



**Monmouth**  
COLLEGE

• Name: \_\_\_\_\_

• Date: \_\_\_\_\_

• Section: \_\_\_\_\_

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## **BUSI 201: Business Data Analysis**

### **Final Exam**

### **Fall 2023**

#### **INSTRUCTIONS:**

- Print your name and section number at the top of this page.
- Make sure that the exam is 9 pages long, including this one.
- You have up to 180 minutes to complete this exam.
- BUSI201-F2023-Final-Workbook.xlsx is the companion workbook for this quiz.
- The workbook consists of 11 worksheets, and the quiz booklet contains 8 problems.
- Once you finish, save or rename the workbook to [YOUR\\_LOGIN\\_ID](#).xlsx, and submit your results via email to [BPARK@monmouthcollege.edu](mailto:BPARK@monmouthcollege.edu).
- Double-check your submission email for the attached file, file name, and the recipient's email address. You won't be permitted to submit or update your solutions after 9:30 PM.
- Good luck, and have a great Winter Break!

**Problem #1. Functions Part 1**

**(15 Points)**

Navigate to worksheet P01. This worksheet contains a hypothetical list of course offerings from some college. Use the information in the table to complete the following tasks. You **MUST** use functions to complete all tasks in this problem.

• **Task #1: Number of Courses Offered**

- Fill the cell highlighted by the **Red Box: A** with the total number of distinct courses offered by the college for Spring 2024. Then, fill the four cells highlighted by the **Blue Box: B** with the total number of courses offered by each department in the college for Spring 2024.
- **THE FUNCTION MUST WORK REGARDLESS OF HOW THE DATA IS SORTED.**

Number of Courses Offered				
Total	Business	Economics	Political Science	Engineering
<b>A</b>	<b>B</b>			

• **Task #2: Number of Students Enrolled**

- Fill the cell highlighted by the **Red Box: A** with the sum of all enrolled students in the college for Spring 2024. Then, fill the four cells highlighted by the **Blue Box: B** with the sum of enrolled students in the college for Spring 2024 by each department.<sup>1</sup>
- **THE FUNCTION MUST WORK REGARDLESS OF HOW THE DATA IS SORTED.**

Number of Students Enrolled				
Total	Business	Economics	Political Science	Engineering
<b>A</b>	<b>B</b>			

• **Task #3: Search Information for Courses**

- Use the appropriate function(s) to fill out the **Red Box: A** with the corresponding information from the table on course offerings.

Course Information Lookup				
Course Code	Course Name	Credits	Enrolled	Waitlist
ECON-310	<b>A</b>			
BUSI-301				

<sup>1</sup>For the sake of simplicity, we will assume that one student only enrolls in one course.

**Problem #2. Functions Part 2**

**(15 Points)**

Navigate to worksheet P02. This worksheet contains a hypothetical gradebook from a college course. Use the information to complete the following tasks. You **MUST** use functions to complete all tasks in this problem.

• **Task #1: Total Score, Ranking, and Pass / Fail**

- Fill the cells highlighted by the **Red Box: A** with the total score of each student. The weights for each item that make up the total score are given in the **Orange Box: D**.<sup>2</sup>
- Fill the cells highlighted by the **Blue Box: B** with the rankings of each student based on the total score you calculated. The student with the highest score should be ranked 1.
- Fill the cells highlighted by the **Green Box: C** with whether the student passed or failed the course. A student fails the course if the total score is strictly less than 60 points.

Student ID	First Name	Last Name	Attendance	Assignments	Quizzes	Midterm	Final	Total	Rank	Pass / Fail
			<b>D</b> 10%	10%	15%	25%	40%			
74095	Emily	Johnson	100	97.84	80.6	98.78	65.34	<b>A</b>	<b>B</b>	<b>C</b>
50507	Ethan	Davis	76.76	89.96	90.14	78.66	61.67			
64484	Olivia	Martinez	91.39	94.39	98.87	53.89	98.95			

• **Task #2: Summary Statistics**

- Fill the cells highlighted by the **Red Box: A** with the corresponding values based on the Total scores of the students.

