

MIS784 – Assignment 2 – T3, 2024

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Query Appendix

Merging Data Files

-- Merged the Customer and Contract tables to create a unified view.
-- Added membership status column to account for customers who have active Gold Memberships across multiple contracts.

```
CREATE OR REPLACE TABLE `AT2.Customer_Contract_Merged` AS
WITH GoldMembershipPeriods AS (
    SELECT
        Cost_ID,
        Fulfilment_Date AS Gold_Start_Date,
        CASE
            WHEN Fulfilment_Ended_Date IS NOT NULL THEN
                Fulfilment_Ended_Date
            ELSE CURRENT_DATE()
        END AS Gold_End_Date
    FROM
        `AT2.Contract`
    WHERE
        Product = 'Gold_Membership'
)
SELECT
    c.*,
    ct.Contract_ID,
    ct.Is_Initial_Commitment,
    ct.Product,
    ct.Total_Paid,
    ct.Fulfilment_Date,
    ct.Fulfilment_Ended_Date,
    CASE
        WHEN EXISTS (
            SELECT 1
            FROM GoldMembershipPeriods gmp
            WHERE
                gmp.Cost_ID = c.Cost_ID
                AND ct.Fulfilment_Date BETWEEN gmp.Gold_Start_Date AND
                gmp.Gold_End_Date
        ) THEN 'Gold Member'
        ELSE 'Non-Member'
    END AS Membership_Status
FROM
```

```

`AT2.Customer` c
LEFT JOIN
`AT2.Contract` ct
ON
c.Cost_ID = ct.Cost_ID;

```

<input type="checkbox"/> Field name	Type	Mode	Key	Collation	Default value	Policy tags 	Description
<input type="checkbox"/> Cost_ID	STRING	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Affluence_Level	STRING	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Tenure	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Age	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Gender	STRING	NULLABLE	-	-	-	-	-
<input type="checkbox"/> State	STRING	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Has_Valid_Email_Address	BOOLEAN	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Has_Valid_Mobile_Number	BOOLEAN	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Number_Of_Inbound_Communication_In_24_MTH	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Number_Of_Inbound_Communication_In_60_MTH	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Number_Of_Outbound_Communication_In_24_MTH	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Number_Of_Outbound_Communication_In_60_MTH	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Pathway_Arrears_In_24_MTH	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Pathway_Arrears_In_60_MTH	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Inter_Mailing_Preferences_Update	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Inter_Personal_Details_Update	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Operating_System	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Browser_type	INTEGER	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Contract_ID	STRING	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Is_Initial_Commitment	BOOLEAN	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Product	STRING	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Total_Paid	FLOAT	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Fulfilment_Date	DATE	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Fulfilment_Ended_Date	DATE	NULLABLE	-	-	-	-	-
<input type="checkbox"/> Membership_Status	STRING	NULLABLE	-	-	-	-	-

Data Cleaning

-- Remove duplicate rows

```
CREATE OR REPLACE TABLE `AT2.Customer_Contract_Merged` AS
SELECT DISTINCT *
FROM `AT2.Customer_Contract_Merged`;
```

-- Handle missing values for critical columns

```
CREATE OR REPLACE TABLE `AT2.Customer_Contract_Merged` AS
SELECT *,
IFNULL(Gender, 'Unknown') AS Updated_Gender,
IFNULL(State, 'Unknown') AS Updated_State
FROM `AT2.Customer_Contract_Merged`;
```

QUESTION 1: Comparison of Gold-Members and Non-Members

Purchase Frequency

```
SELECT
Membership_Status,
COUNT(DISTINCT Contract_ID) AS Purchase_Frequency
FROM
`AT2.Customer_Contract_Merged`
GROUP BY
Membership_Status
```

Row	Membership_Status	Purchase_Frequency
1	Non-Member	112139
2	Gold Member	17072

Spending Behaviour

```
SELECT
Membership_Status,
SUM(Total_Paid) AS Total_Spending,
AVG(Total_Paid) AS Avg_Spending
FROM
`AT2.Customer_Contract_Merged`
GROUP BY
Membership_Status
```

Row	Membership_Status	Total_Spending	Avg_Spending
1	Non-Member	6187005.050000...	55.17264332658...
2	Gold Member	1133920.0	66.41986879100...

Communication Patterns

```

SELECT
    Membership_Status,
    AVG(Number_Of_Inbound_Communication_In_24_MTH) AS
    Inbound_Communication_In_24_MTH,
    AVG(Number_Of_Outbound_Communication_In_24_MTH) AS
    Outbound_Communication_In_24_MTH
FROM
    `AT2.Customer_Contract_Merged`
GROUP BY
    Membership_Status
  
```

Row	Membership_Status	Inbound_Communication	Outbound_Communication
1	Non-Member	11.400289202809764	64.266383168053736
2	Gold Member	12.587394564198675	65.223055295220334

