Monmouth COLLEGE

- Name: _____
- Date: _____
- Section: _____

BUSI 201: Business Data Analysis

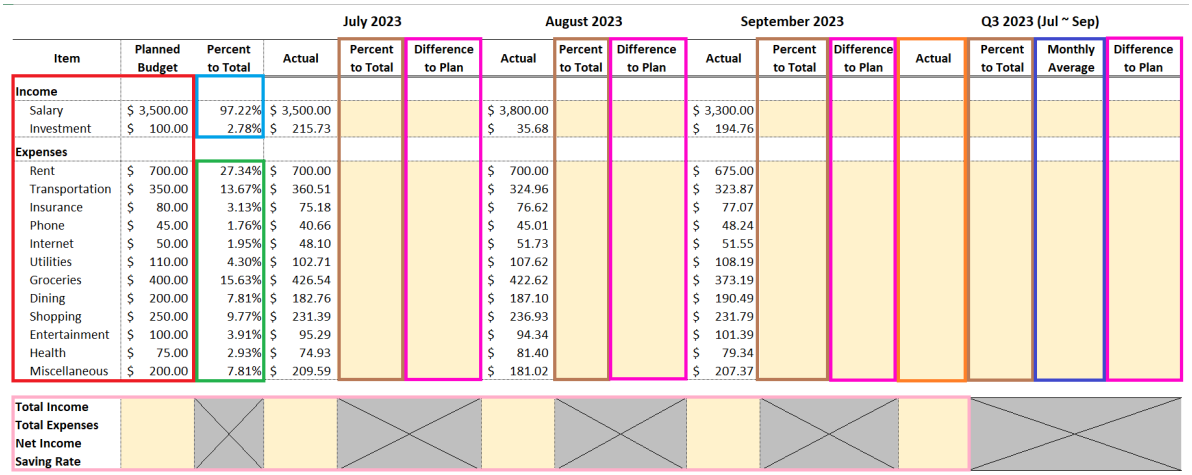
Quiz #2: Functions

INSTRUCTIONS:

- `BUSI201-Q02-Workbook.xlsx` is the companion workbook for this quiz.
- The workbook consists of four worksheets: `Budget`, `Properties`, and `Grading`.
- The quiz booklet contains 3 problems, each corresponding to one of the worksheets.
- Answers that are manually typed in without using functions are not eligible for any points.
- Once you are finished, save/rename the workbook to `YOUR_LOGIN_ID.xlsx`, and submit your results via email to `BPARK@monmouthcollege.edu`.
- Double-check your submission email for your attached file and receiver's email address, as you will not be permitted to submit or update your solutions past the in-class deadline.

Problem 1. Budget: 35 Points

The worksheet contains a synthetic budget sheet for a household from the third quarter of 2023. The entries in the red box is the planned income/expense for this household. The blue box and green box calculate the percentage of each item in income/expenses out of total income/expenses. For instance see cell E12, `Rent`, which is $700 monthly, takes up 27.34% of the household's planned monthly expense of $2,560.



			July 2023			August 2023			September 2023			Q3 2023 (Jul ~ Sep)		
Item	Planned Budget	Percent to Total	Actual	Percent to Total	Difference to Plan	Actual	Percent to Total	Difference to Plan	Actual	Percent to Total	Difference to Plan	Actual	Percent to Total	Monthly Average	Difference to Plan
Income															
Salary	$ 3,500.00	97.22%	$ 3,500.00			$ 3,800.00			$ 3,300.00						
Investment	$ 100.00	2.78%	$ 215.73			$ 35.68			$ 194.76						
Expenses															
Rent	$ 700.00	27.34%	$ 700.00			$ 700.00			$ 675.00						
Transportation	$ 350.00	13.67%	$ 360.51			$ 324.96			$ 323.87						
Insurance	$ 80.00	3.13%	$ 75.18			$ 76.62			$ 77.07						
Phone	$ 45.00	1.76%	$ 40.66			$ 45.01			$ 48.24						
Internet	$ 50.00	1.95%	$ 48.10			$ 51.73			$ 51.55						
Utilities	$ 110.00	4.30%	$ 102.71			$ 107.62			$ 108.19						
Groceries	$ 400.00	15.63%	$ 426.54			$ 422.62			$ 373.19						
Dining	$ 200.00	7.81%	$ 182.76			$ 187.10			$ 190.49						
Shopping	$ 250.00	9.77%	$ 231.39			$ 236.93			$ 231.79						
Entertainment	$ 100.00	3.91%	$ 95.29			$ 94.34			$ 101.39						
Health	$ 75.00	2.93%	$ 74.93			$ 81.40			$ 79.34						
Miscellaneous	$ 200.00	7.81%	$ 209.59			$ 181.02			$ 207.37						
Total Income															
Total Expenses															
Net Income															
Saving Rate															