Summary Statistics (Based on Total Score)			
Average	Median	Minimum	Maximum
<b>A</b>			

• **Task #3: Calculating the Rate of Failure**

- Fill the cell highlighted by the **Red Box: A** with the total number of students in this class.
- Fill the cells highlighted by the **Blue Box: B** with the number of students who passed/failed.
- Fill the cell highlighted by the **Green Box: C** with the ratio of students who failed the course.<sup>3</sup>

Pass / Fail Statistics			
# Total Students	# Passing Students	# Failing Students	Fail Rate
<b>A</b>	<b>B</b>		<b>C</b>

<sup>2</sup>The first student should have a total score of:  $100 \cdot 10\% + 97.84 \cdot 10\% + 80.6 \cdot 15\% + 98.78 \cdot 25\% + 65.34 \cdot 40\%$ .

<sup>3</sup> $(\# \text{ Students who failed}) / (\# \text{ Total students})$

**Problem #3. Filtering and Sorting****(15 Points)**

Problem 3 requires you to work on three worksheets, P03-1, P03-2, and P03-3. These three worksheets are duplicates, each containing a table of the top 50 grossing movies of 2023. Use the tables in these worksheets to complete the following tasks.

- **Task #1: Sorting**

- Navigate to the worksheet P03-1. Currently, the table is sorted so that the highest-grossing movies are on top. Sort the table so that movies that opened in the greatest number of theaters appear at the top. See the figure below for a preview.

Rank	Title	Gross	# Theaters	Distributors
11	Indiana Jones and the Dial of Destiny	\$174,480,468.00	4,600	Walt Disney Studios Motion Pictures
4	Guardians of the Galaxy Vol. 3	\$358,995,815.00	4,450	Walt Disney Studios Motion Pictures
2	The Super Mario Bros. Movie	\$574,934,330.00	4,371	Universal Pictures
7	Ant-Man and the Wasp: Quantumania	\$214,504,909.00	4,345	Walt Disney Studios Motion Pictures
1	Barbie	\$636,190,846.00	4,337	Warner Bros.

- **Task #2: Filtering**

- Navigate to the worksheet P03-2. Apply filter(s) to the table so that movies distributed by **Walt Disney Studios Motion Pictures** that recorded a gross revenue greater than **\$100,000,000.00** appear on the table. See the figure below for a preview.

Rank	Title	Gross	# Theaters	Distributors
4	Guardians of the Galaxy Vol. 3	\$358,995,815.00	4,450	Walt Disney Studios Motion Pictures
6	The Little Mermaid	\$298,172,056.00	4,320	Walt Disney Studios Motion Pictures
7	Ant-Man and the Wasp: Quantumania	\$214,504,909.00	4,345	Walt Disney Studios Motion Pictures
11	Indiana Jones and the Dial of Destiny	\$174,480,468.00	4,600	Walt Disney Studios Motion Pictures
15	Elemental	\$154,426,697.00	4,035	Walt Disney Studios Motion Pictures

- **Task #3: Sorting**

- Navigate to the worksheet P03-3. Sort the table so that it displays **Distributors** in alphabetical order. Within each **Distributor**, movies with a wider reach in the form of a greater **# Theaters** should come on top. See the figure below for a preview.

Rank	Title	Gross	# Theaters	Distributors
10	Taylor Swift: The Eras Tour	\$178,243,751.00	3,855	-
39	Air	\$52,460,106.00	3,507	-
42	Talk to Me	\$48,299,436.00	2,379	A24
9	Sound of Freedom	\$184,174,633.00	3,411	Angel Studios
3	Spider-Man: Across the Spider-Verse	\$381,311,319.00	4,332	Columbia Pictures
24	The Equalizer 3	\$92,373,751.00	3,965	Columbia Pictures
48	Napoleon	\$36,211,931.00	3,500	Columbia Pictures
8	John Wick: Chapter 4	\$187,131,806.00	3,855	Lions Gate Films
21	The Hunger Games: The Ballad of Songbirds & Snakes	\$103,197,294.00	3,776	Lions Gate Films

**Problem #4. Conditional Formatting****(15 Points)**

Problem 4 requires you to work on two worksheets, P04-1 and P04-2, which are duplicates. The tables hold data on VTI trading over the month of November. Use the tables in these worksheets to complete the following tasks. The figures need not exactly match the given example. You **MUST** use conditional formatting to complete all tasks in this problem.

