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 in F#

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 3

- **Create a command for our new Macros**
  - Setup Jeremy Tammik's Template
- **Create an Application and a User Interface for our Macros**
  - Create Tab
  - Create Panels
  - Create Buttons
  - Create a User Interface
- **Create more Macros to Explore various parts of the Revit API**
  - Cleanup Revit Files – deleting views, objects from Revit
  - Copy Objects from Project to Project
  - Create and Rename Floor/Ceiling Plans based on View Type Names

Revit Commands

- Revit commands are the buttons that appear under the addins Tab External Tools, these options are something that generally doesn't need to take up space in the UI.
- We are going to use the Building Coders Revit Visual Template to save us a ton of setup time.
- Copy the Zip file C:\RTC2014-Session 35-36\revit2014addinwizardcs-1.zip
- Paste this file here; C:\Users\username\Documents\Visual Studio 2013\Templates\ProjectTemplates\Visual C#\

Visual Studio newcommand

- We are now going to copy our code from the Get Selection macro we made in the previous lab.
- If you were not here you raise your hand and I will put up the next slide from the previous lab session for your convenience.

- Open up Visual Studio and create a new Revit project this time. We will now go and build our macro into a Revit Command.

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

Visual Studio UI Application

- **What does it do?**
  - This creates a new tab and custom panels will tools in the panels that will have all our previous commands from the labs earlier in one place.
  - This will show users how to transition working macros into the Visual Studio Project environment.
  - Shows how to setup buttons into the new Panels
  - Create your own user interfaces inside of Revit

Back to VSTA

- **Now we've gone from building and testing simple macros to setting them up in the Revit Interfaces for our users to access the commands and tools.**

- **We are going to be spending the rest of our time looking at a number of different Revit API functions to expose users to many area's the rest of this lab will include.**

  - Cleanup Project Files
  - Copy from Project to Project
  - Create and Rename Views

Revit API – Delete from Revit

- **What does it do?**
  - This Macro will go through the Revit database and delete the View Types, View Templates and Filters, but leave Floor plans for Revit Link options.
  - It show users some examples of using LINQ, Lambdas queries to select objects
  - Creates a transaction that delete elements from the Revit Project

Revit API – Copy from Project to Project

- **Before you start copy the file Test.rvt from the dataset area to the desktop**
- **What does it do?**
  - This will be one of our largest Macros, this show how to copy families, system types, tags and filters from one project to another.
  - Shows a number of options for filtering the Revit Database.
  - Showcases the use of the Revit Copy Util command the only API command that allows copying between projects.

Revit API – Create and Rename Views

- **Before we begin you should create some custom floor plan view types.**

- **What does it do?**

  - The command reads all the levels in a project and gets a list of them

  - We then get a list of all the floor, ceiling and structural floor view types in the project

  - The API then renames the views according to our naming convention and creates them for the multiple categories in a single go.

Revit API – Rename and Export to DWG

- **What does it do?**
  - This macro gets a list of all the sheets in a project
  - It then gets the DWG export setting options based on the name we picked
  - The program then goes through each sheet applies our naming convention and DWG export settings and exports the sheet drawing to the DWG format in a folder of our choosing

Revit API – Place Families in Rooms

- **Before writing the API make open the Revit project in C:\RTC2014-Session 35-36\RoomObject.rvt**
- **What does it do**
  - The program gets a copy of the family type bed
  - It looks through the project for the room called "Roombed"
  - The project then places the family object into the room by getting it's location point.

Revit API – Create Floors to Room Outlines and sets height

- **Keep the RoomObjects.rvt open or open it again**
- **What does it do**
  - This selects all the rooms in your project
  - It then gets the line boundaries that make up your room and creates floor objects to each of the room finish boundaries
  - The API updates the floor and sets the height to the correct offset from the level based on the thickness of the floor type

Wow we made it!!!

- Guys this is basically the end of the session if we actually get to this point in the time allotted I will be impressed.

- If we have made it here then I guess we should start asking around for a specific API's they are interested in and we can explore the possibility of how to do it and give them a head start!

- The key is guys to keep practicing, coding is a huge art of patience and becoming skilled only comes with constant hands on testing, you can't cheat sorry!! Read lots of books and gets lots of practice!!!

Questions?