C++ for Mathematical Finance (MF703, Fall 2015)

Project #1

Problem #1: Yield to Maturity

On 8/26/1997, the ATT 8 5/8 31 bond closed at 106.5. Determine the internal rate of rate (IRR) or bond parlance, the yield to maturity (y) using the following methods.

1) Write a computer program to compute the following:

Task	Parameter
Application	BisectionMethod
Note	General root finding
Input	Describe the bond
Output	Yield to maturity

1) Write a computer program to compute the following:

Task	Parameter
Application	NewtonRaphsonMethod
Note	General root finding
Input	Describe the bond
Output	Yield to maturity

Problem #2: Extracting Spot Rates from a Yield Curve

Input:

Treasury Bonds at 6m, 1y, 2y, 3y, 5y, 7y, 10y (coupon values and present price)

You can input any values you like, but we will check solutions with our yield curve inputted into your code.

A typical file would have the following data.

Tenor, Coupon, Present Price

Output:

Spot rates, discount factors, and future rates

Notes:

1. From treasury bonds, you can get yield-to-maturity (ytm).
2. Bootstrap to get spot rates.
3. Compute discount factors and future rates.