INFO 4707 - Group 7 Project

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Update Assignment

Requirements

1.) ERD Diagram of the database - 20 Points
2.) All the Business rules - 20 Points
3.) 5 Key objectives of the database - 20 Points

4.) Write SQL queries for Database creation, Table creation, Defining Data Types, Defining keys and Data Insertion. - 20 Points
5.) Screenshots of the queries and respective responses. - 20 Points
Note for any submissions in ANY OF CLOUD STORAGE,ADDITIONAL POINTS WILL BE AWARDED - 10 Points

Current Tables

Stores - Store ID (PK) - Street - City - Zip - State - Country	Transactions - Transaction ID (PK) - Date - Amount - Employee ID (FK) - Customer ID (FK) - Store ID (FK)	Sales - Sales ID (PK) - Transaction ID (FK) - Product ID (FK) - Quanity
Employees - Employee ID (PK) - First Name - Last Name - Role - Store ID (FK)	Customer - Customer ID (PK) - First Name - Last Name - Phone - Email	Products - Product ID (PK) - Name - Description - Cartegory - Price

- Wage / Rate		
Time Tracking - Time ID (PK) - Date - Start Time - End Time - Employee ID (FK)		

Business Rules

1. One Store can have many Employees. Each employee can only work at one Store.
2. One Category can have many Products. Each Product must only have one Category.
3. One Transaction can have many (Product) Sales. Each (Prodct) Sale must occur within one Transaction.
4. One Store can have many Transactions. Each Transaction can only occur at a single Store
5. One Customer can have many Transactions. Each Transaction can belong to one Customer

Objectives

1. Monitor Inventory Levels (Annual & Seasonal Trends)
2. Analyze Sales, Profit, Revenue Metrics for Stores
3. Manage Employee Payroll & Hours
4. Asses Customer Purchase Behaviors
5. Optimize Pricing Strategy for Products

TABLE 3.6

A SAMPLE DATA DICTIONARY

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
CUSTOMER	CUS_CODE	Customer account code	CHAR(5)	99999	10000–99999	Y	PK	
	CUS_LNAME	Customer last name	VARCHAR(20)	Xxxxxxxx		Y		
	CUS_FNAME	Customer first name	VARCHAR(20)	Xxxxxxxx		Y		
	CUS_INITIAL	Customer initial	CHAR(1)	X				
	CUS_RENEW_DATE	Customer insurance renewal date	DATE	dd-mmm-yyyy				
	AGENT_CODE	Agent code	CHAR(3)	999			FK	AGENT
AGENT	AGENT_CODE	Agent code	CHAR(3)	999		Y	PK	
	AGENT_AREACODE	Agent area code	CHAR(3)	999		Y		
	AGENT_PHONE	Agent telephone number	CHAR(8)	999–9999		Y		
	AGENT_LNAME	Agent last name	VARCHAR(20)	Xxxxxxxx		Y		
	AGENT_YTD_SLS	Agent year-to-date sales	NUMBER(9,2)	9,999,999.99				

FK	= Foreign key
PK	= Primary key
CHAR	= Fixed character length data (1 – 255 characters)
VARCHAR	= Variable character length data (1 – 2,000 characters)
NUMBER	= Numeric data. NUMBER (9,2) is used to specify numbers with up to nine digits, including two digits to the right of the decimal place. Some RDBMS permit the use of a MONEY or CURRENCY data type.

Questions

1. Which stores have the most sales?
2. Which Products / Category sell the most?
3. Which Products / Category sell the most per season?
4. What is the average amount of hours that an Employee / Manager works at X store?
5. Which customers have bought the most per specific month?
6. Which products are bought in large quantities?

