CP212 Assignment 4 – Functions & SQL

Due: Friday, March 19, 2021; 11:45pm (19 marks)

Objectives

- Write a function in VBA that works on an Excel spreadsheet
- Develop a code solution to a problem using subroutines and modular programming
- Write an application that connects to an Access database
- Use SQL queries to extract information from a database

Part A

According to Microsoft Business, there are 3 types of **profit margins**:

- Net
- Gross
- Operating

Read more here to understand the concept and to learn about the calculations:

https://www.microsoft.com/en-ca/microsoft-365/business-insights-ideas/resources/how-to-calculate-profit-margin

The cost of producing a product is often called the Cost of Goods Sold (**COGS**).

For example, if I sell a t-shirt that costs me $7.89 to produce, and I sell it for $19.99, what is my revenue, COGS, and profit margin?

Write a function that can calculate each type of **profit margin**, using an argument to indicate which calculation to use.

For example, your function could look like `=profitmargin([range],"operating")` or `=profitmargin([range],"gross")`, where [range] is a cell range or cell name, without square brackets.

Make sure your argument for calculation type is case-insensitive. This means using "Gross", "gross", or "GROss" will all work. Create examples that shows each type of calculation and that your function works properly.

In the code, use a comment to explain your choice for the data type of the return value.

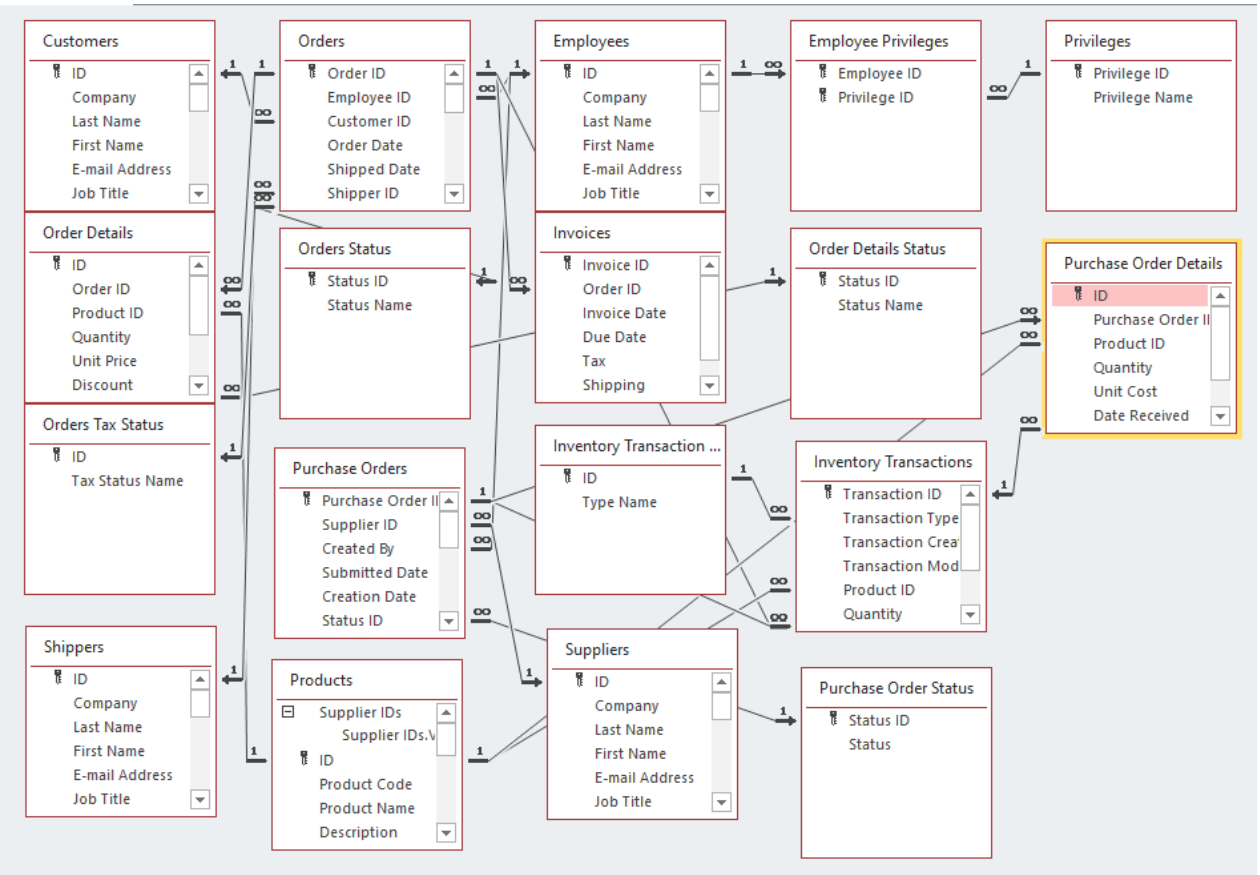
Remember to save your file as a macro enabled workbook (.xlsm) and upload it to the Dropbox in MyLearningSpace before the due date.