Task #1: 5 Points

Your first task is to calculate the actual income and expenditure over the the third quarter of 2023 for this household in the orange box. Add up the income and expenses for July, August, and September.

Task #2: 10 Points

Fill the pink box by calculating the planned monthly income / expenditure, actual monthly income / expenditure, and the income / expenditure for Q3 of 2023. Net income is the difference between total income and total expenses, and the saving rate is the total income divided by net income.

Task #3: 5 Points

Fill out the brown boxes with the percent to total information. Refer to the blue box and green box for guidance on how to fill out the percent to total columns.

Task #4: 5 Points

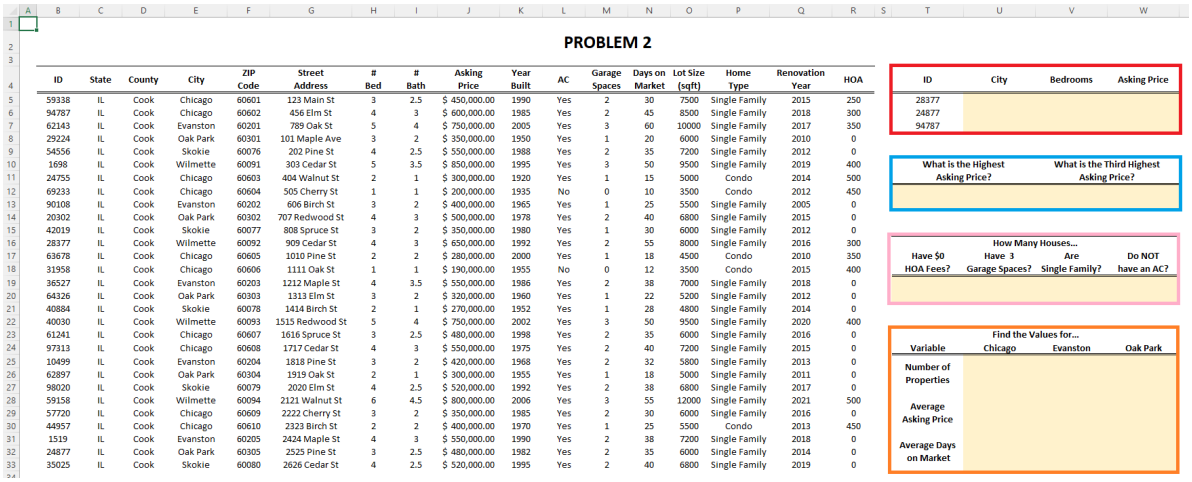
Fill out the navy box with the average actual income / expenditure over the three months.

Task #5: 10 Points

Fill out the purple boxes with the difference between the planned and actual income / expenditure. If the household spends more than they planned, the value should be negative. If the household earns more than they planned, the value should be positive.

Problem 2. Properties: 25 Points

The second worksheet, corresponding to the second problem, contains a fictitious list of real estate properties near Chicago IL. The entries include a unique ID, state, county, city, ZIP code, street address, number of bedrooms, number of bathrooms, asking price, year constructed, whether an AC unit exists in the property, number of garage spaces, days on the market, lot size, home type, year property was rennovated, and the monthly HOA fee.



