**Learning Objectives: Understand amortization schedule. Understand several Excel functions: Edate, Index and Match, If Error, as well as If statements.**

**Understand how to compute monthly interest and principal portions of payment (without using Excel functions).**

**Create a flexible amortization schedule which allows for “extra payments” and looks professional.**

**REMINDER: THE EXCEL PORTION OF THIS HOMEWORK MUST BE DONE INDIVIDUALLY. DO NOT SHARE YOUR EXCEL FILE WITH OTHERS.**

**Instructions for completion:**

Please use the Excel File named “MGT8813\_HW\_2\_Mortgage\_Template\_Summer\_2025.xlsm”

to complete the homework. This file is MACRO enabled. You will need to save as Macro Enable file upon uploading.

Your job is to build an amortization schedule that will allow for extra principal payments. This “model” could be used by a borrower who wants to put some assumptions in the model and find out how many years it will take to pay off the mortgage.

Assume that the borrower is 30 years old and 2 months as of 2/28/2021 (that is, 10 months until the next birthday). Assume the closing date of the mortgage was December 31, 2020, and the first payment is due January 31, 2021. This means the borrower was exactly 30 on the day of closing.

Also assume that today’s date is February 28, 2021.

Anything in gray needs a formula written.

Anything in blue font are “inputs” ---while building your model, these can be changed to test your model, but should be the original inputs when you turn in your file.

Formula for D4: Use PMT function to compute the monthly payment. Do not hardcode the inputs, but rather “pull” inputs D1, D2 and D3 in your formula. DO NOT ROUND to 2 decimals (as shown in the videos). We know rounding issues can compound in calculations! 😊 PMT(rate,…)

Where the ellipsis are: You should put the arguments to the PMT portion of this formula.

Formula for D15: Compute the date assuming the first of the month of the closing date. If the closing date is 12/31/2020, this formula should return 12/1/2020. You can use the Date function. More below on this.

**Instructions Continued on Next Page**

Formula for D6: Use the Index and Match functions on Columns A and H (in the amortization schedule) to determine how many years it will take to pay off the mortgage.

Formula for D7: Years saved = Original term (Cell D3) minus years to pay off (Cell D6)

D9: Use the date function in this form: =DATE(YEAR(D8),MONTH(D8),1)

This should return a date similar to the date in D8, but the first of the month. We will cover XLOOKUP later in the course; please do not use XLOOKUP here (learning objective is to understand Index/Match)

Formula for D10: Use the Index and Match functions on Columns K and H, respectively to select the date when “Paid Off”---this date should be the first of the month (even if the actual mortgage is Paid Off at the end of the month). Note: “Paid Off” as a text in quotes will be in the formula.

Formula for D11: Use the Index and Match functions on Columns C and H, respectively, to select the date when “Paid Off” ---this date should be the ACTUAL date of the payoff.

Formula for D14: Write a formula to determine the Age of the borrower when Paid Off. The Datedif function used on the date (D9) and the date when Paid Off (D10) should be added to the person’s current age (D12). Also adjust for “months old” by using D13. Note: D13 has how many months the borrower is AWAY from the next birthday. It is not “months old” but can be used to determine.

=((D12\*12)+(12-D13))/12+DATEDIF(D9,D10,"M")/12

**Amortization schedule portion of the file:**

Column B: Pull the closing date (in input area) and put this in every row

Column C: Use the Edate function to create the date the PMT is due. Utilize data in Columns A and B.

Column D: Use a combination of ISNUMBER, **if/and (If + AND)** statements to return what will be paid by the borrower or “Paid Off”. Logic: If the PRIOR principal balance is a number **AND** it is also greater than the regular loan payment, then pull the regular payment (Cell D4). If, however, the PRIOR principal balance is a number **AND** greater than 0, then pull the PRIOR principal balance PLUS this month’s interest. Otherwise, the cell should return “Paid Off”. This formula requires two conditions that require the use of ISNUMBER. **Note: Do not change Paid Off to Paid off, done, payed off or any other wording. Make it Paid Off.** This specificity is for grading purposes.

