

## **NAPA VALLEY WINERIES**

### **Introduction:**

Napa Valley Wineries are well known for their beautiful vineyards and premium wine production. One of the most well-known winegrowing regions in the world is Napa Valley, which is in Northern California. The region's Mediterranean climate, diverse terroir, and skilled winemakers contribute to the production of bold, complex reds and elegant whites. There are more than 400 wineries open for tastings and 90 urban tasting rooms in Napa Valley. Visitors are drawn to the region's picturesque landscapes, offering wine tastings, vineyard tours, and culinary delights. The oak aging process enhances the wines' depth and character, making them sought after by connoisseurs worldwide. Many of the wineries in Napa Valley accept visitors for tastings, tours, and events. Napa Valley properties also have luxury stays and restaurants so you can enjoy your wine tasting experience. 95% of their wineries are family-owned and operated, making nearly every spot feel like home. They provide a wide variety of wines reflecting the unique terroir, from the valley floor to the mountain vineyards, including Chenin Blanc, Cabernet Sauvignon, Chardonnay, and other varieties. Napa Valley wineries continue to lead in innovation, ensuring their wines remain at the forefront of the industry.

### **Understanding the Problem for Napa Valley Wineries:**

Napa Valley wineries have a variety of operational difficulties and have certain requirements that a DBMS should satisfy. Management of grapes and vineyards, wine production, inventories and cellars, financial management, quality assurance, legal compliance, sales and distribution, management of wine clubs, data analytics and other areas are the main areas of concern.

### **Business requirements, Questions, Assumptions for Napa Valley wineries:**

#### **1. Marketing:**

##### **1.1 Communication Tools-**

###### **Business Requirements:**

The system ought to offer SMS marketing, email marketing, and other forms of communication so that users may interact with one another, spread news, and promote events. To collect leads and track online sales, integration with the winery's website and e-commerce platform is crucial.

###### **Questions:**

What marketing platforms and technologies, such as email marketing software, CRM systems, or analytics tools, would the DBMS need to integrate with?

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### Assumptions:

Assuming that the creation and administration of marketing material within the system will be handled by marketing teams.

### **1.2 Data management for customers:**

#### Business requirements:

The database management system (DBMS) must store and manage comprehensive client data, such as contact information, preferences, purchase history, and club memberships.

#### Questions:

- How often will the DBMS be updated with new customer data, and where will it come from?
- How are you going to handle concerns about data privacy and permission, particularly in relation to email marketing and consumer communication?

#### Assumptions:

- Assuming that the winery obtains consent from customers and complies with data protection laws when collecting consumer information.
- Assuming that the DBMS will have strong security mechanisms, such as encryption and access controls, in place to safeguard customer data.

### **1.3 Campaign segmentation, targeting & tracking**

#### Business requirements:

- It should enable segmenting the client base into several groups (for example, wine club members, frequent customers, and first-time visitors) in order to execute targeted marketing efforts.
- Metrics like open rates, click-through rates, and conversion rates should be tracked within the DBMS to determine how effective marketing campaigns are.

#### Questions:

- How will the DBMS help marketing initiatives that include personalised content and recommendations?
- Will the system have tools for organising and maintaining marketing materials such as email templates, images, and event descriptions?

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### Assumptions:

Assuming that the creation and administration of marketing material within the system will be handled by marketing teams.

### **1.4 Data Analytics & Event Promotion:**

#### Business requirements:

- The system must have tools for promoting and overseeing winery events, such as registration and payment processing.
- To analyse customer behaviour, marketing effectiveness, and ROI, comprehensive reporting and analytics solutions should be used.

#### Questions:

What will the promotion and management procedure be, and how will it be integrated into the DBMS?

#### Assumptions:

Assuming that key marketing metrics needed to gauge the effectiveness of campaigns will be recorded and reported by the DBMS.

## **2. Sales & Distribution**

### **2.1 Management of multi-channel sales:**

#### Business Requirements:

Wineries must navigate the complex world of wine sales and distribution, whether through direct-to-consumer sales, retail, or export.

#### Questions:

What should the DBMS do to accommodate the main sales channels? (For instance, tasting room, online sales, wholesale distribution, and direct sales)

#### Assumption:

Assuming that wineries might have a variety of channels for selling their products, such as direct sales from the vineyard, distribution to restaurants and stores, and an internet sales platform.

### **2.2 Customers Data**

#### Business Requirements:

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Customer information, such as contact information, preferences, and purchase history, should be gathered and added to the system.

#### **Questions:**

What client information needs to be gathered throughout the sales process? (For instance, contact details, interests, and past purchases)

#### **Assumption:**

- Assuming that customer data will be gathered and stored by the DBMS to assist with customised marketing and customer relationship management.
- Assuming that the DBMS should be equipped with strong security safeguards to safeguard confidential customer and financial information

## **2.3 Orders**

#### **Business Requirements:**

- The system must handle returns and refunds while following predetermined rules and procedures.
- Order tracking, customer data management, delivery fulfilment and real-time updates to available inventory are crucial.

#### **Questions:**

- How will the DBMS keep track of available stock and update it when sales happen?
- How are orders going to be taken in and processed? Will there be various sales channels with various processes?
- What is the procedure for fulfilling orders, and how will the DBMS handle it? (such as picking, packaging, and shipping)

#### **Assumption:**

- Assuming that as sales are made, the DBMS will deliver real-time updates to the inventory that is available.
- Assuming that the winery has a clear order fulfilment workflow, and that the DBMS will be built to support it.

## **2.4 Payments, Discounts & Logistics**

#### **Business Requirements:**

- It should produce invoices as necessary and interface with payment processing systems for safe and effective transactions.
- The choosing, packing, shipping, and delivery of orders should be made easier by the DBMS, which may also integrate with shipping companies.

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- The system should handle pricing, including special pricing for various consumer segments and sales channels as well as discounts, promotions, and other discounts.

### Questions:

What will the system's processing and integration procedures be for payments?  
What forms of payment are accepted?

### Assumption:

Assuming that the DBMS will connect to e-commerce platforms for online sales as well as payment processing systems, if necessary.

## **3. Regulatory Compliance:**

### **3.1 Payments & Records**

#### Business Requirements:

- It should produce reports and make it easier to calculate and submit excise taxes, which are subject to change depending on the type and volume of wine produced.
- For auditing purposes, the DBMS should keep historical records of production procedures, ingredient usage, and labelling.
- Transparency and accountability are provided by the DBMS by maintaining an audit trail of modifications made to regulatory data and records.

#### Questions:

How will the DBMS calculate excise taxes, make it easier to pay them, and how do you go about delivering required reports to regulatory authorities?

#### Assumption:

Assuming the DBMS will keep an accurate and thorough record of any modifications made to compliance-related data.

## **4. Data Analytics:**

### **4.1 Data Analysis Tools**

#### Business Requirements:

Determine the data analysis tools and technologies currently in use. This includes software, databases, and analytics platforms.

#### Questions:

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How will data flow across these systems, along with which analytics tools or platforms will be linked with the DBMS for data analysis?

Assumption:

Assuming that it is possible to undertake data analysis and that the DBMS can be integrated with analytics tools and platforms.

### **4.2 Data Collection & Storage**

Business Requirements:

- The DBMS should gather information from a range of sources, including as sales, customer data, production, and other pertinent data points.
- It ought to be integrated with other platforms and information sources, such as websites, social media, and external analytics programmes.
- Both organised and unstructured data should be efficiently stored and managed by the system.

Questions:

- What are the main internal and external data sources that the DBMS should gather and integrate?
- How will the DBMS handle scaling as the amount of data increases over time?

Assumption:

Assuming that any data entered into the DBMS is of reasonable quality and that procedures for addressing any problems with data cleaning and transformation are in place.

### **4.3 Reports & Analysis**

Business Requirements:

- It ought to make it easier to make personalised reports and dashboards that show important performance metrics and trends.
- In order to forecast demand, optimise production, and comprehend customer behaviour, the system should offer predictive analytics.

Questions:

What data quality presumptions are made, how will the data be transformed, and how will it be presented for analysis?

How will data sharing be handled? Who will have access to the data and analytics reports?

Assumption:

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Assuming that there are clear rules and permissions about who can access and distribute data and reports in place.

### **5. Wine Tourism & Tasting Room:**

#### **5.1 Visitor Reservation & Data Collection**

##### Business Requirements:

- The DBMS should record and store visitor data, such as contact information, previous visits, and preferences.
- In order to improve personalised experiences, it ought to enable the construction of visitor profiles.
- Online reservations for events, excursions, and tastings should be possible through the system, with real-time availability updates.

##### Questions:

- How will the DBMS track and manage visitor data, including names, contact information, and visit details?
- What will the reservation procedure include, and how can customers make reservations? Will the system send reminders and confirmations?
- What information about visitors must be gathered, and how will it be input into the DBMS? Concerns about data privacy and consent exist?

##### Assumption:

- Assuming that the data entered into the DBMS is of a decent quality and that procedures are in place to deal with any problems during data entry.
- Assuming wineries' owners are committed to gathering and handling visitor data in accordance with the law and are aware of data privacy laws.
- Assuming that the visitor data will be protected by security mechanisms like user access controls and encryption provided by the DBMS.

#### **5.2 Tasting tours & Wine Club Membership**

##### Business Requirements:

- Regular customers and wine club members should be treated differently by the system, which should offer exclusive experiences.
- It should coordinate the scheduling of tastings and tours while accounting for staff availability and venue capacity.

##### Questions:

- Will the system support online reservations for tastings and tours, and how will these be managed?

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- How will the DBMS differentiate between regular visitors and wine club members? What benefits will be provided to club members?
- What is the procedure for scheduling optimisation and how will the system handle the tasting room's capacity restrictions?

#### Assumption:

Assuming that the data entered into the DBMS is of a decent quality and that procedures are in place to deal with any problems during data entry.

## **5.3 Marketing of events & Payment**

#### Business Requirements:

- The management and advertising of events, including registration, ticketing, and payment processing, ought to be made easier by the DBMS.
- To keep users informed and interested, the DBMS should provide communication options like email marketing, SMS notifications, and reminders.

#### Questions:

- How will payments for tastings, tours, or events be processed, and how will invoicing be handled?
- How will events be produced, advertised, and maintained inside the system?
- What tools are needed to communicate with visitors before, during, and after their visit, and how will this data be managed by DBMS?

#### Assumption:

Assuming that responsibilities and workflows for creating and managing events will be clearly defined, and that the DBMS will make these procedures easier.

## **6. Vineyard Management:**

### **6.1 Vineyard Maintenance & Data Management**

#### Business Requirements:

- The system ought to enable the scheduling of vineyard operations including pruning, irrigation, and harvesting while taking into account regional and seasonal changes.

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- The DBMS should make it easier to gather and manage information on vineyards, such as information about the soil, weather, pest control, and grape types.
- It ought to assist in managing the labour, tools, and supplies required for vineyard upkeep.

#### Questions:

- Where and how will the DBMS acquire information about vineyard conditions (e.g., through user input, sensors, or weather stations)?
- How will the DBMS assist scheduling and task management for vineyard maintenance tasks? What is the process for these tasks?
- How can the DBMS help with efficient labour, resource, and material allocation while accounting for fluctuations in vineyard needs?

#### Assumption:

- Assuming that information will be gathered from a variety of sources, possibly including manual data entry and sensors or Internet of Things (IoT) devices in the vineyards.
- Assuming that the DBMS would help to streamline these processes and that there will be established workflows and schedules for vineyard maintenance activities
- Assuming that the labour, tools, and materials required for vineyard management will be readily available.

## **7. Winemaking Process:**

### **7.1 Wine Fermentation & Harvesting**

#### Business Requirements:

- The administration of the fermentation tank, temperature, and yeast strains should all be under its watchful eye.
- The technology should make the ageing process easier to manage, including keeping track of the barrels or tanks that were used.
- The DBMS should record information on grape harvesting, such as grape kinds, harvest times, and yields. To ensure that only grapes of the highest calibre are used, it should also monitor the sorting procedure.

#### Questions:

- What precise guidelines and constraints are in place for ageing and fermentation, and how will the DBMS support these procedures?

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- Given that even minor differences in winemaking data can have a big impact on the end product, how will the system assure data quality and accuracy?
- What are the main sources of information about winemaking, and how will it be gathered (e.g., manually, through sensors, through lab analysis)?

#### Assumption:

- Assuming that information will be gathered from a variety of sources, including manual data entry, lab testing, and perhaps sensors or Internet of Things (IoT) devices.
- Assuming that data cleansing and validation procedures are in place, and that the data entered into the DBMS is of reasonable quality.

## **7.2 Inventory Management & Analytics**

#### Business Requirements:

- It ought to maintain an ongoing wine inventory that records the types, quantities, and locations of wine in storage.
- The winemaking process should be monitored and optimised using powerful analytics capabilities.

#### Questions:

- How will the system maintain accurate and up-to-date information on quantities and locations while tracking inventory, including ageing wine?
- What regulations apply specifically to Napa Valley winemaking, and how will the DBMS help to ensure compliance and produce the necessary reports?
- What access restrictions will be used to safeguard this data, and how will the DBMS secure sensitive winery data?

#### Assumption:

Assuming that to safeguard data used in winemaking, the DBMS will come with strong security features such user access controls and encryption.

## **8. Financial Planning:**

### **8.1 Inventory & Expense**

#### Business Requirements:

- The system should make it easier to track sources of income and types of expenses, giving users insights into profitability and cost control.
- It should control inventory levels and compute COGS while accounting for the expenses related to growing grapes, making wine, and bottling.

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### Questions:

- How can the system correctly determine COGS and inventory levels while accounting for various manufacturing phases and costs?
- What access restrictions will be put in place to protect this data, and how will the DBMS secure sensitive financial information?

### Assumption:

- Assuming that to safeguard financial data, the DBMS will come with strong security mechanisms, like user access controls and encryption.
- Assuming that data cleansing and validation procedures are in place, and that the data entered into the DBMS is of reasonable quality.

## **9. Risk Management:**

### **9.1 Report Management**

#### Business Requirements:

- To make risk management easier, the system should contain pertinent documents including contracts, insurance policies, and backup plans.
- To efficiently manage emergencies, it should have crisis response protocols, contact lists, and communication technologies.

#### Questions:

How will the system ensure that occurrences are immediately and accurately documented, and what is the process for reporting risk incidents?

#### Assumption:

Assuming that to secure delicate risk management data, the DBMS will come with strong security mechanisms, like user access controls and encryption.

## **10. Growth & Expansion:**

### **10.1 Research & Data Source**

#### Business Requirements:

To find chances for growth and create expansion strategies, the DBMS should facilitate market research and analysis.

#### Questions:

How will the data from market research be integrated into the DBMS for strategic decision-making, and from what sources will it be gathered?

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### Assumption:

Assuming that accurate sources can be used to gather market research data, which can then be incorporated into the DBMS for analysis and decision-making.

### **10.2 Inventory Management, Sales & Compliance**

#### Business Requirements:

- To fulfil growing demand and distribution requirements, it should guarantee effective inventory management and supply chain optimisation.
- The DBMS should make it easier to expand sales and distribution channels, including those that involve breaking into new markets, forming partnerships, and online shopping.
- It needs to aid in managing compliance and regulatory facets of expansion, such as licences, permits, and adherence to national and international laws.

#### Questions:

- What techniques and resources would be applied to the supply chain optimisation to satisfy the increasing demand and guarantee timely production and distribution?
- How can clients be segmented for targeted marketing and customer retention tactics throughout expansion using the DBMS?
- How are expansion efforts, including market entry, new collaborations, and regulatory compliance, managed?

#### Assumption:

- Assuming that the DBMS has systems in place for data cleaning and validation, and that the customer data that has been collected into it is of reasonable quality.
- Assuming that the DBMS can assist in adjusting and scaling the supply chain to accommodate the demands of expansion
- Assuming that owners of wineries are aware of and dedicated to following all laws and regulations connected to growth.

**Entities:**

1. **WINERY:** It represents a specific winery located in Napa Valley.
2. **BUSINESS:** Orders by the companies to napa valley
3. **CART:** Items added in the cart and purchased
4. **BRAND:** The types of wine brands which are sold.
5. **PAYMENT:** Final products purchased and payment done for them.
6. **WINE:** It represents different wine varieties produced by a winery.
7. **VINEYARD:** It is a representation of the winery's vineyard where the grapes are cultivated.
8. **EMPLOYEE(parent):** It represents many people responsible for production of wine at the particular winery. It has attributes such as name, contact information, and expertise.