PROBLEM 2

ID	State	County	City	ZIP Code	Street Address	# Bed	# Bath	Asking Price	Year Built	AC	Garage Spaces	Days on Market	Lot Size (sqft)	Home Type	Renovation Year	HOA
59338	IL	Cook	Chicago	60601	123 Main St	3	2.5	$ 450,000.00	1990	Yes	2	30	7500	Single Family	2015	250
94787	IL	Cook	Chicago	60602	456 Elm St	4	3	$ 600,000.00	1985	Yes	2	45	8500	Single Family	2018	300
62143	IL	Cook	Evanston	60201	789 Oak St	5	4	$ 750,000.00	2005	Yes	3	60	10000	Single Family	2017	350
29224	IL	Cook	Oak Park	60301	101 Maple Ave	3	2	$ 350,000.00	1950	Yes	1	20	6000	Single Family	2010	0
54556	IL	Cook	Skokie	60076	202 Pine St	4	2.5	$ 550,000.00	1988	Yes	2	35	7200	Single Family	2012	0
1698	IL	Cook	Wilmette	60091	303 Cedar St	5	3.5	$ 850,000.00	1995	Yes	3	50	9500	Single Family	2019	400
24755	IL	Cook	Chicago	60603	404 Walnut St	2	1	$ 300,000.00	1920	Yes	1	15	5000	Condo	2014	500
69233	IL	Cook	Chicago	60604	505 Cherry St	1	1	$ 200,000.00	1935	No	0	10	3500	Condo	2012	450
90108	IL	Cook	Evanston	60202	606 Birch St	3	2	$ 400,000.00	1965	Yes	1	25	5500	Single Family	2005	0
20302	IL	Cook	Oak Park	60302	707 Redwood St	4	3	$ 500,000.00	1978	Yes	2	40	6800	Single Family	2015	0
42019	IL	Cook	Skokie	60077	808 Spruce St	3	2	$ 350,000.00	1980	Yes	1	30	6000	Single Family	2012	0
28377	IL	Cook	Wilmette	60092	909 Cedar St	4	3	$ 650,000.00	1992	Yes	2	55	8000	Single Family	2016	300
63678	IL	Cook	Chicago	60605	1010 Pine St	2	2	$ 280,000.00	2000	Yes	1	18	4500	Condo	2010	350
31958	IL	Cook	Chicago	60606	1111 Oak St	1	1	$ 190,000.00	1955	No	0	12	3500	Condo	2015	400
36527	IL	Cook	Evanston	60203	1212 Maple St	4	3.5	$ 550,000.00	1986	Yes	2	38	7000	Single Family	2018	0
64326	IL	Cook	Oak Park	60303	1313 Elm St	3	2	$ 320,000.00	1960	Yes	1	22	5200	Single Family	2012	0
40884	IL	Cook	Skokie	60078	1414 Birch St	2	1	$ 270,000.00	1952	Yes	1	28	4800	Single Family	2014	0
40030	IL	Cook	Wilmette	60093	1515 Redwood St	5	4	$ 750,000.00	2002	Yes	3	50	9500	Single Family	2020	400
61241	IL	Cook	Chicago	60607	1616 Spruce St	3	2.5	$ 480,000.00	1998	Yes	2	35	6000	Single Family	2016	0
97313	IL	Cook	Chicago	60608	1717 Cedar St	4	3	$ 550,000.00	1975	Yes	2	40	7200	Single Family	2015	0
10499	IL	Cook	Evanston	60204	1818 Pine St	3	2	$ 420,000.00	1968	Yes	2	32	5800	Single Family	2013	0
62897	IL	Cook	Oak Park	60304	1919 Oak St	2	1	$ 300,000.00	1955	Yes	1	18	5000	Single Family	2011	0
98020	IL	Cook	Skokie	60079	2020 Elm St	4	2.5	$ 520,000.00	1992	Yes	2	38	6800	Single Family	2017	0
59158	IL	Cook	Wilmette	60094	2121 Walnut St	6	4.5	$ 800,000.00	2006	Yes	3	55	12000	Single Family	2021	500
57720	IL	Cook	Chicago	60609	2222 Cherry St	3	2	$ 350,000.00	1985	Yes	2	30	6000	Single Family	2016	0
44957	IL	Cook	Chicago	60610	2323 Birch St	2	2	$ 400,000.00	1970	Yes	1	25	5500	Condo	2013	450
1519	IL	Cook	Evanston	60205	2424 Maple St	4	3	$ 550,000.00	1990	Yes	2	38	7200	Single Family	2018	0
24877	IL	Cook	Oak Park	60305	2525 Pine St	3	2.5	$ 480,000.00	1982	Yes	2	35	6000	Single Family	2014	0
35025	IL	Cook	Skokie	60080	2626 Cedar St	4	2.5	$ 520,000.00	1995	Yes	2	40	6800	Single Family	2019	0

