Questions and Answers

- **Question 01:** Using the customer table or tab, please write an SQL query that shows Title, First Name and Last Name and Date of Birth for each of the customers.

  SELECT Title, First_Name, Last_Name, Date_of_Birth
  FROM Customer;

- **Question 02:** Using customer table or tab, please write an SQL query that shows the number of customers in each customer group (Bronze, Silver & Gold). I can see visually that there are 4 Bronze, 3 Silver and 3 Gold but if there were a million customers how would I do this in Excel?

  SELECT Customer_Group, COUNT(*) AS Number_of_Customers
  FROM Customer
  GROUP BY Customer_Group;

- **Question 03:** The CRM manager has asked me to provide a complete list of all data for those customers in the customer table but I need to add the currencycode of each player so she will be able to send the right offer in the right currency. Note that the currencycode does not exist in the customer table but in the account table. Please write the SQL that would facilitate this. **BONUS:** How would I do this in Excel if I had a much larger data set?

  SELECT C.*, A.CurrencyCode
  FROM Customer C
  JOIN Account A ON C.Customer_ID = A.Customer_ID;

  BONUS ANSWER: In Excel, we could use **VLOOKUP** or **XLOOKUP** to join the tables, searching for the **CurrencyCode** in the Account table and adding it to the Customer table.

- **Question 04:** Now I need to provide a product manager with a summary report that shows, by product and by day how much money has been bet on a particular product. PLEASE note that the transactions are stored in the betting table and there is a product code in that table that is required to be looked up (classid & categortyid) to determine which product family this belongs to. Please write the SQL that would provide the report. **BONUS:** If you imagine that this was a much larger data set in Excel, how would you provide this report in Excel?

  SELECT P.Product_Name, B.Bet_Date, SUM(B.Bet_Amount) AS Total_Bet_Amount
  FROM Betting B
  JOIN Product P ON B.Product_Code = P.Product_Code
  GROUP BY P.Product_Name, B.Bet_Date;

  BONUS ANSWER: We can use pivot tables in Excel to summarize bets by product and day.

- **Question 05:** You've just provided the report from question 4 to the product manager, now he has emailed me and wants it changed. Can you please amend the summary report so that it only summarizes transactions that occurred on or after 1st November and he only wants to

see Sportsbook transactions. Again, please write the SQL below that will do this. **BONUS:** If I were delivering this via Excel, how would I do this?

```
SELECT P.Product_Name, B.Bet_Date, SUM(B.Bet_Amount) AS Total_Bet_Amount
FROM Betting B
JOIN Product P ON B.Product_Code = P.Product_Code
WHERE B.Bet_Date >= '2023-11-01' AND P.Product_Type = 'Sportsbook'
GROUP BY P.Product_Name, B.Bet_Date;
```

BONUS ANSWER: In Excel, we could filter data by date and product type in a pivot table.

- **Question 06:** As often happens, the product manager has shown his new report to his director and now he also wants different version of this report. This time, he wants the all of the products but split by the currencycode and customergroup of the customer, rather than by day and product. He would also only like transactions that occurred after 1st December. Please write the SQL code that will do this.

```
SELECT P.Product_Name, A.CurrencyCode, C.Customer_Group, SUM(B.Bet_Amount) AS Total_Bet_Amount
FROM Betting B
JOIN Product P ON B.Product_Code = P.Product_Code
JOIN Account A ON B.Account_ID = A.Account_ID
JOIN Customer C ON A.Customer_ID = C.Customer_ID
WHERE B.Bet_Date >= '2023-12-01'
GROUP BY P.Product_Name, A.CurrencyCode, C.Customer_Group;
```

- **Question 07:** Our VIP team have asked to see a report of all players regardless of whether they have done anything in the complete timeframe or not. In our example, it is possible that not all of the players have been active. Please write an SQL query that shows all players Title, First Name and Last Name and a summary of their bet amount for the complete period of November.

```
SELECT C.Title, C.First_Name, C.Last_Name, SUM(B.Bet_Amount) AS Total_Bet_Amount
FROM Customer C
LEFT JOIN Account A ON C.Customer_ID = A.Customer_ID
LEFT JOIN Betting B ON A.Account_ID = B.Account_ID AND B.Bet_Date BETWEEN '2023-11-01' AND '2023-11-30'
GROUP BY C.Title, C.First_Name, C.Last_Name;
```

- **Question 08:** Our marketing and CRM teams want to measure the number of players who play more than one product. Can you please write 2 queries, one that shows the number of products per player and another that shows players who play both Sportsbook and Vegas.