SQL QUERIES

Question 1:

```
SELECT DISTINCT StoreID, SUM(Total) as total_sales
FROM Transactions
GROUP BY StoreID
ORDER BY TotalSales DESC;
```

Question 2:

```
SELECT DISTINCT p.ProductName, p.Category, SUM(s.Quantity) AS
QuantitySold
FROM Sales s
JOIN Products p ON ProductID = p.ProductID
GROUP BY p.ProductName, p.Category
ORDER BY QuantitySold DESC;
```

Question 4:

```
SELECT DISTINCT e.EmployeeID, e.StoreID, AVG(
FROM TimeTracking tt
JOIN Employees e ON tt.EmployeeID + e.EmployeeID
WHERE e.StoreID = “HappyPaws”
GROUP BY e.EmployeeID, e.StoreID;
```

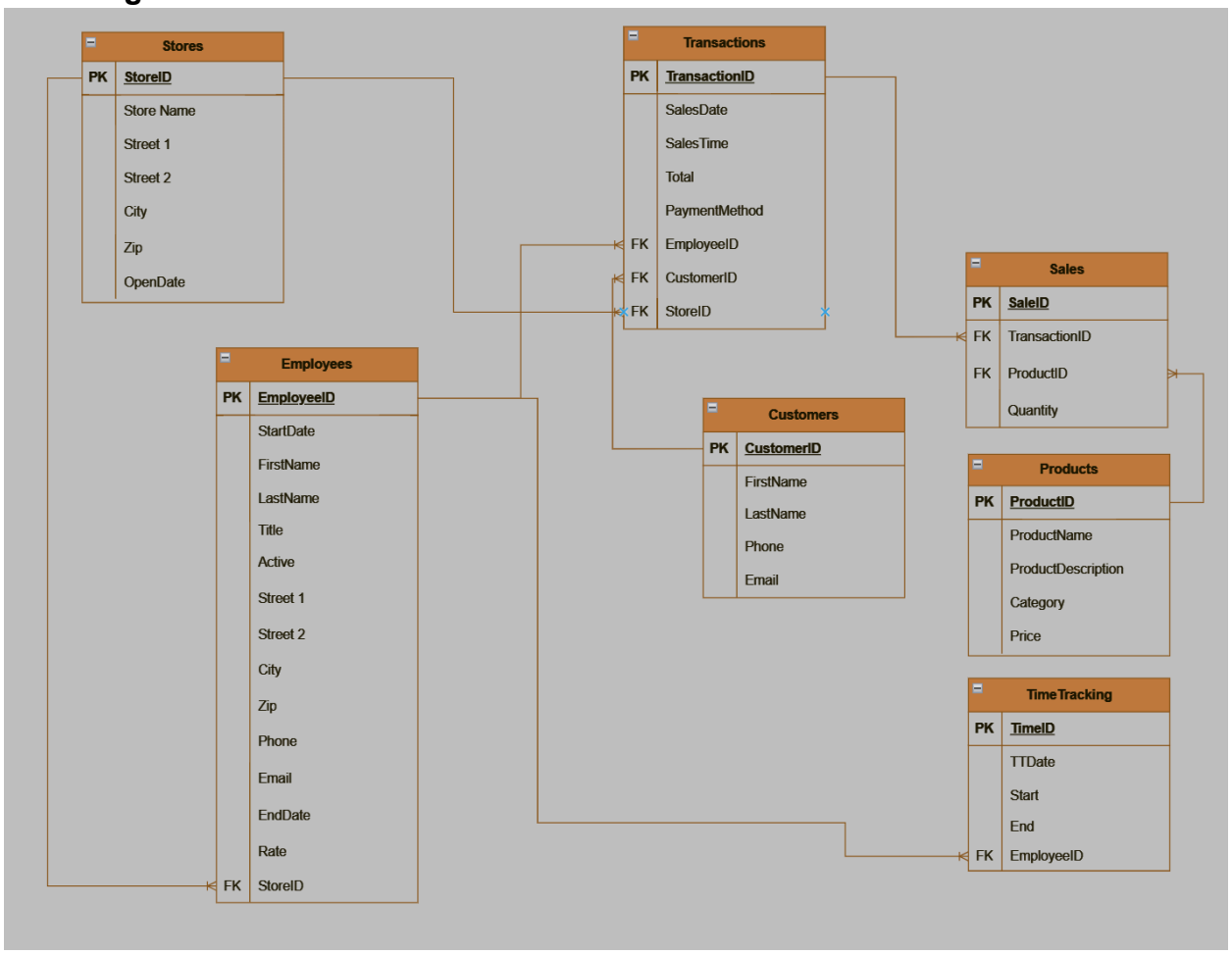
Question 5:

```
SELECT DISTINCT t.CustomerID, MONTH(t.SalesDate) AS Month,
SUM(t.Total) AS TotalSpent
FROM Transactions t
GROUP BY t.CustomerID, Month
Order BY TotalSpent DESC;
```