ID	City	Bedrooms	Asking Price
28377			
24877			
94787			

What is the Highest Asking Price?	What is the Third Highest Asking Price?

How Many Houses...			
Have $0 HOA Fees?	Have 3 Garage Spaces?	Are Single Family?	Do NOT have an AC?

Find the Values for...			
Variable	Chicago	Evanston	Oak Park
Number of Properties			
Average Asking Price			
Average Days on Market			

Task #1: 10 Points

Fill out the red box with the city of which the property is located, the number of bedrooms in the property, and the asking price for the property for the three unique IDs listed in the table.

Task #2: 5 Points

Fill out the blue box with the highest asking price of all properties in the list, and the third highest asking price of all properties in the list.

Task #3: 5 Points

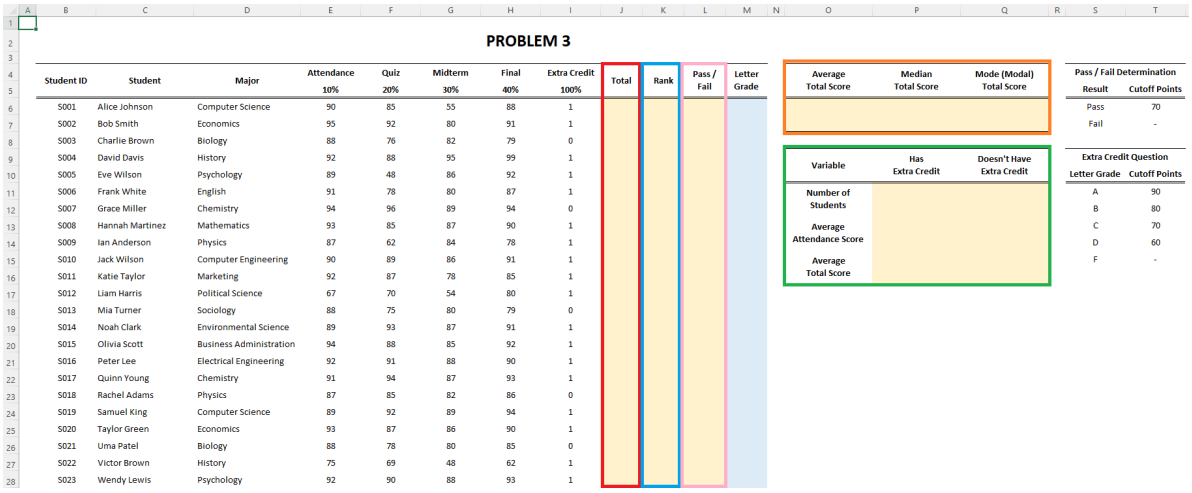
Fill out the pink box by finding the number of properties that have zero HOA fees, the number of properties that have exactly 3 garage spaces, the number of properties that are single family houses, and the number of properties that do not have an AC unit.

Task #4: 5 Points

Fill out the orange box by finding the number of properties, average asking price, and average days on the market for Chicago, Evanston, and Oak Park.

