MID-LEVEL EXERCISES

1 Sunrise Credit Union Weekly Payroll

As manager of the Sunrise Credit Union, you are responsible for managing the weekly payroll. Your assistant developed a partial worksheet, but you need to enter the formulas to calculate the regular pay, overtime pay, gross pay, taxable pay, withholding tax, FICA, and net pay. In addition, you want to total pay columns and calculate some basic statistics. As you construct formulas, make sure you use absolute and relative cell references correctly in formulas and avoid circular references.

a. Open the *e02m1payroll* workbook and save it as **e02m1payroll_LastnameFirstname**.

b. Study the worksheet structure, and then read the business rules in the Notes section.

c. Use IF functions to calculate the regular pay and overtime pay based on a regular 40-hour work-week in **cells E5** and **F5**. Pay overtime only for overtime hours. Calculate the gross pay based on the regular and overtime pay. Abram's regular pay is $398. With eight overtime hours, Abram's overtime pay is $119.40.

d. Create a formula in **cell H5** to calculate the taxable pay. Multiply the number of dependents by the deduction per dependent, and then subtract that from the gross pay. With two dependents, Abram's taxable pay is $417.40.

e. Use a VLOOKUP function in **cell I5** to identify and calculate the federal withholding tax. With a taxable pay of $417.40, Abram's tax rate is 25%, and the withholding tax is $104.35. The VLOOKUP function returns the applicable tax rate, which you must then multiply by the taxable pay.

f. Calculate FICA in **cell J5** based on gross pay and the FICA rate, and then calculate the net pay in **Cell K5**.

g. Calculate the total regular pay, overtime pay, gross pay, taxable pay, withholding tax, FICA, and net pay on row 17.

h. Copy all formulas down their respective columns.

i. Apply **Accounting Number Format** to the **range C5:C16**. Apply **Accounting Number Format** to the first row of monetary data and to the total row. Apply **Comma Style** to the monetary values for the other employees. Underline the last employee's monetary values, and then use the Format Cells dialog box to apply **Double Accounting Underline** for the totals.

j. Insert appropriate functions to calculate the average, highest, and lowest values in the Summary Statistics area (**range I21:K23**) of the worksheet.

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k. At your instructor's discretion, use Help to learn about the FREQUENCY function. The Help feature contains sample data for you to copy and practice in a new worksheet to learn about this function. You can close the practice worksheet containing the Help data without saving it. You want to determine the number (frequency) of employees who worked less than 20 hours, between 20 and 29 hours, between 30 and 40 hours, and over 40 hours. **Cells J28:J31** list the ranges. You need to translate this range into correct values for the Bin column in **cells I28:I30** and then enter the FREQUENCY function in **cells K28:K31**. The function should identify one employee who worked between 0 and 19 hours and six employees who worked more than 40 hours.

l. Apply other page setup formats as needed.

m. Insert a footer with your name on the left side, the date code in the center, and the file name code on the right side.

n. Save and close the workbook, and submit based on your instructor's directions.

2 House Loan

FROM SCRATCH

As a financial consultant, you work with people who are planning to buy a new house. You want to create a worksheet containing variable data (the price of the house, down payment, date of the first payment, and borrower's credit rating) and constants (property tax rate, years, and number of payments in one year). Borrowers pay 0.5% private mortgage insurance (PMI) of the loan amount if they do not make at least a 20% down payment. A borrower's credit rating determines the required down payment

percentage and APR. For example, a person with an excellent credit rating may make only a 5% down payment with a 4.25% APR loan. A person with a fair credit rating will make a 15% down payment and have a higher APR at 5%. Your worksheet needs to perform various calculations. Refer to Figure 2.43 as you complete this exercise. The filled cells in column F indicate cells containing formulas, not values.