**→ EMPLOYEE SUBTYPE:**

- **STAY STAFF** - It represents the person responsible for the boutique stays.
- **BUSINESS DEVELOPMENT:** People responsible for business development of wineries.
- **MARKETING:** People responsible for the whole marketing of Napa Valley.
- **WINE MAKERS:** People responsible for and involved in the whole process of wine making.
- **WINE TASTING EVENT STAFF:** People responsible for taking care of and organizing the wine tasting events.

9. **TASTING ROOM:** wine-sampling experience in a winery.

**→ TASTING ROOM SUBTYPE:**

- DOWNTOWN NAPA
- NAPA
- YOUNTVILLE
- CALISTOGA
- ST.HELENA
- OAKVILLE

10. **CUSTOMER(Business or People/B2B or B2C):** It represents people or groups that interact with the winery, including tasting room patrons, wine club members, and wholesale customers.

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**11. WINE TASTING EVENT:** Records information about wine tasting events hosted by wineries.

• **WINE TASTING EVENT SUBTYPE:**

- MEET THE WINEMAKER
- BLIND TASTING
- EVENING TASTINGS
- HEDONISTIC WEDNESDAYS
- STELLAR CELLAR SALE
- KICK BACK HOUR
- LIVE,MUSIC,PARTY,SNORKELING AND MORE
- THROWBACK THURSDAYS
- WEDNESDAY BINGO AND BREWS

**12. RESTAURANTS:** Directory of restaurants in napa valley

• **RESTAURANT SUBTYPE:**

- MICHELIN RATED RESTAURANTS
- COFFEE SHOPS, BAKERY AND TAKEAWAY
- ALFRESCO DINING
- TERROR TO TABLE

**13. STAYS(resorts,hotels,ins):** All napa valley properties to stay and enjoy the experience

• **STAYS SUBTYPE:**

- LUXURY BOUTIQUE INNS
- HOTELS
- RESORTS

**14. TOUR INFORMATION:** All the information regarding tours in napa valley.

• **TOURS SUBTYPE:**

- WALKING
- MOTOR VEHICLE
- HIKING
- BIKING

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- TRAIN

15. **ORDER:** It describes the final orders placed by online customers and in person customers
16. **WINE INVENTORY:** Manages the current inventory of wines at each winery.
17. **MEMBERSHIP:** Records memberships in winery wine clubs, offering special benefits to customers.
18. **WINE ITINERARIES:** Wine itineraries made by Napa Valley, which includes tours and restaurants to visit as well.
19. **EXPORT:** Wine exported by Napa Valley wineries to other restaurants or companies etc.
20. **PRODUCTION:** Details about the wine production process and its bottling dates.

### **Relationships:**

#### **Produced By (between Winery and Wine):**

Description: A winery produces multiple wines, and each wine is produced by one winery.

Cardinality: One-to-Many (1:N).

#### **Sources From (between Winery and Vineyard):**

Description: A winery may source grapes from multiple vineyards, and a vineyard may supply

grapes to multiple wineries.

Cardinality: Many-to-Many (M:N)

#### **Hosted By (between Winery and Wine Tasting Event):**

Description: Wineries host wine tasting events, and each event is hosted by one winery.

Cardinality: One-to-Many (1:N).

#### **Holds (between Customer and Membership)**

Description: Customers can be members of multiple wine clubs, and each club can have multiple members.

Cardinality: Many-to-Many (M:N)

#### **Works In (Between Wineries and Employee)**

Description: Many Employees are employed in winery, but each employee only works at one winery.

Cardinality: One-to-Many (1:M)

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### **Comprise (Between Wine Itineraries and Wine Tour)**

Description: There can be many tours in an itineraries but each itinerary has one tour.

Cardinality: One-to-Many (1:M)

### **Associated With (Between Stays and Wine Itineraries)**

Description: There can be many stays in an itineraries but each itinerary has one stay.

Cardinality: One-to-Many (1:M)

### **Plans (Between Customer and Wine Itineraries)**

Description: An itineraries can be planned by many customers but each itinerary can have one stay.

Cardinality: One-to-Many (1:M)

### **Places (Between Customer and Order)**

Description: A customer can place many orders but each order is places by one and only customer.

Cardinality: One-to-Many (1:M)

### **Stores (Between Wine Inventory and Winery)**

Description: Wine Inventory from all the wineries but each winery is stored in one wine inventory.

Cardinality: One-to-Many (1:M)

### **Maintains (Between Website and Winery)**

Description: There are a lot of websites of wineries but each winery has only one website.

Cardinality: One-to-Many (1:M)

### **Added To (Between Wine and Cart)**

Description: There can be many wines in a cart, but a wine can be in a single cart.

Cardinality: One-to-Many (1:M)

### **Provides (Between Wine Tasting Event and Wine Tasting Room)**

Description: The relationship between these entities captures the connection between a specific wine tasting event and the wine tasting room where it occurs. It indicates which event is hosted in which room.

Cardinality: One-to-Many (1:M)

### **Employs (Between Winery and Employee)**

Description: Many employees can be employed by one winery, each employee is employed by one specific winery.

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Cardinality: One-to-Many (1:M)

### **Occurs In (Between Vineyard and Production)**

Description: Many production occurrences can happen in one vineyard, each production occurrence is associated with one specific vineyard.

Cardinality: One-to-Many (1:M)

### **Labelled Under (Between Brand and Wine)**

Description: Many wines can be labelled under one brand, each wine is labelled under one specific brand.

Cardinality: One-to-Many (1:M)

### **Exports To (Between Winery and Exporter)**

Description: Many exporters can receive exports from one winery, each exporter is associated with one specific winery.

Cardinality: One-to-Many (1:M)

### **Collaborates With (Between Exporter and Business)**

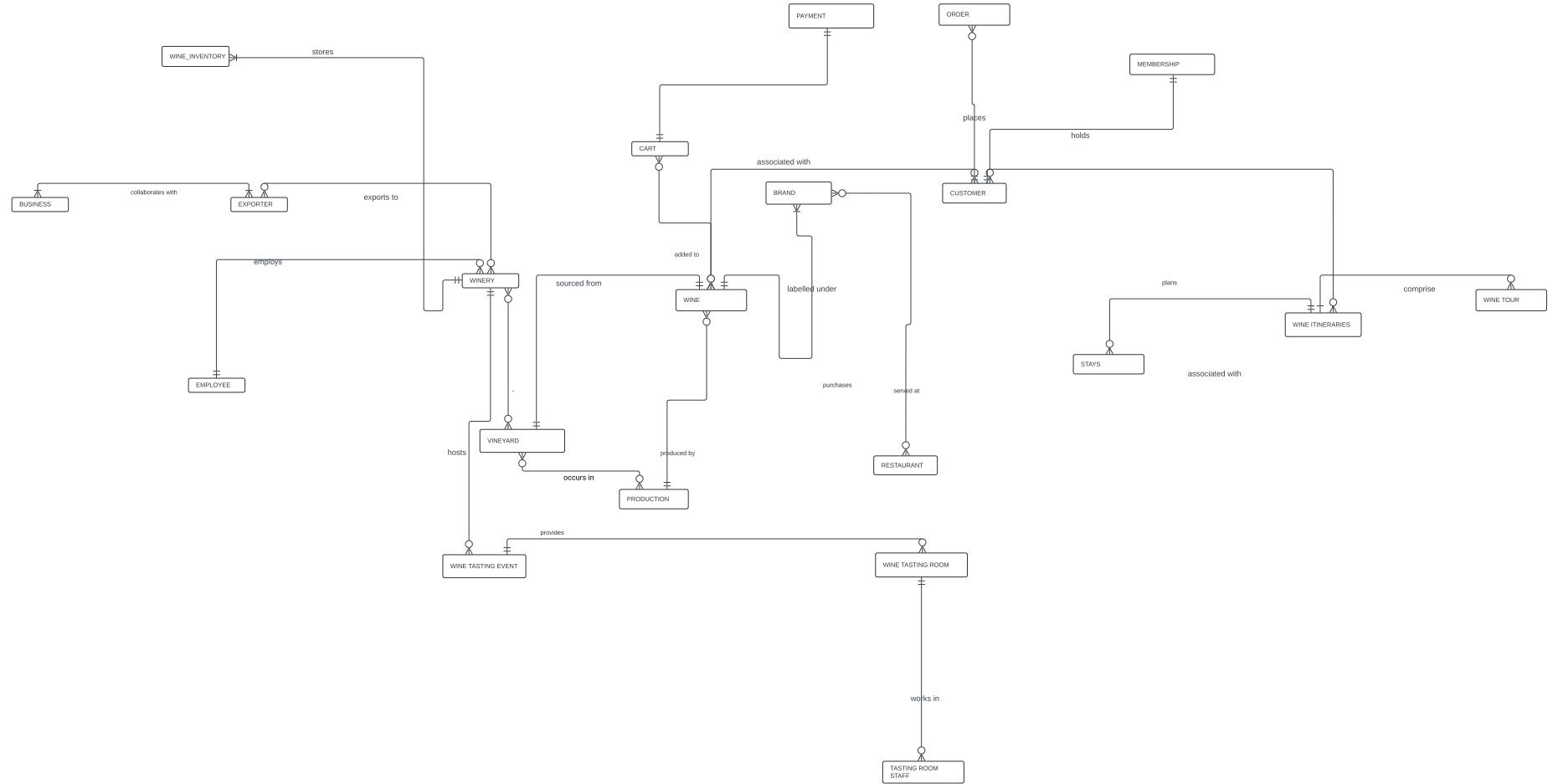
Description: Many exporters can collaborate with many businesses, each exporter can be associated with multiple businesses, and each business can collaborate with multiple exporters.

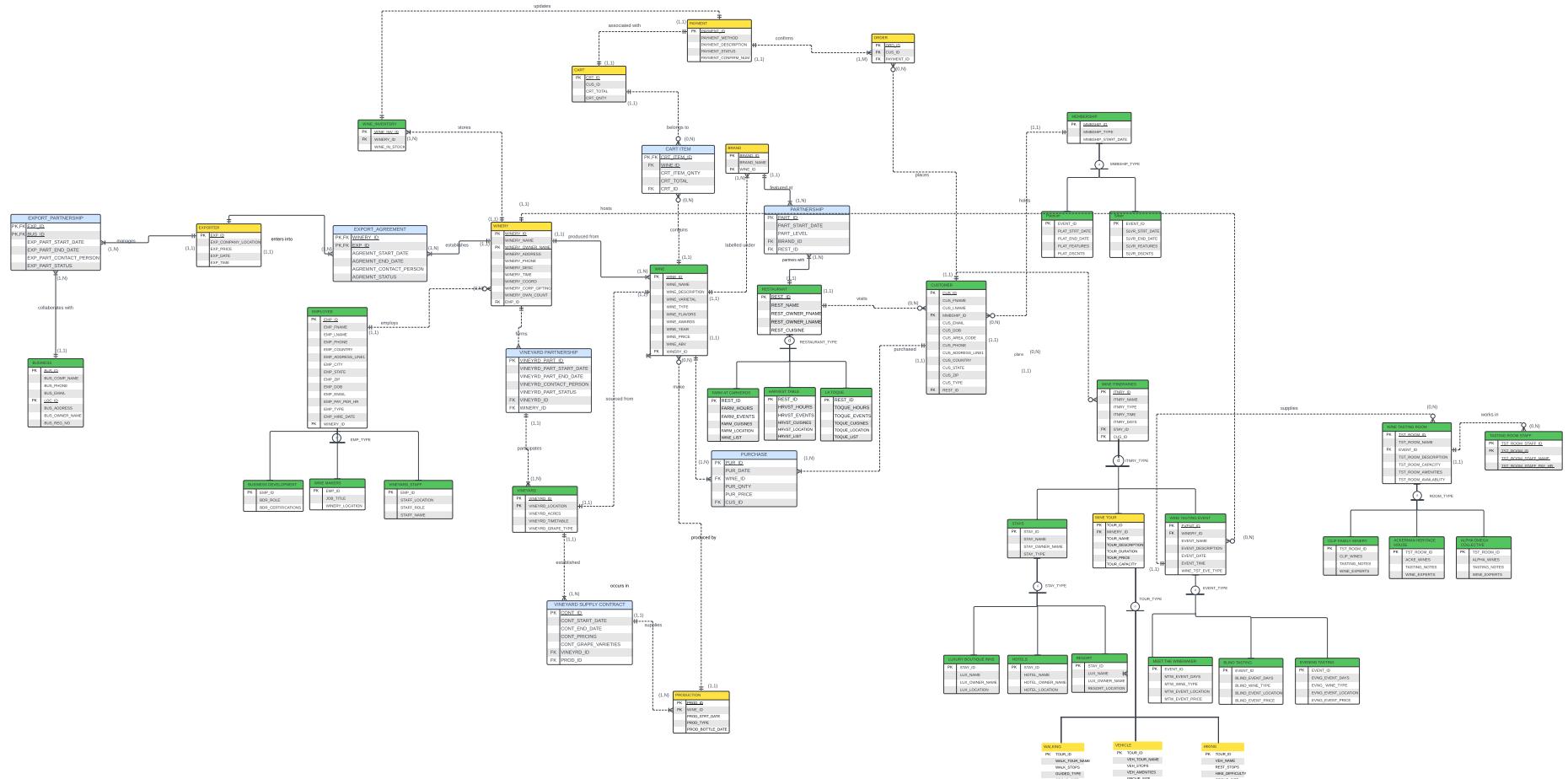
Cardinality: Many-to-Many (M:N)

### **Served At (Between Restaurant and Brands)**

Description: Many brands can be served at many restaurants, each brand can be served at multiple restaurants, and each restaurant can serve wines from multiple brands.

Cardinality: Many-to-Many (M:N)





## LOGICAL RELATIONAL MODEL

a)

Composite entities are marked in blue color, subtypes are marked in pink color for the supertypes

**Weak relationship (shown as ---- in erd):**

When the primary key of a related entity does not inherit a primary key component of the parent entity, it's a **weak relationship**.

Here the related entity is a **strong entity**.

**Strong relationship (shown as solid straight line in erd) :**

When the primary key of a related entity has a primary key component of the parent entity, it's a **strong relationship**.

Here the related entity is a **weak entity**.