Problem 3. Grading: 40 Points

The third worksheet `Grading` is a hypothetical spreadsheet on students' grades on some class. The information includes unique student IDs, the students' names, their major, attendance score, quiz score, midterm results, final results, and whether they earned extra credit or not.



PROBLEM 3

Student ID	Student	Major	Attendance 10%	Quiz 20%	Midterm 30%	Final 40%	Extra Credit 100%	Total	Rank	Pass / Fail	Letter Grade
S001	Alice Johnson	Computer Science	90	85	55	88	1				
S002	Bob Smith	Economics	95	92	80	91	1				
S003	Charlie Brown	Biology	88	76	82	79	0				
S004	David Davis	History	92	88	95	99	1				
S005	Eve Wilson	Psychology	89	48	86	92	1				
S006	Frank White	English	91	78	80	87	1				
S007	Grace Miller	Chemistry	94	96	89	94	0				
S008	Hannah Martinez	Mathematics	93	85	87	90	1				
S009	Ian Anderson	Physics	87	62	84	78	1				
S010	Jack Wilson	Computer Engineering	90	89	86	91	1				
S011	Katie Taylor	Marketing	92	87	78	85	1				
S012	Liam Harris	Political Science	67	70	54	80	1				
S013	Mia Turner	Sociology	88	75	80	79	0				
S014	Noah Clark	Environmental Science	89	93	87	91	1				
S015	Olivia Scott	Business Administration	94	88	85	92	1				
S016	Peter Lee	Electrical Engineering	92	91	88	90	1				
S017	Quinn Young	Chemistry	91	94	87	93	1				
S018	Rachel Adams	Physics	87	85	82	86	0				
S019	Samuel King	Computer Science	89	92	89	94	1				
S020	Taylor Green	Economics	93	87	86	90	1				
S021	Uma Patel	Biology	88	78	80	85	0				
S022	Victor Brown	History	75	69	48	62	1				
S023	Wendy Lewis	Psychology	92	90	88	93	1				

Average Total Score	Median Total Score	Mode (Modal) Total Score

Variable	Has Extra Credit	Doesn't Have Extra Credit
Number of Students		
Average Attendance Score		
Average Total Score		

Pass / Fail Determination	
Result	Cutoff Points
Pass	70
Fail	-

Extra Credit Question	
Letter Grade	Cutoff Points
A	90
B	80
C	70
D	60
F	-

Task #1: 10 Points

Fill out the red box with the total score that the student acheived in this class. The total score is calculated as the raw scores multiplied by the specified weights. For instance, cell `J6` should calculate the following: $90 \cdot 10\% + 85 \cdot 20\% + 55 \cdot 30\% + 88 \cdot 40\%$

Task #2: 10 Points

Fill out the blue box with the students' rank within this class. The rank should be based on the total score that you calculated in **Task #1**, and the highest scoring student should be ranked 1.

Task #3: 10 Points

Fill out the pink box with "Pass" if the student passes the class (greater than or equal to 70 points), and "Fail" if they fail (lower than 70 points). You can find the cutoff points for pass/fail in the table to the right.

Task #4: 5 Points

Fill out the orange box with the average, median, and mode of the class' total score.

Task #5: 5 Points

Fill out the green box with the number of students, average attendance score, and average total scores by students who have / do not have extra credit. Students who have extra credit have entry 1, and those who do not have extra credit have entry 0 in the "Extra Credit" column.

Extra Credit Task: 20 Points

Fill out the blue shaded zone with the final letter grade that the student would receive. The cutoff points are given in the right hand side of the worksheet, and it can be interpreted as:

- A: $90 \leq$ `Total` ≤ 100
- B: $80 \leq$ `Total` < 90
- C: $70 \leq$ `Total` < 80
- D: $60 \leq$ `Total` < 70
- F: `Total` < 60

- Original Score: _____
- Recovered Score: _____
- Original Date: _____
- Recovered Date: _____