

# Práce s knihovnami

Karel Richta a kol.

katedra počítačů FEL ČVUT v Praze

Přednášky byly připraveny s pomocí materiálů, které vyrobili Ladislav Vágner, Pavel Strnad, Martin Hořeňovský, Aleš Hrabalík a Martin Mazanec

© Karel Richta, 2015

Programování v C++, A7B36PJC

09/2015, Lekce 8

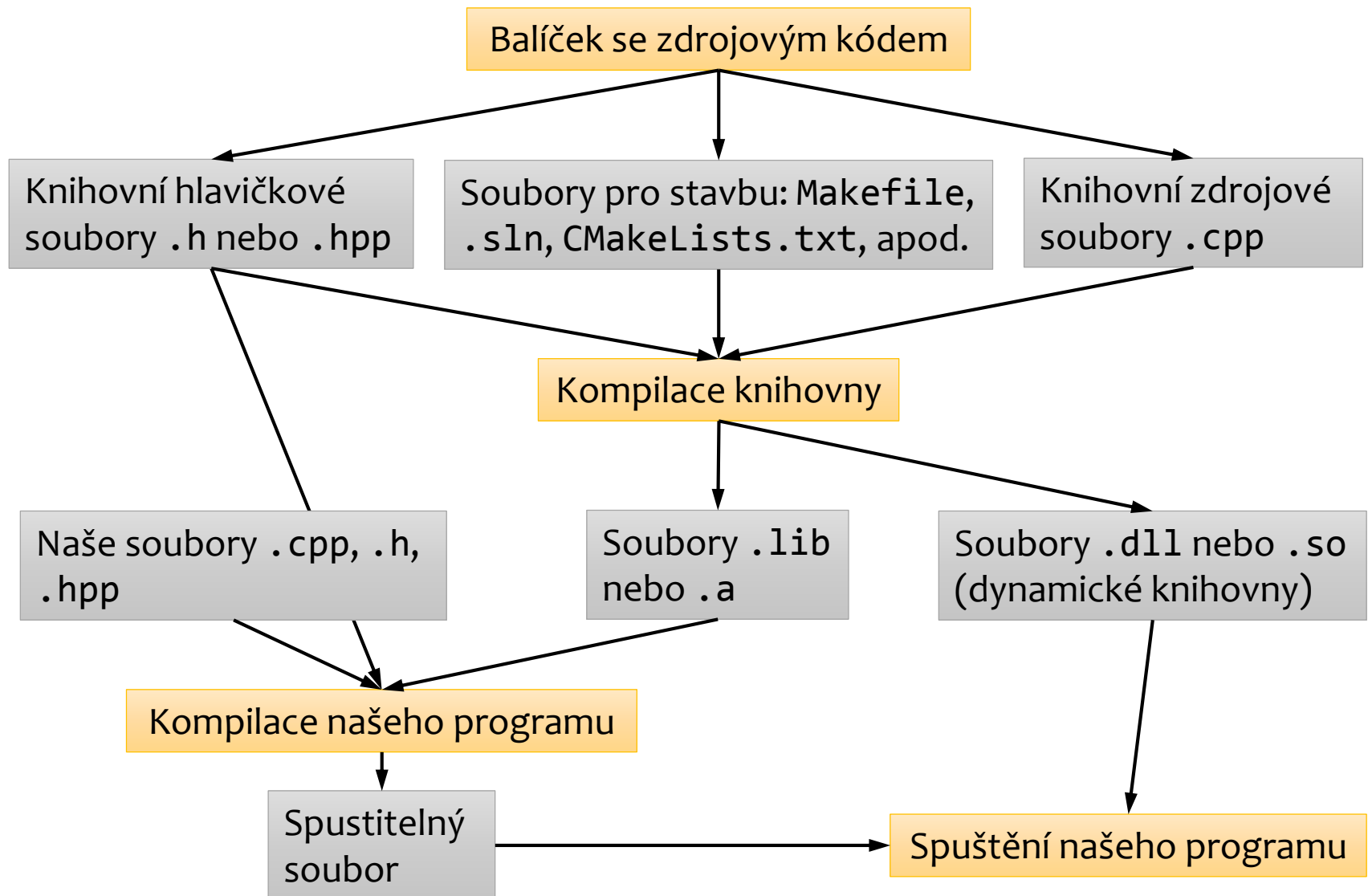
<https://cw.fel.cvut.cz/wiki/courses/a7b36pjc/start>



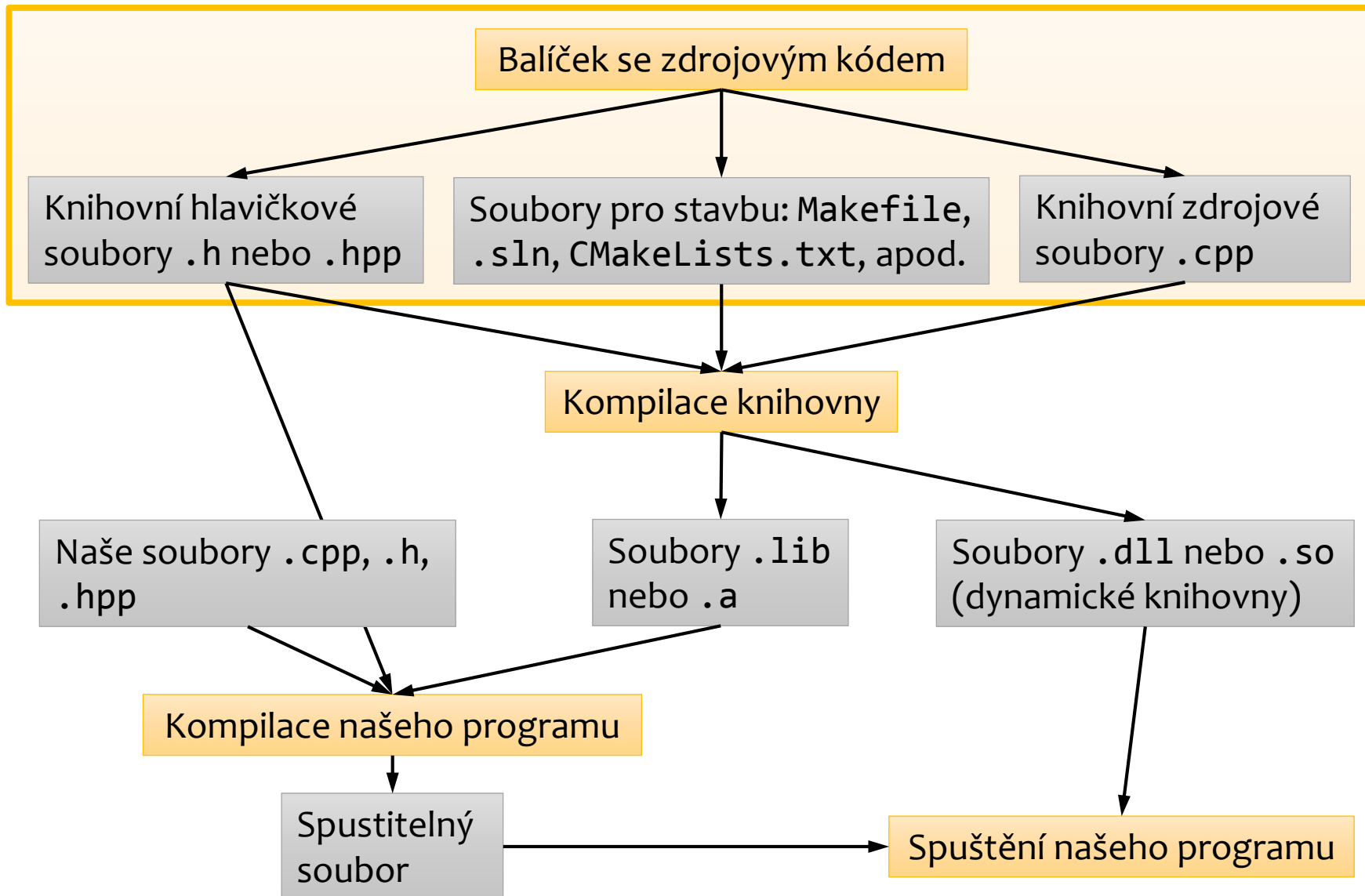
# Knihovna Poco::Net

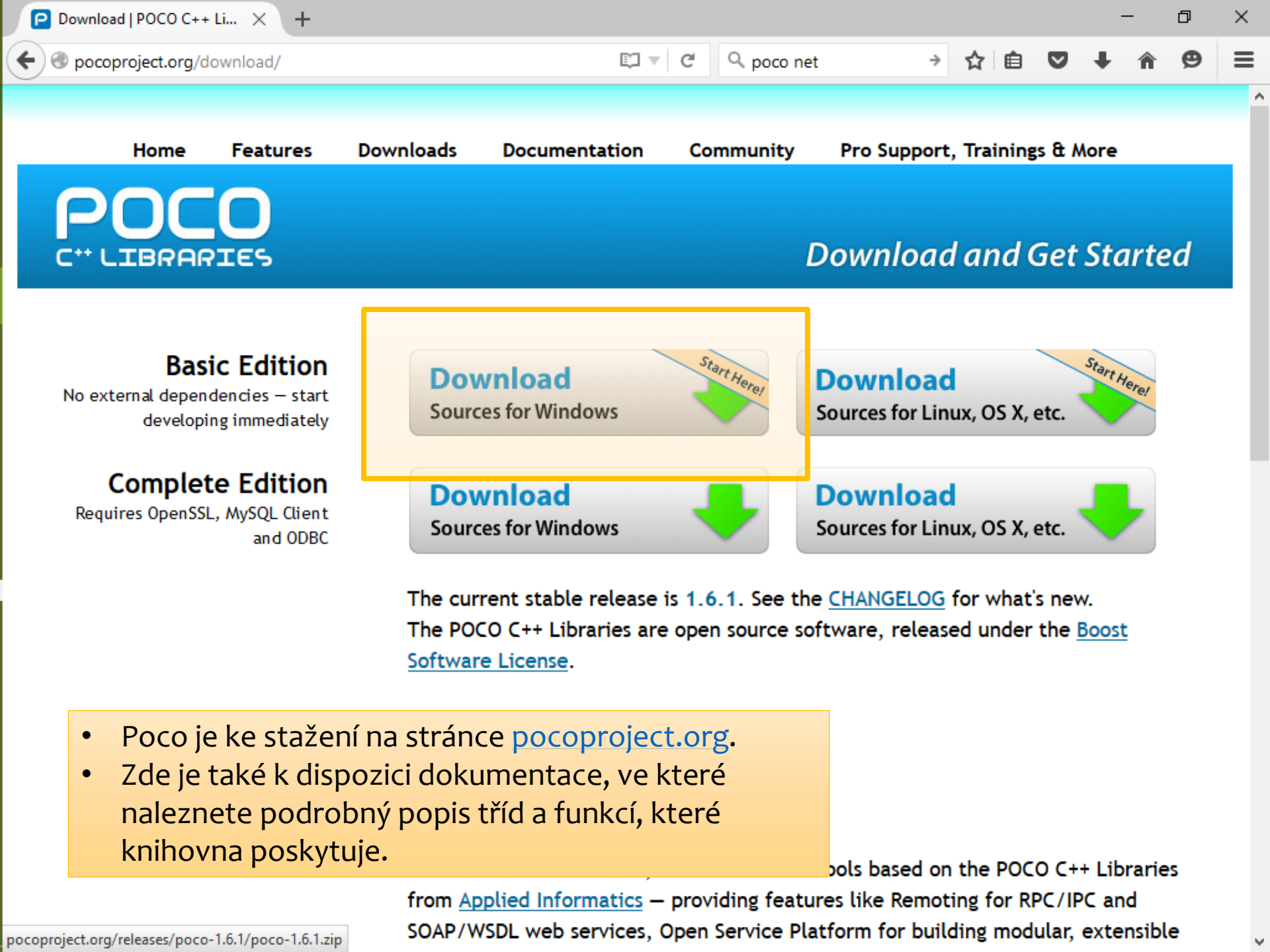
- Umožňuje snadný přístup k síti a webovým službám.
- Obsahuje třídy a funkce pro práci s technologiemi:
  - HTTP, FTP
  - SMTP, POP3
  - TCP/IP, UDP
- Instalace na Linuxu:
  - `sudo apt-get install libpoconet9` (nebo `libpoconet9-dbg`)
- Další knihovny z balíčku Poco:
  - Poco::Foundation – užitečné nástroje, např. práce se soubory, logování, datum a čas, systém událostí
  - Poco::XML, Poco::JSON – další webové technologie
  - Poco::Util – konfigurace programu ze souboru a z příkazové řádky
  - Poco::Crypto – kryptografie
  - Poco::Data – přístup k databázím (MySQL, SQLite)
  - Poco::Zip – komprese

# Práce s knihovnou



# Práce s knihovnou





# POCO

C++ LIBRARIES

Download and Get Started

## Basic Edition

No external dependencies – start developing immediately

## Complete Edition

Requires OpenSSL, MySQL Client and ODBC

Download

Sources for Windows



Download

Sources for Linux, OS X, etc.



Download

Sources for Windows



Download

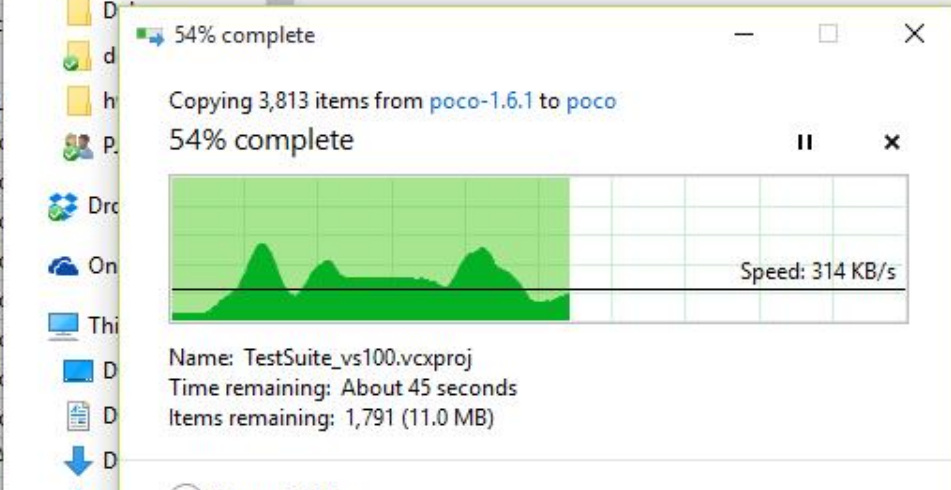
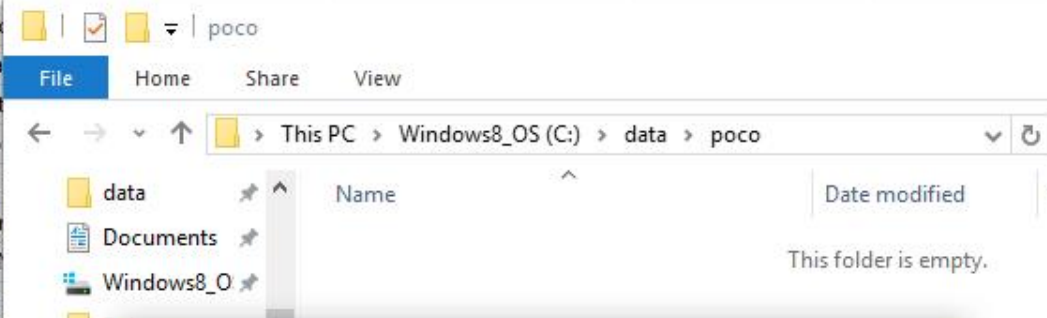
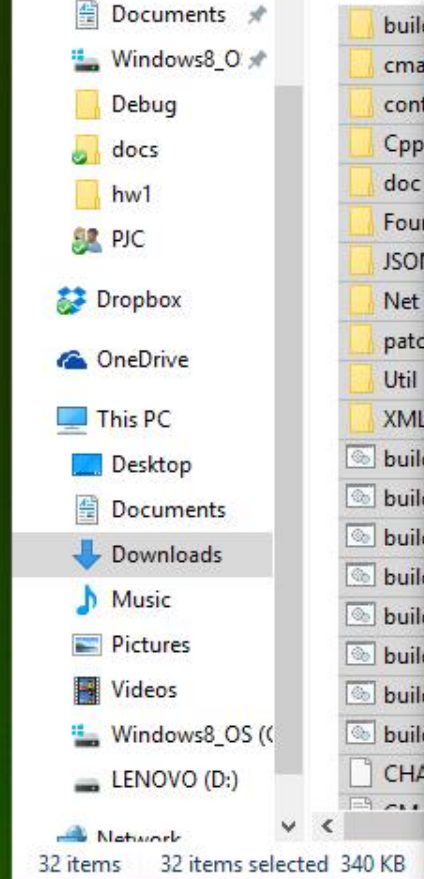
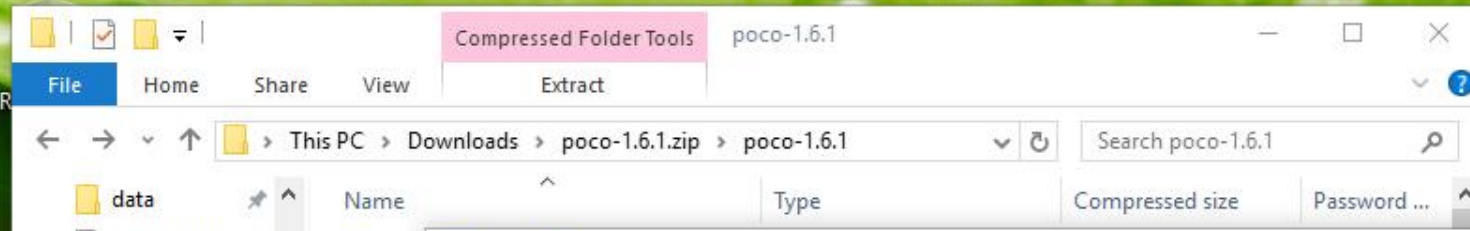
Sources for Linux, OS X, etc.



The current stable release is **1.6.1**. See the [CHANGELOG](#) for what's new. The POCO C++ Libraries are open source software, released under the [Boost Software License](#).

- POCO je ke stažení na stránce [pocoproject.org](http://pocoproject.org).
- Zde je také k dispozici dokumentace, ve které naleznete podrobný popis tříd a funkcí, které knihovna poskytuje.

Products based on the POCO C++ Libraries from [Applied Informatics](#) – providing features like Remoting for RPC/IPC and SOAP/WSDL web services, Open Service Platform for building modular, extensible



- Rozbalte .zip soubor do nějaké dobře přístupné složky.
- Cestu k rozbaleným souborům budeme několikrát hledat a psát, takže se vyplatí, když bude krátká.
- Na obrázku: c : \data \poco

# Práce s knihovnou

Balíček se zdrojovým kódem

Knihovnní hlavičkové soubory .h nebo .hpp

Soubory pro stavbu: Makefile, .sln, CMakeLists.txt, apod.

