ZWCAD .NETelementary guidance

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Operating environments

CADplatform: ZWCAD IDE:Visual studio 2010 .NETframework: .NETFramework 4.0 .NETlibrary files: ZwManaged.dll and ZwDatabaseMgd.dll Development language: VB.NET or C# etc.

Create a project and set properties

1. Create a project

Start Visual studio 2010. Go to menu File, and then select File-> New Project. Here you can select two kinds of projects: Windows Forms Application or Class Library. The first type will produce a stand alone .exe file that allows your application to automate ZWCAD. The second type will produce a .dll file that you can load inside ZWCAD and register new commands.



2. Add reference

Now, at the Solution Explorer window, double click the project's name to go to project properties.



Select the "References" taband click on "Add" from the project properties, and select "Browse". Add reference to ZwManaged.dll and ZwDatabaseMgd.dll at the installationfolder of ZWCAD, like the image below.

Application	Unused References Reference Path	5				
Compile	References:					
Debug	System Add Reference	rk\v4. rk\v4.				
References	System. System. The system of	rk\v4. rk\v4. rk\v4.				
Resources	System. X Look in: C ZWCAD+ 2012 V 🔇 🌮 🖽 -	rk\v4.				
Services	CwGxMR. dll					
Settings	SzwH9RR7.dll SzwligHgr.dll Szw0 ZwHopl.dll ≁ZwHigrator.exe Szw0					
Signing	SwHow.dll ZwWigRes.dll ZwInstallDrive.exe ZwWouseGestureApp.dll					
My Extensions	SzwInstallDriveFNP, dll SzwMouseGestureLib, dll ZwP ZwLispEx. dll ZwMouseGestureUT. DLL ZwP					
Code Analysis		>				
	File name: "Zwllanaged. dll" "Zwllanaged. dll"	Juace				
	Imported Hicrosof Files of type: Component Files (*. dll;*. tlb;*. olb;*. ocx;*. exe;*. man 🖌 Add User Import					
	V Hicros V System OK Cancel					
	♥ System Collections. ♥ System Collections. Generic					
	V System Data					
	V System. Diagnostics V System. Linq					
	System. Xml. Ling					

The result should be like in the following image.

lerences.				· ·
Reference Name	Type	Ver	Copy Local	Path
System	. NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.
System.Core	. NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.
System. Data	NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.
System. Data. DataSetExtens	NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.)
System.Xml	NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.)
System. Xml. Ling	NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.0
ZwDatabaseMgd	NET	1.1.1.8	True	C:\Program Files\ZWCAD+ 2012\ZwDatabaseMgd.dll
ZwManaged	NET	1.1.1.8	True	C:\Program Files\ZWCAD+ 2012\ZwManaged.dll

Additionally, as we will use some COM features with our project, add reference to ZWCAD.exe in the same folder.The result should be like in the following image.

<u>K</u> eterences:				
Reference Name	Type	Ver	Copy Local	Path
OLE Automation	COM	2.0.0.0	False	C:\WINDOWS\assembly\GAC\stdole\7.0.3300.0_b03f5f7f11d50a3a\stdole.dll
System	. NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.
System.Core	NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.
System. Data	NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.
System. Data. DataSetExtens	NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.
System.Xml	NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.
System. Xml. Ling	NET	4.0.0.0	False	C:\Program Files\Reference Assemblies\Microsoft\Framework\.NETFramework\v4.
ZWCAD Type Library	COM	1.1.0.0	False	C:\Documents and Settings\XPMUser\Local Settings\Application Data\Temporary
ZwDatabaseMgd	NET	1.1.1.8	True	C:\Program Files\ZWCAD+ 2012\ZwDatabaseMgd.dll
ZwManaged	. NET	1.1.1.8	True	C:\Program Files\ZWCAD+ 2012\ZwManaged.dll

Finally, change the property "Copy Local" of ZwDatabaseMgd and ZwManaged to False.

Pro	operties	▼ -⊐ X			
ZwDatabaseMgd Reference F -					
	2↓ 🖻				
4	Misc				
	(Name)	ZwDatabaseMg			
	Copy Local	False			
· · ·	Culture				

In .NET we need to import the namespace we want to use. The code inside class1.vb will look like the following code:

Imports ZWCAD

3. Specify theversion of framework

Select the "Compile" taband click on "Advance Compile Options" from the project properties. Specify the version of framework from "Target framework (all configurations)" option at the "Advanced Compiler Settings" window.