Query 1: Show the number of products played by each player.

```
SELECT C.Customer_ID, COUNT(DISTINCT B.Product_Code) AS Number_of_Products
FROM Customer C
JOIN Account A ON C.Customer_ID = A.Customer_ID
```

```
JOIN Betting B ON A.Account_ID = B.Account_ID
GROUP BY C.Customer_ID;
```

Query 2: Show players who play both Sportsbook and Vegas.

```
SELECT C.Customer_ID
FROM Customer C
JOIN Account A ON C.Customer_ID = A.Customer_ID
JOIN Betting B ON A.Account_ID = B.Account_ID
JOIN Product P ON B.Product_Code = P.Product_Code
WHERE P.Product_Type IN ('Sportsbook', 'Vegas')
GROUP BY C.Customer_ID
HAVING COUNT(DISTINCT P.Product_Type) = 2;
```

- **Question 09:** Now our CRM team want to look at players who only play one product, please write SQL code that shows the players who only play at sportsbook, use the bet_amt > 0 as the key. Show each player and the sum of their bets for both products.

```
SELECT C.Customer_ID, SUM(B.Bet_Amount) AS Total_Bet_Amount
FROM Customer C
JOIN Account A ON C.Customer_ID = A.Customer_ID
JOIN Betting B ON A.Account_ID = B.Account_ID
JOIN Product P ON B.Product_Code = P.Product_Code
WHERE P.Product_Type = 'Sportsbook' AND B.Bet_Amount > 0
GROUP BY C.Customer_ID
HAVING COUNT(DISTINCT P.Product_Type) = 1;
```

- **Question 10:** The last question requires us to calculate and determine a player's favorite product. This can be determined by the most money staked. Please write a query that will show each players favorite product.

```
WITH Player_Bets AS (
  SELECT C.Customer_ID, P.Product_Name, SUM(B.Bet_Amount) AS Total_Bet_Amount
  FROM Customer C
  JOIN Account A ON C.Customer_ID = A.Customer_ID
  JOIN Betting B ON A.Account_ID = B.Account_ID
  JOIN Product P ON B.Product_Code = P.Product_Code
  GROUP BY C.Customer_ID, P.Product_Name
)
SELECT Customer_ID, Product_Name
FROM Player_Bets
WHERE (Customer_ID, Total_Bet_Amount) IN (
  SELECT Customer_ID, MAX(Total_Bet_Amount)
  FROM Player_Bets
  GROUP BY Customer_ID
);
```

Looking at the abstract data on the "Student_School" tab into the Excel spreadsheet, please answer the below questions:

- **Question 11:** Write a query that returns the top 5 students based on GPA.

```
SELECT Student_Name, GPA
FROM Student_School
ORDER BY GPA DESC
LIMIT 5;
```

- **Question 12:** Write a query that returns the number of students in each school. (a school should be in the output even if it has no students!).

```
SELECT School_Name, COUNT(Student_ID) AS Number_of_Students
FROM School S
LEFT JOIN Student_School SS ON S.School_ID = SS.School_ID
GROUP BY S.School_Name;
```

- **Question 13:** Write a query that returns the top 3 GPA students' name from each university.

```
WITH Ranked_Students AS (
  SELECT SS.Student_Name, SS.GPA, S.School_Name,
      ROW_NUMBER() OVER (PARTITION BY S.School_ID ORDER BY SS.GPA DESC) AS Rank
  FROM Student_School SS
  JOIN School S ON SS.School_ID = S.School_ID
)
SELECT Student_Name, GPA, School_Name
FROM Ranked_Students
WHERE Rank <= 3;
```