**Task #1: Conditional Formatting Entire Rows**

- Navigate to the worksheet P04-1. Apply conditional formatting to the table so that the rows of data on days where the trading Volume exceeds 3,000,000 shares are shaded green.

Date	Ticker	Open	High	Low	Close	Volume
30-Nov-23	VTI	\$225.73	\$225.92	\$224.82	\$225.43	2,456,670
29-Nov-23	VTI	\$226.38	\$227.19	\$225.11	\$225.33	2,653,700
28-Nov-23	VTI	\$224.77	\$225.91	\$224.45	\$225.23	2,761,900
27-Nov-23	VTI	\$225.12	\$225.53	\$224.77	\$225.09	2,410,000
24-Nov-23	VTI	\$225.04	\$225.44	\$225.01	\$225.38	1,219,500
22-Nov-23	VTI	\$224.85	\$225.76	\$224.53	\$225.14	2,880,400
21-Nov-23	VTI	\$224.25	\$224.43	\$223.61	\$224.18	2,513,800
20-Nov-23	VTI	\$223.11	\$225.25	\$223.00	\$224.79	2,875,600
17-Nov-23	VTI	\$222.87	\$223.44	\$222.42	\$223.11	3,123,700
16-Nov-23	VTI	\$222.30	\$222.88	\$221.60	\$222.55	2,754,500
15-Nov-23	VTI	\$222.86	\$223.80	\$222.29	\$222.70	2,819,200
14-Nov-23	VTI	\$220.51	\$222.78	\$220.51	\$222.15	4,055,100

- **Task #2: Data Bars and Top % Rules**

- Navigate to the worksheet P04-2.
- Apply conditional formatting to the table so that data bars representing the daily trade volume are displayed to the right of the volume column, as shown in the Red Box.
- Apply conditional formatting to the table so that the cells displaying the top 25% of closing prices are shaded green, as shown in the Green Box.

Date	Ticker	Open	High	Low	Close	Volume
30-Nov-23	VTI	\$225.73	\$225.92	\$224.82	\$225.43	2,456,670
29-Nov-23	VTI	\$226.38	\$227.19	\$225.11	\$225.33	2,653,700
28-Nov-23	VTI	\$224.77	\$225.91	\$224.45	\$225.23	2,761,900
27-Nov-23	VTI	\$225.12	\$225.53	\$224.77	\$225.09	2,410,000
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22-Nov-23	VTI	\$224.85	\$225.76	\$224.53	\$225.14	2,880,400
21-Nov-23	VTI	\$224.25	\$224.43	\$223.61	\$224.18	2,513,800
20-Nov-23	VTI	\$223.11	\$225.25	\$223.00	\$224.79	2,875,600
17-Nov-23	VTI	\$222.87	\$223.44	\$222.42	\$223.11	3,123,700