### **BRIDGE ENTITIES ADDED TO REMOVE M:N RELATIONSHIP :**

**BRIDGE ENTITY RELATIONSHIPS (ALL TABLE 1 HAS 1:M CONNECTIVITY WITH TABLE 2: (mentioning few)**

TABLE 1	RELATIONSHIP	TABLE 2
BUSINESS	collaborates with	EXPORT PARTNERSHIP
EXPORTER	manages	EXPORT PARTNERSHIP
EXPORTER	enters into	EXPORT AGREEMENT
WINERY	establishes	EXPORT AGREEMENT

### **TABLE IDENTITY :**

TABLE	PRIMARY KEY	FOREIGN KEY
BUSINESS	BUS_ID	-----
WEBSITE	WEB_ID	----
WINERY	WNRY_ID	WINE_ID ,WEB_ID
CART	CRT_ID	-----
CART ITEM	CRT_ID	CRT_ID, WINE_ID, CRT_QUANT
BRAND	BRND_ID	WINE_TYPE
PAYMENT	PAY_ID	CART_ID
WINE	WINE_ID	-----
VINEYARD	VINEYRD_ID	WINE_INV
EMPLOYEE	EMP_ID	WINERY_ID
VINYARD STAFF	EMP_ID	VINEYRD_LOCATION
BUSINESS DEVELOPMENT	EMP_ID	-

WINE TASTING ROOM	TST_ROOM_ID	EVENT_ID
CILIF FAMILY WINERY	TST_ROOM_ID	
ACKERMAN HERITAGE HOUSE	TST_ROOM_ID	
ALPHA OMEGA COLLECTIVE	TST_ROOM_ID	
CUSTOMER	CUS_ID	REST_ID, ORD_ID
WINE TASTING EVENT	EVENT_ID	WNRY_ID
MEET THE WINEMAKER	EVENT_ID	
BLIND TASTING	EVENT_ID	
EVENING TASTING	EVENT_ID	
RESTAURANT	RES_ID	-
FARM AT CARNEROS	RES_ID	-
HARVEST TABLE	RES_ID	-
LA TOQUE	RES_ID	-
STAYS	STAY_ID	-
RESORT	STAY_ID	-
HOTEL	STAY_ID	-
LUXURY BOUTIQUE INN	STAY_ID	-
ORDER	ORD_ID	CUS_ID, WINE_ID
EXPORTER	EXP_ID	WINE_TYPE
WINE TOUR	TOUR_ID	WNRY_ID
WALKING	TOUR_ID	WNRY_ID, TOUR_NAME
VEHICLE	TOUR_ID	WNRY_ID, TOUR_NAME
HIKING	TOUR_ID	WNRY_ID, TOUR_NAME
PRODUCTION	PROD_ID	WINE_ID
		-
		-
WINE ITINERARIES	ITNRY_ID	TOUR_ID, REST_ID, STAY_ID
WINE INVENTORY	WINE_INV_ID	WINE_ID
MEMBERSHIP	MMBSHIP_ID	CUS_ID
PARTNERSHIP	PART_ID	BRAND_ID, REST_ID
PURCHASE	PUR_ID	WINE_ID
VINEYARD PARTNERSHIP	VINEYRD_PART_ID	VINEYRD_ID, WINERY_ID
EXPORT PARTNERSHIP	EXP_PART_ID	EXP_ID, BUS_ID
EXPORT AGREEMENT	AGREMT_ID	-
VINEYARD SUPPLY CONTRACT	CONT_ID	-

**B)****ENTITY INTEGRITY :**

TABLE	ENTITY INTEGRITY	EXPLANATION
WINERY	YES	Each WNRY_ID value is unique and there are no nulls.
CART	YES	Each CART_ID value is unique and there are no nulls
CART ITEM	YES	Each CART_ID value is unique and there are no nulls
BRAND	NO	Each BRND_ID value is NOT unique and there are nulls.
PAYMENT	YES	Each PAY_ID value is unique and there are no nulls.
WINE	YES	Each WINE_ID value is unique and there are no nulls.
VINEYARD	NO	Each VINEYRD_ID value is NOT unique and there might be nulls.
EMPLOYEE	YES	Each EMP_ID value is unique and there are no nulls.
VINYARD STAFF	YES	Each EMP_ID value is unique and there are no nulls.
BUSINESS DEVELOPMENT	YES	Each EMP_ID value is unique and there are no nulls.
WINE MAKERS	YES	Each EMP_ID value is unique and there are no nulls.
WINE WTASTING ROOM	YES	Each TST_ROOM_ID value is unique and there are no nulls.
DOWNTOWN NAPA	YES	Each TST_ROOM_ID value is unique and there are no nulls.
CILIF FAMILY WINERY	YES	Each TST_ROOM_ID value is unique and there are no nulls.
ACKERMAN HERITAGE HOUSE ,	YES	Each TST_ROOM_ID value is unique and there are no nulls.
ALPHA OMEGA COLLECTIVE ,	YES	Each TST_ROOM_ID value is unique and there are no nulls.
CUSTOMER	YES	Each CUS_ID value is unique and there are no nulls.
WINE TASTING EVENT	YES	Each EVENT_ID value is unique and there are no nulls.
MEET THE WINEMAKER	YES	Each EVENT_ID value is unique and there are no nulls.
FARM AT CARNEROS	YES	Each EVENT_ID value is unique and there are no nulls.

HARVEST TABLE	YES	Each EVENT_ID value is unique and there are no nulls.
LA TOQUE	YES	Each EVENT_ID value is unique and there are no nulls.
RESTAURANT	YES	Each REST_ID value is unique and there are no nulls.
STAYS	YES	Each STAY_ID value is unique and there are no nulls.
RESORT	YES	Each STAY_ID value is unique and there are no nulls.
HOTEL	YES	Each STAY_ID value is unique and there are no nulls.
LUXURY BOUTIQUE INN	YES	Each STAY_ID value is unique and there are no nulls.
ORDER	YES	Each ORDER_ID value is unique and there are no nulls.
EXPORTER	YES	Each EXP_ID value is unique and there are no nulls.
WINE TOUR	YES	Each TOUR_ID value is unique and there are no nulls.
WALKING	YES	Each TOUR_ID value is unique and there are no nulls.
VEHICLE	YES	Each TOUR_ID value is unique and there are no nulls.
HIKING	YES	Each TOUR_ID value is unique and there are no nulls.
PRODUCTION	YES	Each PROD_ID value is unique and there are no nulls.
PROMOTION	YES	Each REV_ID value is unique and there are no nulls.
WINE ITINERARIES	YES	Each ITNRY_ID value is unique and there are no nulls.
WINE INVENTORY	YES	Each WINE_INV_ID value is unique and there are no nulls.
MEMBERSHIP	NO	Each MMBSHIP_ID value is NOT unique and there might be nulls.
PARTNERSHIP	YES	Each PART_ID value is unique and there are no nulls.
PURCHASE	YES	Each PUR_ID value is unique and there are no nulls.
VINEYARD PARTNERSHIP	YES	Each VINEYRD_PART_ID value is unique and there are no nulls.

EXPORT PARTNERSHIP	YES	Each EXP_PART_ID value is unique and there are no nulls.
EXPORT AGREEMENT	YES	Each AGREMT_ID value is unique and there are no nulls
VINEYARD SUPPLY CONTRACT	YES	Each CONT_ID value is unique and there are no nulls.

### REFERENTIAL INTEGRITY :

TABLE	REFERENTIAL INTEGRITY	EXPLANATION
CART	YES	Each WINE_ID value in CART points to an <i>existing</i> WINE ID value in WINE and each WINE_PRICE value in CART points to an <i>existing</i> WINE_PRICE value in WINE. Each WINE_DESCRIPTION value in CART points to an <i>existing</i> WINE_DESCRIPTION value in WINE and each CUS_ID value in CART points to an <i>existing</i> CUS_ID value in CUSTOMER. Each WEB_ID value in CART points to an <i>existing</i> WEB_ID value in WEBSITE.
CART ITEM	YES	Each CRT_ID value in CART ITEM points to an <i>existing</i> CRT_ID value in CART and each CRT_QUANT value in CART ITEM points to an <i>existing</i> CART_QUANT value in CART and each WINE_ID value in CART ITEM points to an <i>existing</i> WINE_ID in WINE.
BRAND	YES	Each WINE_ID value in BRAND points to an <i>existing</i> WINE_ID value in WINE.
PAYMENT	YES	Each CUS_ID value in PAYMENT points to an <i>existing</i> CUS_ID value in CUSTOMER.

WINE	YES	Each WNRY_ID value in WINE points to an <i>existing</i> WNRY_ID value in WINERY.
STAY STAFF	YES	Each STAY_TYPE value in STAY STAFF points to an <i>existing</i> STAY_TYPE value in STAY. Each STAY_NAME value in STAY STAFF points to an <i>existing</i> STAY_NAME value in STAY.
WINE MAKERS	YES	Each WNRY_LOCATION value in WINE MAKER points to an <i>existing</i> WNRY_LOCATION value in WINERY.
WINE TASTING ROOM	YES	Each WNRY_ID value in TASTING ROOM points to an <i>existing</i> WNRY_ID value in WINERY.
CILIF FAMILY WINERY	YES	Each WNRY_ID value in CILIF FAMILY WINERY points to an <i>existing</i> WNRY_ID value in WINERY.
ACKERMAN HERITAGE HOUSE	YES	Each WNRY_ID value in ACKERMAN HERITAGE HOUSE points to an <i>existing</i> WNRY_ID value in WINERY.
ACKERMAN HERITAGE HOUSE	YES	Each WNRY_ID value in ACKERMAN HERITAGE HOUSE points to an <i>existing</i> WNRY_ID value in WINERY.
CUSTOMER	YES	Each EMP_ID value in CUSTOMER points to an <i>existing</i> EMP_ID value in EMPLOYEE. Each ORD_ID value in CUSTOMER points to an <i>existing</i> ORD_ID value in ORDER.
WINE TASTING EVENT	YES	Each WNRY_ID value in WINE TASTING EVENT points to an <i>existing</i> WNRY_ID value in WINERY.
ORDER	YES	Each CUS_ID value in ORDER points to an <i>existing</i> CUS_ID

		value in CUSTOMER. Each WINE_ID value in ORDER points to an <i>existing</i> WINE_ID value in WINE.
EXPORTER	YES	Each WINE_TYPE value in EXPORTER points to an <i>existing</i> WINE_TYPE value in WINE.
WINE TOUR	YES	Each WNRY_ID value in WINE TOUR points to an <i>existing</i> WNRY_ID value in WINERY.
WALKING	YES	Each WNRY_ID value in WALKING points to an <i>existing</i> WNRY_ID value in WINERY. Each TOUR_ID value in WALKING points to an <i>existing</i> TOUR_ID value in WINE TOUR.
VEHICLE	YES	Each WNRY_ID value in MOTOR VEHICLE points to an <i>existing</i> WNRY_ID value in WINERY. Each TOUR_ID value in MOTOR VEHICLE points to an <i>existing</i> TOUR_ID value in WINE TOUR.
HIKING	YES	Each WNRY_ID value in HIKING points to an <i>existing</i> WNRY_ID value in WINERY. Each TOUR_ID value in HIKING points to an <i>existing</i> TOUR_ID value in WINE TOUR.
PRODUCTION	YES	Each WINE_ID value in PRODUCTION points to an <i>existing</i> WINE_ID value in WINE. Each VINEYRD_ID value in PRODUCTION points to an <i>existing</i> VINEYRD_ID value in VINEYARD.
WINE ITINERARIES	YES	Each TOUR_ID value in WINE ITINERARIES points to an <i>existing</i> TOUR_ID value in WINE TOUR. Each REST_ID value in WINE ITINERARIES points to an <i>existing</i> REST_ID

		value in RESTAURANT. Each STAY_ID value in WINE ITINERARIES points to an <i>existing</i> STAY_ID value in STAY.
WINE INVENTORY	YES	Each WINE_ID value in WINE INVENTORY points to an <i>existing</i> WINE_ID value in WINE.
MEMBERSHIP	YES	Each CUS_ID value in MEMBERSHIP points to an <i>existing</i> CUS_ID value in CUSTOMER.
PURCHASE	YES	Each WINE_ID value in PURCHASE points to an <i>existing</i> WINE_ID value in WINE.

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFRENCE TABLE
WINERY	WINREY_ID	Winery ID	CHAR(6)	XXXXXX	N/A	Y	PK	
	WINERY_NAME	Winery Name	CHAR(30)		N/A	Y		
	WNRY_OWN_NAME	Winery Owner Name	CHAR(30)		N/A	Y		
	WINERY_ADDRESS_LINE1	Winery Address Line1	CHAR(70)		N/A	Y		
	WINERY_ZIP	Winery Zipcode	CHAR(8)		N/A	Y		
	WINERY_LATITUDE	Winery Latitude	DECIMAL		N/A	Y		
	WINERY_LONGITUDE	Winery Longitude	DECIMAL		N/A	Y		
	WINERY_PHONE	Winery Phone Number	CHAR(10)	(000)-000-0000	N/A	Y		
	WINERY_DESCRIPTION	Winery Description	VARCHAR		N/A	Y		
	WINERY_TIME	Winery Timings	TIME	0:00	N/A	Y		
	WINERY_CORP_GIFTING	Winery Corporate Gifting	BOOLEAN		YES/NO	Y		
	WINERY_OWNER_ID	Winery Owner ID	CHAR(7)	XXXXXXXX	N/A	Y	FK	WINERY OWNER ID
WINERY OWNERSHIP	WINERY_OWNER_ID	Winery Owner ID	CHAR(7)	XXXXXXXX	N/A	Y	PK	
	WINERY_OWNER_FNAME	Winer Owner First Name	CHAR(15)		N/A	Y		
	WINERY_OWNER_LNAME	Winer Owner Last Name	CHAR(15)		N/A	Y		
	WINERY_OWNER_COUNT	Winery Owned Count	CHAR(2)	XX	N/A	Y		
BUSINESS	BUS_ID	Business ID	CHAR(6)	XXXXXX	N/A	Y	PK	
	BUS_COMP_NAME	Business Company Name	CHAR(20)		N/A	Y		
	BUS_OWNER_FNAME	Business Owner First Name	CHAR(10)		N/A	Y		
	BUS_OWNER_LNAME	Business Owner Last Name	CHAR(10)		N/A	Y		
	BUS_LOC_ID	Business Location Id	CHAR(6)		N/A	Y		
	BUS_COUNTRY_CODE	Business Country Code	CHAR(3)		N/A	Y		
	BUS_PHONE	Business Phone	CHAR(10)	(000)-000-0000	N/A	Y		
	BUS_EMAIL	Business Email	CHAR(20)		N/A	Y		
	BUS_ADDRESS_LINE1	Business Address Line1	CHAR(30)		N/A	Y		
	BUS_REG_NO	Business Registration Number	CHAR(10)		N/A	Y		
	BUS_ZIP	Business Zipcode	CHAR(6)		N/A	Y		
BUSINESS LOCATION	BUS_LOC_ID	Business Location ID	CHAR(7)	XXXXXXXX	N/A	Y	PK	
	BUS_ID	Business ID	CHAR(6)	XXXXXXXX	N/A	Y	FK	BUSINESS
	BUS_LOC_CITY	Business Location City	CHAR(10)		N/A	Y		
	BUS_LOC_STATE	Business Location State	CHAR(10)		N/A	Y		
CART	CRT_ID	Cart ID	CHAR(8)	XXXXXXXXXX	N/A	Y	PK	
	WINE_ID	Wine ID	CHAR(10)	XXXXXXXXXX	N/A	Y	FK	WINE
	CRT_QUANT	Cart Quantity	SMALLINT		N/A	Y		
CART ITEM	CRT_ITEM_ID	Cart Item ID	CHAR(8)	XXXXXXXX	N/A	Y	PK,FK	CART
	VINE_ID	Wine ID	CHAR(5)	XXXXX	N/A	Y	PK,FK	WINE
	CRT_ITEM_QUANT	Cart Item Quantity	SMALLINT		N/A	Y	FK	CART
	CRT_ID	Cart ID	CHAR(8)	XXXXXXXX	N/A	Y	fk	CART
BRAND	BRAND_ID	Brand ID	CHAR(6)	XXXXXX	N/A	Y	PK	
	BRAND_NAME	Brand Name	VARCHAR		N/A	Y		
	WINE_ID	Wine Type	CHAR(5)	XXXXX	N/A	Y	FK	WINE
PAYMENT	PAYMENT_ID	Payment ID	INTEGER	#####	N/A	Y	PK	
	PAYMENT_METHOD	Payment Method	BOOLEAN		Online/In-Person	Y		
	PAYMENT_STATUS	Payment Status	VARCHAR(15)		N/A	Y		
	PAYMENT_DESCRIPTION	Payment Description	CHAR(250)		N/A	Y		
	PAYMENT_CONFIRM_NUM	Payment Confirmation Number	INTEGER	#####	N/A	Y		
WINE	WINE_ID	Wine ID	CHAR(5)	XXXXX	N/A	Y	PK	
	WNRY_ID	Winery ID	CHAR(10)	XXXXXXXXXX	N/A	Y	FK	
	WINE_NAME	Wine Name	CHAR(100)		N/A	Y		
	WINE_DESCRIPTION	Wine Description	CHAR(250)		N/A	Y		
	WINE_VARIETAL	Wine Varietal	CHAR(100)		N/A	Y		
	WINE_TYPE	Wine Type	CHAR(15)		N/A	Y		
	WINE_FLAVORS	Wine Flavors	CHAR(100)		N/A	Y		
	WINE_AWARDS	Wine Awards	CHAR(100)		N/A	Y		
	WINE_YEAR	Wine Year	INTEGER	####	N/A	Y		
	WINE_PRICE	Wine Price	NUMBER(8,2)	####.##	N/A	Y		
	WINE_ABV	Wine Alcohol By Volume	NUMBER(2,1)	##.#	N/A	Y		
VINEYARD	VINEYRD_ID	Vineyard ID	CHAR(10)	XXXXXXXXXX	N/A	Y	PK	
	VINEYRD_LOCATION	Vineyard Location	CHAR(100)		N/A	Y		
	VINEYRD_ACRES	Vineyard Acres	INTEGER		N/A	Y		
	VINEYRD_TIMETABLE	Vineyard Timetable	TIME	0:00	N/A	Y		
	VINEYRD_GRAPE_TYPE	Vineyard Grape Type	CHAR(100)		N/A	Y		
EMPLOYEE	EMP_ID	Employee ID	CHAR(8)	XXXXXXX	N/A	Y	PK	
	WINERY_ID	Winery ID	CHAR(6)	XXXXXX	N/A	Y	FK	WINERY
	EMP_FNAME	Employee First Name	CHAR(20)		N/A	Y		
	EMP_LNAME	Employee Last Name	CHAR(20)		N/A	Y		
	EMP_PHONE	Employee Phone	CHAR(10)	(000)-000-0000	N/A	Y		
	EMP_COUNTRY	Employee Country	CHAR(20)		N/A	Y		
	EMP_ADDRESS	Employee Address	CHAR(50)		N/A	Y		
	EMP_CITY	Employee City	CHAR(20)		N/A	Y		
	EMP_STATE	Employee State	CHAR(20)		N/A	Y		
	EMP_ZIP	Employee Zipcode	INTEGER		N/A	Y		
	EMP_DOB	Employee Date of Birth	DATE	YYYY/MM/DD	N/A	Y		
	EMP_EMAIL	Employee Email	CHAR(50)		N/A	Y		
	EMP_HIRE_DATE	Employee Hire Date	DATE	YYYY/MM/DD	N/A	Y		
	SALARY_ID	Salary ID	CHAR(4)	XXX	N/A	Y	FK	EMPLOYEE SALARY
EMPLOYEE SALARY	SALARY_ID	Salary ID	CHAR(4)	XXX	N/A	Y	PK	
	EMP_TYPE	Employee Type	CHAR(10)	XXXXXXXXXX	N/A	Y		
	EMP_PAY_PER_HOUR	Employee Pay Per Hour	INTEGER		N/A	Y		
VINEYARD STAFF	EMP_ID	Employee ID	CHAR(8)	XXXXXXXX	N/A	Y	PK	
	STAFF_ROLE	Staff Role	CHAR(20)		N/A	Y		
	STAY_LOCATION	Staff Location	CHAR(20)		N/A	Y	FK	STAFF
	STAY_NAME	Staff Name	CHAR(20)		N/A	Y	FK	STAFF
BUSINESS DEVELOPMENT	EMP_ID	Employee ID	CHAR(8)	XXXXXXXX	N/A	Y	PK	
	BDR_ROLE	Business Development Role	CHAR(20)		N/A	Y		