Application	Configuration: Active (Debug) Platform: Active (Any CPU)
Compile	
Debug	Build output path:
References	Compile Options:
Resources	Option explicit: Option strict:
Services	On (custon)
Settings	Binary Advanced Compiler Settings
Signing	Warning configurations: Optimizations Condition Remove integer overflow checks Enable optimizations
My Extensions	Implicit conversion DLL hase address:
Code Analysis	Late binding; call could fail at r Implicit type: object assumed
	Use of variable prior to assignmer Function returning reference type
	Function returning intrinsic value
	Unused local variable Instance variable accesses shared Generate gerialization assemblies:
	Recursive operator or property acc Auto
	Target CPU:
	Disable all warnings
	Treat all warnings as errors
	Iv Generate XML documentation file .NET Framework 2.0 Im Register for COM interop .NET Framework 3.0 .NET Framework 3.5 .NET Framework 3.5
	. NET Framework 3.5 Client Profile NET Framework 4 NET Framework 4 Client Profile Install other frameworks

4. Debug Setting

Select the "Debug" taband specify ZWCAD.ext as the Start external program from the project properties.

Application	Start Action	
Compile	○ Start project	
Debug*	⊙ Start e <u>x</u> ternal program:	C:\Program Files\ZWCAD+ 2012\ZWCAD.exe
References	◯ Start browser with U <u>R</u> L:	
Resources	Start Options Comma <u>n</u> d line arguments:	
e		

Run the DLL file

After building a project, a dll file named as project's name will be generated in the path of ...\bin\Release\.Start ZWCAD and run NETLOAD command to load the DLL file. And then you can run commands which are registered in the code.

Sample code

The following example program is executing the AddCircle command in the command line, will create a red circle with radius of 10 in the drawing and center of the circle is (2, 3, 0). Steps:

1. Follow the steps above to create a project and add reference. And then copy andpaste the bellow codes to the Class1.vb file.Overwrite the original code.

```
Imports ZwSoft.ZwCAD.ApplicationServices
Imports ZwSoft.ZwCAD.Runtime
Imports ZwSoft.ZwCAD.DatabaseServices
Imports ZwSoft.ZwCAD.Geometry
```

Namespace TEST

```
Public Class SHMain
```

```
<\!\!\!CommandMethod("AddCircle")\!\!>_-
```

```
Public Sub AddCircle()
```

Dim zcDoc As Document = Application.DocumentManager.MdiActiveDocument

Dim zcDB As Database = zcDoc.Database

Using zcTran As Transaction = zcDB.TransactionManager.StartTransaction

Dim zcBLT As BlockTable

zcBLT = zcTran.GetObject(zcDB.BlockTableId, OpenMode.ForRead)

Dim zcBLTR As BlockTableRecord

zcBLTR = zcTran.GetObject(zcBLT(BlockTableRecord.ModelSpace), OpenMode.ForWrite)

Dim zcCircle As Circle = New Circle

```
zcCircle.Center = New Point3d(2, 3, 0)
```

zcCircle.Radius = 10

zcCircle.ColorIndex = 1

zcBLTR.AppendEntity(zcCircle)

zcTran.AddNewlyCreatedDBObject(zcCircle, True)

```
zcTran.Commit()
```

End Using

zcDoc.SendStringToExecute("_ZOOM E ", False, False, False)

End Sub

End Class

End Namespace

For your convenience, here is C# code:

using System;

using System.Collections;

using System.Collections.Generic;

using System.Data;

using System.Diagnostics;

using ZwSoft.ZwCAD.ApplicationServices;

using ZwSoft.ZwCAD.Runtime;

using ZwSoft.ZwCAD.DatabaseServices;

using ZwSoft.ZwCAD.Geometry;

namespace TEST

{

public class SHMain

{

[CommandMethod("AddCircle")]

public void AddCircle()

{

Document zcDoc = Application.DocumentManager.MdiActiveDocument; Database zcDB = zcDoc.Database;

Transaction ZcTran = zcDoc.TransactionManager.StartTransaction();

using (ZcTran)

{

BlockTable zcBLT = (BlockTable)ZcTran.GetObject(zcDB.BlockTableId,

OpenMode.ForRead);

```
BlockTableRecord zcBLTR =
```

(BlockTableRecord)ZcTran.GetObject(zcBLT[BlockTableRecord.ModelSpace], OpenMode.ForWrite);

```
Circle zcCircle = new Circle();
zcCircle.Center = new Point3d(2, 3, 0);
```

```
zcCircle.Radius = 10;
```

```
zcCircle.ColorIndex = 1;
```

zcBLTR.AppendEntity(zcCircle);

ZcTran.AddNewlyCreatedDBObject(zcCircle, true);

```
ZcTran.Commit();
```

}

```
zcDoc.SendStringToExecute("_ZOOM E ", false, false, false);
```

}

}

2. Go to menu File, and then select Build->Build ClassLibrary1 (the ClassLibrary1 is project's name) to build the project.



After building the program, the result will be shown in the Output window as shown below.



- Start ZWCADby manual or select Debug->Start Debugging to launch ZWCADautomatically.
- 4. Run NETLOAD command and load the DLL file.
- 5. After loading the DLL file, run the AddCircle command and a red circle will be created in the drawing.