Advanced Excel Hacking Workshop

Didier Stevens

http://.DidierStevens.com/excel.zip

No Exploits

Just Features

Unzip excel.zip to c:\excel

Password: Workshop

VBA (Visual Basic for Applications)

is a complete Windows programming language

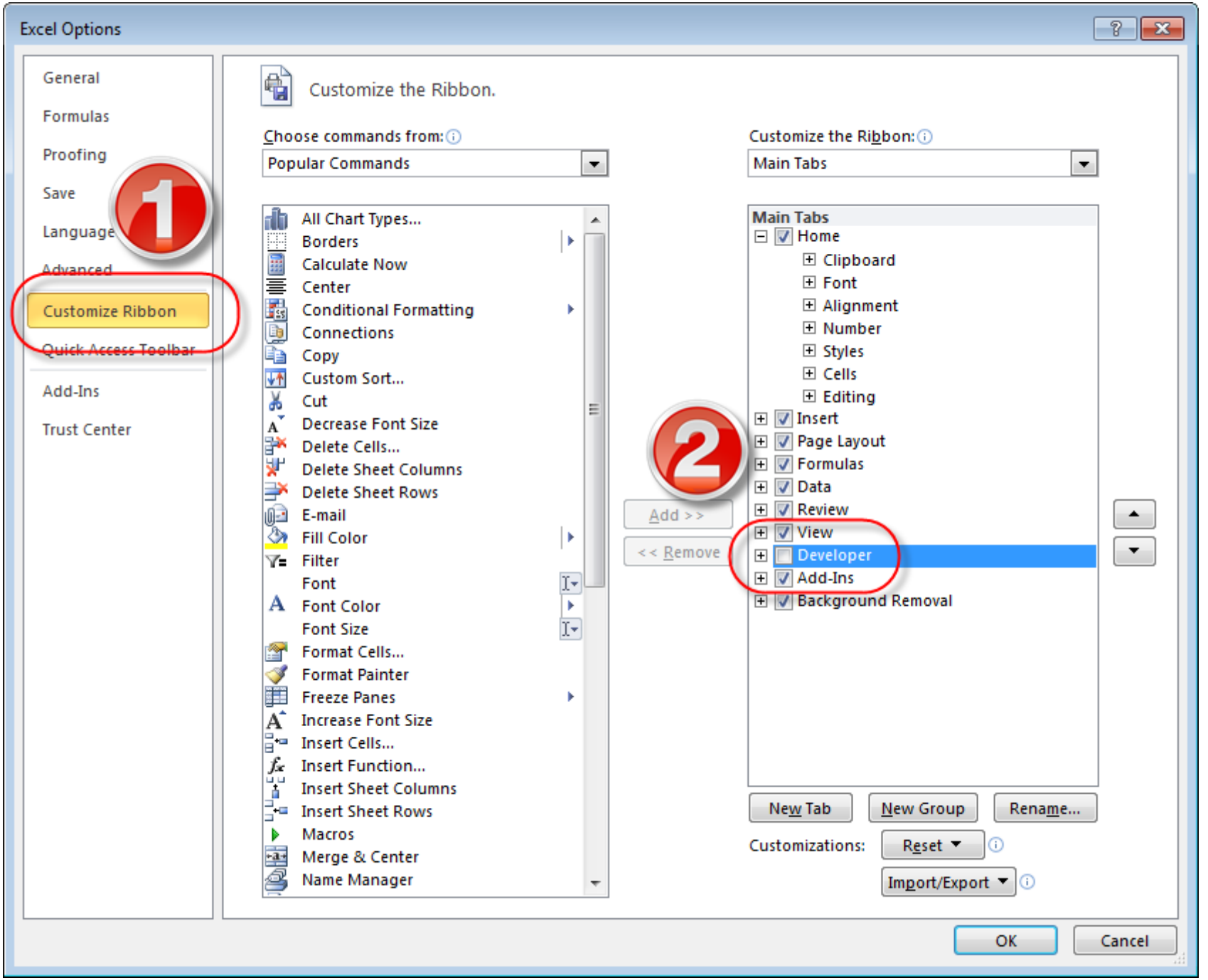
VBS (Visual Basic Script)