Knihovnní zdrojové soubory .cpp

Kompilace knihovny

Naše soubory .cpp, .h, .hpp

Soubory .lib nebo .a

Soubory .dll nebo .so (dynamické knihovny)

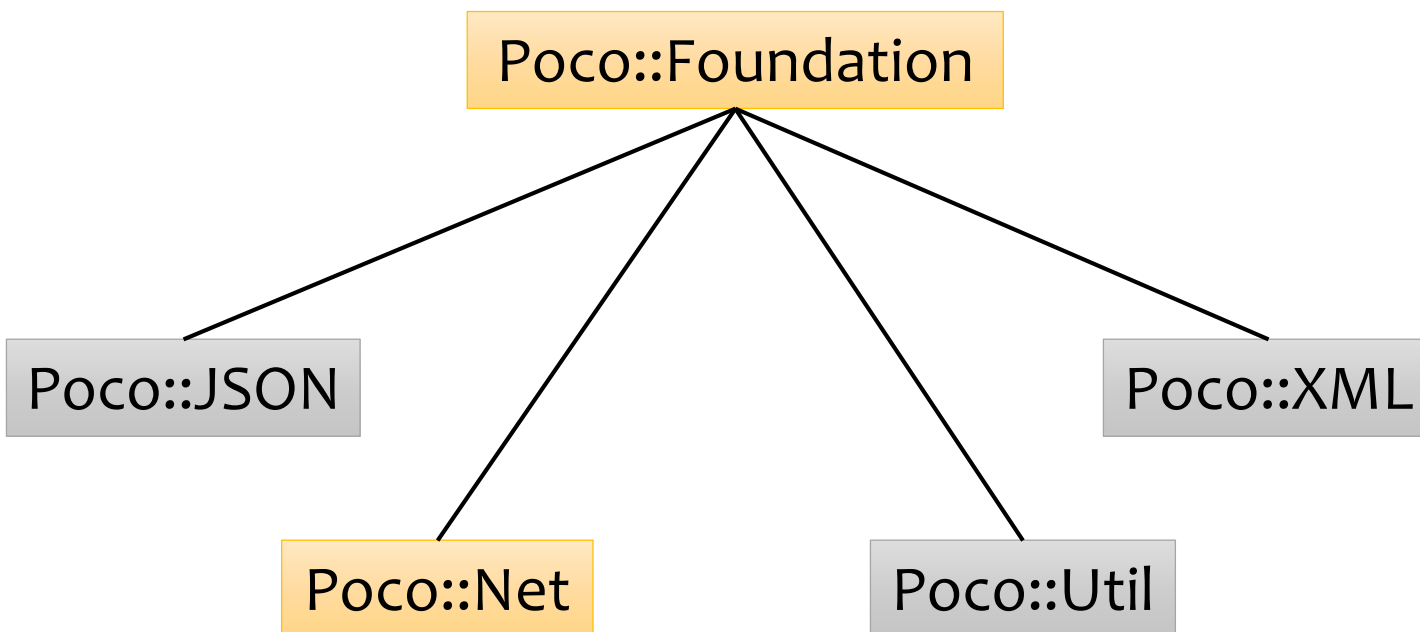
Kompilace našeho programu

Spustitelný soubor

Spuštění našeho programu

# Poco Basic Edition

- V základním balíčku Poco nalezneme pět knihoven.
- Knihovna Foundation obsahuje funkce a typy, na nichž ostatní knihovny závisí.







Recycle Bin

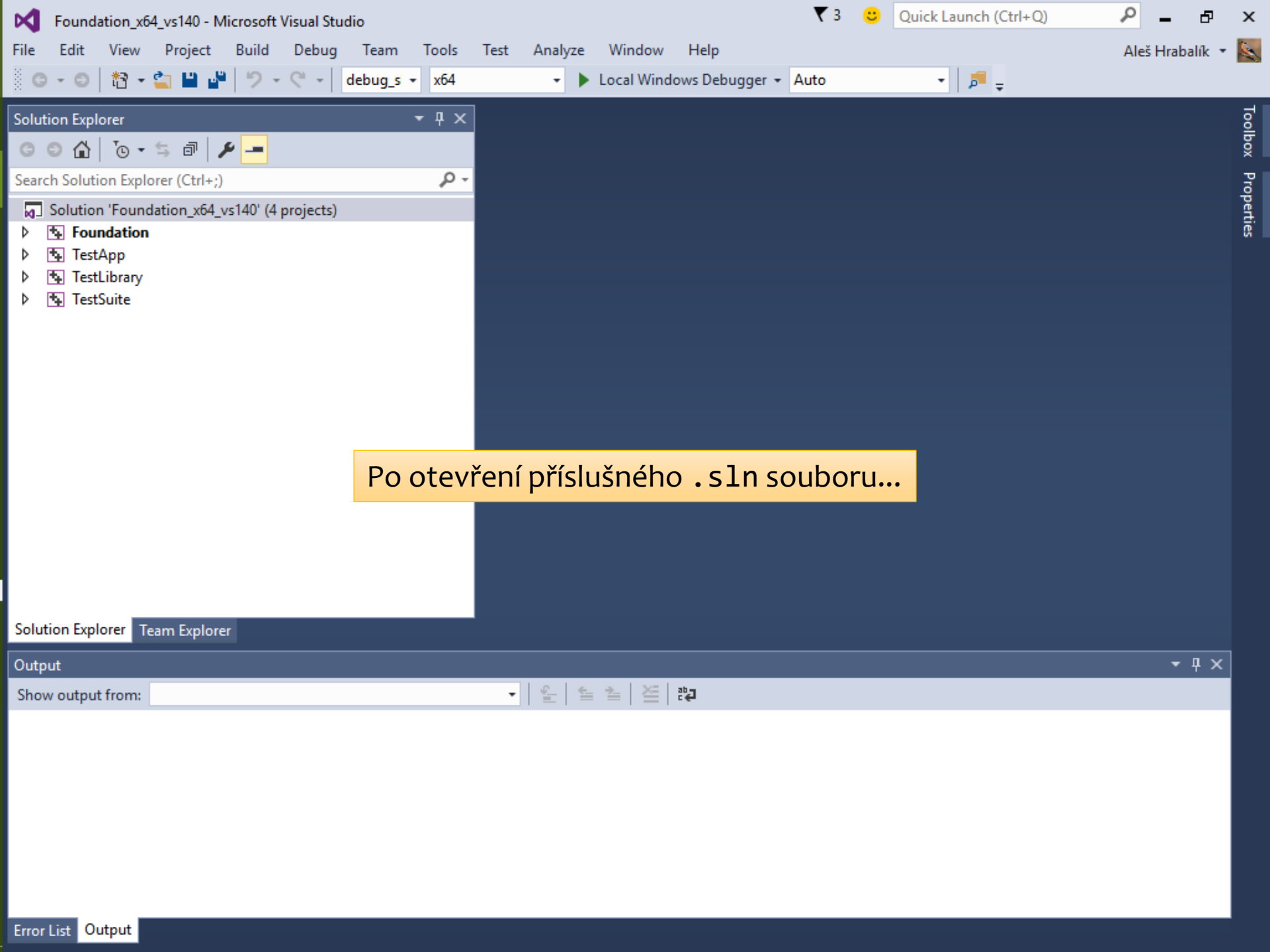
File Explorer window showing the contents of the 'Foundation' folder. The address bar indicates the path: <code>C:\Windows8\_OS\data\poco\Foundation</code>. The left sidebar shows the folder structure, and the main pane displays a list of files and folders.

Name	Date modified	Type	Size
Foundation_vs140.vcxproj.filters	11/4/2015 9:52 AM	VC++ Project Filte...	73 KB
Foundation_WEC2013_vs110.sln	11/4/2015 9:52 AM	Microsoft Visual S...	10 KB
Foundation_WEC2013_vs110.vcxproj	11/4/2015 9:52 AM	VC++ Project	110 KB
Foundation_WEC2013_vs110.vcxproj.filters	11/4/2015 9:52 AM	VC++ Project Filte...	73 KB
Foundation_WEC2013_vs120.sln	11/4/2015 9:52 AM	Microsoft Visual S...	10 KB
Foundation_WEC2013_vs120.vcxproj	11/4/2015 9:52 AM	VC++ Project	110 KB
Foundation_WEC2013_vs120.vcxproj.filters	11/4/2015 9:52 AM	VC++ Project Filte...	73 KB
Foundation_x64_vs90.sln	11/4/2015 9:52 AM	Microsoft Visual S...	6 KB
Found...			
Found...			
Found...			
Found...			
Found...			
Found...			
Found...			
Found...			
Foundation_x64_vs120.vcxproj	11/4/2015 9:52 AM	VC++ Project	97 KB
Foundation_x64_vs120.vcxproj.filters	11/4/2015 9:52 AM	VC++ Project Filte...	72 KB
Foundation_x64_vs140.opensdf	11/4/2015 10:10 AM	OPENSDF File	0 KB
Foundation_x64_vs140.sdf	11/4/2015 10:11 AM	SQL Server Comp...	51,840 KB
Foundation_x64_vs140.sln	11/4/2015 9:52 AM	Microsoft Visual S...	7 KB
Foundation_x64_vs140.vcxproj	11/4/2015 9:52 AM	VC++ Project	97 KB

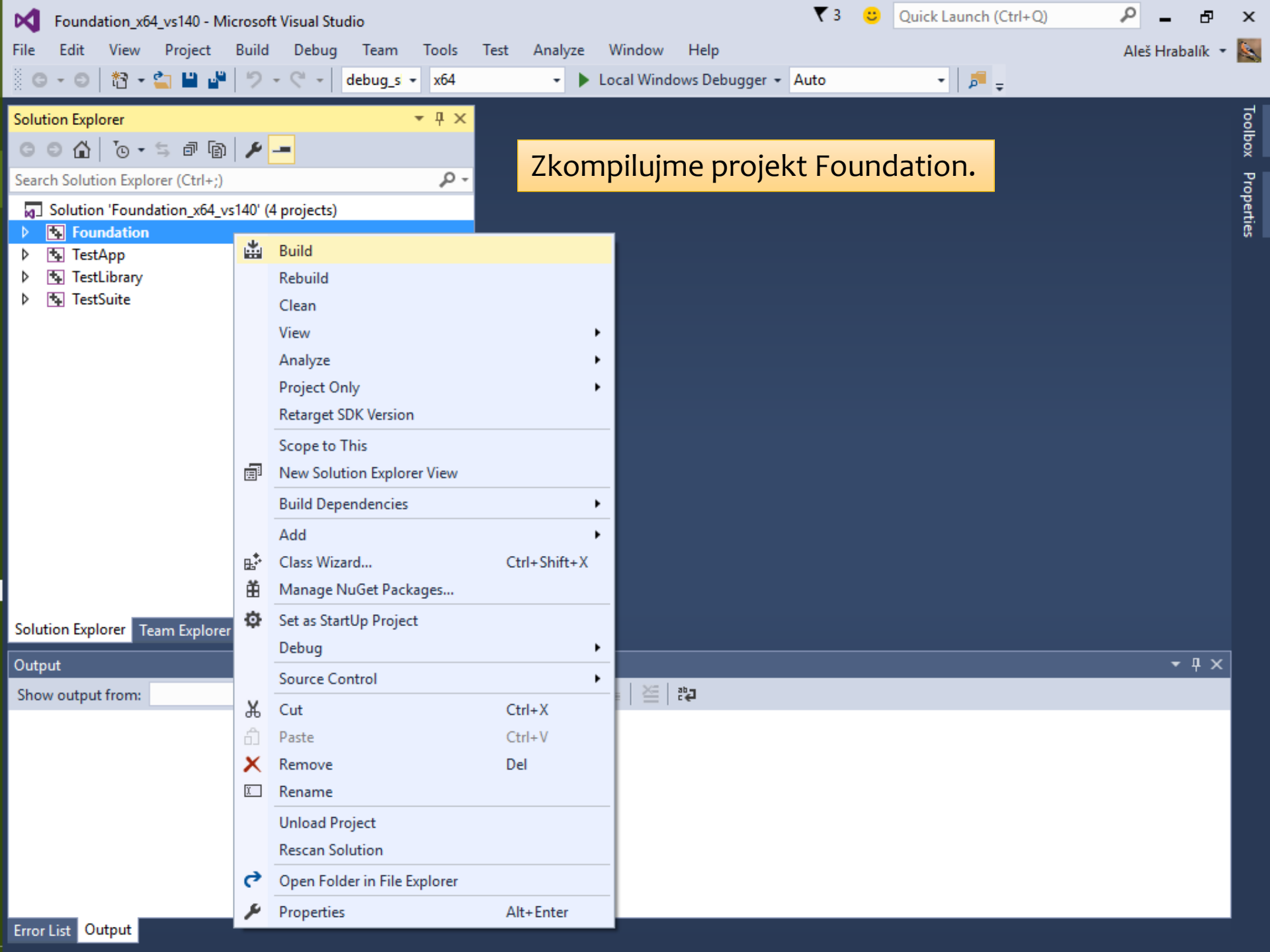
47 items | 1 item selected 6.10 KB

**• V podsložce Foundation jsou k dispozici projektové soubory pro všechny podporované verze Visual Studia.**

- vs120.sln – Visual Studio 2013**
- vs140.sln – Visual Studio 2015**



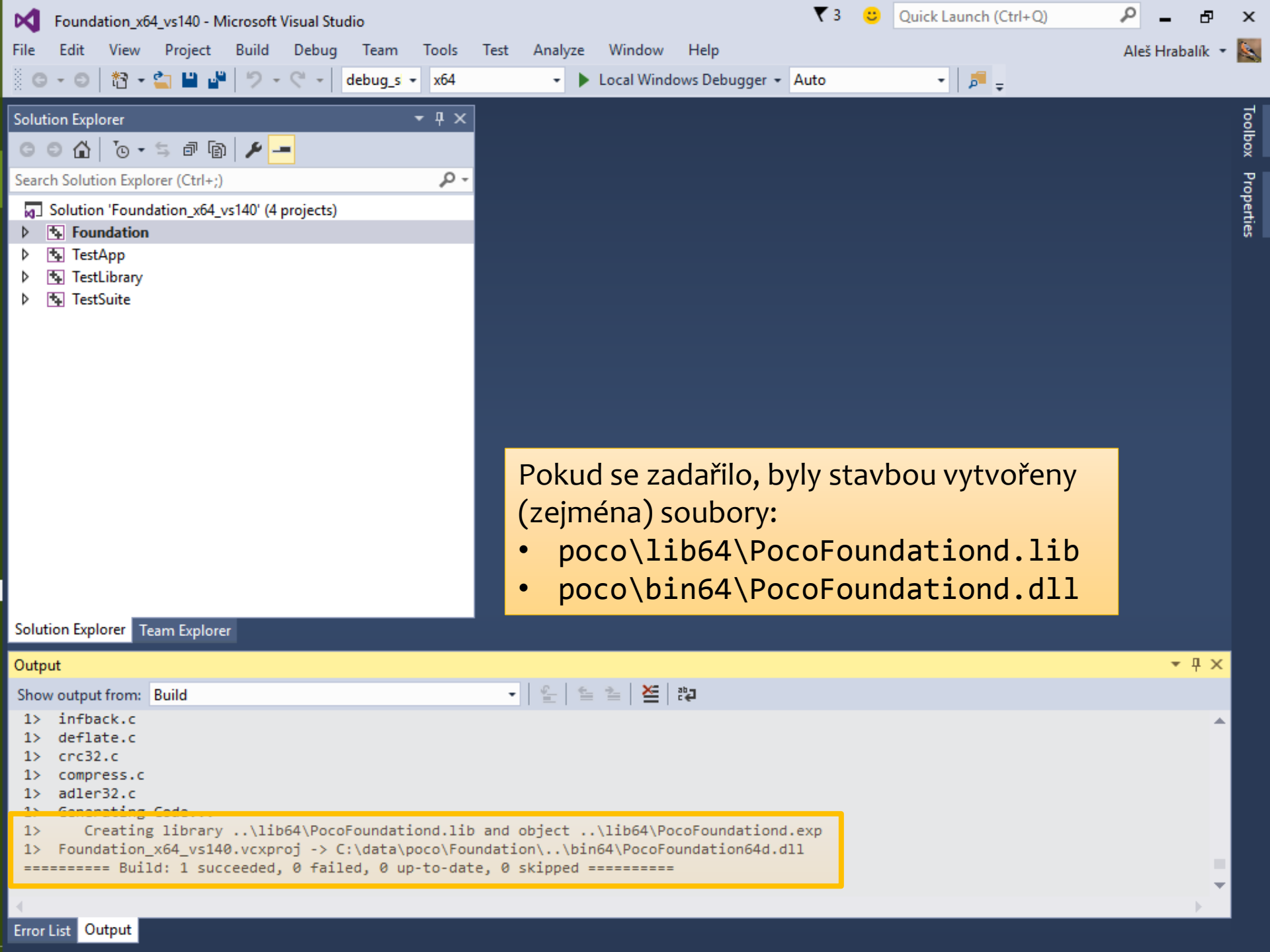
Po otevření příslušného .sln souboru...



Zkompilujme projekt Foundation.