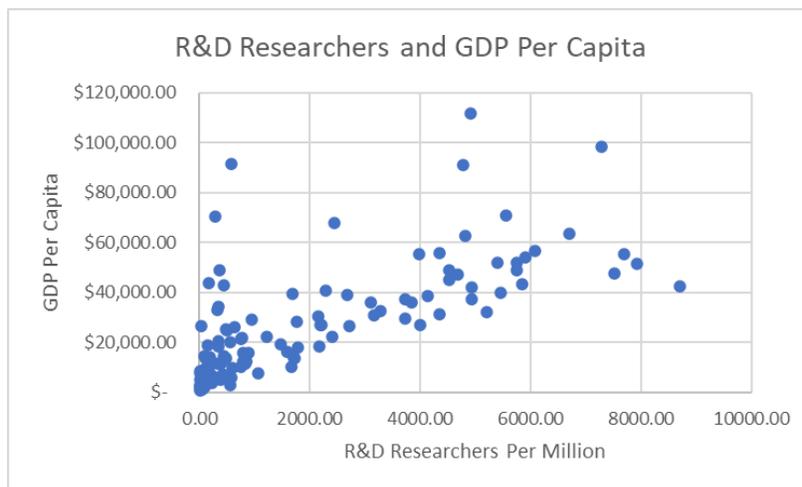
**Problem #5. Charts**

**(10 Points)**

Problem 5 requires you to work on two worksheets, P05-1 and P05-2. Use the tables in these worksheets to complete the following tasks. The minute details in the figures need not exactly match the given example.

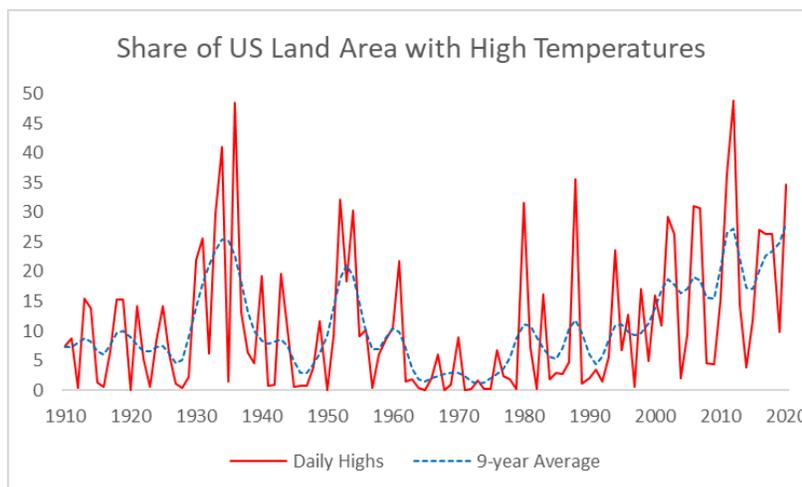
• **Task #1: Chart #1**

- Navigate to the worksheet P05-1. The worksheet contains data on countries' GDP per capita and the number of R&D researchers per million citizens. Using this data, replicate the following chart as closely as possible.



• **Task #2: Chart #2**

- Navigate to the worksheet P05-2. The worksheet contains data on temperature anomalies in the US over time. Using this data, replicate the following chart as closely as possible.



**Problem #6. PivotTables**

**(15 Points)**

Navigate to worksheet P06. This worksheet contains stock market data on four different assets: VTI, GLD, BND, and VT. Use this data to complete the following tasks.

- **Task #1: Constructing PivotTables**

- Using the data, construct a PivotTable that matches the figure below.

Row Labels	Average of Close	Sum of Volume
BDN	\$72.03	1,312,605,366
GLD	\$179.75	1,670,986,583
VT	\$93.85	404,314,056
VTI	\$211.09	696,279,470
<b>Grand Total</b>	<b>\$139.18</b>	<b>4,084,185,475</b>

- **Task #2: Slicer / Timeline**

- Add the filtering tool shown in the figure below.
- Using this tool, filter the data so that the PivotTable displays values based on the months of April 2023 and May 2023 as shown in the figure.

