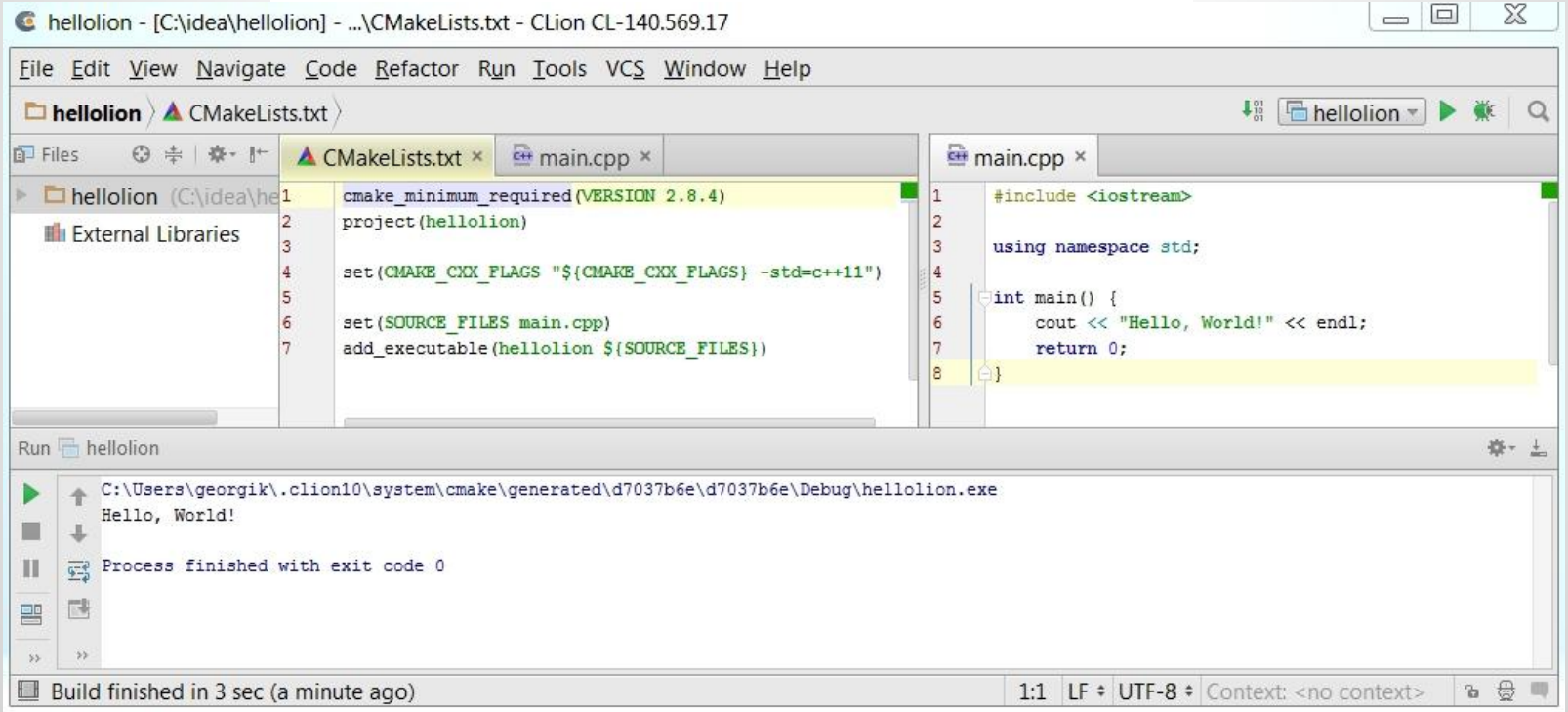
Ideone.com


source code
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5 // your code goes here
6 cout << "Hello" << endl;
7 return 0;
8 }
input
Output
Success time: 0 memory: 3296 signal:0
Hello