- Build
- Rebuild
- Clean
- View
- Analyze
- Project Only
- Retarget SDK Version
- Scope to This
- New Solution Explorer View
- Build Dependencies
- Add
- Class Wizard... Ctrl+Shift+X
- Manage NuGet Packages...
- Set as StartUp Project
- Debug
- Source Control
- Cut Ctrl+X
- Paste Ctrl+V
- Remove Del
- Rename
- Unload Project
- Rescan Solution
- Open Folder in File Explorer
- Properties Alt+Enter

Toolbox Properties



Pokud se zadařilo, byly stavbou vytvořeny (zejména) soubory:

- poco\lib64\PocoFoundationd.lib
- poco\bin64\PocoFoundationd.dll

Solution Explorer

Search Solution Explorer (Ctrl+;)

Solution 'Foundation\_x64\_vs140' (4 projects)

- ▶ Foundation
- ▶ TestApp
- ▶ TestLibrary
- ▶ TestSuite

Output

Show output from: Build

```
1> infback.c
1> deflate.c
1> crc32.c
1> compress.c
1> adler32.c
1> Generating Code...
1> Creating library ..\lib64\PocoFoundationd.lib and object ..\lib64\PocoFoundationd.exp
1> Foundation_x64_vs140.vcxproj -> C:\data\poco\Foundation\..\bin64\PocoFoundation64d.dll
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
```





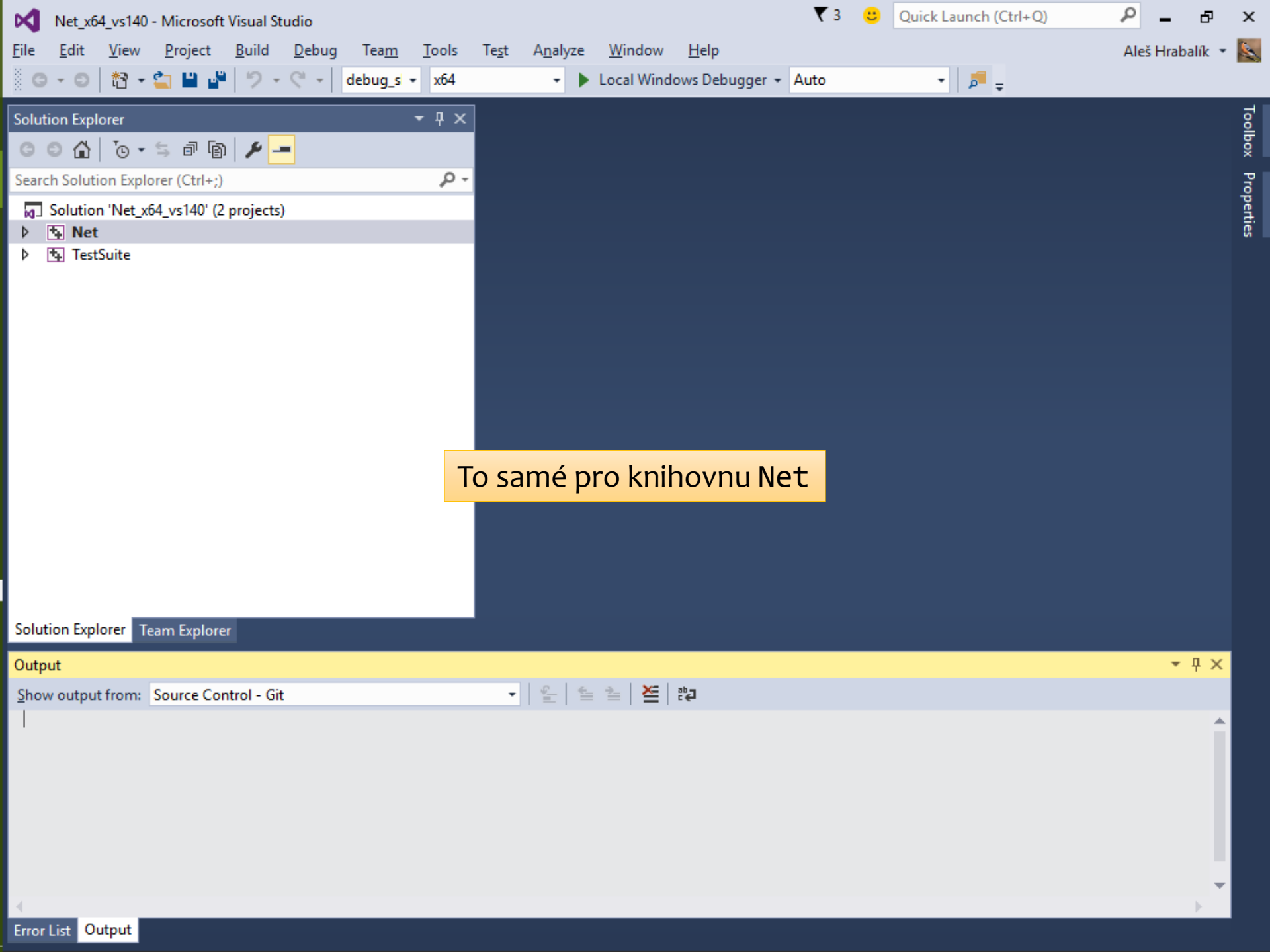
Recycle Bin

File Explorer window showing the contents of the 'Net' folder. The address bar shows the path: This PC > Windows8\_OS (C:) > data > poco > Net. The left sidebar shows the navigation pane with 'Windows8\_OS (C:)' selected. The main pane displays a list of files and folders.

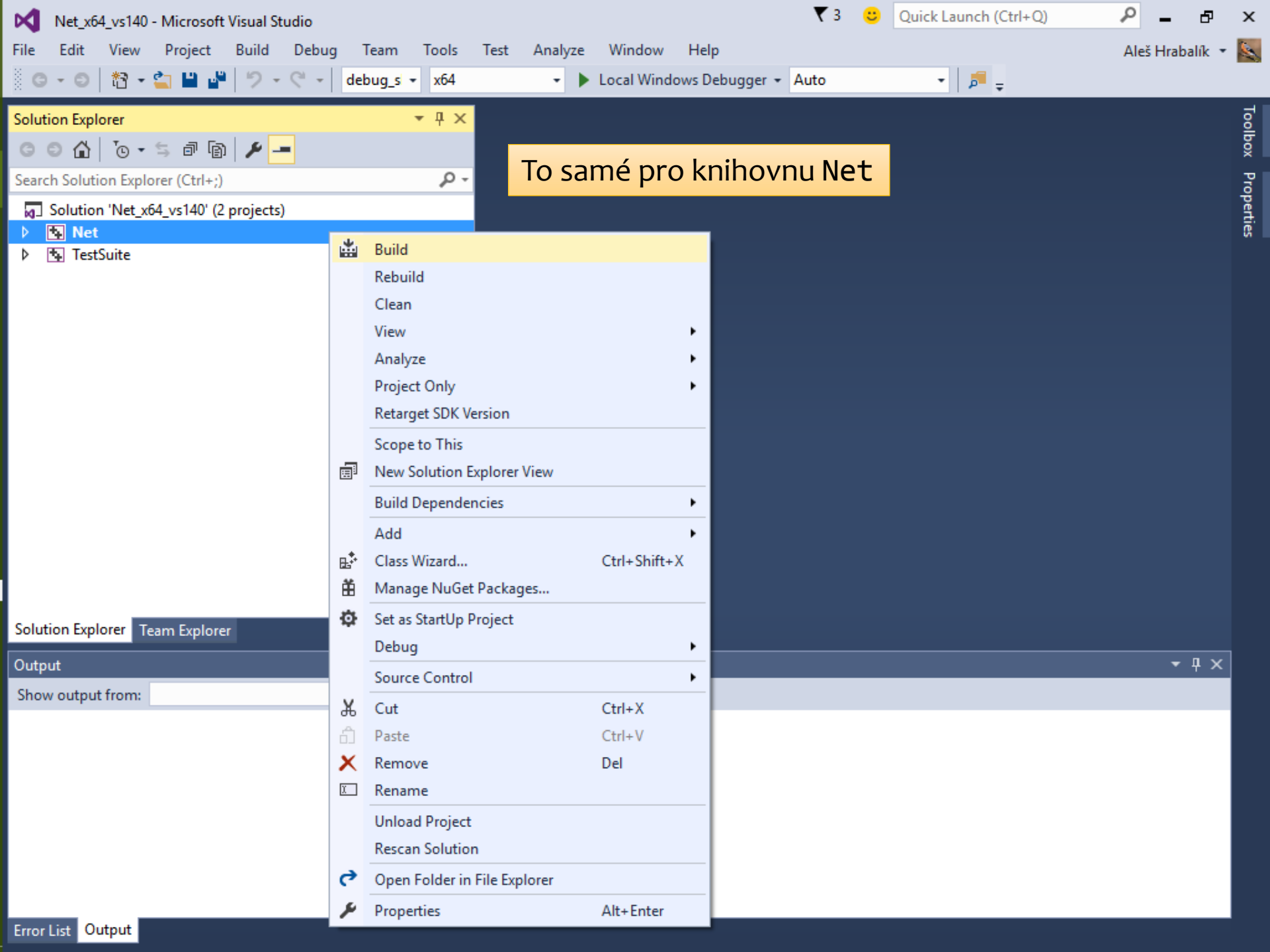
Name	Date modified	Type	Size
data			
Documents			
Windows8_O			
Debug			
docs			
hw1			
PJC			
Dropbox			
OneDrive			
This PC			
Desktop			
Documents			
Downloads			
Music			
Pictures			
Videos			
Windows8_OS (C:)			
LENOVO (D:)			
Network			
Net_vs140.vcxproj	11/4/2015 9:53 AM	VC++ Project	28 KB
Net_vs140.vcxproj.filters	11/4/2015 9:53 AM	VC++ Project Filte...	30 KB
Net_WEC2013_vs110.sln	11/4/2015 9:53 AM	Microsoft Visual S...	7 KB
Net_WEC2013_vs110.vcxproj	11/4/2015 9:53 AM	VC++ Project	28 KB
Net_WEC2013_vs110.vcxproj.filters	11/4/2015 9:53 AM	VC++ Project Filte...	30 KB
Net_WEC2013_vs120.sln	11/4/2015 9:53 AM	Microsoft Visual S...	7 KB
Net_WEC2013_vs120.vcxproj	11/4/2015 9:53 AM	VC++ Project	28 KB
Net_WEC2013_vs120.vcxproj.filters	11/4/2015 9:53 AM	VC++ Project Filte...	30 KB
Net_x64_vs90.sln	11/4/2015 9:53 AM	Microsoft Visual S...	5 KB
Net_x64_vs90.vcxproj	11/4/2015 9:53 AM	VC++ Project	26 KB
Net_x64_vs100.sln	11/4/2015 9:53 AM	Microsoft Visual S...	5 KB
Net_x64_vs100.vcxproj	11/4/2015 9:53 AM	VC++ Project	29 KB
Net_x64_vs100.vcxproj.filters	11/4/2015 9:53 AM	VC++ Project Filte...	30 KB
Net_x64_vs110.sln	11/4/2015 9:53 AM	Microsoft Visual S...	5 KB
Net_x64_vs110.vcxproj	11/4/2015 9:53 AM	VC++ Project	28 KB
Net_x64_vs110.vcxproj.filters	11/4/2015 9:53 AM	VC++ Project Filte...	30 KB
Net_x64_vs120.sln	11/4/2015 9:53 AM	Microsoft Visual S...	5 KB
Net_x64_vs120.vcxproj	11/4/2015 9:53 AM	VC++ Project	28 KB
Net_x64_vs120.vcxproj.filters	11/4/2015 9:53 AM	VC++ Project Filte...	30 KB
Net_x64_vs140.sln	11/4/2015 9:53 AM	Microsoft Visual S...	5 KB
Net_x64_vs140.vcxproj	11/4/2015 9:53 AM	VC++ Project	28 KB
Net_x64_vs140.vcxproj.filters	11/4/2015 9:53 AM	VC++ Project Filte...	30 KB

45 items | 1 item selected 4.26 KB

To samé pro knihovnu Net



To samé pro knihovnu Net



To samé pro knihovnu Net

- Build
- Rebuild
- Clean
- View
- Analyze
- Project Only
- Retarget SDK Version
- Scope to This
- New Solution Explorer View
- Build Dependencies
- Add
- Class Wizard... Ctrl+Shift+X
- Manage NuGet Packages...
- Set as StartUp Project
- Debug
- Source Control
- Cut Ctrl+X
- Paste Ctrl+V
- Remove Del
- Rename
- Unload Project
- Rescan Solution
- Open Folder in File Explorer
- Properties Alt+Enter

Toolbox Properties

Solution 'Net\_x64\_vs140' (2 projects)

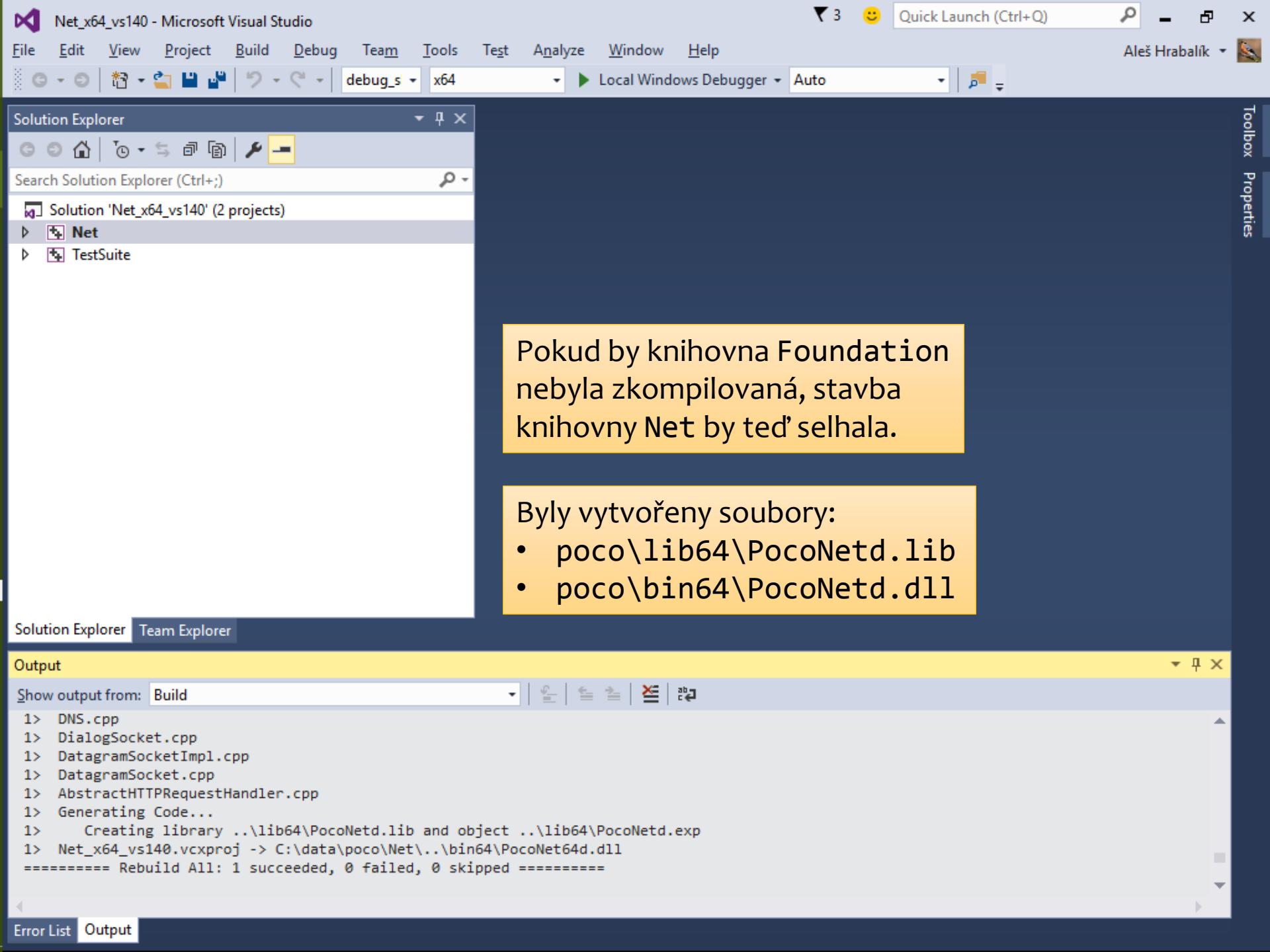
Net

TestSuite

Solution Explorer Team Explorer

Output

Show output from:

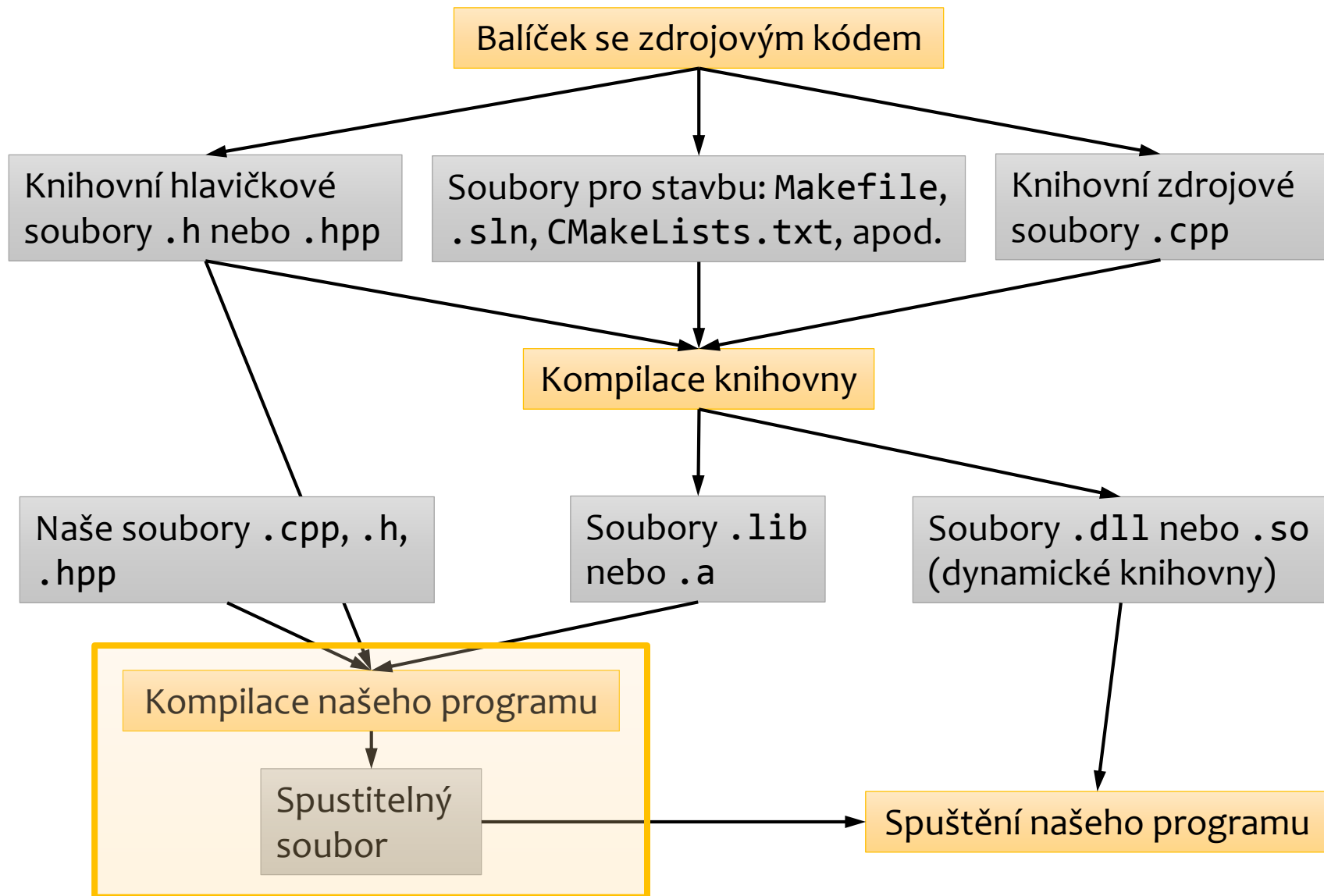


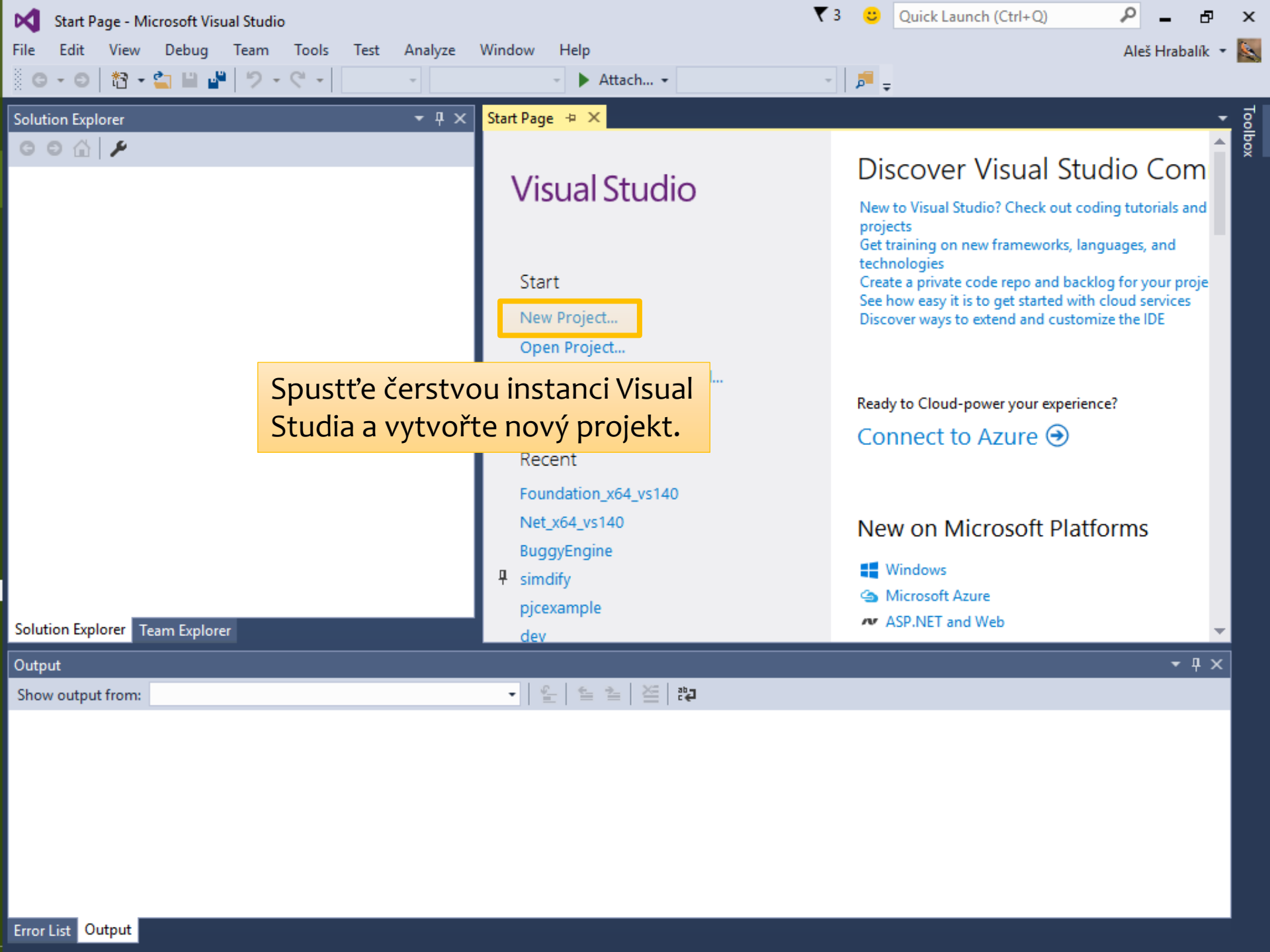
Pokud by knihovna Foundation nebyla zkompilovaná, stavba knihovny Net by teď selhala.

