**SOA & the ProductService: Homework**

**MTH 9815: Software Engineering for Finance**

Note: Please use the C++ coding standards as specified in the following guide:

<https://google-styleguide.googlecode.com/svn/trunk/cppguide.html>

**DUE DATE: MONDAY, NOVEMBER 21, 2016 at 6pm**

Please reach out to me on the forum should you have any questions. You can complete this homework in the groups assigned by Alain. Please submit via a repo on bitbucket or GitHub that you share with Alan (ID alancoman).

**EXERCISE 1**

Write a program to publish an int between two C++ programs using shared memory. Google how to use Boost.Interprocess to do this!

**EXERCISE 2**

Write a Future class in the same way we have a Bond and IRSwap class (products.zip attached to this thread). Also write a FutureProductService like a BondProductService and IRSwapProductService with an example test program to retrieve three futures.

Also add EuroDollarFuture and BondFuture as subclasses of Future.

**EXERCISE 3**

Write the following utility method on the BondProductService to search for all instances of a Bond for a particular attribute:

// Get all Bonds with the specified ticker

vector<Bond> GetBonds(string& \_ticker);

Write the following utility methods on the IRSwapProductService to search for all instances of an IRSwap for a particular attribute:

// Get all Swaps with the specified fixed leg day count convention

vector<IRSwap> GetSwaps(DayCountConvention \_fixedLegDayCountConvention);

// Get all Swaps with the specified fixed leg payment frequency

vector<IRSwap> GetSwaps(PaymentFrequency \_fixedLegPaymentFrequency);

// Get all Swaps with the specified floating index

vector<IRSwap> GetSwaps(FloatingIndex \_floatingIndex);

// Get all Swaps with a term in years greater than the specified value

vector<IRSwap> GetSwapsGreaterThan(int \_termYears);

// Get all Swaps with a term in years less than the specified value

vector<IRSwap> GetSwapsLessThan(int \_termYears);

// Get all Swaps with the specified swap type

vector<IRSwap> GetSwaps(SwapType \_swapType);

// Get all Swaps with the specified swap leg type

vector<IRSwap> GetSwaps(SwapLegType \_swapLegType);