	A	B	C	D	E	F
1			**Mortgage Calculator**			
2						
3	**Inputs**				**Intermediate Calculations**	
4	Negotiated Cost of House		$ 350,000.00		APR Based on Credit Rating	4.25%
5	Additional Down Payment		$ 3,500.00		Min Down Payment Required	$ 17,500.00
6	Date of First Payment		5/1/2013		Annual Property Tax	$ 2,625.00
7	Credit Rating		Excellent		Annual PMI	$ 1,645.00
8						
9	**Constants**				**Outputs**	
10	Property Tax Rate		0.75%		Total Down Payment	$ 21,000.00
11	Down Payment to Avoid PM		20.00%		Amount of the Loan	$329,000.00
12	PMI Rate		0.50%		Monthly Payment (P&I)	$1,618.48
13	Term of Loan in Years		30		Monthly Property Tax	218.75
14	# of Payments Per Year		12		Monthly PMI	137.08
15					Total Monthly Payment	$ 1,974.32
16	**Credit**	**Down Payment**	**APR**		Date of Last Payment	4/1/2043
17	Excellent	5%	4.25%			
18	Good	10%	4.50%			
19	Fair	15%	5.00%			
20	Poor	20%	5.25%			
21						

FIGURE 2.43 House Loan Data ➤

a. Start a new Excel workbook, save it as **e02m2loan_LastnameFirstname**, rename Sheet1 as **Payment**, rename Sheet2 as **Range Names**, and then delete Sheet3.

b. Select the **Payment sheet**, type **Mortgage Calculator** in **cell A1**, and then merge and center the title on the first row in the **range A1:F1**. Apply bold, **18 pt size**, and **Aqua, Accent 5, Darker 25% font color**.

c. Create and format the Inputs and Constants areas by doing the following:
   • Type the labels in the **range A3:A20**. For each label, such as *Negotiated Cost of House*, merge the cells, such as the **range A4:B4**, and then apply **Align Text Left**. You will have to merge cells for nine labels.
   • Enter and format the *Inputs* and *Constants* values in column C.

d. Create the lookup table in the **range A16:C20** to use the credit ratings to identify the appropriate required percentage down payment and the respective APR by doing the following:
   • Type **Credit**, **Down Payment**, and **APR** in the **range A16:C16**.
   • Type the four credit ratings in the first column, the required down payment percentages in the second column, and the respective APRs in the third column.
   • Format the percentages, apply **Align Text Right**, and then indent the percentages in the cells as needed.

e. Assign range names to cells containing individual values in the Inputs and Constants sections. Do *not* use the *Create from Selection* feature since the labels are stored in merged cells. Assign a range name to the lookup table.

f. Type labels in the *Intermediate Calculations* and *Outputs* sections in column E, and then assign a range name to each cell in the **ranges F4:F7** and **F10:F12**. Widen column E as needed.

g. Enter formulas in the *Intermediate Calculations* and *Outputs* sections using range names to calculate the following:

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   • **APR** based on the borrower's credit rating by using a lookup function. Include the range_lookup argument to ensure an *exact match*. For example, a borrower who has an Excellent rating gets a 4.25% APR.
   • **Minimum down payment required** amount by using a lookup function and calculation. Include the range_lookup argument to ensure an *exact match*. For example, a borrower who has an Excellent rating is required to pay a minimum of 5% down payment of the negotiated purchase price. Multiply the function results by the negotiated cost of the house. Hint: The calculation comes after the closing parenthesis.
   • **Annual property tax** based on the negotiated cost of the house and the annual property tax rate.
   • **Annual PMI**. If the borrower's total down payment (required and additional) is 20% or higher of the negotiated purchase price (multiply the cost by the PMI avoidance percentage),

PMI is zero. If the total down payment is less than 20%, the borrower has to pay PMI based on multiplying the amount of the loan by the PMI rate.