Column E: This should be an IFERROR statement which determines EITHER the dollar amount of interest paid OR “N/A” if the mortgage is Paid Off. Do not round. Do not use the IPMT function, but rather calculate the interest based on the prior principal balance and the monthly interest rate. Why? One of the learning objectives of this HW is to understand how the interest each month is calculated. **Do not change N/A to n/a or na. Make sure it is N/A (capitalized with forward slash in between).** This specificity is for grading purposes.

**Instructions Continued on Next Page**

Column F: Use IFERROR function to calculate the amount of principal being paid. If the mortgage is Paid Off, this should return “N/A” **Do not change N/A to n/a or na. Make sure it is N/A (capitalized with forward slash in between).** This specificity is for grading purposes.

Column G: Using ISNUMBER (and an IF statement), pull D5 or have the formula return “N/A.” **Do not change N/A to n/a or na. Make sure it is N/A (capitalized with forward slash in between).** This specificity is for grading purposes.

In addition to the ISNUMBER condition, here’s the logic:

If PRIOR principal balance is GREATER than the PRINC paid (not PMT) plus the EXTRA PAYMENT, the cell should return the EXTRA PMT.

IF (PRIOR principal balance LESS PRINC paid) >0, then take this difference; otherwise 0. If none of this is true, “N/A”

Colum H: Use IFERROR function coupled with an IF statement to return either the dollar amount of the principal balance OR “Paid Off.”

=IFERROR(If (Prior balance – Princ Paid – Extra Prin)>0,Prior bal – Princ paid – Extra payment, “Paid Off”), “Paid Off”)

Note you need two “Paid Off” ---one for the IFERROR and one for the IF.

**Note: Do not change Paid Off to Paid off, Paidoff, done, payed off or any other wording. Make it Paid Off.** This specificity is for grading purposes.

**The file you should turn in is one where the EXTRA PMT is $200.**

**Incorrect inputs penalty: Please leave the original inputs (cells with hardcoded blue entries) when you turn the file in.**

**5 point penalty if original inputs are not in submission.**

**Note: You should change the inputs as you are working with your file –in particular to make sure you match the 3 “check files” (see page 4 for more detail) which represent three different scenarios for early payoff. But please put them back to these inputs (of course, the gray cells will have formulas and will not be blank upon submission). Failure to do this will result in a 25% grade reduction.**

**A table with numbers and text

Description automatically generated**

**Instructions continued on next page**

**Fill out the Information tab with your last name (ONLY PUT YOUR LAST NAME!) and your GT Login. GT Logins are of the form: jgarner47 (this is my login; these are not private, so safe to input).**

**Save your file with your last name on the end of the current name of the file:**

**Make sure you save as MACRO enabled file.**

Example: My file would be named:

**“MGT8813\_HW\_2\_Mortgage\_Template\_Summer\_2025\_Garner.xlsm”**

**Three numbers only files are provided (in the assignment tab) where you can check to see if you have your amortization schedule correct! These are “check files.”**

**Post your file back to the assignment tab!**

**FINAL REMINDER: THE EXCEL PORTION OF THIS HOMEWORK MUST BE DONE INDIVIDUALLY. DO NOT SHARE YOUR EXCEL FILE WITH OTHERS. Working with anyone on individual assignments is considered a violation of the Georgia Tech Student Code of Conduct.**

In this course, you will be provided with template files to use for homework and case  
assignments. Unless you are specifically instructed to do so, do not make any  
adjustments to the formatting of these documents, such as inserting/deleting rows or  
tabs in the workbook. Should you make changes to the template, you will earn whatever  
grade the auto-grader assigns, because there is not a practical way for the TA team to  
grade your file manually. We will allow one re-submission if this situation occurs, with  
the template corrected, for a maximum of 85% of the credit.

This re-submission is for a specific situation; in general, re-submissions (for incorrect  
answers) are not allowed. Further, normal “re-grades” (as a result of a grading error) do not impose any penalty for the learner.

**If the original inputs are not in the submission file, we will impose a 25% grade penalty**.

**END OF INSTRUCTIONS**