CS130 Assignment #2

Date Assigned: Wednesday, September 20, 2017
Date Due: Wednesday, September 27, 2017
Points: 50

Continue adding the following worksheets to your Workbook called **PUNetIDExcel**:

Worksheet #3 – named "Mortgage"

Many believe that one of the best investments that anyone can make is buying a house. Houses in general will appreciate and the interest on the loan is tax deductible. Unfortunately, most of us become so mind boggled when presented with all of the paperwork for buying a house that we really don't understand much of what went on (trust me on this). For this problem, I want to concentrate on the mortgage loan.

Before you go out looking at houses, you need to have a price range in mind. That price range is based on how much the monthly payment is going to be. A monthly payment consists of principal, interest, taxes, and insurance (PITI). The principal is a portion of the actual loan that is being paid back. The interest is what you are paying as interest on the remainder of the loan each month. Taxes refer to property taxes and insurance is self-explanatory. The majority of the monthly payment is made up of (PI) which is principal and interest.

In order to figure out how much house we can buy, we need to know what the monthly payment is going to be. To figure out the monthly payment, we must do a what-if analysis. That is, what-if we are looking at an $87,000 house for example. Further, we must do a what-if on the interest rate. As an example, presently the interest rate is somewhere in the range of 4% to 5% (fixed). Here is an example of what I want your worksheet to look like:

	A	B	C	D	E	F	G	H
1	**Mortgage Calculator**							
2								
3	Enter Loan Balance	$87,000.00						
4	Enter APR	7.75%						
5	Enter Time In Years	30						
6	Enter Additional Payment	$0.00						
7								
8	Monthly Payment	($623.28)						
9	Total Interest Paid	$137,380.32						
10								
11		Beginning Balance	Monthly Payment	Interest	Principal	Additional Payment	Ending Balance	Month
12		$87,000.00	($623.28)	$561.88	$61.40	$0.00	$86,938.60	1
13		$86,938.60	($623.28)	$561.48	$61.80	$0.00	$86,876.80	2
14		$86,876.80	($623.28)	$561.08	$62.20	$0.00	$86,814.60	3
15		$86,814.60	($623.28)	$560.68	$62.60	$0.00	$86,752.00	4
368		$2,453.38	($623.28)	$15.84	$607.43	$0.00	$1,845.94	357
369		$1,845.94	($623.28)	$11.92	$611.36	$0.00	$1,234.58	358
370		$1,234.58	($623.28)	$7.97	$615.31	$0.00	$619.28	359
371		$619.28	($623.28)	$4.00	$619.28	$0.00	($0.00)	360

If your table is correct, the final balance will zero out at month 360 if no additional payment is made.

You will notice that the additional payment column so far is zero. Here is the deal. When you buy your house, you want to make sure that along with the regular monthly payment (which does not change over the duration of the loan), the lending institution will allow you to make additional monthly payments toward the principal. This will enable you to pay off the loan several months in advance if you so desire. Many people want to get out from under the loan as soon as possible.

With this background information, the problem is as follows. You are to design a worksheet that allows the user the ability to enter:

1. the amount of the loan (in dollars)
2. the annual interest rate (as a percentage e.g. 0.075 for 7.5%)
3. the time of the loan in years
4. the amount of any additional payment toward the principal each month (in dollars)

With this input information, you are to create the above amortization table. Split the screen showing the first 4 rows and the last 4 rows of the worksheet.

Note 1: If I can't do a drag down of your worksheet from the second row of the amortization table, then you do not have a completely correct solution. Use named variables in your solution for all input information.

Note2: Use the PMT function to calculate your monthly payment. Assume the payment is made at the end of the month.

Note3: You are to add one more feature to your worksheet and that is, once the Ending Balance is <= 0, all subsequent lines are to be blank. For instance, with an additional payment of $1.00, a few months are chopped off because the additional payment comes directly off the balance.

	A	B	C	D	E	F	G	H
1	Mortgage Calculator							
2								
3	Enter Loan Balance	$87,000.00						
4	Enter APR	7.75%						
5	Enter Time In Years	30						
6	Enter Additional Payment	$1.00						
7								
8	Monthly Payment	($623.28)						
9	Total Interest Paid	$136,329.59						
10								
11		Beginning Balance	Monthly Payment	Interest	Principal	Additional Payment	Ending Balance	Month
12		$87,000.00	($623.28)	$561.88	$61.40	$1.00	$86,937.60	1
13		$86,937.60	($623.28)	$561.47	$61.81	$1.00	$86,874.79	2
14		$86,874.79	($623.28)	$561.07	$62.21	$1.00	$86,811.58	3
15		$86,811.58	($623.28)	$560.66	$62.62	$1.00	$86,747.96	4
368		$1,076.48	($623.28)	$6.95	$616.33	$1.00	$459.15	357
369		$459.15	($623.28)	$2.97	$620.31	$1.00	($162.16)	358
370								
371								

Worksheet #4 – named "Regression"

There is an interesting problem on p. 361 of
https://www.coconino.edu/resources/files/pdfs/academics/sabbatical-reports/kate-kozak/chapter_10.pdf

You have been asked to solve this problem by a researcher that is going to give a presentation but knows little about Excel. To successfully complete your task, you must:

a) Create a new worksheet called Regression.

b) Enter the data into the worksheet properly labeled.

c) Perform a linear regression on the data using the Scatterplot functionality of Excel. Make sure your Scatterplot has a proper title, and x & y-axis labels. Also, make sure the linear equation and R^2 information is showing on the plot.

d) In cell D1 place a comment that answers the following problem: Find the number of deaths from bladder cancer when cigarette sales were 20 per capita as specified in the problem.

e) Looking at your Scatterplot and the possible six Correlation Graphs on page. 363, place a comment in cell F1 correctly identifying what type of correlation the plotted data turned out to be.

When I open this worksheet make sure the actual data is professionally displayed, the graph is properly displayed (and labeled), and all comments are showing.

How to Submit and Grading Policies
A copy of your single Excel file (properly named) with the four worksheets (properly named) is to be placed in the CS130-01Drop Box by **2:15pm** on the due date to be considered on time.

Grading will be based on:
  • Correctness of your results
  • Completeness of your results
  • Professional look of the worksheets as described above and discussed in class
  • Ability to perform a what-if analysis by changing any of the user input data with accurate results computed and displayed in the worksheet.

For each worksheet:

1. Clearly label all the data, and use the cell formatting options to make this spreadsheet easy to read and to give it a professional look.

2. Use Named Cells where appropriate.