REVIT RTC TECHNOLOGY CONFERENCE NORTH AMERICA 2014

Learn to Write Add-ons No Coding Exp Required!

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Who am I

- BIM Manager for YTL Corporation Malaysia
- All in one company Property Developer, Design, Engineering, QS, Construction and FM
- Hotels, Resorts, Residential, Commercial, Retail, Power and Rail
- Projects from 10mill to 2.5billionUSD
- Programming for 4-5 years
- Self taught a long struggle, had lots of help from community and the Dev Days with Jeremy Tammik were invaluable
- Have written the Company API toolkits for ADG and GHD
- Now do a lot of things with opensource, javascipt, C/C++, PHP, F# (dabbling).
- Have developed custom addons for Dynamo

Overall Lesson Plan

- Lab 1 – Computing Essentials, Visual Studio and First Project
- Lab 2a – Revit API Pre-Starters, Setup and VSTA
- Lab 2b – Select Objects, get data, set data, export/import data
- Lab 3 – UI Setup, Project Templates, Views
- Lab 4 – Export/Rename, Place Families, Create Floors, Events

Lab 2

- **Revit Lookup Table Installation and Introduction**
- **Revit SDK walkthrough**
- **Using VSTA ie Revit Macros**
- **API TIME!!**
  - Get Selection (Using Mouse Picking Tools)
  - Get Collection (Using the Revit Database to Select)
  - Update Door Tags from Room Data
  - Export Data to Text file
  - Import Data from Text file

Revit Lookup Table

- Revit Lookup Table is a custom tool that allows users to explore various data and information that is hidden “under the hood” so to speak.
- This tool is invaluable for programmers learning the ins and outs of Revit

- Let’s go over and look at a basic example

RevitLookup.addin

Revit Lookup Table Installation

- Now that you can see what the tool does we need to look at how to install it.
- First we need to open the Lookup Tool project file in Visual Studio
- File -> Open Project (NOT OPEN FILE)
- Go to C:\RTC2014-Session 35-36\Revit SDK\RevitLookup\CS\RevitLookup.csproj
- From here go straight to Build ->Build Solution or hit F7
- Once the program compiles go to C:\RTC2014-Session 35-36\Revit SDK\RevitLookup\CS\bin\Debug
- Copy the RevitLookup.dll and the RevitLookup.addin
- Paste them into C:\ProgramData\Autodesk\Revit\Addins\2014

Revit SDK Review

- With every installation of Revit you can install the Revit SDK
- We will go through the files now to review what's available with the SDK
- RevitAPI.chm is a very important document and invaluable to help you with your coding, we will review now.

Revit VSTA

- The Revit VSTA is the Macro creator for Revit, this very helpful application is a great way to debug and build pieces of your application, especially if you are debugging your code a lot it saves opening Revit every single time you are testing.
- You can access this tool from the Manage Tab then Macros Panel in Revit.
- From here we can create Document and Application programs. With documents the macro code will actually reside inside the project which allows users to build specific Project macros if required.
- We will be using “Application” Macros for our Lab

Revit VSTA Setup

- Lets put the example code into our system so if you get lost you can follow along.
- First copy the folder C:\RTC2014-Session 35-36\VSTA\RTC2014_Lab_2
- Paste it to the following location C:\ProgramData\Autodesk\Revit\Macros\2014\Revit\App Hookup

Setup your VSTA Application

- Open a new Revit Project and a standard construction Template
- Click on the Manage Tab -> Macro Manager
- Click on the Application Tab
- Create a new C# Module call it “Username_Lab2”
- Create a new Macro and call it get_selection

Revit API – Get Selection

- **What does it do?**
  - This Macro shows how users can get the API to get user input to select specific Revit elements, in this case the users will be prompted to pick walls
  - Once the Wall is selected users will learn how to access the instance and type parameters of the wall and return them as a dialog box as the User Output
  - A number of selection filter options will be covered

Revit API – Get Collection

- **What does it do?**
  - This Macro shows how users can access the Revit database without user input to access elements in a Revit Project. In this case the API will retrieve some walls automatically without selection and Return parameter information about the walls back to the users.

Revit API – Update Door Tag

- **Before we begin we need to make some Rooms in our project and give a name Room1 will suffice. Then put a door on the walls leading into and out of the room.**
- **What does it do?**
  - This API reads the doors that are ToRoom and gets the Room numbers from the connecting Rooms.
  - It then updates the instance comments parameter with the Room number value for tagging purposes.
  - A key feature used here is the "Transaction" which is required any time wants to write to the Revit Database.

Revit API – Export Data to Text

- **What does it do?**
  - The API looks for all the wall instances in our Revit Project
  - It then gets the ID numbers, Wall Type Names and the instance comments parameter
  - Once it has these values it exports them to a text file as tab delimitated items.

Revit API – Import Data from Text

- **Before writing the API open up the text file we just created and modify the comments information, we can do this in notepad or excel**
- **What does it do**
  - This firstly selects the Text file we created earlier
  - Second it gets the ID numbers stored to get the elements
  - Last any comments for any items that have been changed it loads them into the Revit model

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Questions?

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