Question 6:

```
SELECT DISTINCT p.ProductName, SUM(s.Quantity) AS QuantitySold
FROM Sales s
JOIN Products p ON s.ProductID = p.ProductID
GROUP BY p.ProductName
HAVING QuantitySold > 1000000;
ORDER BY QuantitySold DESC;
```

ERD Diagram


Stores
PK StoreID
Store Name
Street 1
Street 2
City
Zip
OpenDate
Transactions
PK TransactionID
SalesDate
SalesTime
Total
PaymentMethod
FK EmployeeID
FK CustomerID
FK StoreID
Sales
PK SaleID
FK TransactionID
FK ProductID
Quantity
Employees
PK EmployeeID
StartDate
FirstName
LastName
Title
Active
Street 1
Street 2
City
Zip
Phone
Email
EndDate
Rate
FK StoreID
Customers
PK CustomerID
FirstName
LastName
Phone
Email
Products
PK ProductID
ProductName
ProductDescription
Category
Price
TimeTracking
PK TimeID
TTDate
Start
End
FK EmployeeID

Proposal Assignment

Requirements

What should be included in the proposal report:

- All members' names, and identify the team coordinator.
- Title of the project/database.
- A general description of the objectives of your database system including the scope of the database.
- Specific users' requirements that the system will be able to address.
- Your choice of DBMS (Microsoft SQL or MySQL)

Your system should contain at least 6 tables/entities including composite entities. The system should not be one of our previous assignments. Make assumptions as needed and document them. You can also consider me as your client, and you can ask for any details on the project discussion board. Each Database project should have at least 10 inserted records in each main entity to provide the required reports.

Names: Maysum, Garret, Andrew, Denzel, Maddie
Database Name: Pet Store
Database Software: MySQL

User Requirements

- Employees (Create Hours - Clocking in)
- Direct Manager (Modify, Update Hours, Create Inventory)
- Admin (Direct Manager + Additional Permissions)

To Do: Write a short description, define scope, expand on specific user's requirements

STORE TABLE - Store # (PK) - City - State - Zip Code - Services offered - Manager?	PROFIT TABLE - Direct Sales - Revenue - Profit - Inventory? - By Time Unit? - Q, M, Y?	PERMISSIONS TABLE - Permission # (1, 2, 3) - Authorization - Employees - Direct Manager - Admin
EMPLOYEE TABLE - Employee ID # - First Name - Last Name - Time Sheets Time in & Time out* - Work Schedules? - Direct Deposit Acc #	CLIENT TABLE - Client ID # - First & Last Name - Pet - Appointment? - Member Join Date? - Active Member?	PET TABLE? - Pet ID # (PK) - Name - Type of Animal - Breed - Age - Color

- Permission #		

Comments/ Potential Changes:

- Change time sheets into two separate attributes (Time-in/Time-out)?
- Add PK for stores
- Maybe we add a Manager for each store under stores table?
- Add age and color for pets just to have more data
- We will also need to add a Pet # (PK). Business Rules: one to many optional (client PK to Pet #)
- We could also create a “Member Join Date” for the client table if we wanted to add more attributes and treat it as if any clients would need to be a part of the store’s “Membership”
- Added Active attribute in case we do decide to do the Member Join Date. That’ll be easy data expansion.
- Services offered could include grooming, nail trims, day care, overnight boarding (Just listing things for when we do populate the entries.
- I think for profit it would be more appropriate to have daily, monthly, and yearly. It should allow for much more data. Quarterly should be able to be found through queries if we have days, months, and years entered.
- I think the appointment date is a good addition. We could store it as a numeric. I.e.INSERT INTO Clients (`Date`) VALUES (STR_TO_DATE('09/18/2024', '%m/%d/%Y'));
- I’m not sure about work schedules in regards to how we would do it. I guess we could just assume that all employees work specific days?

Additional GroupMe Suggestions

- Remove Profit Table and Permissions Table
- Add Inventory Table (Count, date?, etc)
- Add Product Table (Product ID, Description, Price)

PetStoreDiagram.drawio.pdf

Explanation \\

- The **Transactions** table records the overall purchase, and each transaction can include multiple items (products/services).
- The **Sales** table holds the individual products or services bought, all linked by a **Transaction ID**.
- The **Store ID** allows for tracking profit by store.
- The **Products** table links to a **Category** table to distinguish between products and services.

Submitted Term Project Proposal

Project Members: Denzel Chike, Maysum Farahat, Garret Gonzales, Andrew Summitt (coordinator), Maddie Ward

Title: Pet Store Database

Database Description: This database will be able to store and retrieve information about pet stores in a small chain

Variables : Store Attributes (city, state, country, date opened), Employee Identifiers (name, address, contact, hours), Customer Details (name, contact, pet), Transaction Info (store, date, amount, product, quantity), Products (name, description, category, price)

Project Scope: The database will store information for the pet stores. This database will be able to sort through information based on each store as needed by the store owner or manager. For example, the owner might want to see an overview of profit by each store. They can aggregate the transaction amounts, analyze sales over time, and compare performance by location. Additionally, a store manager might want to manage stock. They can track inventory by extracting product details and quantity purchased. The primary purpose of this database is to enable data storage and facilitate business intelligence operations. The database should enable insightful reporting.

Choice of DBMS: MySQL

Miscellaneous Notes

Products::

1. BARK BE GONE
- Type: Dog Shampoo
- Size: 16 oz
- Price: $14.99
2. PAWFECT CHEW
- Type: Dental Bone

Price: $8.99

3. SNUGGLE PUPS
- Type: Dog Bed
- Price: $49.99
4. TAIL WAGGERS
- Type: Dog Treats
- Price: $12.99
5. FETCH MASTER
- Type: Tennis Ball Set
- Price: $9.99
6. WOOF WALKER
- Type: Dog Leash
- Price: $19.99
7. DINNER TIME
- Type: Dog Bowl
- Price: $15.99
8. PUPPY PAD PLUS
- Type: Training Pads
- Price: $24.99

DATA TYPES

When creating the tables, I decided to use the data type VARCHAR(n) for most of the columns. The reason is because TEXT data types are utilized for larger blocks of text, and do not allow you to specify a maximum length.

Stores

OpenDate: DATE data type was used which stores dates in the format of (YYYY-MM-DD)

Employee Table:

Title Column: has a Check Constraint, which only allows you to enter values in the database that are defined within the check constraint list. The list I created contains titles such as Manager, Sales Associate, Cashier, and Inventory Specialist.

Active Column: I used a BIT type which acts as a boolean. 1 means that the employee is active and 0 means the employee is inactive.

Zip Column: Used VARCHAR(n) and not INT because INT is not suitable for leading 0's; and we need to keep the formatting intact for zip codes.

Rate Column: DECIMAL was used because it makes it more accurate and flexible. The MONEY data type has a fixed scale of four decimal places (example: 12356.9085) this is unnecessary for our currency value. We used DECIMAL(10,2) which means up to 10 values and 2 decimal places.