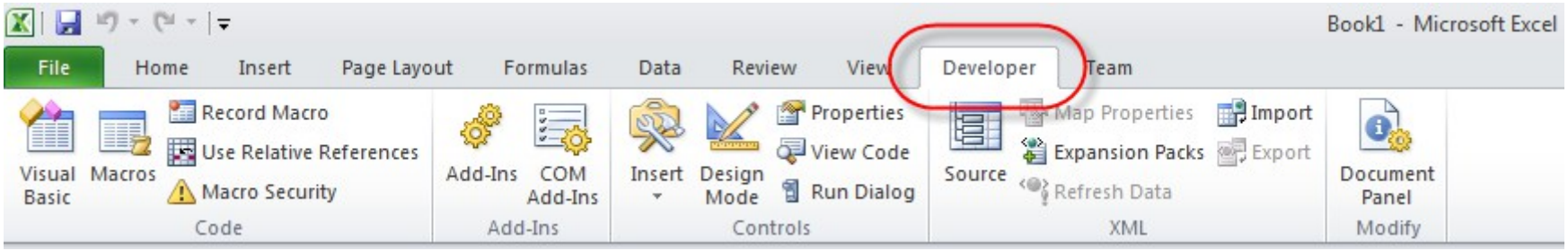
is NOT a complete Windows programming language

VBA has access to the Windows API

VBA: MS Office (Word, Excel Powerpoint, …), AutoCAD, ...

Excel: what I prefer as a User Interface


Excel Options
General
Formulas
Proofing
Save
Language
Advanced
Customize Ribbon
Quick Access Toolbar
Add-Ins
Trust Center
1
Customize the Ribbon.
Choose commands from:
Popular Commands
All Chart Types...
Borders
Calculate Now
Center
Conditional Formatting
Connections
Copy
Custom Sort...
Cut
Decrease Font Size
Delete Cells...
Delete Sheet Columns
Delete Sheet Rows
E-mail
Fill Color
Filter
Font
Font Color
Font Size
Format Cells...
Format Painter
Freeze Panes
Increase Font Size
Insert Cells...
Insert Function...
Insert Sheet Columns
Insert Sheet Rows
Macros
Merge & Center
Name Manager
2
Add >>
<< Remove
Customize the Ribbon:
Main Tabs
Main Tabs
Home
Clipboard
Font
Alignment
Number
Styles
Cells
Editing
Insert
Page Layout
Formulas
Data
Review
View
Developer
Add-Ins
Background Removal
New Tab
New Group
Rename...
Customizations:
Reset
Import/Export
OK
Cancel


Book1 - Microsoft Excel
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Developer
Team
Visual Basic
Macros
Record Macro
Use Relative References
Macro Security
Code
Add-Ins
COM Add-Ins
Add-Ins
Insert
Design Mode
Properties
View Code
Run Dialog
Controls
Source
Map Properties
Expansion Packs
Refresh Data
Import
Export
XML
Document Panel
Modify

Exercise 1:

“Hello World” message box with VBA

VBA7

Introduced with Office 2010

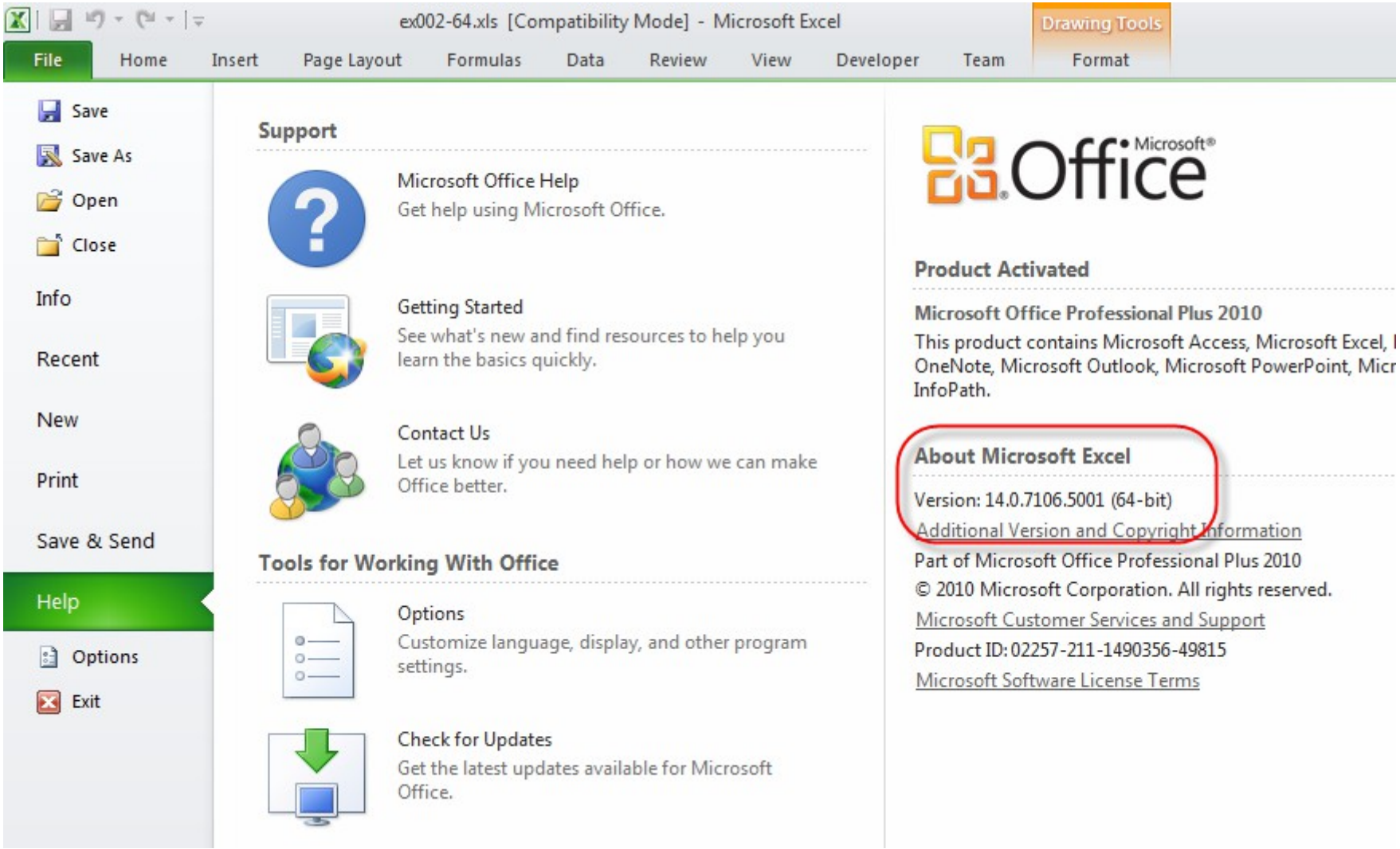
Support for 64-bit

32-bit Excel or 64-bit Excel?

Excel 2007 or earlier: 32-bit

Excel 2010 or 2013:

Check File/Help


ex002-64.xls [Compatibility Mode] - Microsoft Excel
Drawing Tools
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Developer
Team
Format
Save
Save As
Open
Close
Info
Recent
New
Print
Save & Send
Help
Options
Exit
Support
Microsoft Office Help
Get help using Microsoft Office.
Getting Started
See what's new and find resources to help you learn the basics quickly.
Contact Us
Let us know if you need help or how we can make Office better.
Tools for Working With Office
Options
Customize language, display, and other program settings.
Check for Updates
Get the latest updates available for Microsoft Office.
Microsoft Office
Product Activated
Microsoft Office Professional Plus 2010
This product contains Microsoft Access, Microsoft Excel,
OneNote, Microsoft Outlook, Microsoft PowerPoint, Micr
InfoPath.
About Microsoft Excel
Version: 14.0.7106.5001 (64-bit)
Additional Version and Copyright Information
Part of Microsoft Office Professional Plus 2010
© 2010 Microsoft Corporation. All rights reserved.
Microsoft Customer Services and Support
Product ID: 02257-211-1490356-49815
Microsoft Software License Terms

3 new VBA7 keywords:

PtrSafe
LongLong
LongPtr

2 new VBA7 compilation constants

VBA7
Win64

I use Win64

If Win64 is defined, I know that I'm using VBA7 on a 64-bit application

Thus I use the new keywords (PtrSafe, LongLong, LongPtr)

If Win64 is not defined, I know that I am on 32-bit application.