	BDR_CERTIFICATIONS	Business Development Certifications	CHAR(20)	N/A	Y	
WINE MAKERS	EMP_ID JOB_TITLE VNRY_LOCATION	Employee ID Job Title Winery Location	CHAR(8) CHAR(10) CHAR(50)	XXXXXXX N/A N/A	Y Y Y	PK FK
WINE TASTING ROOM	TST_ROOM_ID TST_ROOM_NAME EVENT_ID TST_ROOM_DESCRIPTION TST_ROOM_CAPACITY TST_ROOM_AMENITIES TST_ROOM_AVAILABILITY	Tasting Room ID Tasting Room Name Wine Tasting Evening ID Tasting Room Description Tasting Room Capacity Tasting Room Amenities Tasting Room Availability	CHAR(5) CHAR(20) CHAR(5) CHAR(50) SMALLINT CHAR(100) BOOLEAN	XXXXX N/A N/A N/A N/A N/A YES/NO	Y Y Y Y Y Y Y	PK FK EVENT
CILIF FAMILY WINERY	TST_ROOM_ID CLIF_WINES TASTING_NOTES WINE_EXPERTS	Tasting Room ID Clif Wines Tasting Notes Wine Experts	CHAR(5) CHAR(4) CHAR(6) CHAR(50)	XXXXX N/A N/A N/A	Y Y Y Y	PK FK WINERY
ACKERMAN HERITAGE HOUSE	TST_ROOM_ID ACKE_WINES TASTING_NOTES WINE_EXPERTS	Tasting Room ID Acke Wines Tasting Notes Wine Experts	CHAR(5) CHAR(4) CHAR(6) CHAR(50)	XXXXX N/A N/A N/A	Y Y Y Y	PK FK WINERY
ALPHA OMEGA COLLECTIVE	TST_ROOM_ID ALPHA_WINES TASTING_NOTES WINE_EXPERTS	Tasting Room ID Alpha Wines Tasting Notes Wine Experts	CHAR(5) CHAR(4) CHAR(6) CHAR(50)	XXXXX N/A N/A N/A	Y Y Y Y	PK FK WINERY
CUSTOMER	CUS_ID CUS_FNAME CUS_LNAME CUS_EMAIL CUS_DOB CUS_AREA_CODE CUS_PHONE CUS_ADDRESS CUS_COUNTRY CUS_STATE CUS_ZIP CUS_TYPE	Customer ID Customer First Name Customer Last Name Customer Email Customer Date Of Birth Customer Area Code Customer Phone Customer Address Customer Country Customer State Customer Zip Code Customer Type	INTEGER CHAR(15) CHAR(15) CHAR(30) CHAR(3) CHAR(10) CHAR(50) CHAR(50) CHAR(15) CHAR(15) INTEGER BOOLEAN	N/A N/A N/A N/A YYYY/MM/DD (000)-000-0000 N/A N/A N/A N/A N/A ONLINE/IN-PERSON	Y Y Y Y Y Y Y Y Y Y Y Y	PK
CUSTOMER RESTAURANT	CUS_ID REST_ID	Customer ID Restaurant ID	INTEGER CHAR(6)	XXXXXX N/A	N/A Y	PK OR FK CUSTOMER RESTAURANT
WINE TASTING EVENT	EVENT_ID VNRY_ID EVENT_NAME EVENT_DESCRIPTION EVENT_DATE EVENT_TIME WINE_TST_EVE_TYPE	Wine Tasting Evening ID Winery ID Wine Tasting Evening Name Wine Tasting Evening Description Wine Tasting Evening Date Wine Tasting Evening Time Wine Tasting Evening Type	CHAR(5) CHAR(6) CHAR(15) CHAR(35) DATE TIME CHAR(20)	XXXXX N/A N/A N/A N/A 0:00 N/A	Y Y Y Y Y Y Y	PK FK WINERY
MEET THE WINEMAKER	MTW_EVENT_ID MTW_VENT_DATES MTW_WINE_TYPE MTW_EVENT_LOCATION MTW_EVENT_PRICE	Event ID Meet The Wine Makers Event Dates Meet The Wine Makers Wine Types Meet The Wine Makers Event Location Meet The Wine Makers Event Price	CHAR(5) DATE CHAR(15) CHAR(35) NUMBER(7,2)	N/A YYYY/MM/DD N/A N/A #####.##	Y Y Y Y 00.00-999999.99	PK
BLIND TASTING	EVENT_ID BLIND_EVENT_DATES BLIND_WINE_TYPE BLIND_EVENT_LOCATION BLIND_EVENT_PRICE	Event ID Blind Event Dates Blind Wine Types Blind Event Location Blind Event Price	CHAR(5) DATE CHAR(15) CHAR(35) NUMBER(7,2)	N/A YYYY/MM/DD N/A N/A #####.##	N/A Y Y Y 00.00-999999.99	PK
RESTAURANT	REST_ID REST_NAME REST_OWNER_FNAME REST_OWNER_LNAME REST_CUISINE REST_CITY REST_STATE	Restaurant ID Restaurant Name Restaurant Owner First Name Restaurant Owner Last Name Restaurant Cuisine Resturant City Restaurant State	CHAR(6) CHAR(15) CHAR(20) CHAR(20) CHAR(10) CHAR(15) CHAR(10)	XXXXXX N/A N/A N/A N/A N/A N/A	Y Y Y Y Y Y Y	PK
MICHELIN RATED RESTAURANTS	REST_ID MRR_NAME MRR_TOWN MRR_CUISINES	Restaurant ID Michelin Rated Restaurant Name Michelin Rated Restaurant Town Michelin Rated Restaurant Cuisine	CHAR(6) CHAR(15) CHAR(15) CHAR(10)	XXXXXX N/A N/A N/A	Y Y Y Y	PK
COFFEE SHOPS, BAKERY AND TAKEAWAY	REST_ID CBT_NAME CBT_TOWN CBT_CUISINES	Restaurant ID Coffee Shops, Bakery and Takeaway Name Coffee Shops, Bakery and Takeaway Town Coffee Shops, Bakery and Takeaway Cuisines	CHAR(6) CHAR(15) CHAR(15) CHAR(10)	XXXXXX N/A N/A N/A	Y Y Y Y	PK
ALFRESCO DINING	REST_ID AL_NAME AL_TOWN AL_CUISINE	Restaurant ID Alfresco Dining Name Alfresco Dining Town Alfresco Dining Cuisine	CHAR(6) CHAR(15) CHAR(15) CHAR(10)	XXXXXX N/A N/A N/A	Y Y Y Y	PK
TERROR TO TABLE	REST_ID TER_NAME TER_TOWN TER_CUISINE	Restaurant ID Terror To Table Name Terror To Table Town Terror To Table Cuisine	CHAR(6) CHAR(15) CHAR(15) CHAR(10)	XXXXXX N/A N/A N/A	Y Y Y Y	PK
STAYS	STAYS_ID STAYS_NAME STAYS_OWNER_NAME	Stays ID Stays Name Stays Owner Name	CHAR(10) CHAR(20) CHAR(25)	XXXXXXXXXX N/A N/A	Y Y Y	PK

	STAYS_TYPE	Stays Type	CHAR(10)	N/A	Y	
LUXURY BOUTIQUE INNS	STAY_ID	Stays ID	CHAR(10)	XXXXXXXXXX	N/A	Y
	LUX_NAME	Luxury Boutique Inn Name	CHAR(20)	N/A	Y	PK
	LUX_OWNER_NAME	Luxury Boutique Inn Owner Name	CHAR(25)	N/A	Y	
	LUX_LOCATION	Luxury Boutique Inn Location	CHAR(10)	N/A	Y	
HOTELS	STAY_ID	Stays ID	CHAR(10)	XXXXXXXXXX	N/A	Y
	HOTEL_NAME	Hotel Name	CHAR(20)	N/A	Y	PK
	HOTEL_OWNER_NAME	Hotel Owner Name	CHAR(25)	N/A	Y	
	HOTEL_LOCATION	Hotel Location	CHAR(10)	N/A	Y	
RESORT	STAY_ID	Stays ID	CHAR(10)	XXXXXXXXXX	N/A	Y
	RESORT_NAME	Resort Name	CHAR(20)	N/A	Y	PK
	RESORT_OWNER_NAME	Resort Owner Name	CHAR(25)	N/A	Y	
	RESORT_LOCATION	Resort Location	CHAR(10)	N/A	Y	
ORDER	ORD_ID	Order ID	INTEGER	N/A	Y	PK
	CUS_ID	Customer ID	INTEGER	N/A	Y	FK
	PAYMENT_ID	Payment ID	INTEGER	#####	N/A	FK
						CUSTOMER PAYMENT
WINE TOUR	TOUR_ID	Tour ID	CHAR(7)	XXXXXXX	N/A	Y
	WNRY_ID	Winery ID	CHAR(6)	XXXXXX	N/A	Y
	TOUR_NAME	Tour Name	CHAR(15)	N/A	Y	FK
	TOUR_DESCRIPTION	Tour Description	CHAR(35)	N/A	Y	WINERY
	TOUR_DURATION	Tour Duration	NUMBER(1,2)	##.#	N/A	Y
	TOUR_PRICE	Tour Price	NUMBER(5,2)	#####.##	N/A	Y
	TOUR_CAPACITY	Tour Capacity	SMLINT	N/A	Y	
WALKING	TOUR_ID	Tour ID	CHAR(7)	XXXXXXX	N/A	Y
	WNRY_ID	Winery ID	CHAR(6)	XXXXXX	N/A	Y
	TOUR_NAME	Tour Name	CHAR(15)	N/A	Y	FK
	WALK_STOPS	Walk Stops	SMLINT	N/A	Y	WINE TOUR
	GUIDED_TYPE	Guided Type	BOOLEAN	YES/NO	Y	
	GROUP_SIZE	Group Size	SMLINT	N/A	Y	
MOTOR VEHICLE	TOUR_ID	Tour ID	CHAR(7)	XXXXXXX	N/A	Y
	WNRY_ID	Winery ID	CHAR(6)	XXXXXX	N/A	Y
	TOUR_NAME	Tour Name	CHAR(15)	N/A	Y	FK
	VEH_STOPS	Vehical Stops	SMLINT	N/A	Y	WINERY
	VEH_AMENITIES	Vehical Amenities	CHAR(25)	N/A	Y	WINE TOUR
	GROUP_SIZE	Group Size	SMLINT	N/A	Y	
HIKING	TOUR_ID	Tour ID	CHAR(7)	XXXXXXX	N/A	Y
	WNRY_ID	Winery ID	CHAR(6)	XXXXXX	N/A	Y
	TOUR_NAME	Tour Name	CHAR(15)	N/A	Y	FK
	REST_STOPS	Rest Stops	SMLINT	N/A	Y	WINERY
	HIKE_DIFFICULTY	Hike Difficulty	CHAR(25)	N/A	Y	WINE TOUR
	GROUP_SIZE	Group Size	SMLINT	N/A	Y	
BIKING	TOUR_ID	Tour ID	CHAR(7)	XXXXXXX	N/A	Y
	WNRY_ID	Winery ID	CHAR(6)	XXXXXX	N/A	Y
	TOUR_NAME	Tour Name	CHAR(15)	N/A	Y	FK
	BIKE_STOPS	Bike Stops	SMLINT	N/A	Y	WINERY
	BIKE_DIFFICULTY	Bike Difficulty	CHAR(15)	N/A	Y	WINE TOUR
	BIKE_RENTAL	Bike Rental	CHAR(10)	N/A	Y	
	GROUP_SIZE	Group Size	SMLINT	N/A	Y	
TRAIN	TOUR_ID	Tour ID	CHAR(7)	XXXXXXX	N/A	Y
	WNRY_ID	Winery ID	CHAR(6)	XXXXXX	N/A	Y
	TOUR_NAME	Tour Name	CHAR(15)	N/A	Y	FK
	TRAIN_STOPS	Train Stops	SMLINT	N/A	Y	WINERY
	TRAIN_AMENITIES	Train Amenities	CHAR(25)	N/A	Y	WINE TOUR
	GROUP_SIZE	Group Size	SMLINT	N/A	Y	
PRODUCTION	PROD_ID	Production ID	CHAR(10)	N/A	Y	PK
	WINE_ID	Wine ID	CHAR(5)	XXXXX	N/A	Y
	PROD_STRT_DATE	Production Start Date	DATE	YYYY/MM/DD	N/A	FK
	PROD_BOTTLE_DATE	Production Bottle Date	DATE	YYYY/MM/DD	N/A	WINE
PRODUCTION TYPE	WINE_ID	Wine ID	CHAR(5)	XXXXX	N/A	PK OR FK
	PROD_TYPE	Production Type	CHAR(20)	N/A	Y	WINE
WINE ITINERARIES	ITNRY_ID	Iteneraries ID	CHAR(7)	XXXXXXX	N/A	Y
	ITNRY_NAME	Iteneraries Name	CHAR(15)	N/A	Y	PK
	ITNRY_TYPE	Iteneraries Type	CHAR(15)	N/A	Y	
	ITNRY_TIME	Iteneraries Time	TIME	0:00	N/A	
	ITNRY_DAYS	Iteneraries Days	CHAR(10)	N/A	Y	
	CUS_ID	Customer ID	INTEGER	N/A	Y	CUSTOMER
	STAY_ID	Stay ID	CHAR(10)	XXXXXXXXXX	N/A	FK
						STAY
WINE INVENTORY	WINE_INV_ID	Wine Inventory ID	CHAR(5)	XXXXX	N/A	Y
	WINE_ID	Wine ID	CHAR(5)	XXXXX	N/A	Y
	WINE_INV_QUANT	Wine Inventory Quantity	INTEGER	N/A	Y	FK
						WINE
MEMBERSHIP	MMBSHIP_ID	Membership ID	CHAR(7)	XXXXXXX	N/A	Y
	MMBSHIP_TYPE	Membership Type	CHAR(15)	N/A	Y	PK
	MMBSHIP_START_DATE	Membership Start Date	DATE	YYYY/MM/DD	N/A	
PARTNERSHIP	PART_ID	Partnership ID	CHAR(7)	XXXXXXX	N/A	Y
	PART_START_DATE	Partnership Start Date	DATE	YYYY/MM/DD	N/A	PK
	PART_LEVEL	Partnership Level	CHAR(25)	N/A	Y	
	BRAND_ID	Brand ID	CHAR(6)	XXXXXX	N/A	FK
	REST_ID	Restaurant ID	CHAR(6)	XXXXXX	N/A	FK
						BRAND RESTAURANT
PURCHASE	PUR_ID	Purchase ID	CHAR(6)	XXXXXX	N/A	Y
	WINE_ID	Wine ID	CHAR(5)	XXXXX	N/A	Y
	PUR_DATE	Purchase Date	DATE	YYYY/MM/DD	N/A	FK
	PUR_QUANT	Purchase Quantity	SMLINT	N/A	Y	WINE
	PUR_PRICE	Purchase Price	NUMBER(8,2)	#####.##	N/A	Y