StartDate & EndDate: DATE data type was used which stores dates in the format of (YYYY-MM-DD)

PRIMARY KEYS

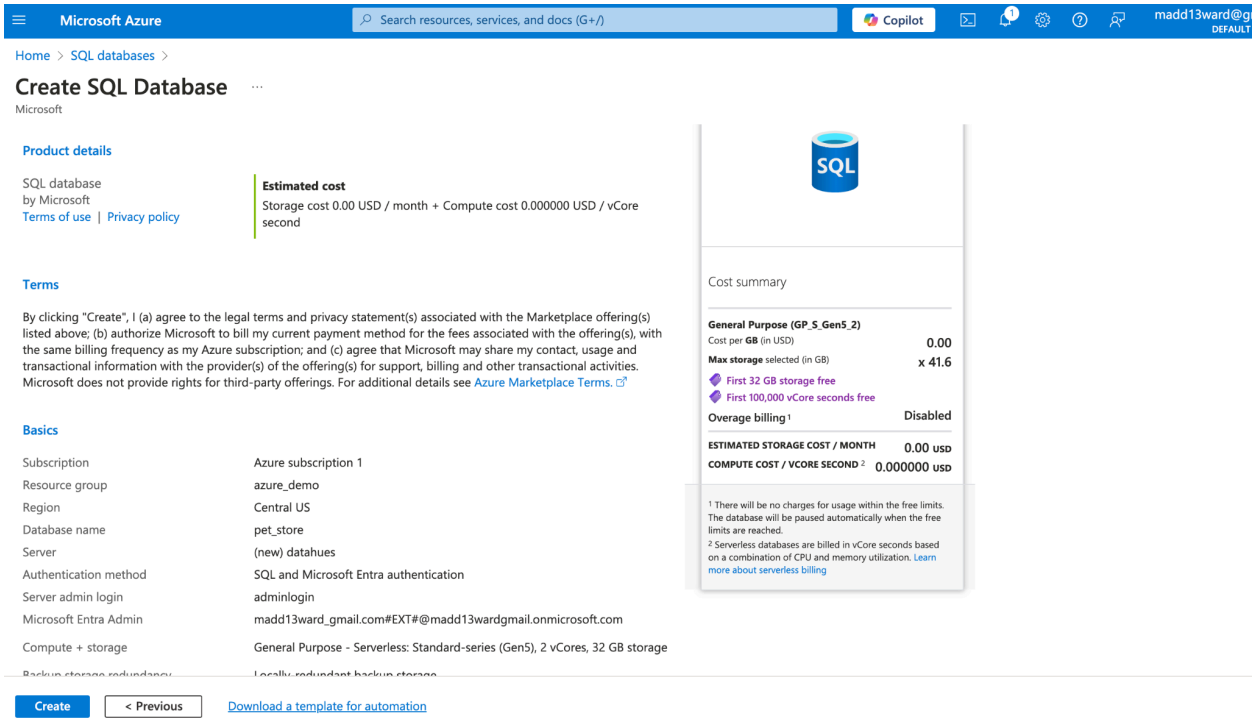
When creating the primary keys we used the IDENTITY(Starting point, the increment value) function which to be exact we used:

IDENTITY(1,1): so the the first row will start at 1, and each subsequent row will increment by 1 (2, 3, 4, etc.).

username: adminlogin

password: Testpetstore1

Azure



SALES

1. Transaction ID: S1001
- Date: 10/30/2024
- Product: BARK BE GONE Shampoo
- Quantity: 2
- Unit Price: $14.99
- Total: $29.98
- Payment: Credit Card
2. Transaction ID: S1002
- Date: 10/30/2024
- Product: TAIL WAGGERS Treats
- Quantity: 3
- Unit Price: $12.99
- Total: $38.97
- Payment: Cash
3. Transaction ID: S1003
- Date: 10/31/2024
- Product: SNUGGLE PUPS Bed
- Quantity: 1
- Unit Price: $49.99

