1. Due: before the class, Feb 15, 2011.

2. One hardcopy must be submitted at the beginning of the class on the due date; all electronic copies, including Excel files, must be sent to BOTH teaching assistants via email. Their email addresses can be found in the course outline.

3. Evaluation will be based on EFFORT. Therefore, please don't put "I don't know how to solve this problem" in your answers or leave your answers blank. If you do so, ***you will not get full marks for your assignment***. Just try something even if you are not able to solve the entire problem.

4. You are strongly encouraged to work on this assignment independently!

Assignment 1 Time Value of Money: Paying Off That Dream House

When Evelyn and Paul Peters were "house hunting" 5 years ago, the mortgage rates were pretty high. The fixed rate on a 30-year mortgage was 8.75% while the 15-year fixed rate was at 8%. After walking through many homes, they finally reached a consensus and decided to buy a $200,000 two-story house in an up and coming suburban neighborhood in the Scarborough. To avoid prepaid mortgage insurance (PMI), the couple had to borrow from family members and come up with the 20% down payment. Since Evelyn and Paul had already accumulated significant credit card debt and were still paying off their college loans, they decided to opt for lower monthly payments by taking a 30-year mortgage, despite its higher interest rate.

Currently, due to a worsening of economic conditions, mortgage rates have come down significantly and the "refinancing" frenzy is under way. Evelyn and Paul have seen 15-year fixed rates advertised at 5% and 30-year rates at 5.75%. Evelyn and Paul realize that refinancing is quite a hassle due to all the paper work involved but with rates being down to 30-year lows, they don't want to let this opportunity pass them by. About 2 years ago, rates were down to similar levels but they had procrastinated, and had missed the boat. This time, however, the couple called you, the mortgage officer at UTSC bank and locked in the 5%, 15-year rate. Nothing was going to stop them from reducing the costs of paying off their dream house this time.

Using Excel to solve these problems is strongly recommended.

Q1: What is Evelyn and Paul's monthly mortgage payment prior to the refinancing (under the 30 years, 8.75% loan)?

Q2: During the first 5 years of owning their dream home, how much money has the couple paid towards the mortgage? What proportion of this amount has been applied towards the interest payment?

Q3: Had the couple opted for the original 15-year mortgage proposal (15 year, 8%) 5 years ago, how much higher would their monthly payment have been?

Q4. Under the original 15-year, 8% mortgage option, how much total interest would have been paid over the life of the loan, assuming that they don't refinance? How does this compare with the total interest that would be paid on the 30-year, 8.75% mortgage?

Q5. If the Evelyn and Paul had increased each payment by one twelfth since the beginning of their existing loan (30 years, 8.75%), what would be their current loan balance amount to?

Q6. Using the assumption in question 5, how many total years would it take for the Peters to pay off their existing loan? Demonstrate your answer with an amortization schedule.

Q7. Should Evelyn and Paul go ahead with the re-financing? Explain your answer with calculation.

Q8. Will it make a difference in your answer of Q7 if Evelyn and Paul are staying in the United States, where the interest payments of mortgages are tax deductable (assuming that the average tax rate in the US is 33%)? Explain your answer with calculation.