CS530 - Assignment 3

Memory System

In this assignment the goal is to create a general memory management system. This system will track frequency, size and lifetime of allocations to optimize memory.

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
* Tracking %16
  + Tracking memory allocations +%4
  + Track memory by callstack +%4
  + Track memory by class +%4
  + Track memory by module finding +%4
* Memory Models %14
  + Memory Stack +%2
  + Memory Pool +%2
  + Segmented Memory Model +%4
  + Memory Graph +%6
* Memory Analysis %12
  + Hot spot finding +4%
  + Memory Usage +4%
  + Unused Memory +4%
* Memory Debugging %12
  + Memory Leaks +%4
  + Detect Overruns / Underruns +%4
  + Memory Use after free +%4
* Memory Display %8
  + Display Memory Graph Tree +%4
  + Display Memory Graph Over time (line graph)+4%
* Deductions
  + Does not compile in VS2010 -20%
  + Does not run on school computer -20%
  + Crashes constantly -20%
  + Crashes frequently -10%
  + Ui is unusable -10%
  + Code is very confusing -5%
  + Features listed that are not complete -5% EACH

Notes

For all memory Analysis and debugging

* Who (What class, callstack, module)
* When (Allocation Number and Time)
* Size ( How much memory was used)