- Total: $49.99
- Payment: Debit Card

4. Transaction ID: S1004
- Date: 10/31/2024
- Product: FETCH MASTER Ball Set
- Quantity: 4
- Unit Price: $9.99
- Total: $39.96
- Payment: Credit Card

5. Transaction ID: S1005
- Date: 10/31/2024
- Product: DINNER TIME Bowl
- Quantity: 2
- Unit Price: $15.99
- Total: $31.98
- Payment: Cash

6. Transaction ID: S1006
- Date: 11/01/2024
- Product: PAWFECT CHEW Bone
- Quantity: 5
- Unit Price: $8.99
- Total: $44.95
- Payment: Credit Card

7. Transaction ID: S1007
- Date: 11/01/2024
- Product: WOOF WALKER Leash
- Quantity: 1
- Unit Price: $19.99
- Total: $19.99
- Payment: Debit Card

8. Transaction ID: S1008
- Date: 11/01/2024
- Product: PUPPY PAD PLUS
- Quantity: 2
- Unit Price: $24.99
- Total: $49.98
- Payment: Credit Card

9. Transaction ID: S1009
- Date: 11/01/2024
- Product: BARK BE GONE Shampoo

- Quantity: 3
- Unit Price: $14.99
- Total: $44.97
- Payment: Cash

10. Transaction ID: S1010

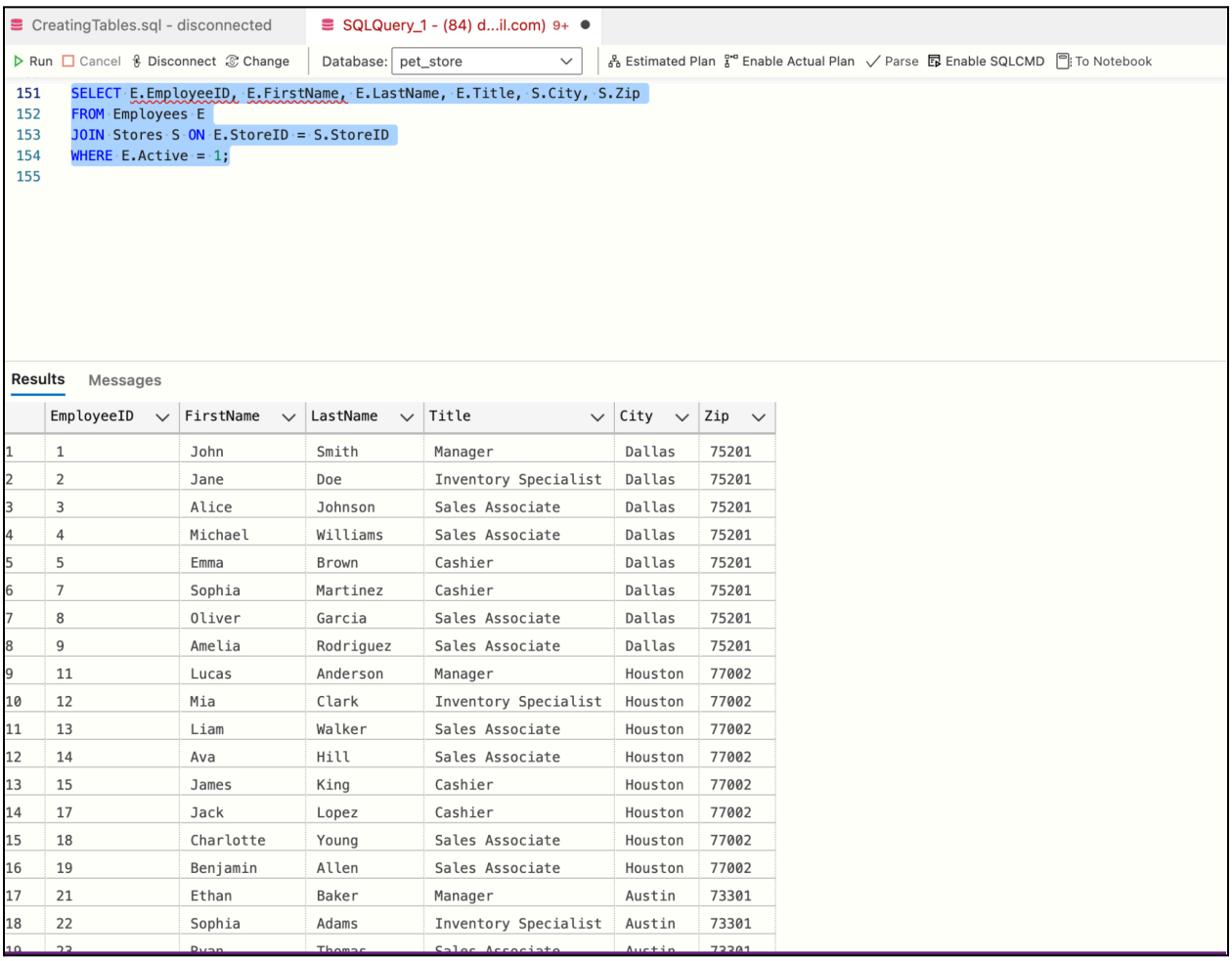
- Date: 11/01/2024
- Product: TAIL WAGGERS Treats
- Quantity: 4
- Unit Price: $12.99
- Total: $51.96
- Payment: Credit Card

```
140
141
142   SELECT *
143   FROM Stores
```