	CUS_ID	Customer ID	INTEGER	N/A	Y	FK	CUSTOMER
VINEYARD PARTNERSHIP	VINEYRD_PART_ID	Vineyard Partnership ID	CHAR(7)	XXXXXXX	N/A	Y	PK
	VINEYRD_PART_START_DATE	Vineyard Partnership Start Date	DATE	YYYY/MM/DD	N/A	Y	
	VINEYRD_PART_END_DATE	Vineyard Partnership End Date	DATE	YYYY/MM/DD	N/A	Y	
	VINEYRD_PART_CONTACT_PERSON	Vineyard Partnership Contact Person	CHAR(15)		N/A	Y	
	VINEYRD_PART_STATUS	Vineyard Partnership Status	CHAR(10)		N/A	Y	
	VINEYRD_ID	Vineyard ID	CHAR(10)	XXXXXXXXXX	N/A	Y	FK VINEYARD
	WINREY_ID	Winery ID	CHAR(6)	XXXXXX	N/A	Y	FK WINERY
EXPORT PARTNERSHIP	EXP_PART_ID	Export Partnership ID	CHAR(7)	XXXXXXX	N/A	Y	PK
	EXP_ID	Exporter ID	CHAR(10)		N/A	Y	FK EXPORTER
	BUS_ID	Business ID	CHAR(6)	XXXXXX	N/A	Y	FK BUSINESS
	EXP_PART_START_DATE	Export Partnership Start Date	DATE	YYYY/MM/DD	N/A	Y	
	EXP_PART_END_DATE	Export Partnership End Date	DATE	YYYY/MM/DD	N/A	Y	
	EXP_START_CONTACT_PERSON	Export Partnership Contact Person	CHAR(15)		N/A	Y	
	EXP_PART_STATUS	Export Partnership Status	CHAR(10)		N/A	Y	
EXPORT AGREEMENT	AGREEMNT_ID	Agreement ID	CHAR(7)	XXXXXXX	N/A	Y	PK
	WINERY_ID	Winery ID	CHAR(6)	XXXXXX	N/A	Y	FK WINERY
	EXP_ID	Exporter ID	CHAR(10)	XXXXXXXXXX	N/A	Y	FK EXPORTER
	AGREEMNT_START_DATE	Agreement Start Date	DATE	YYYY/MM/DD	N/A	Y	
	AGREEMNT_END_DATE	Agreement End Date	DATE	YYYY/MM/DD	N/A	Y	
	AGREEMNT_CONTACT_PERSON	Agreement Contact Person	CHAR(15)		N/A	Y	
	AGREEMNT_STATUS	Agreement Status	CHAR(10)		N/A	Y	
VINEYARD SUPPLY CONTRACT	CONT_ID	Contract ID	CHAR(6)	XXXXXX	N/A	Y	PK
	CONT_START_DATE	Contract Start Date	Date	YYYY/MM/DD	N/A	Y	
	CONT_END_DATE	Contract End Date	Date	YYYY/MM/DD	N/A	Y	
	CONT_PRICING	Contract Pricing	NUMBER(8,2)	#####.##	N/A	Y	
	VINEYRD_ID	Vineyard ID	CHAR(10)	XXXXXXXXXX	N/A	Y	FK VINEYARD
	PROD_ID	Production ID	CHAR(10)		N/A	Y	FK PRODUCTION
EXPORTER	EXP_ID	Exporter ID	CHAR(10)	XXXXXXXXXX	N/A	Y	PK
	EXP_COMPANY_NAME	Exporter Company Name	CHAR(35)		N/A	Y	
	EXP_PRICE	Exporter Price	NUMBER(8,2)	#####.##	N/A	Y	
	EXP_DATE	Exporter Date	DATE	YYYY/MM/DD	N/A	Y	
	EXP_TIME	Exporter Time	TIME		0:00 N/A	Y	

## NORMALIZATION

### 1. BUSINESS:

Business can be thought of a store from where customers would buy wines.

#### i) **1NF:**

##### **ASSUMPTION:**

Assuming we are exporting to a Business having many locations.

For e.g. – Business ‘A’ is in Thailand and Japan, but Business ‘A’ can also be in many locations in Thailand. Hence, we have a composite primary key.

##### **COMPOSITE PRIMARY KEY: (BUS\_ID, LOC\_ID)**

All the attributes depend on both the primary keys so no partial dependency, hence it's in **1NF**.

1NF (BUS\_ID, BUS\_COMP\_NAME, BUS\_PHONE, BUS\_EMAIL, LOC\_ID,  
BUS\_ADDRESS, BUS\_OWNER\_NAME, BUS\_REG\_NO)

#### ii) **2NF:**

- Refine Attribute Atomicity:
  - **BUS\_PHONE** to
    - BUS\_COUNTRY\_CODE, BUS\_PHONE
  - **BUS\_ADDRESS** to
    - BUS\_ADDRESS\_LINE1, BUS\_CITY, BUS\_STATE, BUS\_ZIP
  - **BUS\_OWNER\_NAME** to
    - BUS\_OWNER\_FNAME, BUS\_OWNER\_LNAME

Creating two separate tables to make it easy to identify businesses having multiple locations.

BUSINESS (BUS\_ID, BUS\_COMP\_NAME, BUS\_OWNER\_FNAME,  
BUS\_OWNER\_LNAME, LOC\_ID, BUS\_COUNTRY\_CODE, BUS\_PHONE, BUS\_EMAIL, BUS\_ADDRESS\_LINE1, BUS\_REG\_NO, BUS\_ZIP)

BUSINESS\_LOCATION (LOC\_ID, BUS\_ID, BUS\_LOC\_CITY, BUS\_LOC\_STATE)

It is in **2NF**.

**iii) 3NF:**

No significant transitive dependencies. Hence it is in 3NF. So, tables will be the same as in 2NF.

**iv) IMPROVING DESIGN:**

- Evaluating Naming Convention:
  - Change LOC\_ID to BUS\_LOC\_ID to indicate its association with business table.
- Identify new relationship:
  - New table Business Location was created, relationship is:  
BUSINESS and LOCATION – 1:M

We can have BUS\_ID as a foreign key in the business location table so each business can see all its locations.

BUSINESS (**BUS\_ID**, BUS\_COMP\_NAME, BUS\_OWNER\_FNAME, BUS\_OWNER\_LNAME, BUS\_LOC\_ID, BUS\_COUNTRY\_CODE, BUS\_PHONE, BUS\_EMAIL, BUS\_ADDRESS\_LINE1, BUS\_REG\_NO, BUS\_ZIP)

BUSINESS\_LOCATION (**BUS\_LOC\_ID**, BUS\_ID, BUS\_LOC\_CITY, BUS\_LOC\_STATE)

**2. EXPORT PARTNERSHIP:**

**i) 1NF:**

The table has one primary key and all non-key attributes in table are dependent on the primary key, hence it's in **1NF**.

**ii) 2NF:**

The table is in 1NF and has no partial dependencies, hence it's in 2NF.

**iii) 3NF:**

The table is in 2NF and has no transitive dependencies, hence it's in 3NF.

**iv) IMPROVING DESIGN:**

We can use an autogenerated/unique primary key called EXP\_PART\_ID which is unique instead of using the two composite primary keys (EXP\_ID, BUS\_ID)

EXPORT_PARTNERSHIP ( <b>EXP_PART_ID</b> , EXP_ID, BUS_ID, EXP_PART_START_DATE, EXP_PART_END_DATE, EXP_PART_CONTACT_PERSON, EXP_PART_STATUS)
---

**3. EXPORT AGREEMENT:**

**i) 1NF:**

The table has one primary key and all non-key attributes in table are dependent on the primary key, hence it's in **1NF**.

**ii) 2NF:**

The table is in 1NF and has no partial dependencies, hence it's in 2NF.

**iii) 3NF:**

The table is in 2NF and has no transitive dependencies, hence it's in 3NF.

**iv) IMPROVING DESIGN:**

We can use an autogenerated/unique primary key called AGREMNT\_ID which is unique instead of using the two composite primary keys (WINERY\_ID, EXP\_ID)

EXPORT_AGREEMENT ( <b>AGREMNT_ID</b> , WINERY_ID, EXP_ID, AGREMNT_START_DATE, AGREMNT_END_DATE, AGREMNT_CONTACT_PERSON, AGREMNT_STATUS)
---

#### 4. WINERY:

##### i) 1NF:

**ASSUMPTION:** One owner can have multiple wineries.

**COMPOSITE PRIMARY KEY:** WINERY\_ID, WINERY\_OWNER\_NAME

**PARTIAL DEPENDENCIES:**

(WINERY\_OWNER\_NAME -> WINERY\_own\_count)

1NF(WINERY\_ID, WINERY OWNER NAME, WINERY\_NAME,  
WINERY\_ADDRESS, WINERY\_PHONE, WINERY\_DESC, WINERY\_TIME,  
WINERY\_COORD, WINERY\_CORP\_GIFTING, WINERY\_own\_count)

##### ii) 2NF:

There are no partial dependencies.

- Refine Attribute Atomicity:

- Winery\_owner\_name to
  - Winery\_owner\_fname, winery\_owner\_lname
- Winery\_address to
  - winery\_add\_line1, winery\_zip (we are not breaking address as city, country, state as it will get repetitive)
- Winery Coord to
  - Winery Latitude and Winery Longitude.

WINERY (WINERY\_ID, WINERY\_NAME,  
WINERY\_ADD\_LINE1, WINERY\_ZIP, WINERY\_PHONE,  
WINERY\_DESC, WINERY\_TIME, WINERY\_LATITUDE,  
WINERY\_LONGITUDE, WINERY\_CORP\_GIFTING)

- Remove partial dependencies:

WINERY\_OWNERSHIP (WINERY OWNER FNAME,  
WINERY OWNER LNAME, WINERY\_own\_count)

##### iii) 3NF:

The table is in 2NF and has no transitive dependencies, hence it's in 3NF.

WINERY (WINERY\_ID, WINERY\_NAME,  
WINERY\_ADD\_LINE1, WINERY\_ZIP, WINERY\_PHONE, WINERY\_DESC,  
WINERY\_TIME, WINERY\_LATITUDE,  
WINERY\_LONGITUDE, WINERY\_CORP\_GIFTING)

WINERY\_OWNERSHIP (WINERY\_OWNER\_FNAME,  
WINERY\_OWNER\_LNAME, WINERY\_OWN\_COUNT)

iv) IMPROVING DESIGN:

Adding PK for winery ownership to make more readable:

Relationship between winery\_ownership and winery -> 1:M

WINERY (WINERY\_ID, WINERY\_NAME, WINERY\_ADD\_LINE1,  
WINERY\_ZIP, WINERY\_PHONE, WINERY\_DESC, WINERY\_TIME,  
WINERY\_LATITUDE, WINERY\_LONGITUDE, WINERY\_CORP\_GIFTING,  
WINERY\_OWNER\_ID)

WINERY\_OWNERSHIP (WINERY\_OWNER\_ID, WINERY\_OWNER\_FNAME,  
WINERY\_OWNER\_LNAME, WINERY\_OWN\_COUNT)

5. EMPLOYEE:

i) 1NF:

- The table has one primary key and all non-key attributes in table are dependent on the primary key.
- No partial dependencies identified.

1NF (EMP\_ID, EMP\_FNAME, EMP\_LNAME, EMP\_PHONE,  
EMP\_COUNTRY, EMP\_CITY, EMP\_ADDRESS\_LINE1, EMP\_STATE,  
EMP\_ZIP, EMP\_DOB, EMP\_EMAIL, WINERY\_ID, EMP\_HIRE\_DATE,  
EMP\_TYPE, EMP\_PAY\_PER\_HR)

TRANSITIVE DEPENDENCIES:

(EMP\_TYPE -> EMP\_PAY\_PER\_HR)

**ii) 2NF:**

There are no partial dependencies. So it is in 2NF.

**iii) 3NF:**

Removing transitive dependencies:

We have a salary table to know salary per hour for a position.

EMPLOYEE ( <u>EMP_ID</u> , EMP_FNAME, EMP_LNAME, EMP_PHONE, EMP_COUNTRY, EMP_CITY, EMP_ADDRESS_LINE1, EMP_STATE, EMP_ZIP, EMP_DOB, EMP_EMAIL, WINERY_ID, EMP_HIRE_DATE, <u>SALARY_ID</u> )
--

EMP_SALARY ( <u>SALARY_ID</u> , EMP_TYPE, EMP_PAY_PER_HR)
---

## **6. RESTAURANT**

**i) 1NF:**

**ASSUMPTION:**

One restaurant can be in multiple locations; hence we are using two keys as a composite primary key.

**COMPOSITE PRIMARY KEY:** RES\_ID, RES\_LOC

All the non-primary keys are fully dependent on the composite primary keys.

1NF ( <u>REST_ID</u> , <u>REST_LOC</u> , REST_NAME, REST_OWNER_NAME, REST_CUISINE)
---

**ii) 2NF:**

There is no partial dependency. REST\_ID is the unique key given

Refine Attribute Atomicity:

- Rest\_owner\_name **to**
  - rest\_owner\_fname and rest\_owner\_lname
- Rest\_Loc **to**
  - Rest\_city and rest\_state

RESTAURANT ( <b>REST_ID</b> , REST_CITY, REST_STATE, REST_NAME, REST_OWNER_FNAME, REST_OWNER_LNAME, REST_CUISINE)
--

iii) **3NF:**

There are no transitive dependencies. As it's in 2NF, it's in 3NF.

7. **CUSTOMER:**

i. **1NF:**

The table has one primary key and all non-key attributes in table are dependent on the primary key, hence it's in **1NF**.

ii. **2NF:**

The table is in 1NF and has no partial dependencies, hence it's in 2NF.

We can make a separate table for customer restaurants to see how frequently customers frequent bars or wine restaurants in the area.

CUSTOMER ( <b>CUS_ID</b> , CUS_FNAME, CUS_LNAME, CUS_EMAIL, CUS_DOB, CUS_AREA_CODE, CUS_PHONE, CUS_ADDRESS_LINE1, CUS_COUNTRY, CUS_STATE, CUS_ZIP, CUS_TYPE)
--

CUSTOMER_RESTAURANT ( <b>CUS_ID</b> , REST_ID)
--

iii. **3NF:**

The table is in 2NF and has no transitive dependencies, hence it's in 3NF.

8. **PRODUCTION:**

i. **1NF:**

The table has one primary key and all non-key attributes in table are dependent on the primary key.

1NF (**PROD\_ID**, WINE\_ID, PROD\_STRT\_DATE, PROD\_TYPE,  
PROD\_BOTTLE\_DATE)

#### TRANSITIVE DEPENDENCIES:

For example - The choice of production type ("Fermentation" or "Blending") is dependent on the specific "Wine Type." Red and White Wines undergo fermentation, while Rosé Wine involves blending.

WINE\_ID  $\rightarrow$  PROD\_TYPE

#### ii. 2NF:

The table is in 1NF and has no partial dependencies, hence it's in 2NF.