Row Labels	Average of Close	Sum of Volume
BDN	\$73.53	185,267,800
GLD	\$185.55	353,166,100
VT	\$92.72	55,861,900
VTI	\$204.89	105,290,400
<b>Grand Total</b>	<b>\$139.17</b>	<b>699,586,200</b>

**Date** X

Apr - May 2023 MONTHS

2023

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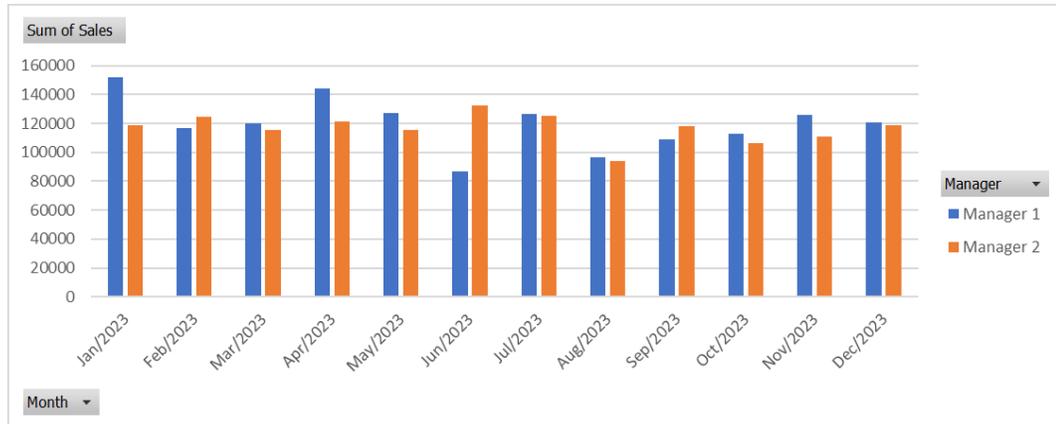
**Problem #7. PivotCharts**

**(10 Points)**

Navigate to worksheet P07. This worksheet contains sales data for 6 employees, working under two different managers. Use this data to complete the following tasks.

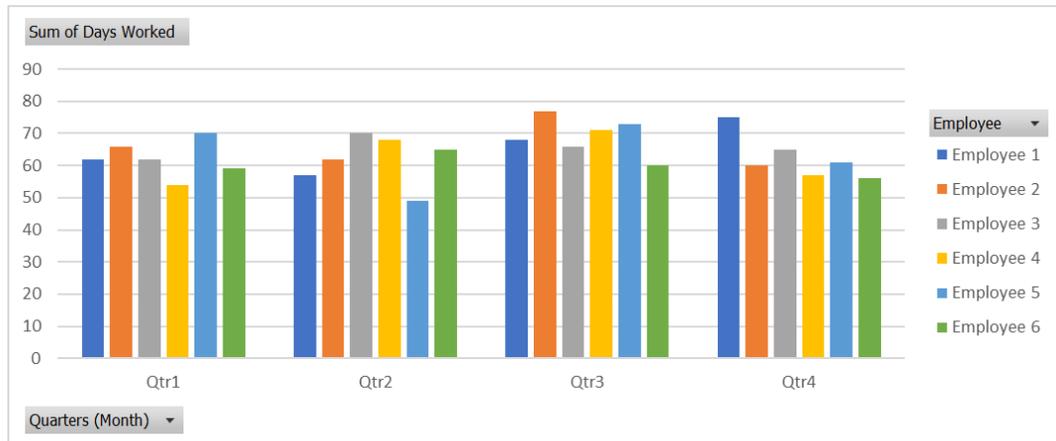
• **Task #1: Constructing PivotCharts**

- Using the data, construct a PivotChart that closely matches the figure below.



• **Task #2: Variable Manipulation in PivotCharts**

- Using the data, construct an additional PivotChart on a new worksheet that closely matches the figure below.



**Problem #8. What-if Analysis****(5 Points)**

Navigate to worksheet P08. This worksheet contains a simplified calculator to calculate retirement plans. Complete the following task using this calculator.

**• Task #1: How Long Does it Take?**

- Assume that the individual's target retirement account value is \$2,500,000, and they can save \$1,000 monthly while collecting a 7.5% return on their investment year-on-year.
- Using the What-if Analysis toolkit and editing the entries of some cells (if necessary), calculate how many years it will take for this individual to reach this goal.

Item	Value
Monthly Savings	\$ 800.00
Return on Investments	6.00%
Years to Retirement	30
Retirement Account	\$803,612.03

← DO NOT OVERWRITE THIS CELL