- Byly vytvořeny soubory:
- poco\lib64\PocoNetd.lib
  - poco\bin64\PocoNetd.dll



# Práce s knihovnou





Spustte čerstvou instanci Visual Studia a vytvořte nový projekt.

# Visual Studio

Start

New Project...

Open Project...

Recent

- Foundation\_x64\_vs140
- Net\_x64\_vs140
- BuggyEngine
- simdify
- pjcexample
- dev

## Discover Visual Studio Com

New to Visual Studio? Check out coding tutorials and projects  
Get training on new frameworks, languages, and technologies  
Create a private code repo and backlog for your proje  
See how easy it is to get started with cloud services  
Discover ways to extend and customize the IDE

Ready to Cloud-power your experience?

Connect to Azure

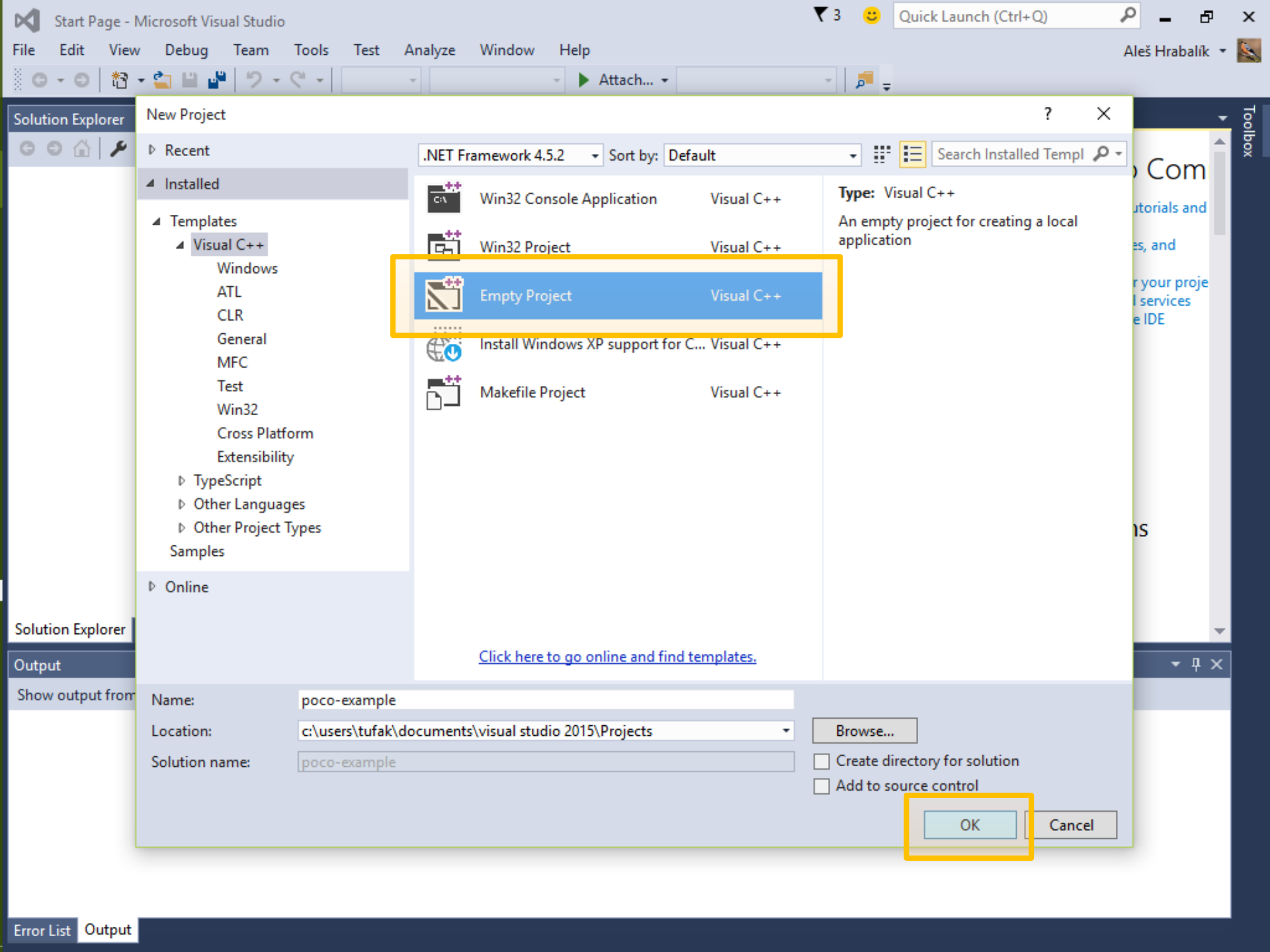
## New on Microsoft Platforms

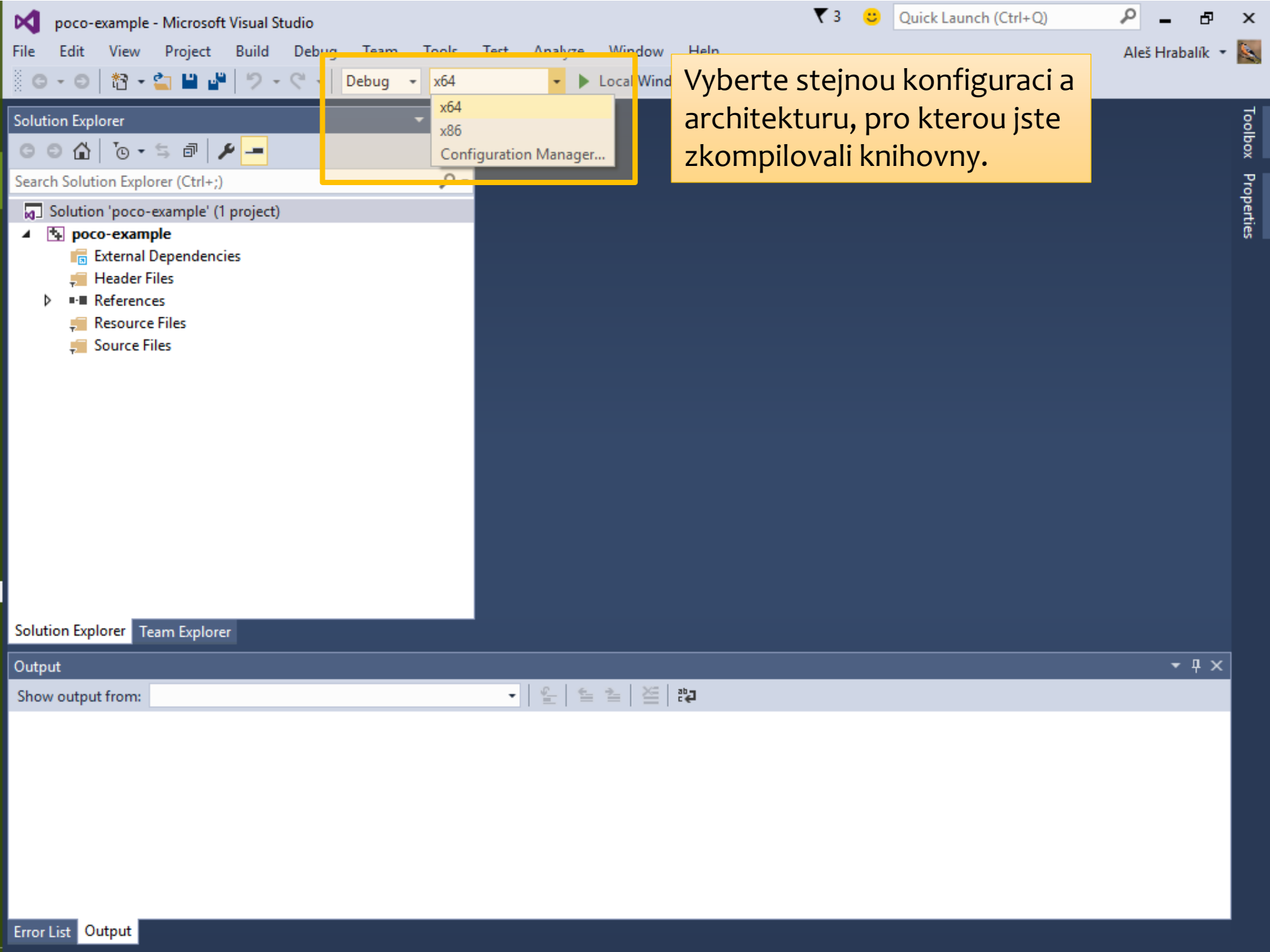
- Windows
- Microsoft Azure
- ASP.NET and Web

Output

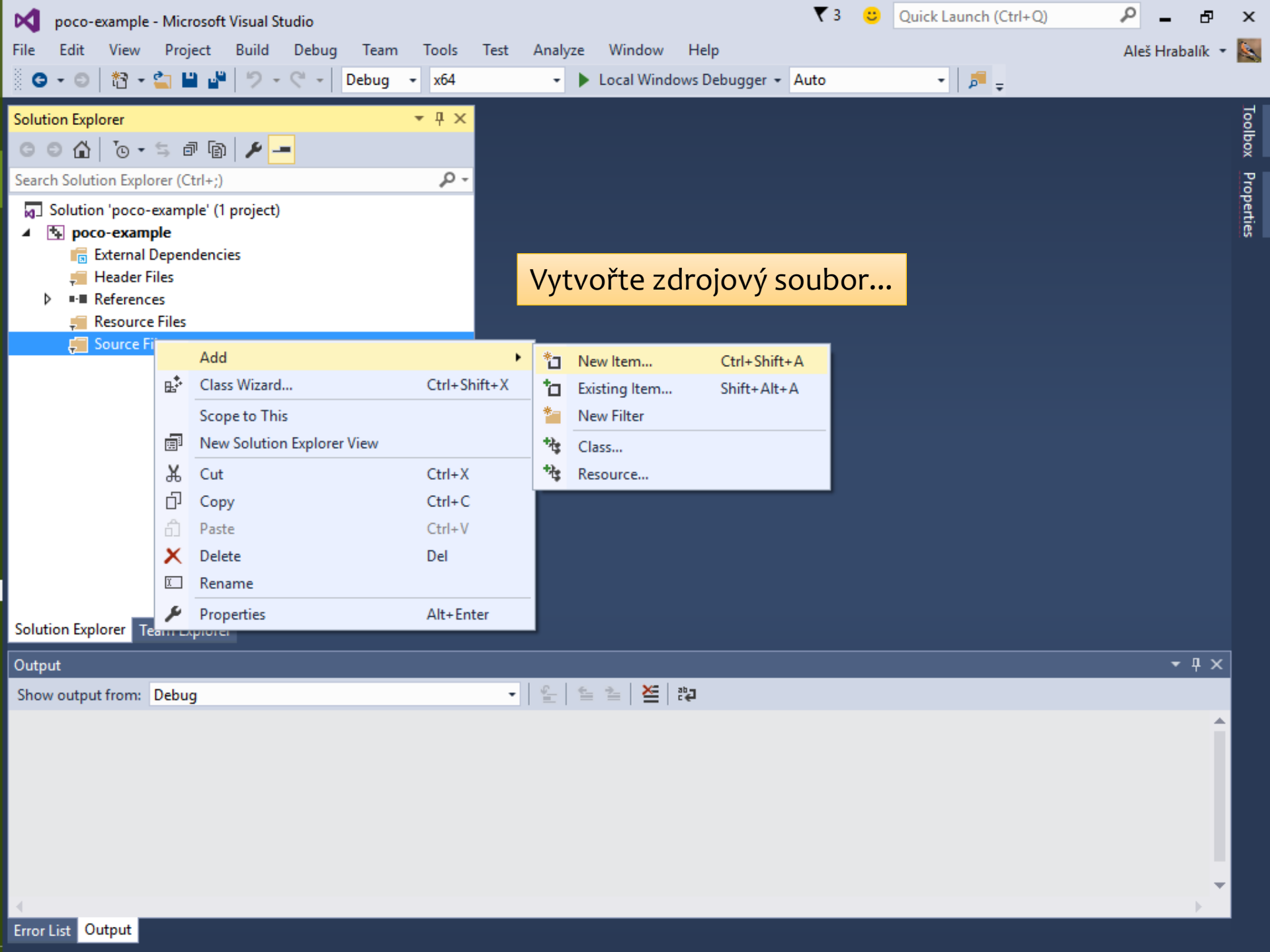
Show output from:

Error List Output





Vyberte stejnou konfiguraci a architekturu, pro kterou jste zkompilevali knihovny.



**Solution Explorer**

Search Solution Explorer (Ctrl+;)

- Solution 'poco-example' (1 project)
  - poco-example**
    - External Dependencies
    - Header Files
    - References
    - Resource Files
    - Source Files**

Vytvořte zdrojový soubor...

- Add**
  - New Item...** Ctrl+Shift+A
  - Existing Item... Shift+Alt+A
  - New Filter
  - Class...
  - Resource...
- Class Wizard... Ctrl+Shift+X
- Scope to This
- New Solution Explorer View
- Cut Ctrl+X
- Copy Ctrl+C
- Paste Ctrl+V
- Delete Del
- Rename
- Properties Alt+Enter

**Output**

Show output from: Debug

Empty output area with scroll bar.

```
// adapted from: http://www.codeproject.com/Articles/252566/Learning-Poco-GET-with-HTTP
```

```
#include <Poco/Net/HTTPClientSession.h>
#include <Poco/Net/HTTPRequest.h>
#include <Poco/Net/HTTPResponse.h>
#include <Poco/StreamCopier.h>
#include <Poco/Path.h>
#include <Poco/URI.h>
#include <Poco/Exception.h>
#include <iostream>
#include <string>

using namespace Poco::Net;
using namespace Poco;

int main(int argc, char** argv) {
    std::string uriStr;

    if (argc >= 2) {
        uriStr = argv[1];
    }
    else {
        uriStr = "http://www.codingnest.com/";
    }

    try {
        // prepare session
        URI uri(uriStr);
        HTTPClientSession session(uri.getHost(), uri.getPort());
    }
    ...
}
```