#### iii. 3NF:

Removing transitive dependencies:

PRODUCTION (**PROD\_ID**, PROD\_STRT\_DATE, PROD\_BOTTLE\_DATE,  
WINE\_ID)

PRODUCTION\_TYPE (**WINE\_ID**, PROD\_TYPE)

### 9. TABLES WHICH ARE DIRECTLY IN 3 NF:

TABLE NAMES: PARTNERSHIP, BRAND, CART\_ITEM, CART, PAYMENT,  
ORDER, MEMBERSHIP, WINE TOUR, WINE\_ITINERARIES,  
TASTING\_ROOM\_STAFF, WINE\_TASTING\_ROOM,  
VINEYARD\_PARTNERSHIP, VINEYARD\_SUPPLY\_CONTRACT, PURCHASE,  
VINEYARD\_EXPORT, WINE

#### i) 1NF:

The tables have one primary key and all non-key attributes in table are dependent on the primary key, hence they are in **1NF**.

**ii) 2NF:**

The tables are in 1NF and have no partial dependencies, hence they are in 2NF.

**iii) 3NF:**

The tables are in 2NF and have no transitive dependencies, hence they are in 3NF.

Tables are:

PARTNERSHIP (PART\_ID, PART\_START\_DATE, PART\_LEVEL, BRAND\_ID, REST\_ID)

BRAND (BRAND\_ID, BRAND\_NAME, WINE\_ID)

CART\_ITEM (CRT\_ITEM\_ID, WINE\_ID, CRT\_ITEM\_QNTY, CRT\_ID)

CART (CRT\_ID, WINE\_ID, CRT\_QNTY)

PAYMENT (PAYMENT\_ID, PAYMENT\_METHOD, PAYMENT\_DESCRIPTION, PAYMENT\_STATUS, PAYMENT\_CONFIRM\_NUM)

ORDER (ORD\_ID, CUS\_ID, PAYMENT\_ID)

MEMBERSHIP (MMBSHIP\_ID, MMBSHIP\_TYPE, MMBSHIP\_START\_DATE)

WINE\_ITINERARIES (ITNRY\_ID, ITNRY\_NAME, ITNRY\_TYPE, ITNRY\_TIME, ITNRY\_DAYS, STAY\_ID, CUS\_ID)

WINE\_TASTING\_ROOM (**TST\_ROOM\_ID**, TST\_ROOM\_NAME, EVENT\_ID,  
TST\_ROOM\_DESCRIPTION,TST\_ROOM\_CAPACITY,  
TST\_ROOM\_AMENITITES, TST\_ROOM\_AVAILABILITY)

VINEYARD\_PARTNERSHIP(**VINEYRD\_PART\_ID**,  
VINEYRD\_PART\_START\_DATE,VINEYRD\_PART\_END\_DATE,  
VINEYRD\_CONTACT\_PERSON,VINEYRD\_PART\_STATUS,VINEYRD\_ID,  
WINERY\_ID)

VINEYARD\_SUPPLY\_CONTRACT(**CONT\_ID**,CONT\_START\_DATE,  
CONT\_END\_DATE, CONT\_PRICING, VINEYRD\_ID, PROD\_ID)

PURCHASE(**PUR\_ID**, PUR\_DATE, WINE\_ID, PUR\_QNTY, PUR\_PRICE,  
CUS\_ID)

VINEYARD(**VINEYRD\_ID**,VINEYRD\_LOCATION,VINEYRD\_ACRES,  
VINEYRD\_TIMETABLE, VINEYRD\_GRAPE\_TYPE)

EXPORTER (**EXP\_ID**, EXP\_COMPANY\_NAME, EXP\_PRICE, EXP\_DATE,  
EXP\_TIME)

WINE (**WINE\_ID**, WINE\_NAME, WINE\_DESCRIPTION, WINE\_VARIETAL,  
WINE\_TYPE, WINE\_FLAVORS, WINE\_AWARDS, WINE\_YEAR, WINE\_PRICE,  
WINE\_ABV, WINERY\_ID)

## TABLES

### **7.RELATIONAL LOGICAL MODEL IN ACCESS:**

The screenshot shows the Microsoft Access application interface. On the left, there is a navigation pane titled "Tables" containing a list of database tables. The table "PAYMENT" is currently selected and highlighted. The main workspace displays the table structure for "PAYMENT". The top menu bar includes options like View, Clipboard, Sort & Filter, Records, Find, and Text Formatting.

### **8.SAMPLE DATA:**

Sample data entered for all, showing few samples :

The screenshot shows the Microsoft Access application interface with the "BRAND" table open. The table has three columns: "BRAND\_ID", "BRAND\_NAM", and "WINE\_ID". The data is listed as follows:

BRAND_ID	BRAND_NAM	WINE_ID
1	Opus One	4
2	Stag's Leap Win	20
3	Joseph Phelps V	1
4	Shafer Vineyard	12
5	Silver Oak Cellar	9
6	Caymus Vineyar	7
7	Caymus Vineyar	20
8	Chateau Monte	5
9	Opus One	9
10	Duckhorn Viney	17
11	Silver Oak Cellar	6
12	Beringer Vineya	10
13	Duckhorn Viney	3
14	Dominus Estate	16
15	Chateau Monte	2
16	Opus One	2
17	Duckhorn Viney	5
18	Silver Oak Cellar	18
19	Beringer Vineya	16
20	Beringer Vineya	14

All Access ...

View | Paste | Copy | Filter | Advanced | Refresh | Save | Spelling | Find | Go To | Sort & Filter | Records | Text Formatting | F9

Tables: BRAND, BUSINESS, BUSINESS\_LOCATION, CART, CART\_ITEM, CUSTOMER, CUSTOMER\_RESTAUR..., EMP\_SALARY, EMPLOYEE, EXPORT\_AGREEMENT, EXPORT\_PARTNERSHIP, EXPORTER, ORDER, PARTNERSHIP, PAYMENT, PRODUCTION, PRODUCTION\_TYPE, RESTAURANT

WINE\_ID • WINERY\_NAME • WINERY\_DESC • WINERY\_ZIP • WINERY\_PH • WEB\_ID • WINERY\_DES • WINERY\_TIN • WINERY\_LAT • WINERY\_LON • WINERY\_COI • WINERY\_OWN • Click to Add

Sort & Filter | Records | Text Formatting | F9

WINE_ID	WINERY_NAME	WINERY_DESC	WINERY_ZIP	WINERY_PH	WEB_ID	WINERY_DES	WINERY_TIN	WINERY_LAT	WINERY_LON	WINERY_COI	WINERY_OWN	Click to Add
1	Syrah	A full-bodied red Chardonnay	red	spicy	Gold Medal	2013 \$50	14.2%	4088				
2	Chardonnay	An aromatic and Chardonnay	rose	spicy	People's Choice	1991 \$30	9.6%	4977				
3	Malbec	A smooth and Cabernet	rose	spicy	Best Value	2006 \$40	10.8%	4218				
4	Sauvignon Blanc	A dry and elegant Chardonnay	red	blackberry	Best in Show	2009 \$90	12.9%	4218				
5	Zinfandel	A bold and spicy Cabernet	rose	apple	Top 10	1999 \$100	10.8%	4218				
6	Syrah	A bold and spicy Pinot Noir	white	apricot	Silver Medal	2010 \$30	9.6%	4977				
7	Malbec	A crisp and refined Pinot Noir	rose	apricot	Critic's Pick	2008 \$90	12.9%	4977				
8	Pinot Noir	A smooth and Cabernet	rose	grape	Silver Medal	1992 \$100	13.7%	4865				
9	Sangiovese	A full-bodied red Riesling	white	blackberry	Innovation Awa	2006 \$100	11.3%	4952				
10	Cabernet Sauvignon	A crisp and refined Pinot Noir	sparkling	vanilla	Grand Prize	2009 \$10	14.2%	4952				
11	Chardonnay	A smooth red Riesling	red	blackberry	Special Recogni	2007 \$100	10.8%	4952				
12	Sangiovese	A crisp and refined Sauvignon Blanc	rose	apple	Outstanding	1996 \$90	13.5%	4004				
13	Malbec	A smooth red Riesling	red	spicy	Grand Prize	2004 \$60	12.5%	4368				
14	Merlot	A smooth and Pinot Noir	red	spicy	Top 10	2007 \$70	11.3%	4865				
15	Malbec	A rich and complex Chardonnay	rose	blueberry	Critic's Pick	2009 \$90	12.5%	4088				
16	Zinfandel	A full-bodied red Riesling	white	strawberry	Critic's Pick	2001 \$50	12.9%	4088				
17	Malbec	A smooth red Chardonnay	red	spicy	Silver Medal	1986 \$80	11.3%	4088				
18	Cabernet Sauvignon	A vibrant and Pinot Noir	red	blueberry	Honorable Men	2011 \$10	13.5%	4218				
19	Petite Sirah	A rich and complex Chardonnay	sparkling	spicy	Critic's Pick	2012 \$100	9.6%	4368				
20	Merlot	A rich and complex Pinot Noir	sparkling	apricot	Silver Medal	1993 \$50	10.8%	4218				

All Access ...

View | Paste | Format Painter | Filter | Advanced | Refresh | Save | Spelling | Find | Go To | Sort & Filter | Records | Text Formatting | F9

Tables: BRAND, BUSINESS, BUSINESS\_LOCATION, CART, CART\_ITEM, CUSTOMER, CUSTOMER\_RESTAUR..., EMP\_SALARY, EMPLOYEE, EXPORT\_AGREEMENT, EXPORT\_PARTNERSHIP, EXPORTER, ORDER, PARTNERSHIP, PAYMENT, PRODUCTION, PRODUCTION\_TYPE, RESTAURANT

CUS\_ID • CUS\_FNAME • CUS\_LNAME • CUS\_EMAIL • CUS\_DOB • CUS\_AREA\_C • CUS\_PHONE • CUS\_ADDRESS • CUS\_CITY • CUS\_STATE • CUS\_ZIP • CUS\_TYPE • Click to Add

Sort & Filter | Records | Text Formatting | F9

CUS_ID	CUS_FNAME	CUS_LNAME	CUS_EMAIL	CUS_DOB	CUS_AREA_C	CUS_PHONE	CUS_ADDRESS	CUS_CITY	CUS_STATE	CUS_ZIP	CUS_TYPE	Click to Add
1	Bonita	Bautista	dbautista@abc.com	5/6/2003	925	80889881831111	10th Floor	Jacksonville	Florida	32269	bronze	
2	Michael	McNamee	mcmnamee@fgh.com	5/11/2003	707	80889881831111	6th Floor	Cincinnati	Ohio	45240	silver	
3	Mariann	Pilisner	mpilisner2@abc.com	10/25/2003	650	80889883191756	Apartment 1756	Denton	Texas	76201	silver	
4	Matty	Coscar	mcoscar@abc.com	2/2/2003	707	80889883191756	Suite 208	Pueblo	Colorado	81010	premium	
5	Leelah	Boschmann	lboschmann@abc.com	10/10/2003	408	80889883191756	Suite 4	Van Nuys	California	91406	regular	
6	Sibilla	Pomfrey	spomfrey@abc.com	8/9/2003	707	80889881831111	Suite 75	Orlando	Florida	32808	premium	
7	Ibbie	Worrall	iworrall@abc.com	8/12/2003	415	80889881831111	Room 76	Mesa	Arizona	85205	silver	
8	Sarannah	Bootes	sbootes@w3.c29/2003	707	80889882240553	Shooters@w3.c29/2003	Knoxville	Tennessee	38150	premium		
9	Alfonse	Roxburgh	aroxburgh@abc.com	2/3/2003	415	8088988315th Floor	Baton Rouge	Louisiana	70805	bronze		
10	Hovry	Bexley	ibexley@abc.com	7/2/2003	707	808898841 Suite 78	Knoxville	Tennessee	37919	gold		
11	Faustina	Braisted	fbraisted@usa.com	9/30/2003	707	8088988515th Floor	Columbus	Ohio	43215	silver		
12	Allie	Kinsley	akinsley@abc.com	12/7/2002	650	8088988518th Floor	Tampa	Florida	33605	silver		
13	Kathly	Karolyi	kkarolyi@blog.com	4/20/2003	650	808898871 Apt 1490	Huntington	West Virginia	25711	premium		
14	Modesta	Gainforth	mgainforth@abc.com	1/5/2003	831	808898841 Apt 5595	Portland	Oregon	97255	bronze		
15	Karly	Tatlock	ktatlock@abc.com	12/26/2002	707	808898851 Room 1355	Des Moines	Iowa	50362	bronze		
16	Analise	Morffew	amorffew@abc.com	8/11/2003	707	808898851295	Greenville	South Carolina	29610	gold		
17	Dominick	Peacham	dpeacham@abc.com	1/26/2003	415	8088988710th Floor	Louisville	Kentucky	40293	silver		
18	Padgett	Lobato	plobato@abc.com	3/5/2003	831	808898812 Apt 703	Colorado Spring	Colorado	80995	silver		
19	Ernesto	Keavin	ekewin@abc.com	7/28/2003	831	808898822 Apt 162	Baltimore	Maryland	21282	bronze		
20	Ferris	Ludwikiewicz	fludwikiewicz@abc.com	4/27/2003	650	808898454 PO Box 7816	Dallas	Texas	75226	regular		

All Access ...

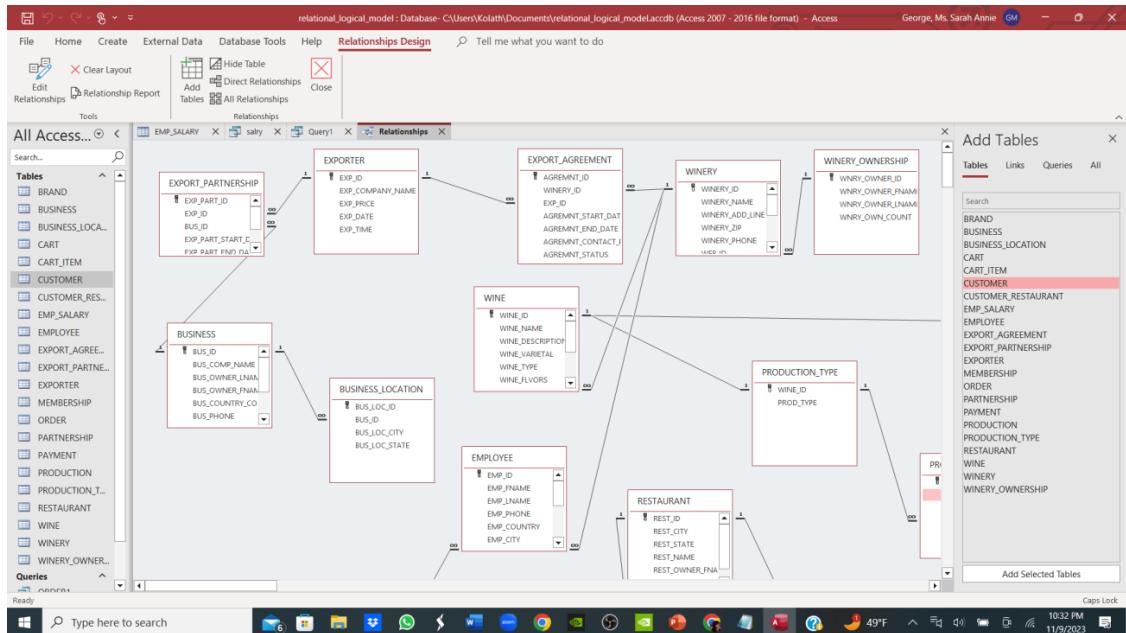
View | Paste | Format Painter | Filter | Advanced | Refresh | Save | Spelling | Find | Go To | Sort & Filter | Records | Text Formatting | F9