- **Total down payment**, which is sum of the required minimum down payment (calculated previously) and any additional down payment entered in the Inputs section.
- **Amount of the loan**, which is the difference between the negotiated cost of the house and the total down payment.
- **Monthly payment** of principal and interest using the PMT function.
- **Monthly property tax**, the **monthly PMI**, and the **total monthly payment**.
- **Last payment date** using the EDATE function. The function's second argument must calculate the correct number of months based on the total length of the loan. For example, if the first payment is 5/1/2013, the final payment is 4/1/2043 for a 30-year loan. The last argument of the function must subtract 1 to ensure the last payment date is correct. If the last payment date calculated to 5/1/2043, you would be making an extra payment.

h. Format each section with fill color, bold, underline, number formats, borders, and column widths as shown in the figure.

i. Paste a list of range names in the Range Names worksheet. Insert a row above the list, and then type and format column labels above the two columns in the list of range names.

j. Center the worksheet data horizontally between the left and right margins.

k. Insert a footer with your name on the left side, the sheet name code in the center, and the file name code on the right side of both sheets.

l. Save and close the workbook, and submit based on your instructor's directions.

3 Professor's Grade Book

You are a teaching assistant for Dr. Denise Gerber, who teaches an introductory C# programming class at your college. One of your routine tasks is to enter assignment and test grades into the grade book. Now that the semester is almost over, you need to create formulas to calculate category averages, the overall weighted average, and the letter grade for each student. In addition, Dr. Gerber wants to see general statistics, such as average, median, low, and high for each graded assignment and test, as well as category averages and total averages. Furthermore, you need to create the grading scale on the documentation worksheet and use it to display the appropriate letter grade for each student.

a. Open the *e02m3grades* workbook and save it as **e02m3grades_LastnameFirstname**.

b. Use breakpoints to enter the grading scale in the correct structure on the Documentation worksheet, and then name the grading scale range **Grades**. The grading scale is as follows:

95+	A		73–76.9	C
90–94.9	A–		70–72.9	C–
87–89.9	B+		67–69.9	D+
83–86.9	B		63–66.9	D
80–82.9	B–		60–62.9	D–
77–79.9	C+		0–59.9	F

c. Calculate the total lab points earned for the first student in **cell T8** in the Grades worksheet. The first student earned 93 lab points.

d. Calculate the average of the two midterm tests for the first student in **cell W8**. The student's midterm test average is 87.

e. Calculate the assignment average for the first student in cell I8. The formula should drop the lowest score before calculating the average. Hint: You need to use a combination of three functions: SUM, MIN, and COUNT. The argument for each function for the first student is B8:H8. Find the total points, and then subtract the lowest score. Then divide the remaining points by the number of assignments minus 1. The first student's assignment average is 94.2 after dropping the lowest assignment score.

f. Calculate the weighted total points based on the four category points (assignment average, lab points, midterm average, and final exam) and their respective weights (stored in the range B40:B43) in cell Y8. Use relative and absolute cell references as needed in the formula. The first student's total weighted score is 90.

g. Use a VLOOKUP function to calculate the letter grade equivalent in **cell Z8**. Use the range name in the function. The first student's letter grade is A–.

h. Copy the formulas down their respective columns for the other students.

i. Name the passing score threshold in **cell B5** with the range name **Passing**. Use an IF function to display a message in the last grade book column based on the student's semester performance. If a student earned a final score of 70 or higher, display *Enroll in CS 202*. Otherwise, display *RETAKE CS 101*. Remember to use quotation marks around the text arguments.

j. Calculate the average, median, low, and high scores for each assignment, lab, test, category average, and total score. Display individual averages with no decimal places; display category and final score averages with one decimal place. Display other statistics with no decimal places.

k. Insert a list of range names in the designated area in the Documentation worksheet. Complete the documentation by inserting your name, today's date, and a purpose statement in the designated areas.

DISCOVER l. At your instructor's discretion, add a column to display each student's rank in the class. Use Help to learn how to insert the RANK function.

m. Select page setup options as needed to print the Grades worksheet on one page.

n. Insert a footer with your name on the left side, the sheet name code in the center, and the file name code on the right side of each worksheet.

o. Save and close the workbook, and submit based on your instructor's directions.