Tento kód získá webovou stránku  
a vypíše ji na standardní výstup.

```

...
    // prepare path
    std::string path = uri.getPathAndQuery();
    if (path.empty()) path = "/";

    // send request
    HTTPRequest req(HTTPRequest::HTTP_GET, path, HTTPMessage::HTTP_1_1);
    session.sendRequest(req);

    // get response
    HTTPResponse res;
    std::cout << res.getStatus() << " " << res.getReason() << "\n";

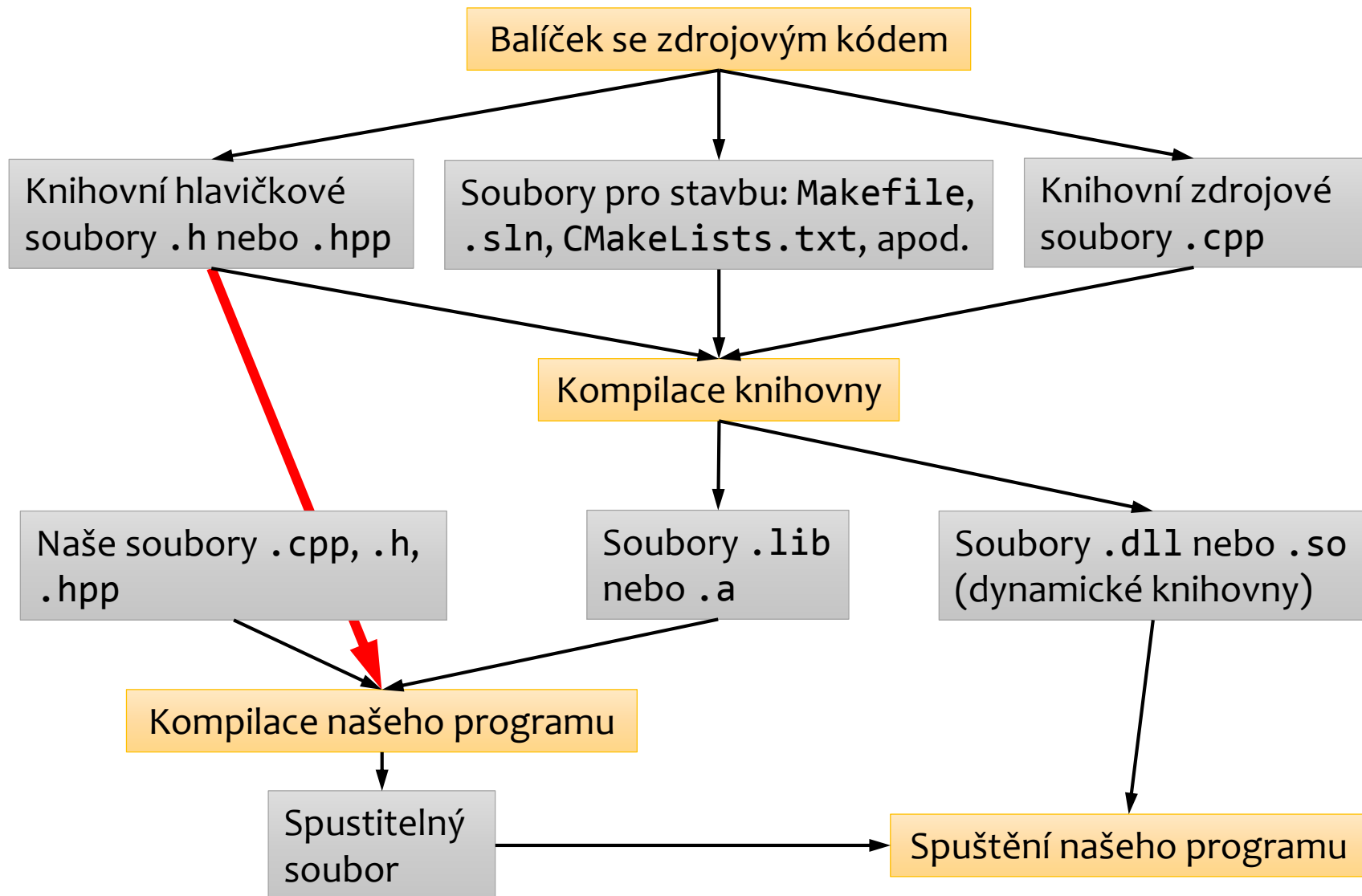
    // print response
    auto& is = session.receiveResponse(res);
    StreamCopier::copyStream(is, std::cout);

    // wait
    std::cin.get();
}
catch (Exception &ex) {
    std::cerr << ex.displayText() << "\n";

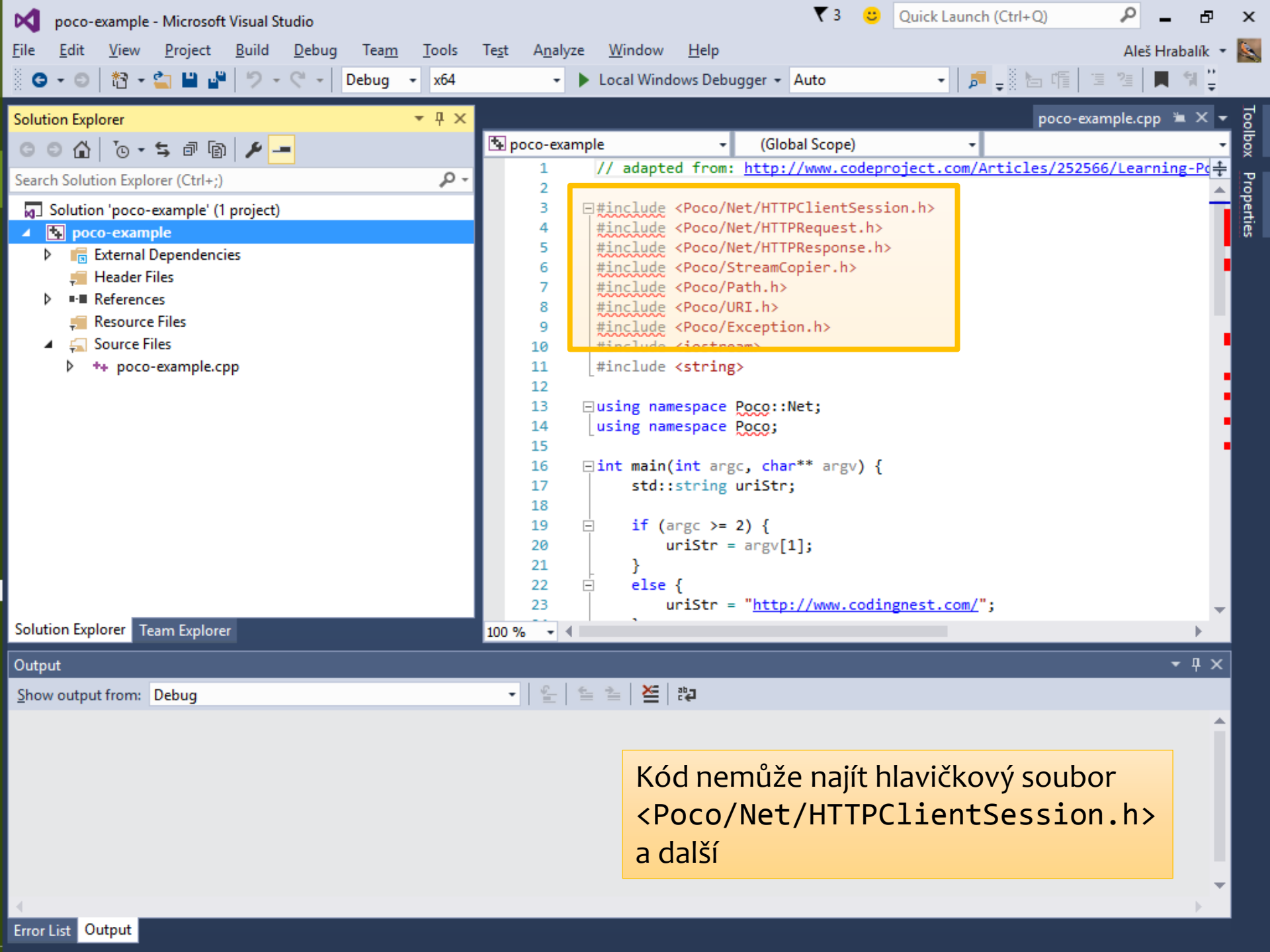
    // wait
    std::cin.get();
    return -1;
}
}

```

# Práce s knihovnou







Kód nemůže najít hlavičkový soubor `<Poco/Net/HTTPClientSession.h>` a další



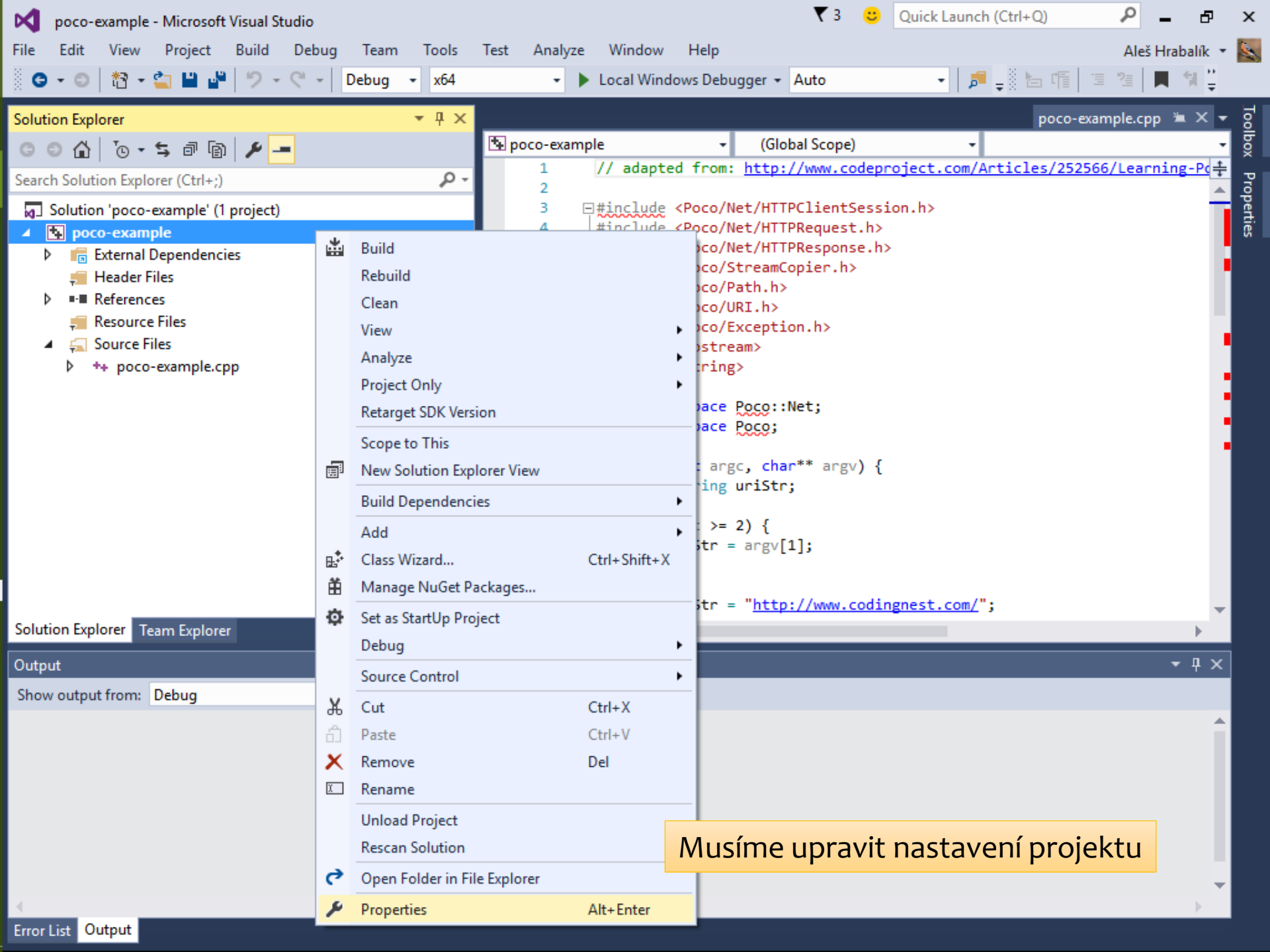
Recycle Bin

File Explorer window showing the directory structure: <code><< data > poco > Net > include > Poco > Net</code>. The file <code>HTTPClientSession.h</code> is selected.

Name	Date modified	Type	Size
AbstractHTTPRequestHandler.h	11/4/2015 9:53 AM	C Header File	4 KB
DatagramSocket.h	11/4/2015 9:53 AM	C Header File	4 KB
DatagramSocketImpl.h	11/4/2015 9:53 AM	C Header File	2 KB
DialogSocket.h	11/4/2015 9:53 AM	C Header File	7 KB
DNS.h	11/4/2015 9:53 AM	C Header File	5 KB
FilePartSource.h	11/4/2015 9:53 AM	C Header File	2 KB
FTPClientSession.h	11/4/2015 9:53 AM	C Header File	13 KB
FTPStreamFactory.h	11/4/2015 9:53 AM	C Header File	4 KB
HostEntry.h	11/4/2015 9:53 AM	C Header File	3 KB
HTMLForm.h	11/4/2015 9:53 AM	C Header File	7 KB
HTTPAuthenticationParams.h	11/4/2015 9:53 AM	C Header File	1 KB
HTTPBasicCredentials.h	11/4/2015 9:53 AM	C Header File	3 KB
HTTPBasicStreamBuf.h	11/4/2015 9:53 AM	C Header File	1 KB
HTTPBufferAllocator.h	11/4/2015 9:53 AM	C Header File	3 KB
HTTPChunkedStream.h	11/4/2015 9:53 AM	C Header File	3 KB
<b>HTTPClientSession.h</b>	11/4/2015 9:53 AM	C Header File	11 KB
HTTPCookie.h	11/4/2015 9:53 AM	C Header File	7 KB
HTTPCredentials.h	11/4/2015 9:53 AM	C Header File	6 KB
HTTPEntity.h	11/4/2015 9:53 AM	C Header File	6 KB
HTTPFixedLengthStream.h	11/4/2015 9:53 AM	C Header File	3 KB
HTTPHeaderStream.h	11/4/2015 9:53 AM	C Header File	3 KB

105 items 1 item selected 10.6 KB

Poco/Net/HTTPClientSession.h je ve složce <code>c:\data\poco\Net\include</code>



Solution Explorer



Search Solution Explorer (Ctrl+;)

Solution 'poco-example' (1 project)

- ▶ poco-example
  - ▶ External Dependencies
  - ▶ Header Files
  - ▶ References
  - ▶ Resource Files
  - ▶ Source Files
    - ▶ ++ poco-example.cpp

- Build
- Rebuild
- Clean
- View
- Analyze
- Project Only
- Retarget SDK Version
- Scope to This
- New Solution Explorer View
- Build Dependencies
- Add
- Class Wizard... Ctrl+Shift+X
- Manage NuGet Packages...
- Set as StartUp Project
- Debug
- Source Control
- Cut Ctrl+X
- Paste Ctrl+V
- Remove Del
- Rename
- Unload Project
- Rescan Solution
- Open Folder in File Explorer
- Properties Alt+Enter

```
1 // adapted from: http://www.codeproject.com/Articles/252566/Learning-Pc  
2  
3 #include <Poco/Net/HTTPClientSession.h>  
4 #include <Poco/Net/HTTPRequest.h>  
5 #include <Poco/Net/HTTPResponse.h>  
6 #include <Poco/StreamCopier.h>  
7 #include <Poco/Path.h>  
8 #include <Poco/URI.h>  
9 #include <Poco/Exception.h>  
10 #include <string>  
11 #include <string>  
12  
13 namespace Poco::Net;  
14 namespace Poco;  
15  
16 int main(int argc, char** argv) {  
17     string uriStr;  
18  
19     if (argc >= 2) {  
20         uriStr = argv[1];  
21     }  
22  
23     uriStr = "http://www.codingnest.com/";  
24 }
```

Musíme upravit nastavení projektu

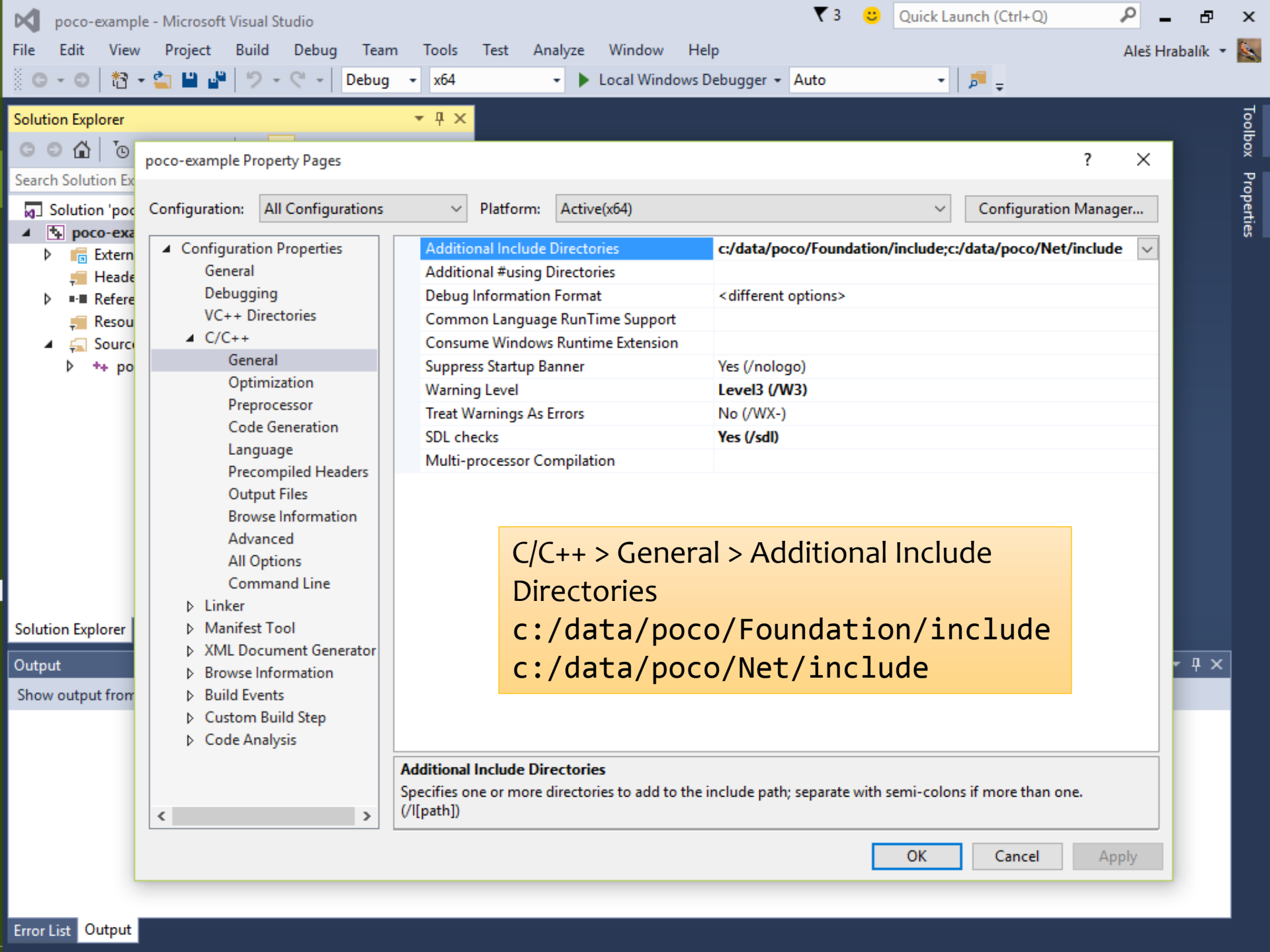
Solution Explorer Team Explorer

Output

Show output from: Debug

Error List Output

Toolbox Properties



poco-example Property Pages

Configuration: All Configurations

Platform: Active(x64)

Configuration Manager...