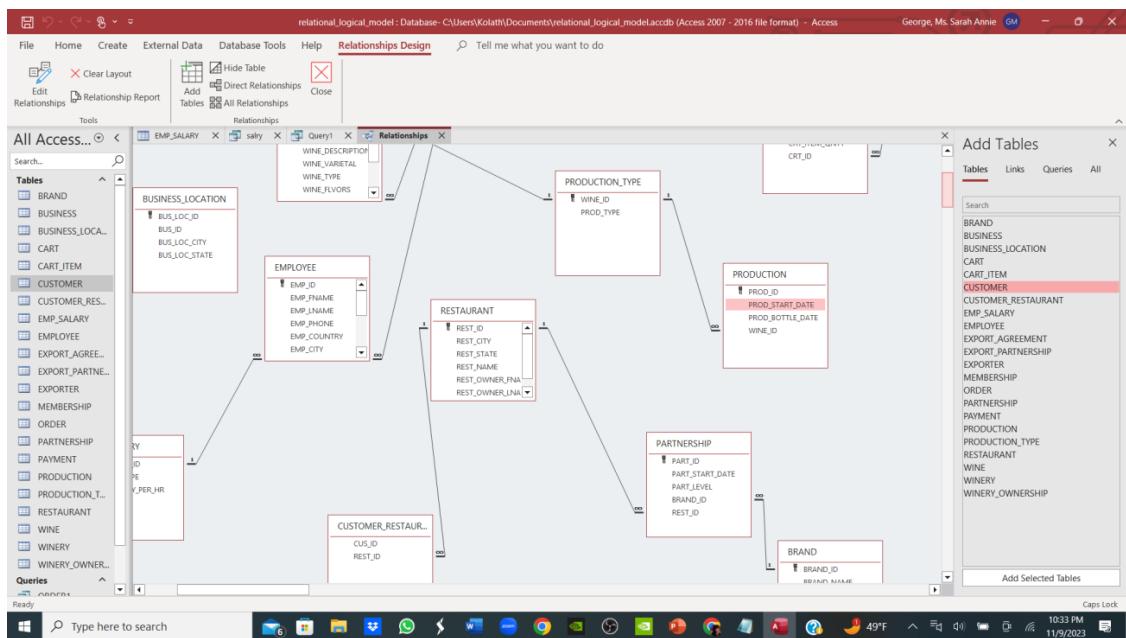
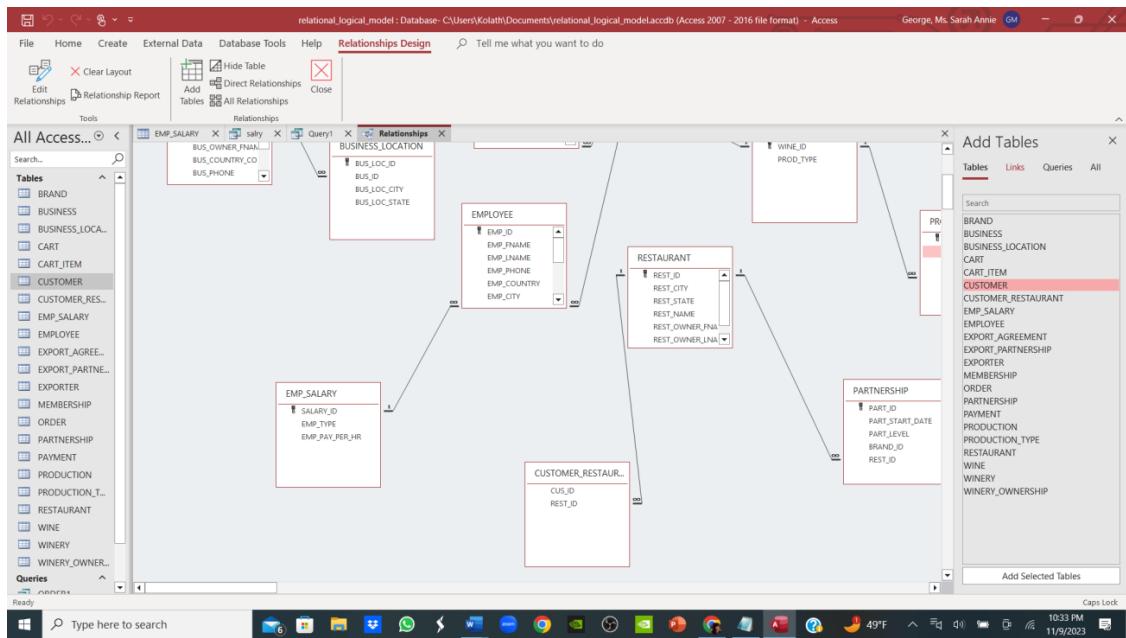
Tables: BRAND, BUSINESS, BUSINESS\_LOCATION, CART, CART\_ITEM, CUSTOMER, CUSTOMER\_RESTAUR..., EMP\_SALARY, EMPLOYEE, EXPORT\_AGREEMENT, EXPORT\_PARTNERSHIP, EXPORTER, ORDER, PARTNERSHIP, PAYMENT, PRODUCTION, PRODUCTION\_TYPE, RESTAURANT

WINERY\_ID • WINERY\_NAM • WINERY\_ADI • WINERY\_ZIP • WINERY\_PH • WEB\_ID • WINERY\_DES • WINERY\_TIN • WINERY\_LAT • WINERY\_LON • WINERY\_COI • WINERY\_OWN • Click to Add

Sort & Filter | Records | Text Formatting | F9

WINERY_ID	WINERY_NAM	WINERY_ADI	WINERY_ZIP	WINERY_PH	WEB_ID	WINERY_DES	WINERY_TIN	WINERY_LAT	WINERY_LON	WINERY_COI	WINERY_OWN	Click to Add
1	Merryvale Vineyards	792 Elm Avenue	97531	1643738045	826	Offers wine and	11/10/2003	30.948905	108.574058	false	4088	
2	4013 Inglenook	684 Maple Road	54231	1643738045	811	Renovated for it	11/15/2003	15.1850483	145.7467259	false	4364	
3	4088 Stag's Leap Winery	468 Ash Road	98765	1643738045	930	Hosts private ev	11/15/2003	35.4695457	63.9113296	false	4545	
4	4120 Merryvale Vineyard	921 Cedar Court	97531	1643738045	920	Produces rare a	11/20/2003	29.1082924	119.6364668	false	4082	
5	4165 Domaine Carine	456 Elm Avenue	86429	1643738045	830	Renovated for it	11/17/2003	-26.8552666	-55.541359	false	4364	
6	4193 Shafer Vineyard	753 Poplar Court	54320	1643738045	827	Offers vineyard	11/14/2003	62.4729446	17.4155753	false	4428	
7	4208 Stag's Leap Winery	468 Ash Road	98765	1643738045	938	Known for its Br	11/14/2003	35.4695457	63.9113296	false	4545	
8	4218 Caymus Vineyard	153 Oak Street	98765	1643738045	863	Hosts private ev	11/10/2003	36.4051945	47.1156092	true	4629	
9	4368 Cakebread Cellars	543 Birch Street	98765	1643738045	869	Scenic vineyard	11/30/2003	8.9247111	-79.5069436	true	4629	
10	4373 Beringer Vineyard	321 Pine Road	98765	1643738045	858	Specializes in Cz	11/10/2003	30.0248282	121.343065	false	4364	
11	4520 Duckhorn Vineyard	864 Birch Avenue	97531	1643738045	873	Hosts private ev	11/21/2003	44.741079	18.2727658	false	4629	
12	4526 Caymus Vineyard	579 Sycamore A	86420	1643738043	819	Produces organi	11/4/2003	2.7523555	98.5116903	true	4428	
13	4530 Stag's Leap Winery	468 Elm Avenue	97531	1643738045	960	Known for its Br	11/4/2003	34.420837	14.1136695	false	4082	
14	4738 Merryvale Vineyard	792 Elm Avenue	97531	1643738045	986	Hosts private ev	11/4/2003	49.202637	15.3236695	true	4830	
15	4747 Clos Du Val	654 Maple Court	54321	1643738040	882	Scenic vineyard	11/4/2003	27.633137	-48.6359277	true	4545	
16	4783 Cakebread Cellars	246 Cherry Street	98765	1643738047	939	Offers vineyard	11/3/2003	15.2081378	99.9688636	true	4830	
17	4865 Robert Mondavi	135 Oak Street	54321	1721627777	927	Scenic vineyard	11/11/2003	16.6078107	101.9291015	false	4428	
18	4940 Clos Du Val	456 Elm Avenue	98765	1643738067	934	Offers wine edu	11/3/2003	-11.303555	-41.8561503	false	4545	
19	4952 Stag's Leap Winery	468 Ash Road	86429	1643738098	818	Produces small-	11/10/2003	26.6969179	50.506231	true	4082	
20	4977 Chateau Monte	279 Spruce Lane	98765	1643738897	821	Produces rare a	11/14/2003	13.4760985	144.751572	false	4545	





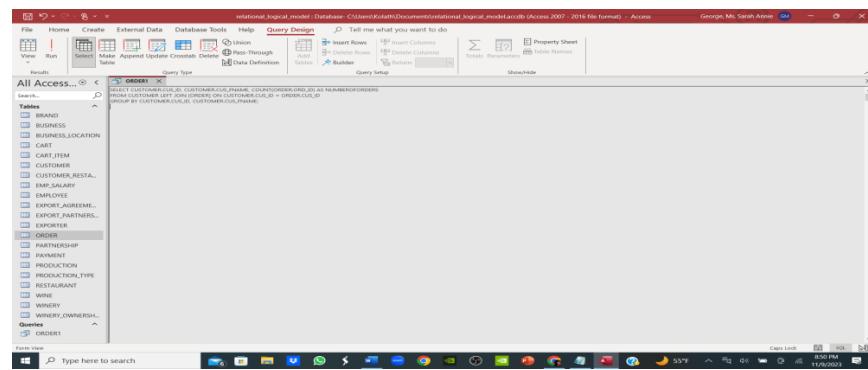
## **9. SELECT 10 BUSINESS VIEWS AND QUERY**

### **1. ORDERS:**

Get number of customers orders-

SQL-

```
SELECT CUSTOMER.CUS_ID, CUSTOMER.CUS_FNAME,  
COUNT(ORDER.ORD_ID) AS NUMBEROFOORDERS  
FROM CUSTOMER LEFT JOIN [ORDER] ON CUSTOMER.CUS_ID =  
ORDER.CUS_ID  
GROUP BY CUSTOMER.CUS_ID, CUSTOMER.CUS_FNAME;
```



The screenshot shows a Microsoft Access interface with a query results grid titled "ORDER1". The grid displays three columns: CUS\_ID, CUS\_FNAME, and NUMBEROFORDERS. The data is sorted by CUS\_ID. The first few rows of data are:

CUS_ID	CUS_FNAME	NUMBEROFORDERS
1	Donia	2
2	Raleigh	0
3	Mariann	0
4	Matty	2
5	Leelah	2
6	Sibilla	2
7	Ibbie	1
8	Saraann	1
9	Alfonse	0
10	Ivory	2
11	Faustina	2
12	Allie	0
13	Kathie	0
14	Modesta	1
15	Karlyn	1
16	Analise	0
17	Dominick	0
18	Padgett	1
19	Ernesto	2
20	Ferris	1

The left sidebar lists various tables: BRAND, BUSINESS, BUSINESS\_LOCATION, CART, CART\_ITEM, CUSTOMER, CUSTOMER\_RESTA..., EMP\_SALARY, EMPLOYEE, EXPORT\_AGREEME..., EXPORT\_PARTNERS..., EXPORTER, ORDER, PARTNERSHIP, PAYMENT, PRODUCTION, PRODUCTION\_TYPE, RESTAURANT, and WINE. The "ORDER" table is currently selected.

## 2. PAYMENTS

Get all pending payments.

```
SELECT CUSTOMER.CUS_FNAME,
CUSTOMER.CUS_LNAME,PAYMENT.PAYMNET_STATUS

FROM (CUSTOMER INNER JOIN [ORDER] ON CUSTOMER.CUS_ID =
ORDER.CUS_ID) INNER JOIN PAYMENT ON ORDER.ORD_ID =
PAYMENT.PAYMENT_ID

WHERE ((PAYMENT.PAYMENT_STATUS) = "PENDING");
```

```

SELECT CUSTOMER.CUS_FNAME, CUSTOMER.CUS_LNAME, PAYMENT.PAYMENT_STATUS
FROM (CUSTOMER INNER JOIN [ORDER] ON CUSTOMER.CUS_ID = ORDER.CUS_ID) INNER JOIN PAYMENT ON ORDER.ORD_ID = PAYMENT.PAYMENT_ID
WHERE ((PAYMENT.PAYMENT_STATUS)='PENDING');

```

CUS_FNAME	CUS_LNAME	PAYMENT_STATUS
Ivory	Bexley	pending

### 3. TRACK EMPLOYEES

Check employees salary based on employee type

```

SELECT EMPLOYEE.EMP_FNAME, EMPLOYEE.EMP_LNAME,
EMP_SALARY.EMP_TYPE, EMP_SALARY.EMP_PAY_PER_HR
FROM EMP_SALARY INNER JOIN EMPLOYEE ON EMP_SALARY.SALARY_ID =
EMPLOYEE.SALARY_ID;

```

All Access... < |

View Run Select Append Update CrossTab Delete Data Definition Tables Builder Return: Totals Parameters Show

EMP\_SALARY X Query2 X

```
SELECT EMPLOYEE.EMP_FNAME, EMPLOYEE.EMP_LNAME, EMP_SALARY.EMP_TYPE, EMP_SALARY.EMP_PAY_PER_HR
FROM EMP_SALARY INNER JOIN EMPLOYEE ON EMP_SALARY.SALARY_ID = EMPLOYEE.SALARY_ID;
```

Tables

- BRAND
- BUSINESS
- BUSINESS\_LOCA...
- CART
- CART\_ITEM
- CUSTOMER
- CUSTOMER\_RES...
- EMP\_SALARY**
- EMPLOYEE
- EXPORT\_AGREE...
- EXPORT\_PARTNE...
- EXPORTER

All Access... < |

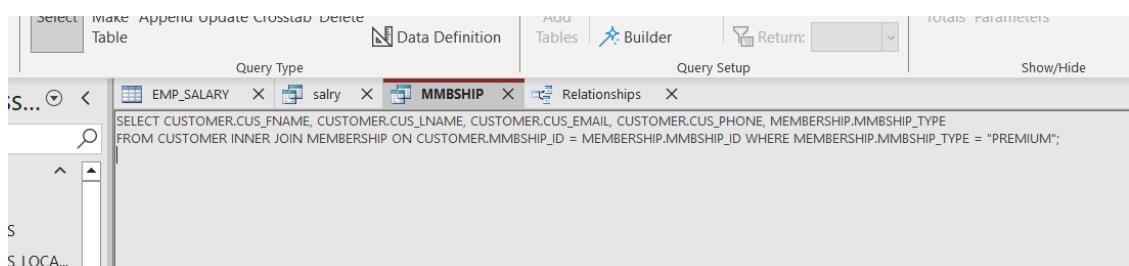
EMP\_SALARY X salary X

EMP_FNAME	EMP_LNAME	EMP_TYPE	EMP_PAY_PE
Rosita	Polsin	Cellar Hand	15
Bradney	Awty	Cellar Hand	15
Kleon	McGorley	Cellar Hand	10.5
Merv	Need	Winery Assistant	9.25
Carmela	Rawson	Cellar Supervisor	10.5
Dena	Gogin	Viticulturist	11.5
Morly	Tossell	Viticulturist	11.5
Jonah	Gradly	Harvest Crew	10.5
Yoshiko	Harding	Harvest Crew	10.5
Kirsteni	Frawley	Wine Chemist	12.75
Baxie	Longcake	Grape Picker	11.5
Arron	Hurring	Grape Picker	11.5
Rosaline	Jura	Lab Technician	10.5
Winifred	Wherrett	Lab Technician	10.5
Marion	Gasgarth	Lab Technician	12.75
Dunn	Malec	Lab Technician	12.75
Emmalee	Crockford	Cellar Hand	10.5
Drusie	Lambotin	Grape Picker	9.25
Wesley	Snawdon	Grape Picker	9.25
Rogerio	Gribbins	Grape Picker	9.25
*			