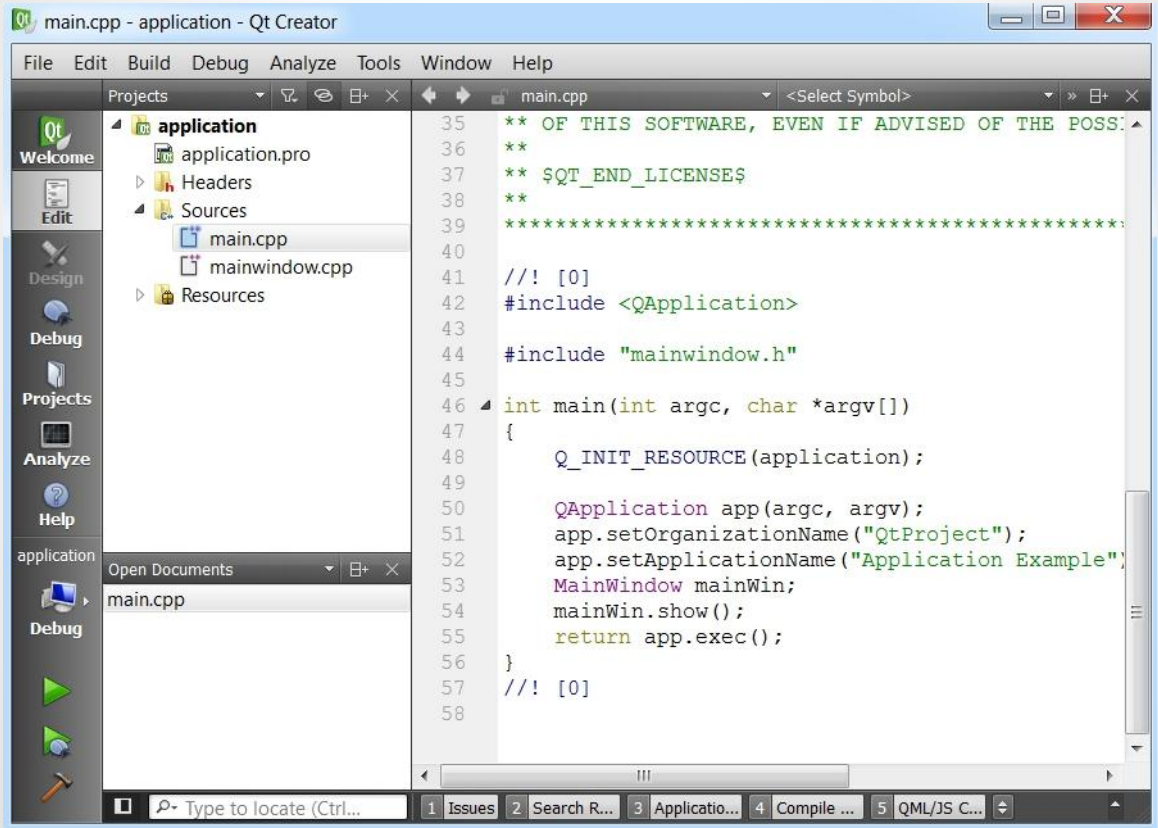
Sublime Text



CLion


hellolion - [C:\idea\hellolion] - ...\CMakeLists.txt - CLion CL-140.569.17
File Edit View Navigate Code Refactor Run Tools VCS Window Help
hellolion CMakeLists.txt
hellolion
Files
CMakeLists.txt
main.cpp
hellolion (C:\idea\he
External Libraries
1 cmake_minimum_required(VERSION 2.8.4)
2 project(hellolion)
3
4 set(CMAKE_CXX_FLAGS "${CMAKE_CXX_FLAGS} -std=c++11")
5
6 set(SOURCE_FILES main.cpp)
7 add_executable(hellolion ${SOURCE_FILES})
main.cpp
1 #include <iostream>
2
3 using namespace std;
4
5 int main() {
6 cout << "Hello, World!" << endl;
7 return 0;
8 }
Run hellolion
C:\Users\georgik\.clion10\system\cmake\generated\d7037b6e\d7037b6e\Debug\hellolion.exe
Hello, World!
Process finished with exit code 0
Build finished in 3 sec (a minute ago)
1:1 LF UTF-8 Context: <no context>

Qt Creator


main.cpp - application - Qt Creator
File Edit Build Debug Analyze Tools Window Help
Projects
application
application.pro
Headers
Sources
main.cpp
mainwindow.cpp
Resources
Open Documents
main.cpp
Welcome
Edit
Design
Debug
Projects
Analyze
Help
application
Debug
main.cpp
<Select Symbol>
** OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSS
** $QT_END_LICENSE$
//! [0]
#include <QApplication>
#include "mainwindow.h"
int main(int argc, char *argv[])
{
Q_INIT_RESOURCE(application);
QApplication app(argc, argv);
app.setOrganizationName("QtProject");
app.setApplicationName("Application Example");
MainWindow mainWin;
mainWin.show();
return app.exec();
}
//! [0]
Type to locate (Ctrl...
1 Issues
2 Search R...
3 Applicatio...
4 Compile ...
5 QML/JS C...

From desktop to cloud

Software is slow

Software is hard to write

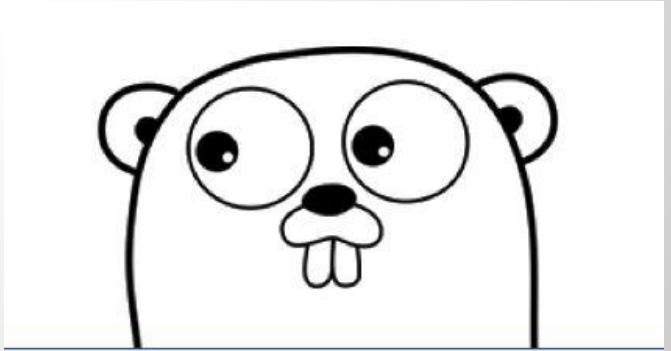
Software is hard to scale

Go

http://golang.org

Authors:

- Ken Thompson - known for Unix
- Rob Pike - known for UTF-8
- Robert Griesemer



Main features of language

syntax patterns from dynamic languages

performance of C

blazing fast compilation

output one binary

concurrency

libraries from internet (e.g. Github)

works on: Mac, Linux, Windows and more...

Materials

Andreas Krennmair

http://synflood.at/tmp/golang-slides/mrmcd2012.html#1

Steve Francia

http://spf13.com/presentation/first-go-app/

YSofters

Twitter: @ysoftdevs

GitHub: github.com/ysoftdevs

Blog: www.ysofters.com

Technology Hour: www.meetup.com/ysoft-th