- Configuration Properties
  - General
  - Debugging
  - VC++ Directories
  - C/C++
    - General
    - Optimization
    - Preprocessor
    - Code Generation
    - Language
    - Precompiled Headers
    - Output Files
    - Browse Information
    - Advanced
    - All Options
    - Command Line
  - Linker
  - Manifest Tool
  - XML Document Generator
  - Browse Information
  - Build Events
  - Custom Build Step
  - Code Analysis

Additional Include Directories	c:/data/poco/Foundation/include;c:/data/poco/Net/include
Additional #using Directories	
Debug Information Format	<different options>
Common Language RunTime Support	
Consume Windows Runtime Extension	
Suppress Startup Banner	Yes (/nologo)
Warning Level	Level3 (/W3)
Treat Warnings As Errors	No (/WX-)
SDL checks	Yes (/sdl)
Multi-processor Compilation	

C/C++ > General > Additional Include Directories  
c:/data/poco/Foundation/include  
c:/data/poco/Net/include

**Additional Include Directories**

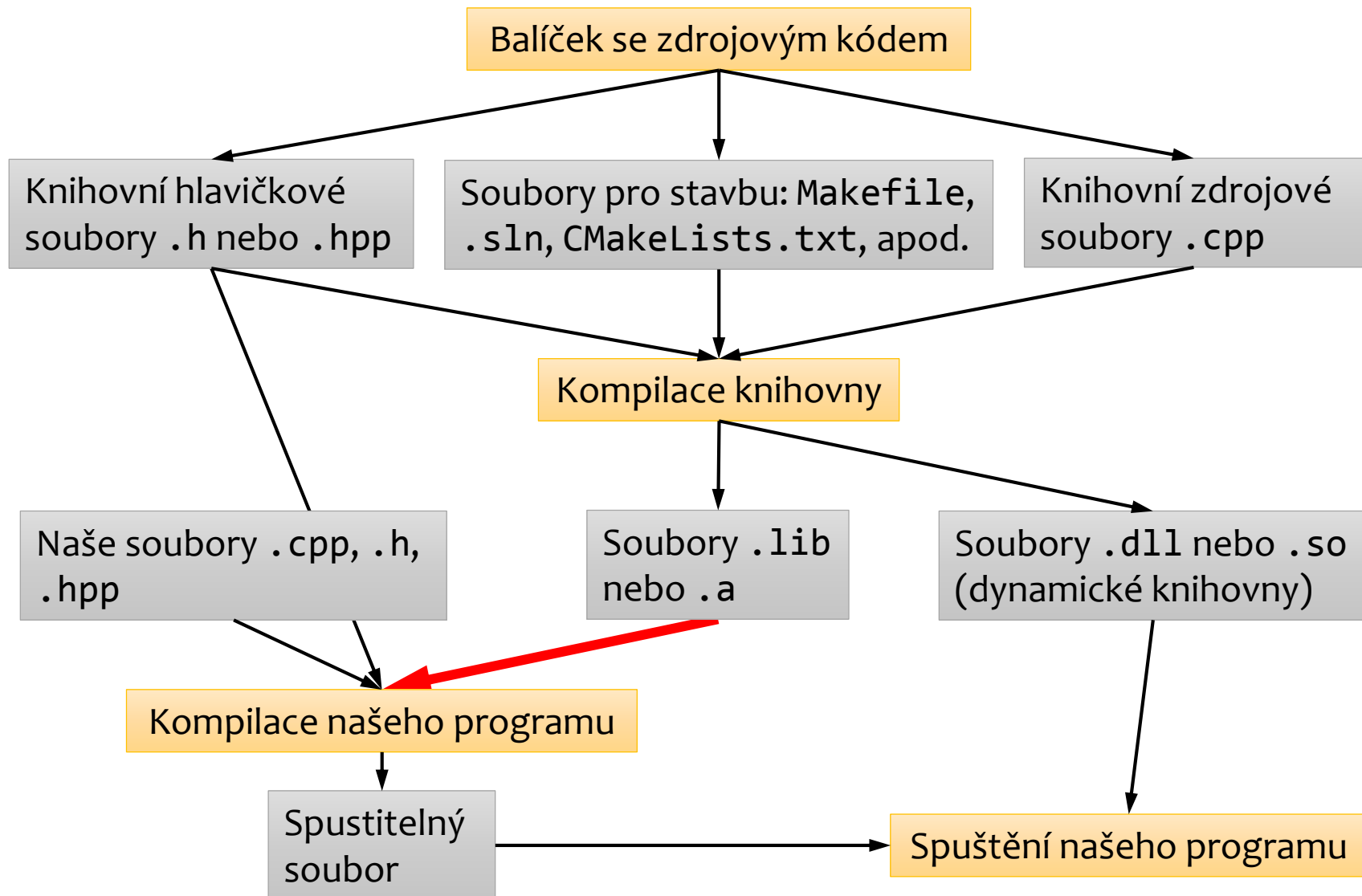
Specifies one or more directories to add to the include path; separate with semi-colons if more than one. (/I[path])

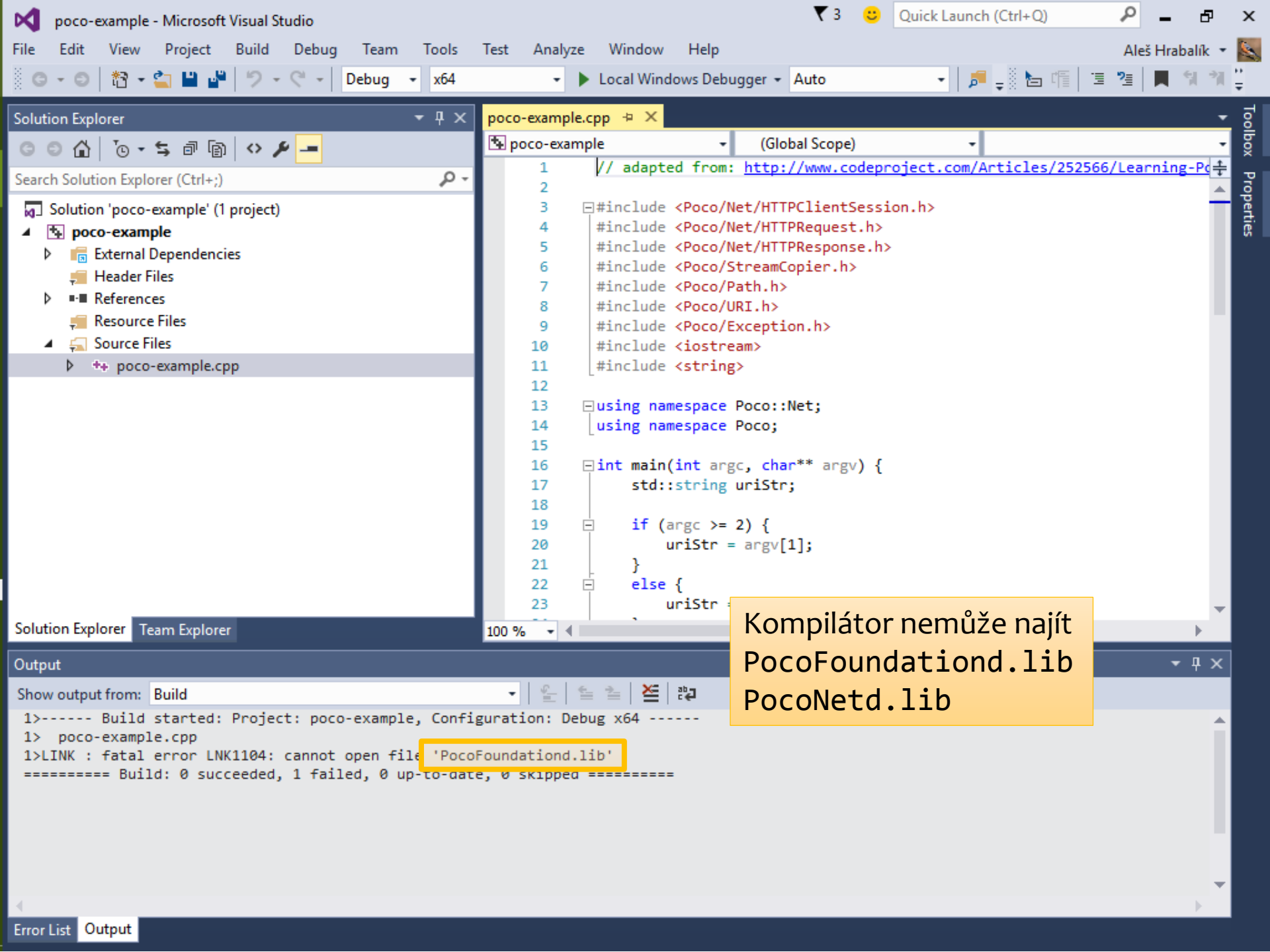
OK

Cancel

Apply

# Práce s knihovnou





Solution Explorer

Search Solution Explorer (Ctrl+;)

- Solution 'poco-example' (1 project)
  - poco-example
    - External Dependencies
    - Header Files
    - References
    - Resource Files
    - Source Files
      - poco-example.cpp

```
poco-example.cpp (Global Scope)
1 // adapted from: http://www.codeproject.com/Articles/252566/Learning-Pc
2
3 #include <Poco/Net/HTTPClientSession.h>
4 #include <Poco/Net/HTTPRequest.h>
5 #include <Poco/Net/HTTPResponse.h>
6 #include <Poco/StreamCopier.h>
7 #include <Poco/Path.h>
8 #include <Poco/URI.h>
9 #include <Poco/Exception.h>
10 #include <iostream>
11 #include <string>
12
13 using namespace Poco::Net;
14 using namespace Poco;
15
16 int main(int argc, char** argv) {
17     std::string uriStr;
18
19     if (argc >= 2) {
20         uriStr = argv[1];
21     }
22     else {
23         uriStr =

```

Kompilátor nemůže najít  
PocoFoundationd.lib  
PocoNetd.lib

Output

Show output from: Build

```
1>----- Build started: Project: poco-example, Configuration: Debug x64 -----
1> poco-example.cpp
1>LINK : fatal error LNK1104: cannot open file 'PocoFoundationd.lib'
===== Build: 0 succeeded, 1 failed, 0 up-to-date, 0 skipped =====
```



lib64

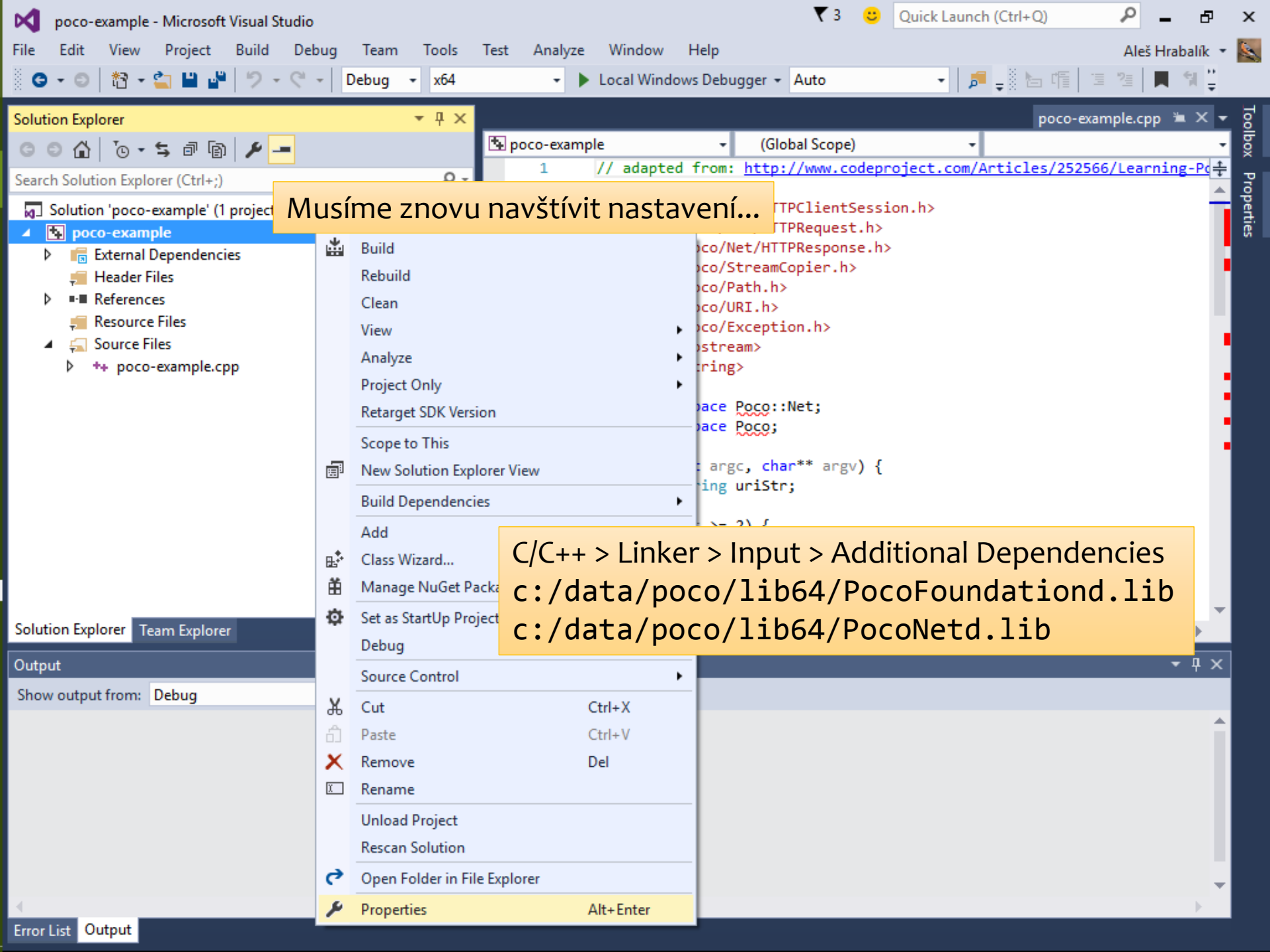
File Home Share View

This PC > Windows8\_OS (C:) > data > poco > lib64

Name	Date modified	Type	Size
PocoFoundationd.exp	11/4/2015 10:16 AM	Exports Library File	909 KB
PocoFoundationd.lib	11/4/2015 10:16 AM	Object File Library	1,503 KB
PocoNetd.exp	11/4/2015 10:21 AM	Exports Library File	622 KB
PocoNetd.lib	11/4/2015 10:21 AM	Object File Library	988 KB

4 items

Tyto soubory jsou v  
c:\data\poco\lib64

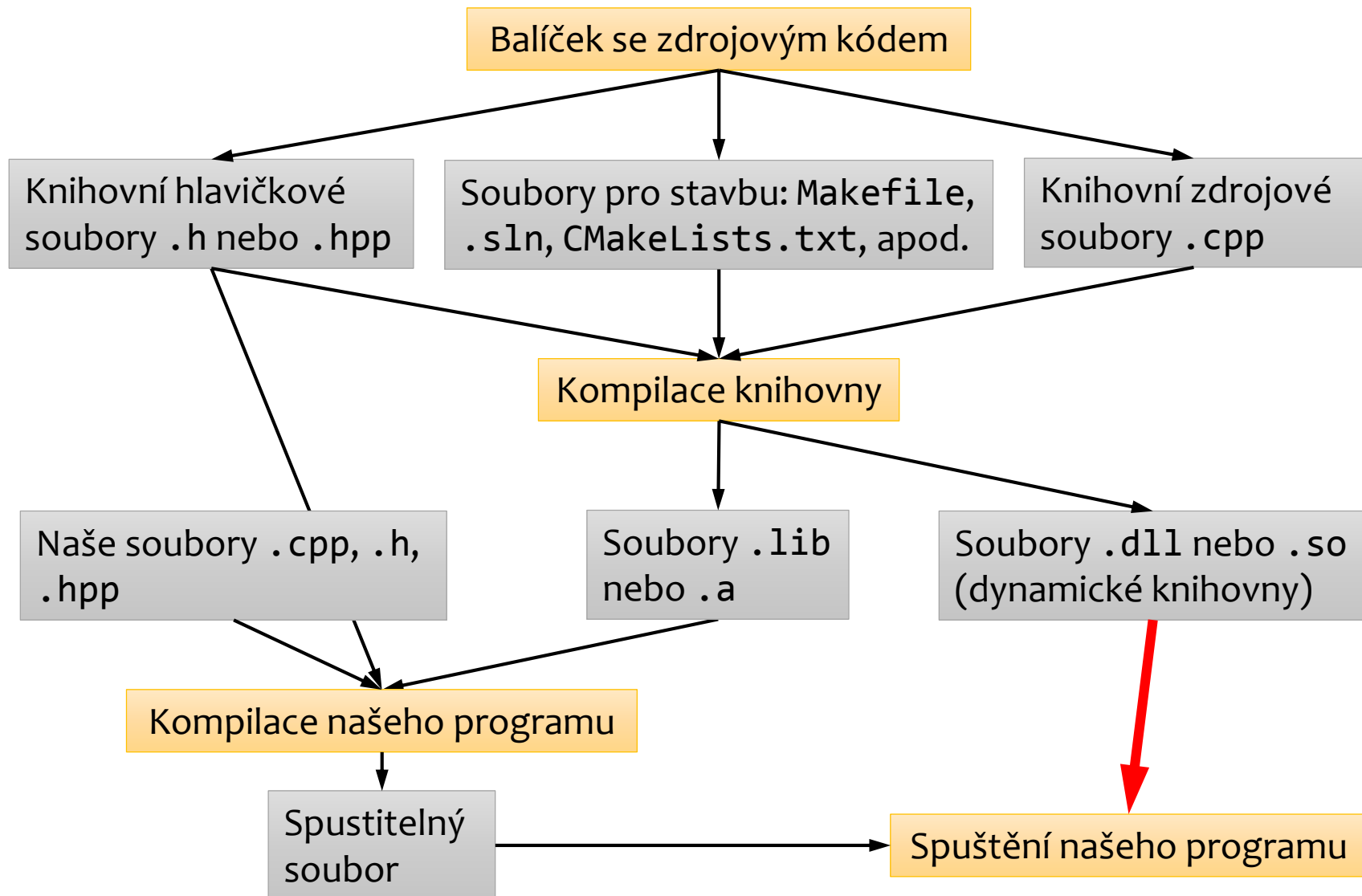


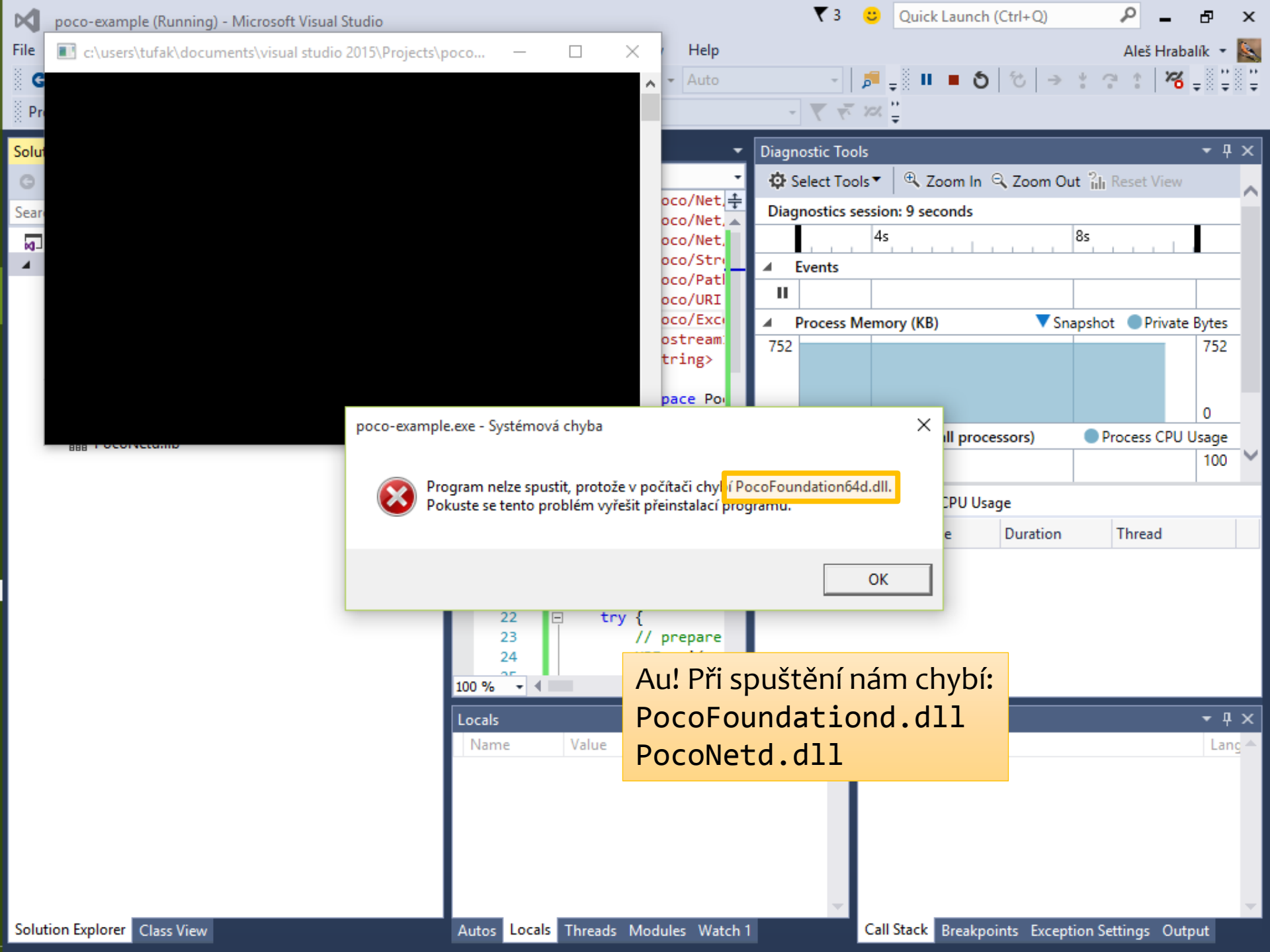
Musíme znovu navštívit nastavení...