QUESTION 2 Patterns among different Customer Groups

By Age

```

SELECT
CASE
    WHEN Age<18 THEN 'Children (Under 18)'
    WHEN Age BETWEEN 18 AND 34 THEN 'Young People (18-34)'
    WHEN Age BETWEEN 35 AND 55 THEN 'Middle Aged (35-55)'
    ELSE 'Senior Citizens (55+)'
END AS Age_Group,
AVG(Tenure) AS Average_Tenure,
COUNT(DISTINCT Contract_ID) AS Total_Purchases,
AVG(Total_Paid) AS Avg_Spending,
COUNTIF(Product = 'Gold_Membership') AS Gold_Membership_Count,
FROM
    `AT2.Customer_Contract_Merged`
GROUP BY
    Age_Group
ORDER BY
    Total_Purchases DESC;
  
```

Row	Age_Group	Average_Tenure	Total_Purchases	Avg_Spending	Gold_Membership_Count
1	Senior Citizens (55+)	21.47818890218...	77009	61.52753898894...	2652
2	Middle Aged (35-55)	15.08385181304...	43512	50.25566740209...	3242
3	Young People (18-34)	8.131151636272...	7263	46.79639267520...	1275
4	Children (Under 18)	8.772898368883...	1427	39.34407848633...	123

By State

```

SELECT
    State,
    AVG(Tenure) AS Avg_Tenure,
    COUNT(DISTINCT Contract_ID) AS Total_Purchases,
    AVG(Total_Paid) AS Avg_Spending,
    COUNTIF(Product = 'Gold_Membership') AS Gold_Membership_Count,
FROM
    `AT2.Customer_Contract_Merged`
GROUP BY
    State
ORDER BY
    Total_Purchases DESC;

```

Row	State	Avg_Tenure	Total_Purchases	Avg_Spending	Gold_Membership_Count
1	NSW	18.73920077657...	41764	58.36901254669...	2529
2	VIC	18.18601941747...	34757	56.36684092413...	1960
3	QLD	17.85483465042...	19187	54.45536040027...	1188
4	WA	17.44556962025...	14477	55.81999032948...	670
5	SA	19.26467439785...	10885	55.36389526871...	491
6	ACT	18.07967103572...	3755	56.92916111850...	200
7	TAS	20.46328725038...	3169	57.68097191543...	154
8	INTERNATIONAL	13.92915531335...	675	61.55454814814...	52
9	Unknown	16.29349470499...	542	56.03874538745...	48

By Gender

```

SELECT
    Updated_Gender AS Gender,
    AVG(Tenure) AS Average_Tenure,
    COUNT(DISTINCT Contract_ID) AS Total_Purchases,
    AVG(Total_Paid) AS Avg_Spending,
    COUNTIF(Product = 'Gold_Membership') AS Gold_Membership_Count
FROM
    `AT2.Customer_Contract_Merged`
GROUP BY
    Updated_Gender
ORDER BY
    Total_Purchases DESC;

```

Row	Gender	Average_Tenure	Total_Purchases	Avg_Spending	Gold_Membership_Count
1	Female	18.73150766042...	65488	53.43511208160...	3110
2	Male	19.64891089604...	38394	63.77588529457...	2040
3	Unknown	15.36848085444...	25329	54.20486754313...	2142

Technology Preferences

```

SELECT
CASE
WHEN Operating_System=1 THEN 'Windows'
WHEN Operating_System=2 THEN 'MacOS'
WHEN Operating_System=3 THEN 'Linux'
WHEN Operating_System=4 THEN 'Android'
END AS Operating_System,
CASE
WHEN Browser_type=1 THEN 'Google Chrome'
WHEN Browser_type=2 THEN 'Mozilla Firefox'
WHEN Browser_type=3 THEN 'Apple Safari'
WHEN Browser_type=4 THEN 'Microsoft Edge'
WHEN Browser_type=5 THEN 'Opera'
END AS Browser_Type,
COUNT(DISTINCT Cost_ID) AS Number_Of_Customers,
AVG(Total_Paid) AS Average_Spending
FROM
`AT2.Customer_Contract_Merged`
GROUP BY
Operating_System, Browser_type
ORDER BY
Number_Of_Customers DESC, Average_Spending DESC;

```

Row	Operating_System	Browser_Type	Number_Of_Customers	Average_Spending
1	MacOS	Apple Safari	2165	56.89794004611...
2	Android	Opera	1138	58.4477149496...
3	Android	Mozilla Firefox	1134	57.58621353383...
4	Linux	Google Chrome	1116	55.23491745101...
5	Android	Microsoft Edge	1112	56.70537031572...
6	Linux	Microsoft Edge	1104	51.71968136870...
7	Windows	Opera	1094	53.20410897049...
8	Windows	Mozilla Firefox	1089	56.51877690366...
9	Windows	Google Chrome	1074	52.60400648107...
10	Linux	Mozilla Firefox	1070	57.68726393715...
11	Android	Apple Safari	1064	55.94714752059...
12	Linux	Opera	1062	59.562980066445
13	Linux	Apple Safari	1054	60.58351276530...
14	Android	Google Chrome	1038	59.57129171323...