#### 4. CUSTOMERS DATA

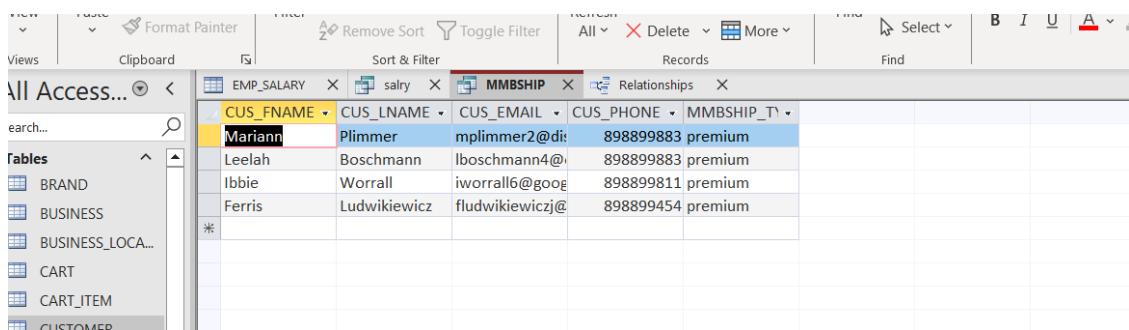
Get all customers data having premium membership

```
SELECT CUSTOMER.CUS_FNAME, CUSTOMER.CUS_LNAME,  
CUSTOMER.CUS_EMAIL, CUSTOMER.CUS_PHONE,  
MEMBERSHIP.MMBSHIP_TYPE  
  
FROM CUSTOMER INNER JOIN MEMBERSHIP ON CUSTOMER.MMBSHIP_ID =  
MEMBERSHIP.MMBSHIP_ID WHERE MEMBERSHIP.MMBSHIP_TYPE =  
"PREMIUM";
```



The screenshot shows the Microsoft Access Query Builder interface. The top menu bar includes 'Select', 'Append', 'Update', 'CrossTab', 'Delete', 'Data Definition', 'Tables', 'Builder', 'Return...', 'Tools', 'Parameters', 'Query Type' (set to 'Select'), 'Relationships', and 'Show/Hide'. The main area displays the SQL query:

```
SELECT CUSTOMER.CUS_FNAME, CUSTOMER.CUS_LNAME, CUSTOMER.CUS_EMAIL, CUSTOMER.CUS_PHONE, MEMBERSHIP.MMBSHIP_TYPE  
FROM CUSTOMER INNER JOIN MEMBERSHIP ON CUSTOMER.MMBSHIP_ID = MEMBERSHIP.MMBSHIP_ID WHERE MEMBERSHIP.MMBSHIP_TYPE = "PREMIUM";
```



The screenshot shows the Microsoft Access Datasheet view. The top ribbon includes 'Views', 'Clipboard', 'Format Painter', 'Remove Sort', 'Toggle Filter', 'All', 'Delete', 'More', 'Select', 'Find', and 'B I U A'. The left pane shows the 'Tables' list with 'EMP\_SALARY', 'saly', 'MMBSHIP', and 'Relationships'. The main grid displays the following data:

CUS_FNAME	CUS_LNAME	CUS_EMAIL	CUS_PHONE	MMBSHIP_T
Mariann	Plummer	mplimmer2@di...	898899883	premium
Leelah	Boschmann	lboschmann4@i...	898899883	premium
Ibbie	Worrall	iworrall6@goo...	898899811	premium
Ferris	Ludwikiewicz	fludwikiewiczj@...	898899454	premium

## 5. EXPORTER

Delete an exporter who is not needed anymore or who does not export anymore

The screenshot shows the Microsoft Access interface with two main windows open:

- Table View:** The top window displays a table named "EXPORTER" with columns: EXP\_ID, EXP\_COMPANY, EXP\_PRICE, EXP\_DATE, EXP\_TIME, and Click to Add. A single row is selected, showing EXP\_ID 1035 and company "Durgan-Runolfs".
- Query Builder:** The bottom window shows a query named "Query1" with the following SQL code:
 

```
DELETE EXPORTER.*  
FROM EXPORTER  
WHERE EXPORTER.EXP_ID = 1035
```

A confirmation dialog box from Microsoft Access is overlaid on the query builder window, asking if the user is sure they want to delete the selected records. The dialog includes a warning message: "You are about to delete 1 row(s) from the specified table. Once you click Yes, you can't use the Undo command to reverse the changes. Are you sure you want to delete the selected records?" with "Yes" and "No" buttons.

## 6. Wine Fermentation & Harvesting

To know what the wine production type is for each wine.

```
SELECT WINE.WINE_NAME, PRODUCTION_TYPE.PROD_TYPE
FROM WINE INNER JOIN PRODUCTION_TYPE ON WINE.WINE_ID =
PRODUCTION_TYPE.WINE_ID;
```

Run | Select | Make Append Update Crosstab Delete Table | Data Definition | Add Tables | Builder | Return: | Totals | Par

Access... < | Query Type |

Query1 X WINE X PRODUCTION X PRODUCTION\_TYPE X

```
SELECT WINE.WINE_NAME, PRODUCTION_TYPE.PROD_TYPE
FROM WINE INNER JOIN PRODUCTION_TYPE ON WINE.WINE_ID = PRODUCTION_TYPE.WINE_ID;
```

CART  
CART\_ITEM  
CUSTOMER  
CUSTOMER\_RES...  
EMP\_SALARY

Access... < |

Query1 X WINE X PRODUCTION X PRODUCTION\_TYPE X

WINE_NAME	PROD_TYPE
Syrah	Viognier
Chardonnay	Malbec
Malbec	Merlot
Sauvignon Blanc	Malbec
Zinfandel	Gewürztraminer
Syrah	Tempranillo
Malbec	Malbec
Pinot Noir	Viognier
Sangiovese	Chenin Blanc
Cabernet Sauvig	Verdejo
Chardonnay	Riesling
Sangiovese	Grüner Veltliner
Malbec	Petite Sirah
Merlot	Verdejo
Malbec	Gewürztraminer
Zinfandel	Viognier
Malbec	Chardonnay
Cabernet Sauvig	Pinot Noir
Petite Sirah	Sangiovese
Merlot	Moscato
*	

## 7. INSERT A NEW OWNER IN WINERY\_OWNERSHIP TABLE

```
INSERT INTO WINERY_OWNERSHIP
VALUES (5466, 'Jane', 'Smith', 4);
```

Run | Select | Make Table | Append | Update | Crosstab | Delete | 

Query Type

Access... <  WINERY\_OWNERSHIP X  **Query1**

```
INSERT INTO WINERY_OWNERSHIP  
VALUES (5466, 'Jane', 'Smith', 4);
```

CART  
CART\_ITEM  
CUSTOMER  
CUSTOMER\_RES...

Clipboard | Sort & Filter | Records | Find |

S... <  WINERY\_OWNERSHIP X  **Query1 X**

Expr1000	Expr1001	Expr1002	Expr1003
5466	Jane	Smith	4

M  
ER  
ER\_RES...  
ARY

WNRY_OWNER_ID	WNRY_OWNER_FNAME	WNRY_OWNER_LNAME	WNRY_OWNER_CNT	Click to Add
4082	Cassie	Kiltie	1	
4271	Florella	Collidge	3	
4285	Coralie	Eagleton	2	
4329	Bartie	Franzolini	3	
4364	Orbadiah	Lithgow	2	
4428	Dorie	Stemp	2	
4545	Martino	Harback	3	
4560	Deirdre	Usmar	3	
4612	Fran	Rosenkranc	4	
4629	Nat	DeSousa	4	
4644	Gardner	MacMeekan	1	
4676	Fergus	Glendinning	3	
4686	Raffaello	Pine	2	
4721	Dulcie	Bramstom	2	
4746	Ruddie	Ridsdell	3	
4830	Paulina	Allbones	2	
4869	Anabel	Lebell	2	
4905	Odene	Zimmermanns	3	
4997	Allsun	Vequaud	1	
4999	Josefina	Middell	3	
5466	Jane	Smith	4	
*				

## 8. FOR MARKETING PURPOSE

Analyze customers frequent which wine restaurants

```

SELECT CUSTOMER.CUS_FNAME, CUSTOMER.CUS_EMAIL,
CUSTOMER.CUS_PHONE, RESTAURANT.REST_NAME

FROM RESTAURANT INNER JOIN (CUSTOMER INNER JOIN
CUSTOMER_RESTAURANT ON CUSTOMER.CUS_ID =
CUSTOMER_RESTAURANT.CUS_ID) ON RESTAURANT.REST_ID =
CUSTOMER_RESTAURANT.REST_ID;

```

Results	Query Type	Query Setup	Show/Hide
Access...	Query2	RESTAURANT	

CUS_FNAME	CUS_EMAIL	CUS_PHONE	REST_NAME
Saraann	sbootes7@w3.c...	898899822	The French Laur...
Saraann	sbootes7@w3.c...	898899822	Wine Country Ki...
Sibilla	spomfrey5@dai...	898899881	Ad Hoc
Matty	mcossar3@exbl...	898899882	Culinary Institut...
Mariann	mplimmer2@dir...	898899883	Bottega
Karlyn	ktatlocke@ning...	898899885	Harvest Table
Leelah	lboschmann4@o...	898899883	The French Laur...
Kathie	kkarolyic@blogl...	898899877	Ad Hoc
Mariann	mplimmer2@dir...	898899883	Culinary Institut...
Modesta	mgainforthd@b...	898899884	Culinary Institut...
Padgett	plaboneh@123...	898899812	The French Laur...
Sibilla	spomfrey5@dai...	898899881	Culinary Institut...
Ibbie	iworrall6@goo...	898899811	Napa Valley Gril...
Ernesto	ekenwini@de.v...	898899823	Culinary Institut...
Padgett	plaboneh@123...	898899812	Farmstead at Lc...
Ferris	fludwikiewiczj...	898899454	Ad Hoc
Alfonse	aroxburch8@tu...	898899833	Culinary Institut...
Ibbie	iworrall6@goo...	898899811	Harvest Table
Ernesto	ekenwini@de.v...	898899823	The French Laur...
Saraann	sbootes7@w3.c...	898899822	The Vineyard Bi...

## 9. Get an overview of wines produced from winery

```
SELECT WINE.WINE_NAME, WINERY.WINERY_NAME
FROM WINERY INNER JOIN WINE ON WINERY.WINERY_ID =
WINE.WINERY_ID;
```

Format Painter	Remove Sort	Toggle Filter	All	Delete	More	Select	Text
Access...							

```
SELECT WINE.WINE_NAME, WINERY.WINERY_NAME
FROM WINERY INNER JOIN WINE ON WINERY.WINERY_ID = WINE.WINERY_ID;
```

The screenshot shows a Microsoft Access interface with a query results grid. The grid has two columns: 'WINE\_NAME' and 'WINERY\_NAI'. The data is as follows:

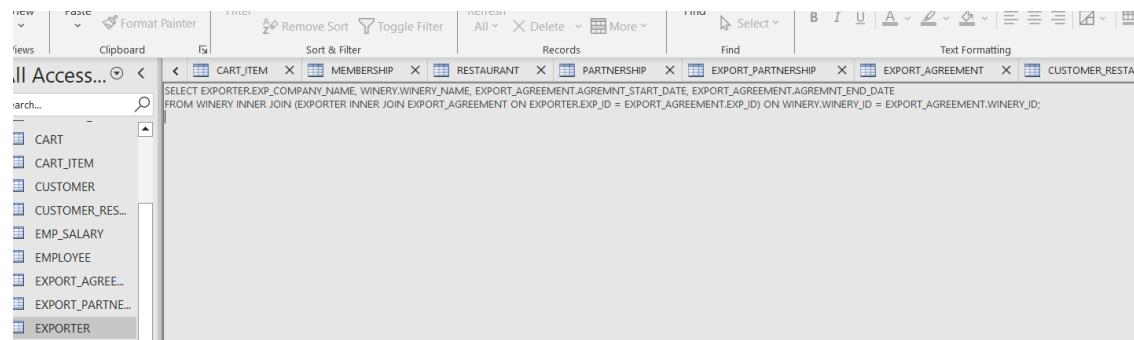
WINE_NAME	WINERY_NAI
Sangiovese	Merryvale Viney
Syrah	Stag's Leap Win
Malbec	Stag's Leap Win
Zinfandel	Stag's Leap Win
Malbec	Stag's Leap Win
Malbec	Caymus Vineyar
Sauvignon Blanc	Caymus Vineyar
Zinfandel	Caymus Vineyar
Cabernet Sauvig	Caymus Vineyar
Merlot	Caymus Vineyar
Malbec	Cakebread Cell
Petite Sirah	Cakebread Cell
Pinot Noir	Robert Mondav
Merlot	Robert Mondav
Sangiovese	Stag's Leap Win
Cabernet Sauvig	Stag's Leap Win
Chardonnay	Stag's Leap Win
Chardonnay	Chateau Monte
Syrah	Chateau Monte
Malbec	Chateau Monte
*	

#### 10. To see all winery companies and their exporters

```

SELECT EXPORTER.EXP_COMPANY_NAME, WINERY.WINERY_NAME,
EXPORT_AGREEMENT.AGREMNT_START_DATE,
EXPORT_AGREEMENT.AGREMNT_END_DATE

FROM WINERY INNER JOIN (EXPORTER INNER JOIN EXPORT_AGREEMENT
ON EXPORTER.EXP_ID = EXPORT_AGREEMENT.EXP_ID) ON
WINERY.WINERY_ID = EXPORT_AGREEMENT.WINERY_ID;
    
```



	CART_ITEM	MEMBERSHIP	RESTAURANT	PARTNERSHIP	EXPORT_PARTNERSHIP
Weissnat-Huel	WINERY_NAI	AGREEMNT_S	AGREEMNT_E		
Weissnat-Huel	Inglenook	9/15/2023	1/19/2023		
Douglas-Okunev	Inglenook	9/17/2023	9/20/2023		
Feest Group	Stag's Leap Win	5/24/2023	10/4/2023		
Durgan-Runolfs	Merryvale Viney	5/6/2023	1/10/2023		
Durgan-Runolfs	Merryvale Viney	1/9/2023	6/12/2023		
Champlin Group	Domaine Carne	8/22/2023	6/10/2023		
Kshlerin LLC	Cakebread Cell	10/18/2023	10/23/2023		
Weissnat-Huel	Domaine Carne	9/15/2023	3/29/2023		
Heller, Wisoky a	Cakebread Cell	12/6/2022	9/23/2023		
Durgan-Runolfs	Inglenook	1/30/2023	3/28/2023		
Heller, Wisoky a	Cakebread Cell	4/15/2023	2/18/2023		
Champlin Group	Caymus Vineyar	11/25/2022	9/6/2023		
Feest Group	Domaine Carne	1/14/2023	7/2/2023		
Jerde, Vanderv	Caymus Vineyar	1/1/2023	3/22/2023		
Douglas-Okunev	Caymus Vineyar	8/27/2023	5/17/2023		
D'Amore Group	Merryvale Vine	1/6/2023	10/1/2023		
Graham, Jakubc	Merryvale Vine	11/21/2022	10/3/2023		
Jerde, Vanderv	Merryvale Vine	4/9/2023	6/5/2023		
Heller, Wisoky a	Merryvale Viney	4/17/2023	4/17/2023		
Schultz LLC	Merryvale Viney	1/26/2023	12/26/2022		

## **10. SUMMARY:**

Here are some considerations to evaluate the confidence in our design:

- **Alignment with Requirements:**

We Assess how closely our database design aligns with the originally stated requirements.  
We ensured that all essential features and functionalities are addressed in your design.

- **Normalization:**

We checked whether our database schema is normalized (e.g., in 1NF, 2NF, 3NF) to minimize redundancy and improve data integrity.

- **Relationships and Integrity:**

We evaluated the relationships between tables, especially foreign key constraints, to ensure referential integrity. We confirmed that the design supports the expected relationships between entities.

- **Scalability:**

We considered the scalability of our design to ensure that it will accommodate future growth in data volume and user activity.

- **Flexibility and Adaptability:**

We assessed whether our design allows for easy modifications and adaptability to changes in requirements. A flexible design is crucial for accommodating future enhancements.

- **Performance Considerations:**

We considered the potential performance implications of our design, especially if the database is expected to handle a large volume of transactions. We optimized queries and indexing where needed.

Regarding the life cycle process undertaken for the design, it's important to reflect on the steps we've taken:

- **Requirements Analysis:**

How well did we understand and document the requirements? Are they comprehensive and accurately reflect the needs of the stakeholders?

- **Conceptual and Logical Design:**

We assessed the effectiveness of our conceptual and logical design phases.

- **Normalization and Schema Refinement:**

We reflected on the normalization process and schema refinement.

- **Implementation and Testing:**

We considered the implementation phase. We successfully translated the logical design into a physical database schema.

As for comfort in using this approach for other database projects, it depends on our familiarity with the methodology, the complexity of the projects, and the unique requirements of each project. Adopting best practices, staying updated with industry standards, and gaining experience through practical application can enhance our confidence in using this approach for future projects.