C/C++ > Linker > Input > Additional Dependencies  
c:/data/poco/lib64/PocoFoundationd.lib  
c:/data/poco/lib64/PocoNetd.lib




# Práce s knihovnou





poco-example.exe - Systémová chyba

 Program nelze spustit, protože v počítači chybí PocoFoundation64d.dll. Pokuste se tento problém vyřešit přeinstalací programu.

OK

Au! Při spuštění nám chybí:  
PocoFoundationd.dll  
PocoNetd.dll

Diagnostic Tools

Select Tools | Zoom In | Zoom Out | Reset View

Diagnostics session: 9 seconds

4s | 8s

Events

Process Memory (KB) | Snapshot | Private Bytes

752		752
		0
		100

Process CPU Usage

	Duration	Thread
--	----------	--------



Recycle Bin

bin64

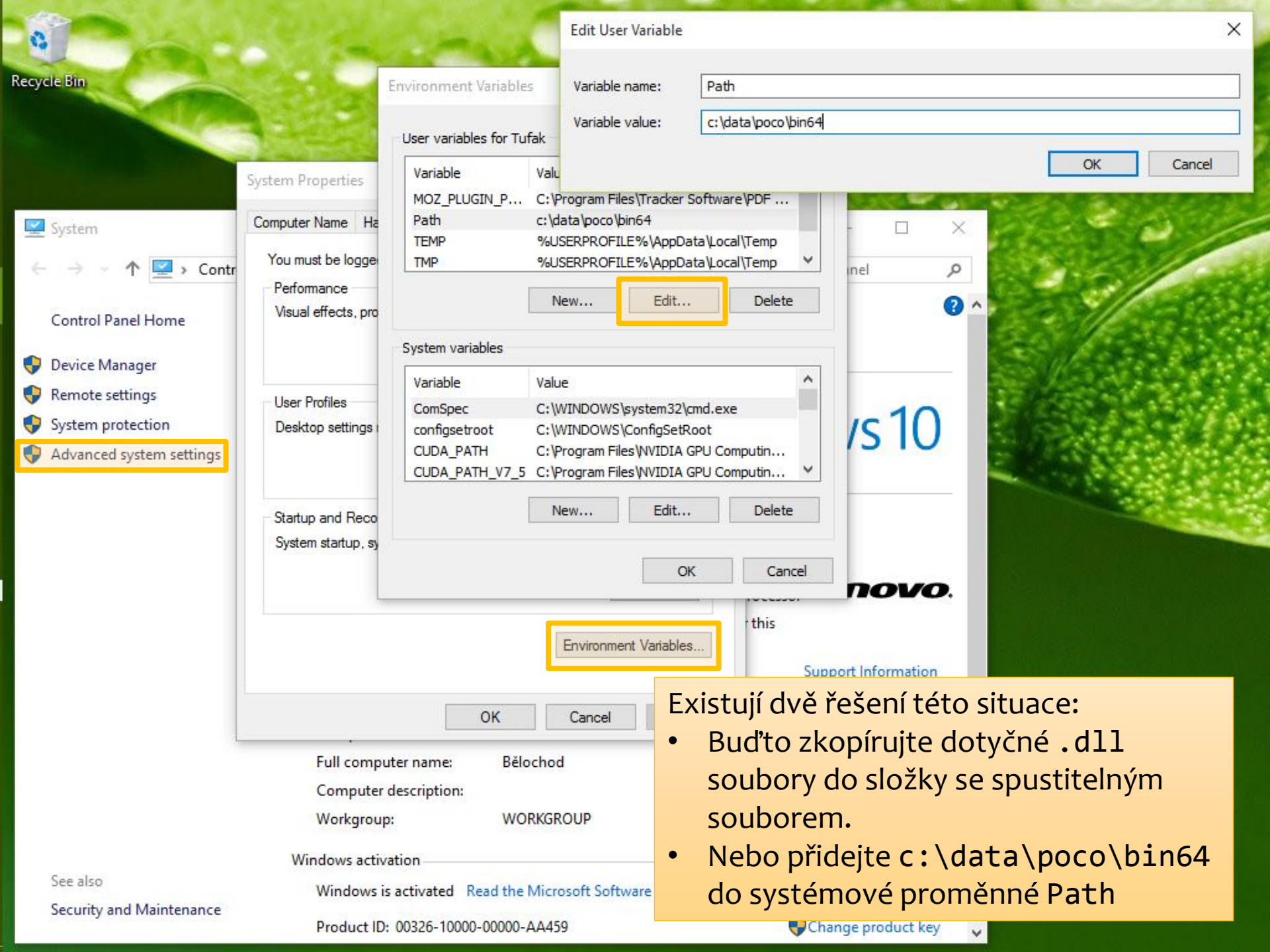
File Home Share View

← → ↕ ↑ This PC > Windows8\_OS (C:) > data > poco > bin64 Search bin64

Name	Date modified	Type	Size
PocoFoundation64d.dll	11/4/2015 10:16 AM	Application extens...	4,598 KB
PocoFoundation64d.ilkk	11/4/2015 10:16 AM	Incremental Linke...	21,151 KB
PocoFoundation64d.pdb	11/4/2015 10:16 AM	Program Debug D...	16,580 KB
PocoNet64d.dll	11/4/2015 10:21 AM	Application extens...	2,409 KB
PocoNet64d.ilkk	11/4/2015 10:21 AM	Incremental Linke...	12,800 KB
PocoNet64d.pdb	11/4/2015 10:21 AM	Program Debug D...	10,452 KB

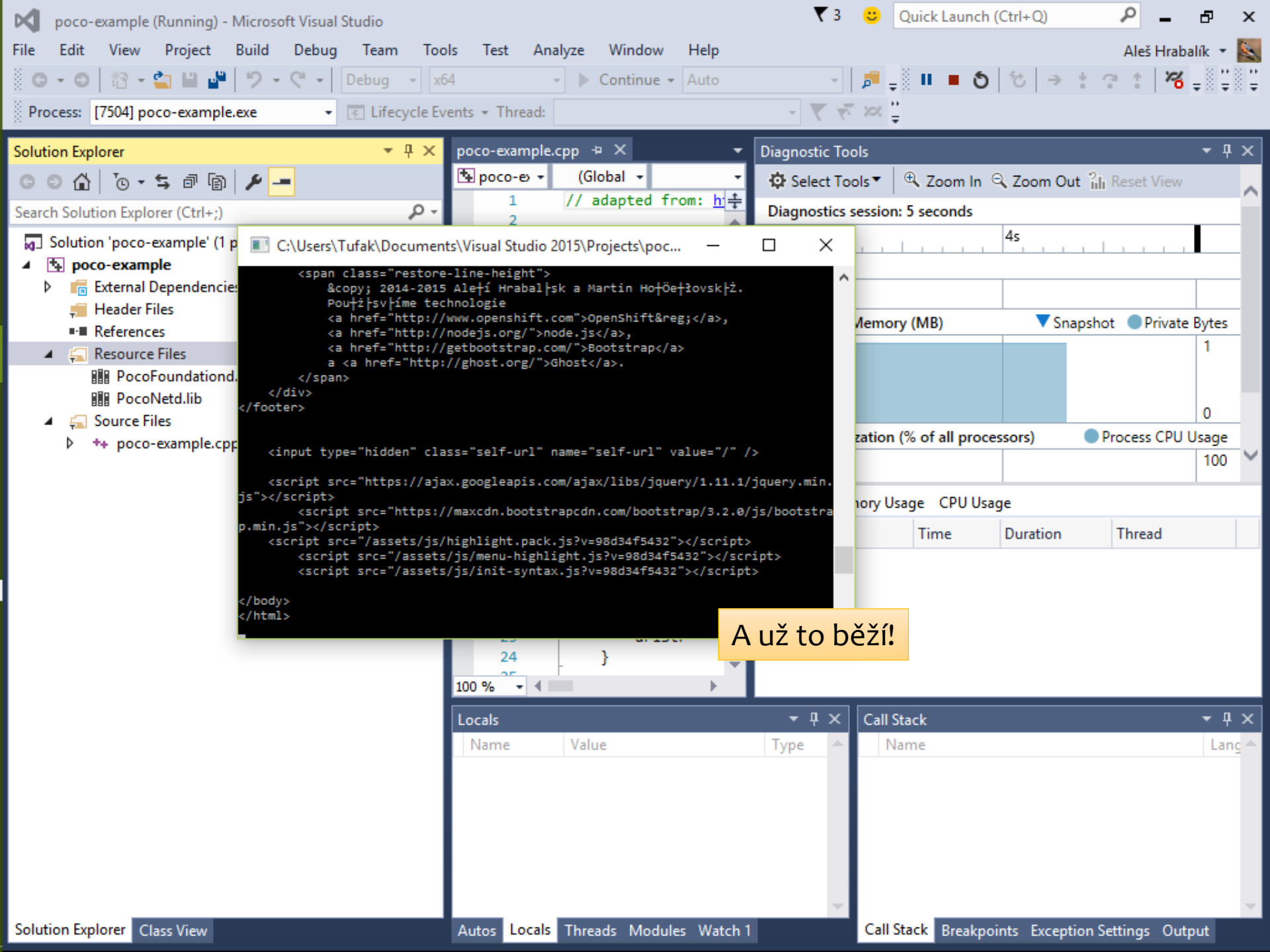
6 items

Tyto soubory jsou v  
c:\data\poco\bin64



Existují dvě řešení této situace:

- Buďto zkopírujte dotyčné .dll soubory do složky se spustitelným souborem.
- Nebo přidejte c:\data\poco\bin64 do systémové proměnné Path



A už to běží!



# Knihovna Cinder

- Umožňuje snadný přístup k rozhraním pro grafické a multimediální aplikace.
  - DirectX a OpenGL (rastrová grafika),
  - Cairo (vektorová grafika),
  - Box2D (fyzikální simulace),
  - OpenCV (počítačové vidění).
- Pozor: Cinder je k dispozici pouze pro Windows a Mac.
- Instalace:
  - Stáhněte na [libcinder.org](http://libcinder.org) a rozbalte stažený .zip soubor.
  - V podsložce `samples` jsou umístěny ukázkové příklady.
  - V podsložce `tools` se nachází `TinderBox`, aplikace pro snadné vytvoření nového projektu.



# Download Cinder

## for OS X and Windows.

Cinder is available for OS X and Windows under the BSD License. The latest version is 0.9.0.

[Release Notes](#)

[CINDER FOR OS X](#)

[CINDER FOR VISUAL C++ 2013](#)

[CINDER ON GITHUB](#)

- Cinder je ke stažení na [libcinder.org](https://libcinder.org).
- Zde je také k dispozici dokumentace, ve které naleznete podrobný popis tříd a funkcí, které knihovna poskytuje.

Compressed Folder Tools cinder\_0.8.6\_vc2013

File Home Share View Extract

« Downloads » cinder\_0.8.6\_vc2013.zip » cinder\_0.8.6\_vc2013

Search cinder\_0.8.6\_vc2013

Name	Type	Compressed size	Password ...	Si
blocks	File folder			

cinder

File Home Share View

This PC » Windows8\_OS (C:) » data » cinder

Search cinder

Name	Date modified	Type	Size
blocks	11/4/2015 1:10 PM	File folder	
boost	11/4/2015 1:10 PM	File folder	
vc2013	11/4/2015 1:07 PM	File folder	
README.md	11/4/2015 1:07 PM	MD File	1 KB
Welcome.html	11/4/2015 1:07 PM	Firefox HTML Doc...	2 KB

35% complete

Copying 24,420 items from cinder\_0.8.6\_vc2013 to cinder

35% complete

Speed: 131 KB/s

Name: channel.hpp  
Time remaining: About 23 minutes  
Items remaining: 16,142 (776 MB)

Fewer details

Stažený .zip soubor rozbalte do nějaké složky.

13 items 13 items selected 2.33 KB

Downloads

Music

Pictures

Videos

Windows8\_OS (C:)

LENOVO (D:)

Network

5 items





Recycle Bin

vc2013

File Home Share view

< > << >> < dat > cinder > samples > ArcballDemo > vc2013

Search vc2013

Name	Date modified	Type	Size
ArcballDemo.opensdf	11/4/2015 2:02 PM	OPENSDF File	0 KB
ArcballDemo.sdf	11/4/2015 2:02 PM	SQL Server Comp...	64 KB
ArcballDemo.sln	11/4/2015 1:20 PM	Microsoft Visual S...	1 KB
ArcballDemo.vcxproj	11/4/2015 1:20 PM	VC++ Project	10 KB
ArcballDemo.vcxproj.filters	11/4/2015 1:20 PM	VC++ Project Filte...	1 KB

Quick access

- Desktop
- Downloads
- data
- Documents
- Windows8\_O
- src
- vc2013
- vc2013
- vc2013

Dropbox

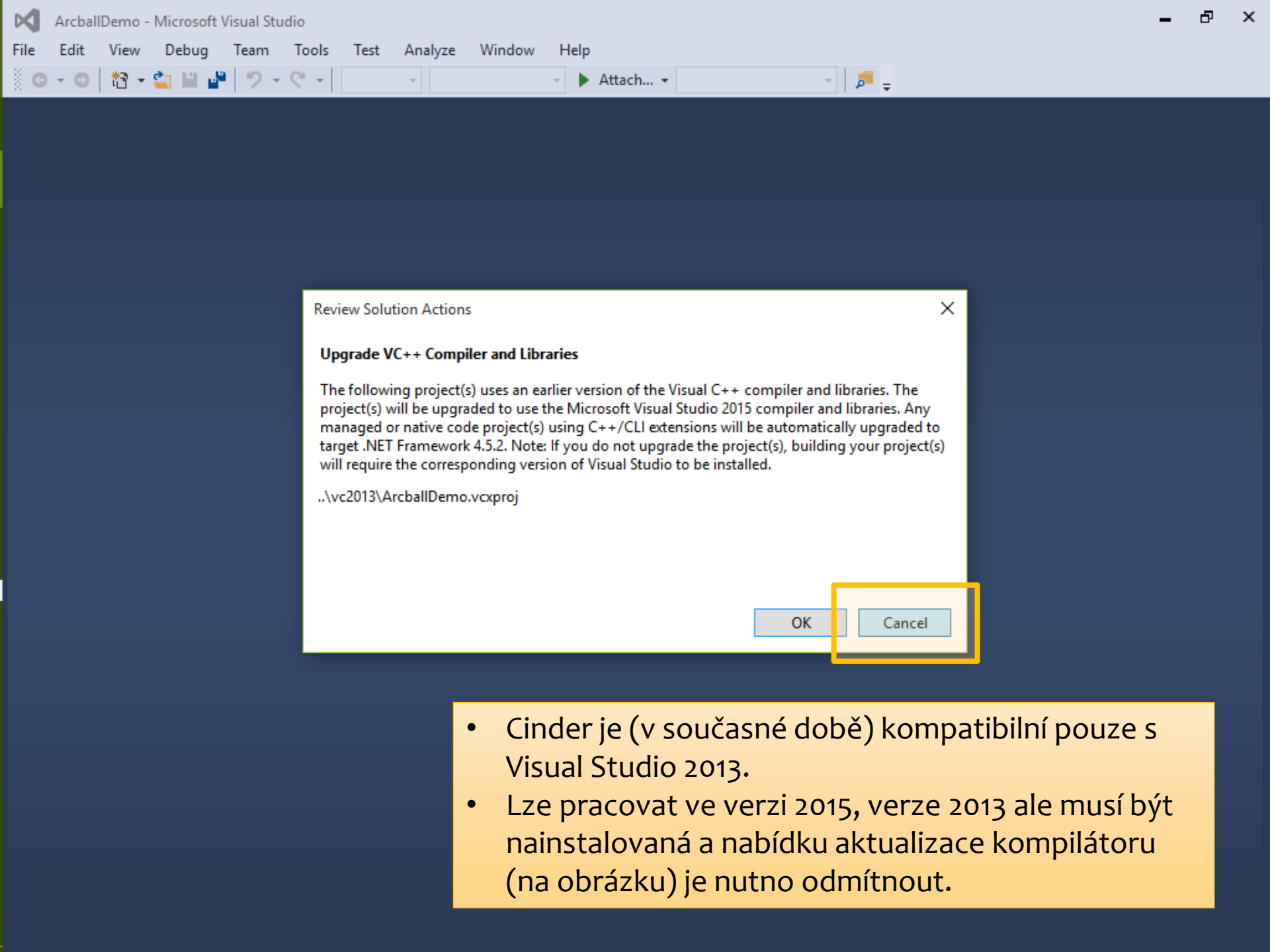
OneDrive

This PC

- Desktop
- Documents
- Downloads
- Music
- Pictures
- Videos

5 items 1 item selected 916 bytes

V podsložce samples jsou umístěny ukázkové příklady, předem připravený projekt pro Visual Studio je vždy ve složce vc2013.