And then I DO NOT use the new keywords.

Exercise 2:

“Hello World” message box with API

32-bit, 64-bit & both

API functions:

not only basic types as arguments,

but also structures

```
Private Declare PtrSafe Sub GetSystemTime Lib "kernel32.dll" (st As SYSTEMTIME)
```

```
Private Type SYSTEMTIME
  wYear As Integer
  wMonth As Integer
  wDayOfWeek As Integer
  wDay As Integer
  wHour As Integer
  wMinute As Integer
  wSecond As Integer
  wMilliseconds As Integer
End Type
```

Exercise 3:

GetSystemTime

32-bit, 64-bit & both

InstalledPrograms

NetworkMashup-32

TaskManager.xls / TaskManagerSC.xls

Problem: writing a lot of VBA code

Datapipe

Modify C source code datapipe

datapipe.exe → datapipe.dll

```
int APIENTRY WinMain(HINSTANCE hInstance, HINS
{
  RedirectIOToConsole();
  puts("Datapipe");
  puts("--------");
  puts("https://DidierStevens.com");
  puts("");
  puts("IPv4 addresses of this machine:");
  PrintIPs();
  puts("");
  DataPipe();
  puts("Press return to end");
  getchar();
}
```

```
BOOL WINAPI DllMain(HINSTANCE hiDLL, DWORD dwRea
{
  switch(dwReason)
  {
    case DLL_PROCESS_ATTACH:
      RedirectIOToConsole();
      puts("Datapipe");
      puts("--------");
      puts("https://DidierStevens.com");
      puts("");
      puts("IPv4 addresses of this machine:");
      PrintIPs();
      puts("");
      DataPipe();
      return FALSE;
```

DLL to shellcode

CreateMemoryModuleShellCode.py datapipe-dll.dll datapipe-dll.dll.bin

Shellcode to VBA

shellcode2vba.py datapipe-dll.dll.bin datapipe-dll.dll.bin.base64.vba

ReactOS cmd and regedit

```
/*
 * main function
 */
int cmd_main (int argc, const TCHAR *argv[])
{
  HANDLE hConsole;
  TCHAR startPath[MAX_PATH];
  CONSOLE_SCREEN_BUFFER_INFO Info;

  lpOriginalEnvironment = DuplicateEnvironment();

  GetCurrentDirectory(MAX_PATH,startPath);
  _tchdir(startPath);

  SetFileApisToOEM();
  InputCodePage= 0;
  OutputCodePage = 0;

  AllocConsole();

  hConsole = CreateFile(_T("CONOUT$"), GENERIC_READ|GENERIC_WRITE,
    FILE_SHARE_READ|FILE_SHARE_WRITE, NULL,
    OPEN_EXISTING, 0, NULL);
```

```c
#include <precomp.h>

INT WINAPI
DllMain(
    IN PVOID hInstanceDll,
    IN ULONG dwReason,
    IN PVOID reserved)
{
    switch (dwReason)
    {
        case DLL_PROCESS_ATTACH:
            cmd_main(0, NULL);
            break;

        case DLL_THREAD_ATTACH:
            break;

        case DLL_THREAD_DETACH:
            break;

        case DLL_PROCESS_DETACH:
            break;
    }

    return TRUE;
}
```

```
<group>
  <module name="cmd" type="win32dll" installbase="system32" installname="cmd.dll"
    <include base="ReactOS">include/reactos/wine</include>
```

Putty

20% discount sale for Brucon:

PDF Analysis workshop videos on CD: €20

White Hat Shellcode workshop videos on CD: €20

x64 workshop videos on CD: €20

All videos on CD: €50

http://DidierStevensLabs.com