CS530 - Assignment 2

Meta Reflection System

In this assignment the goal is to create a meta reflection system that allows the viewing or manipulating of C++ classes with a dynamic interface. This system can then be used to solve many problems with editing, introspection and scripting. Several mechanisms can be used to accomplish this task such as C++ templates, compiler reflection systems, dlls, or a library that generates the C++ class and binding code.

To show a basic feature you must have a small working code example that demonstrates the feature. For the ui based features a simple mouse based ui is sufficient.

The Grade for this assignment is a simple point system. You start with a base grade and implement features to get a higher grade. The idea is to select the features that are valuable first and be selective of the advanced features you would like to include. There are also issues that can subtract points. When you turn in your assignment, have a text file starting with a basic readme and a list enumerates each feature you completed, its point worth, where it is located in your code and any other comments. Zip this file with a folder labeled source that has your source code and a visual studio project/solution that will compile your project (expect me to be using a standard school computer). Total your grade at the end. Additional features not listed can be added, just ask the instructor for their point value.

Example:

Name: Chris Peters

Bind Basic Functions: Binding.hpp(100-200)/.cpp(120-140) +4%

Etc.

Expected Grade 85%

* Base Grade 50%
* Basic (24%)
  + Ability to bind basic functions +4%
  + Ability to bind member functions +4%
  + Ability to bind members functions with basic arguments +4%
  + Each additional argument up to 4
    - For Each+1%
  + Ability to bind functions that take object parameters +2%
  + Ability to bind member functions with return values. +2%
  + Ability to bind properties +4%
* Object Binding (14%)
  + Ability to generically create objects +2%
  + Create object from String +2%
  + Ability to bind sub objects (Objects that contain objects) +2%
  + Ability to bind components or dynamic objects +2%
  + Ability to bind base classes +2%
  + Ability to have safe casting (Is A) +2%
  + Bind Events Sent or Received +2%
* Editor Ui (12%)
  + Basic Property Editing (Basic Types) +4%
  + Advanced Property Editing (Ranges, Colors, Rotations)
    - For Each +2%;
  + Undo / Redo +4%
* Scripting (12%)
  + Scripting Objects (Native objects in scripts)+2%
  + Script Calling of functions +4%
  + Script Setting of Properties +4%
  + Script Creation and Destruction +2%
* Additional (14%)
  + Console Command Binding +4%
  + Serialization From Meta +%4
  + Ability to bind arrays of basic types +2%
  + Ability to have generic safe references +2%
  + Great Ui +2%
* Deductions
  + Does not compile in VS2010 -20%
  + Does not run on school computer -20%
  + Crashes constantly -20%
  + Crashes frequently -10%
  + Ui is unusable -10%
  + Binding is very confusing -5%
  + Features listed that are not complete -5% EACH