### Review Solution Actions

#### Upgrade VC++ Compiler and Libraries

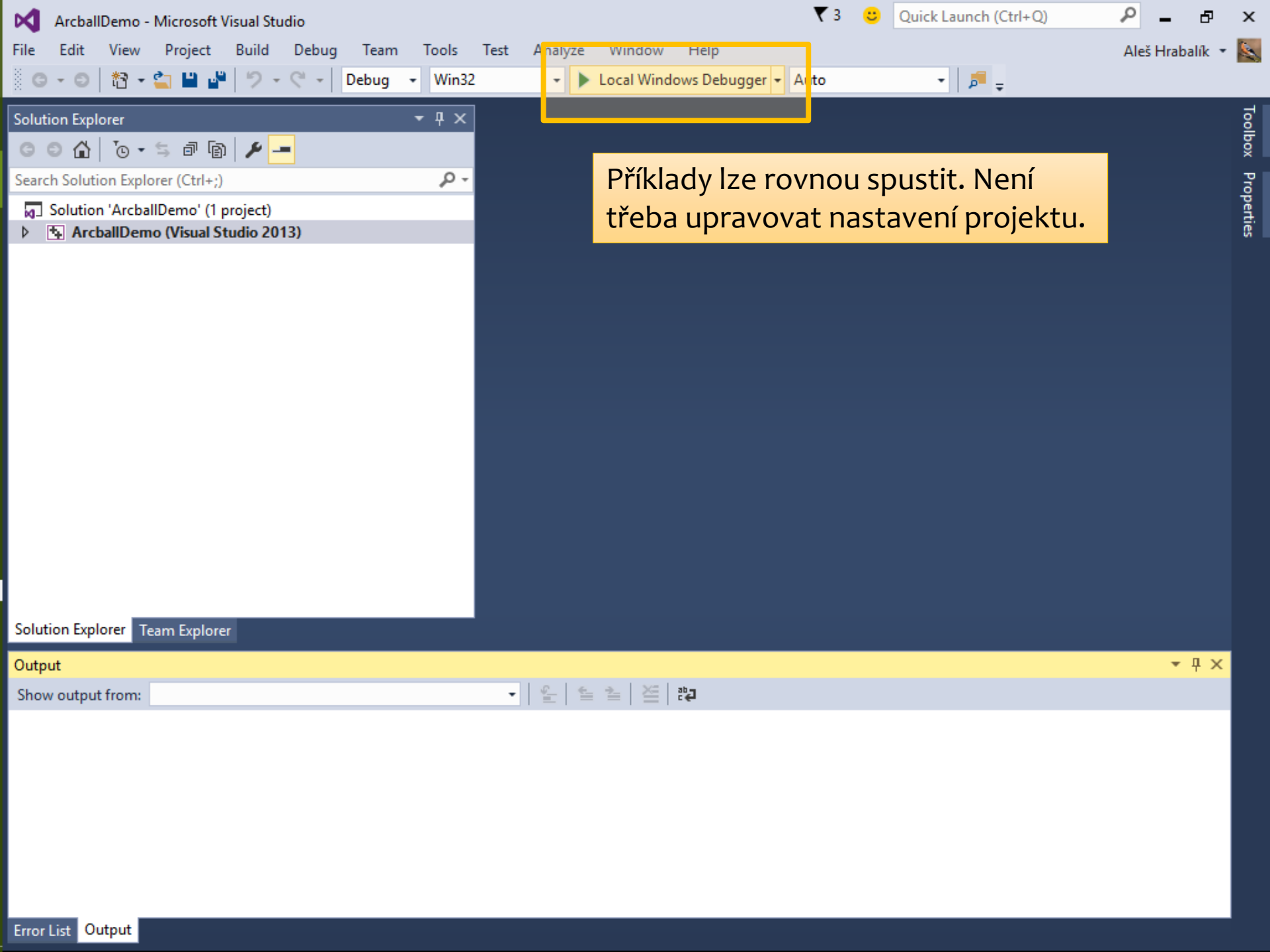
The following project(s) uses an earlier version of the Visual C++ compiler and libraries. The project(s) will be upgraded to use the Microsoft Visual Studio 2015 compiler and libraries. Any managed or native code project(s) using C++/CLI extensions will be automatically upgraded to target .NET Framework 4.5.2. Note: If you do not upgrade the project(s), building your project(s) will require the corresponding version of Visual Studio to be installed.

..\vc2013\ArcballDemo.vcxproj

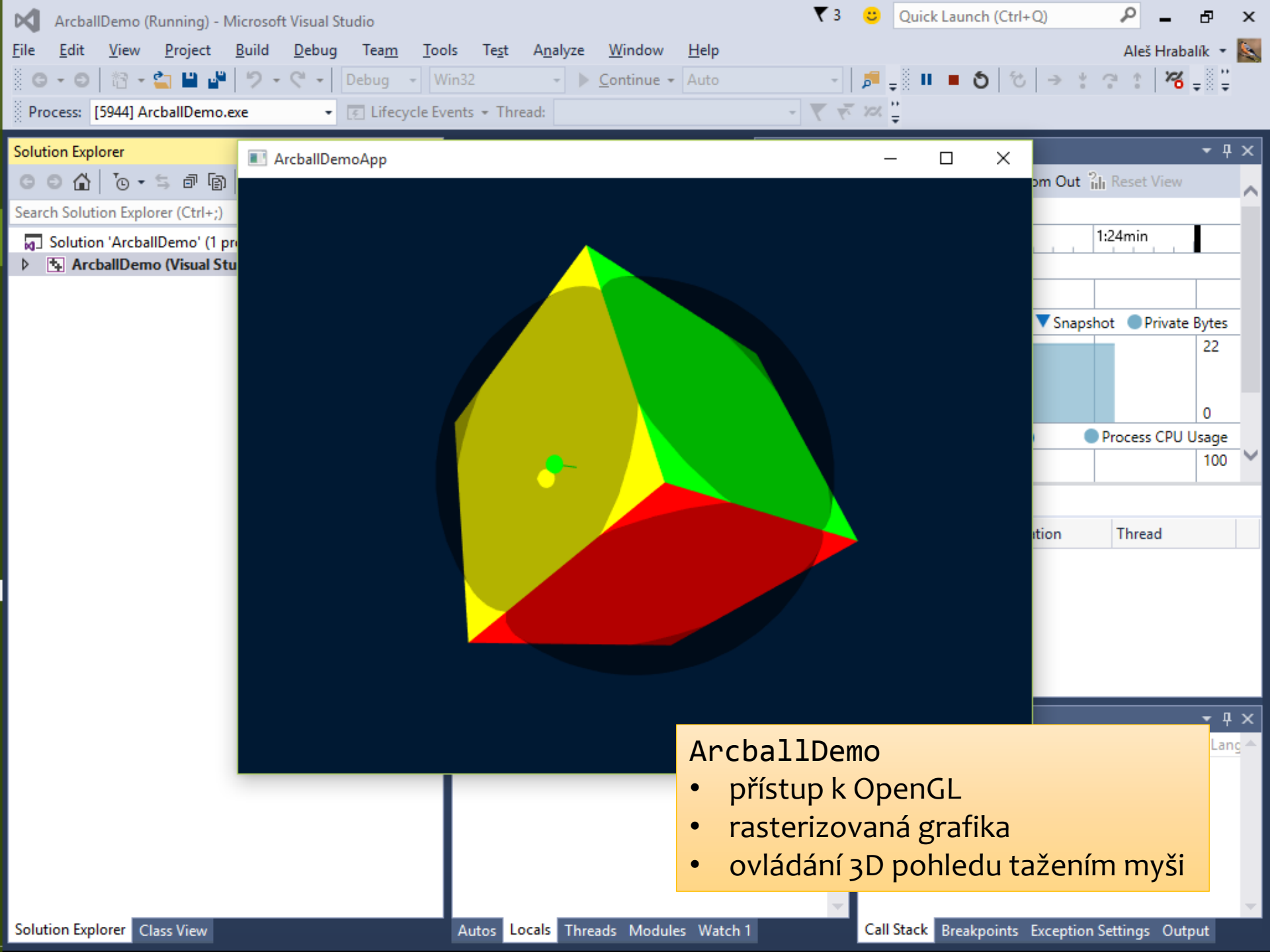
OK

Cancel

- Cinder je (v současné době) kompatibilní pouze s Visual Studio 2013.
- Lze pracovat ve verzi 2015, verze 2013 ale musí být nainstalovaná a nabídku aktualizace kompilátoru (na obrázku) je nutno odmítnout.

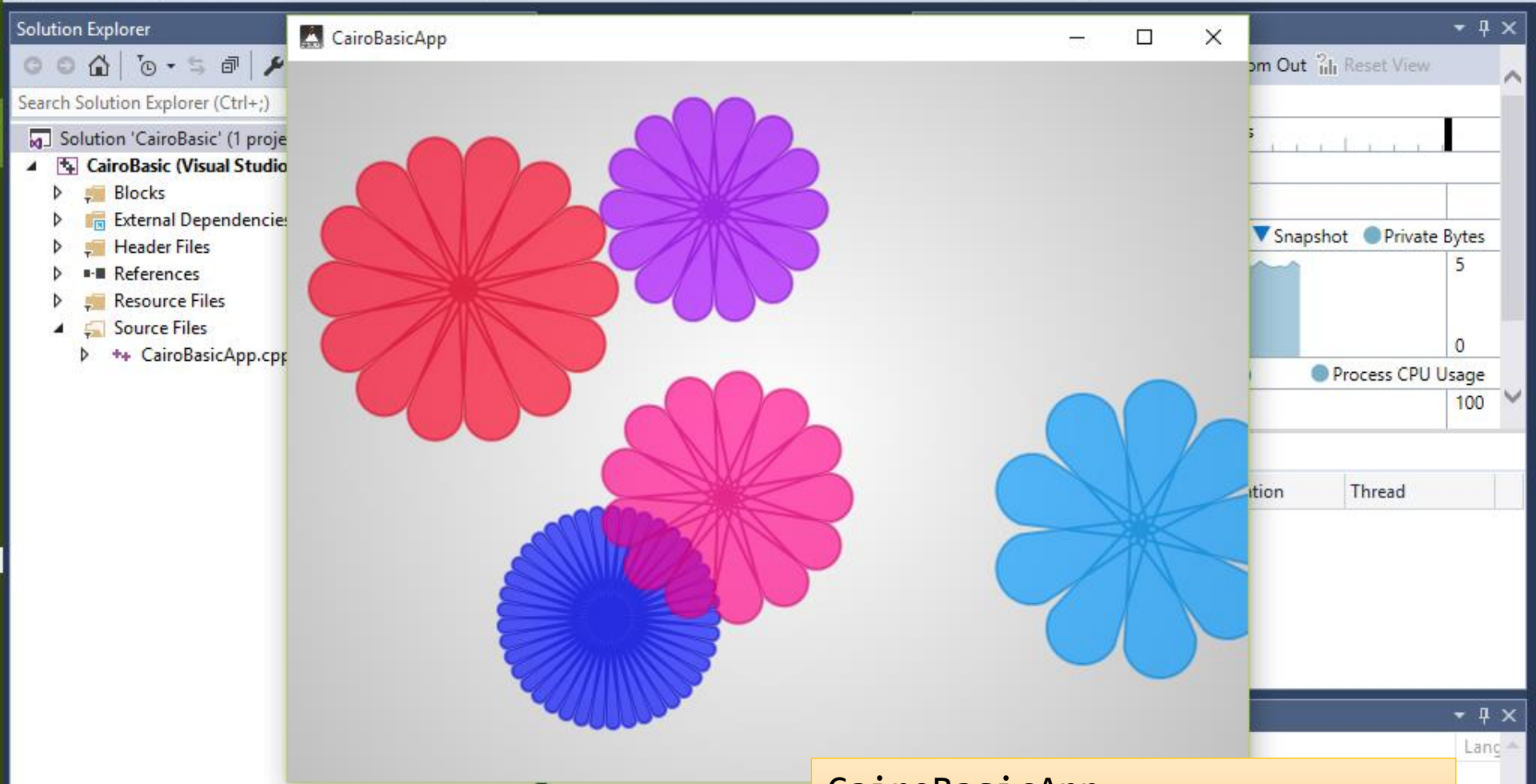


Příklady lze rovnou spustit. Není třeba upravovat nastavení projektu.



## ArcballDemo

- přístup k OpenGL
- rasterizovaná grafika
- ovládání 3D pohledu tažením myši



CairoBasicApp

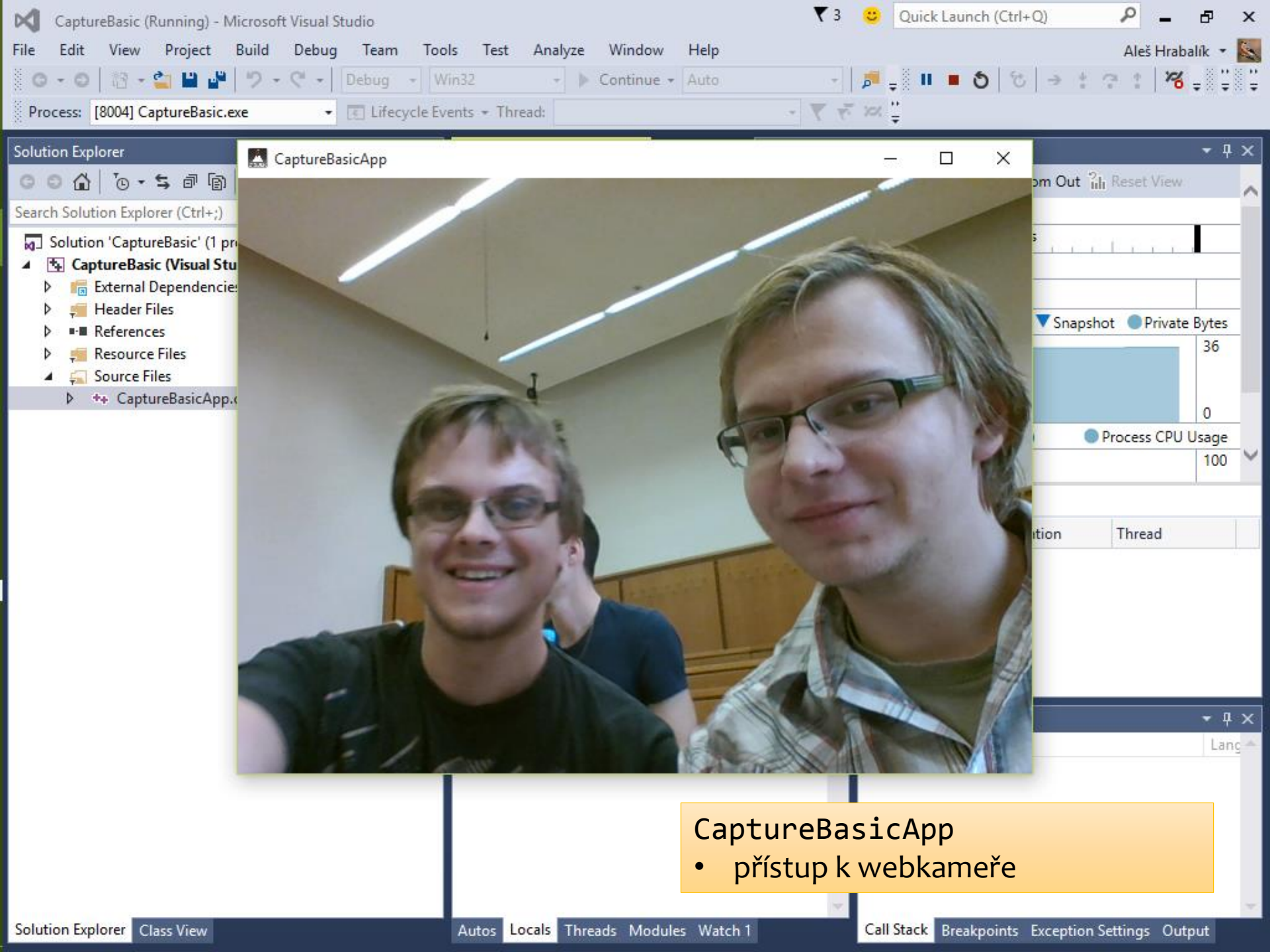
- vektorová grafika
- program reaguje na kliknutí myši





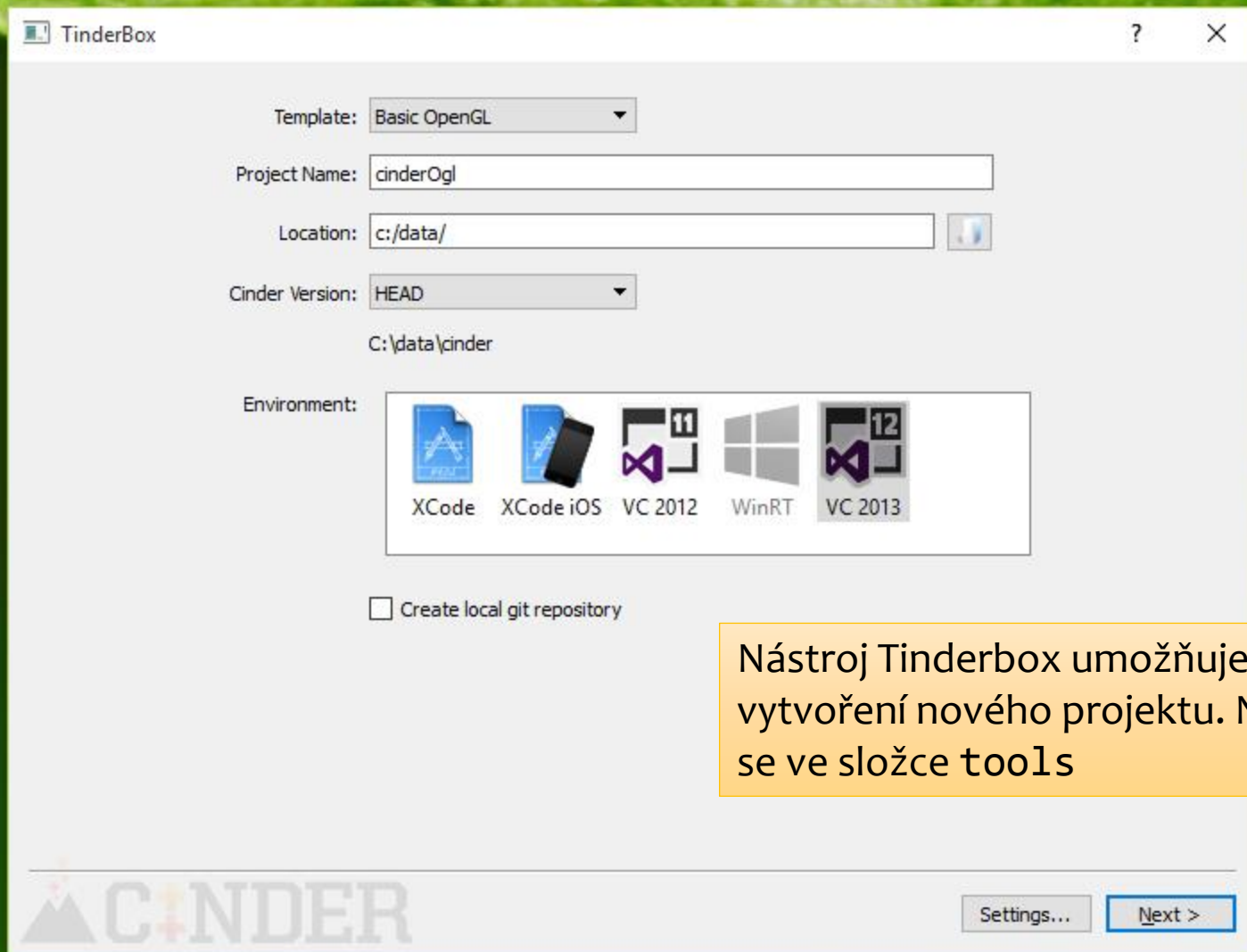
## FalingGearsApp

- fyzikální simulace
- reaguje na kliknutí a podržení myši



CaptureBasicApp

- přístup k webkameře



Nástroj Tinderbox umožňuje snadné vytvoření nového projektu. Nachází se ve složce tools



Děkuji za pozornost.