Spreadsheet Homework Assignment on Mortgage Loans

The assignment is to put together three spreadsheet templates to use in computing mortgage loan payments. You are given detailed cell formulas to enter. The loans are:

1) Fixed interest rate mortgage loan (FRM), with an amortization period of 30 years (the most straightforward of the three, and thus probably the one to start with)
2) Fixed interest rate mortgage loan (FRM) that allows for an amortization period of *up to* 30 years (the most complex of the three, because you need IF statements to tell the program whether to keep computing relevant dollar amounts or to stop)
3) 5/25 Hybrid mortgage loan, with an interest rate that stays the same for the first 5 years and then changes annually in the remaining 25 years of a 30-year amortization period. We identify an interest rate for years 1-5 together, one for year 6, and one for year 7 (to reinforce the point that rates are reset annually after year 5). Then to keep things from getting too messy we just treat the year 8-30 interest rates as being identical to year 7's.

All three of the spreadsheets center on the most important computational lesson of Topic 12 (and probably of the entire FIL 260 course): *the amount of money that remains owed on a loan at any time is just the present value of the stream of remaining payments* (based on the contract interest rate and the original amortization period). Note that at the top of each page we compute the monthly payment based on the original amortization period, but then as we move downward through the loan's life we compute the same payment using the remaining number of months as the exponent (and in the Hybrid loan we use the new interest rate when rates have changed). *In the two FRM examples we also find the unchanging monthly payment with Excel's automated loan payment computation function =PMT (periodic rate, # of payment periods, – principal), but in the cells below we want to work primarily with the formulas, not the shortcut Excel function.*

Templates with cell formulas, and accompanying output pages based on sample values, are with Topic 12 material on the course web site. Much of what you do will involve typing the indicated formulas into cells on a key row or two, and then copying/pasting into most of the remaining cells. But in each cell you should be asking yourself: what does this formula achieve? *This assignment is a critical thinking exercise, not a typing exercise!!* Be sure each template is complete, which includes having cells at the bottom that show total principal, interest, and payments. If your template is set up correctly the user should be able to enter just the values shown in larger, bold print on the sheets showing the cell formulas: amount borrowed, interest rate (or rates for the Hybrid loan), and amortization period (for the loan that can be repaid over any period up to 30 years). Grading will involve opening each student's submissions and changing input values at the top to see if appropriate computations take place in the cells below.

Please submit a single Excel® workbook with three separate worksheets containing output for the three assigned loans. Upload your submission to Reggie Net if you can; attach it to an e-mail to the instructor if you can not. (Submit the Excel® file, not a pdf, so the grader can check your work by changing values in various input cells.) You are to do your own individual work; our spreadsheet homework assignments are not group projects. Feel free to call (309-438-2966) or e-mail (trefzger@ilstu.edu) with questions (more complicated questions can be difficult to address via e-mail, so please call if those arise). Due date and time are shown with the assignment on Reggie Net. ▪

Trefzger – FIL 260