Part B

For Part B, save the file northwind2021w.accdb into the folder containing your Excel file. Parts A and B will be in the same Macro-Enabled Workbook.

You can complete this assignment without having Access on your computer but using it may help.

The database for the Northwind Adventure Company looks something like this:



If you have access to Windows or the remote desktop version of Windows provided by the university, you can view the diagram by clicking **Database Tools -> Relationships**.

- Create a new worksheet in your Excel file and call it **Northwind**.
- Put a button on it that will open your application for Part B. Name it something meaningful.

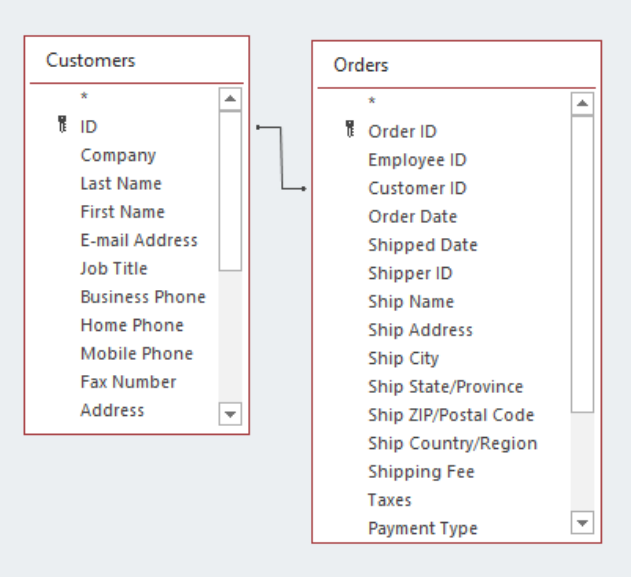
Create a userform (Chapter 11) that contains buttons that allows you to display the results of the following queries (Chapter 14).

Output the results of each query into a textbox or listbox (your choice) on the userform you create, When writing queries, make sure the field names are displayed in the order they appear in the query.

1. Write a query to list all the Customers and include Company, Last Name, First Name, and E-mail Address
    a. **Note**: When a field name has a space or special characters, use square brackets [] around the name.
2. Write a query to list the Product Name, Product Code, and Product Description. Order the list alphabetically by name.
3. Write a query that could produce the data shown here for Coffee. The info is in the **Products** table:

Product Name	Product Code	Standard Cost	List Price	Category
Northwind Traders Coffee	NWTB-43	34.5	46	Beverages

4. Write a query that displays the Company, Order Date, and Shipped Date for all the orders.



    a. Note: You will need to use SQL to create the table join shown in the diagram.

Marking Rubric [marks]

1. ProfitMargin() function returns an appropriate data type and is explained in a comment. [2]
2. ProfitMargin() function works for all three calculation types. [3]
3. ProfitMargin() function shows examples for all 3 calculation types. [3]
4. Northwind worksheet has a button on it to start the application (display the userform). [1]
5. Userform has all required buttons. [1]
6. Userform and controls follow specified naming conventions taught in class and text. [1]
7. Output is written out as required. [1]
8. All queries show the correct results. [4]
9. Code is well organized. [1]
10. Code is well commented. [2]

Tip: You should never be creating a connection the database more than once. If you find yourself repeating blocks of code, think about how it could re-written to reduce the repetition. (Using loops where appropriate is not the same as repeating blocks of code.)