Results Messages

StoreID	Street1	Street2	City	Zip	OpenDate	StoreName
1	123 Elm St	Suite 200	Dallas	75201	2021-05-15	Pet Haven
2	456 Maple Ave	*NULL*	Houston	77002	2020-09-10	Critter Corner
3	789 Oak St	Floor 1	Austin	73301	2019-11-23	Furry Friends
4	101 Pine Dr	*NULL*	San Antonio	78205	2022-03-17	The Pet Place
5	234 Cedar Ln	Apt 5	Fort Worth	76102	2021-07-30	Pet Paradise
6	678 Birch Rd	*NULL*	Plano	75023	2020-12-01	Happy Paws
7	910 Walnut St	Suite 300	El Paso	79901	2019-08-14	Pet World
8	345 Willow St	*NULL*	Corpus Christi	78401	2021-06-20	Paw Prints

1. What are the various roles of active employees?



	EmployeeID	FirstName	LastName	Title	City	Zip
1	1	John	Smith	Manager	Dallas	75201
2	2	Jane	Doe	Inventory Specialist	Dallas	75201
3	3	Alice	Johnson	Sales Associate	Dallas	75201
4	4	Michael	Williams	Sales Associate	Dallas	75201
5	5	Emma	Brown	Cashier	Dallas	75201
6	7	Sophia	Martinez	Cashier	Dallas	75201
7	8	Oliver	Garcia	Sales Associate	Dallas	75201
8	9	Amelia	Rodriguez	Sales Associate	Dallas	75201
9	11	Lucas	Anderson	Manager	Houston	77002
10	12	Mia	Clark	Inventory Specialist	Houston	77002
11	13	Liam	Walker	Sales Associate	Houston	77002
12	14	Ava	Hill	Sales Associate	Houston	77002
13	15	James	King	Cashier	Houston	77002
14	17	Jack	Lopez	Cashier	Houston	77002
15	18	Charlotte	Young	Sales Associate	Houston	77002
16	19	Benjamin	Allen	Sales Associate	Houston	77002
17	21	Ethan	Baker	Manager	Austin	73301
18	22	Sophia	Adams	Inventory Specialist	Austin	73301
19	23	Ryan	Thomas	Sales Associate	Austin	73301

```
138
139    SELECT S.StoreName, SUM(T.Total) AS TotalSales
140    FROM Transactions T
141    JOIN Stores S ON T.StoreID = S.StoreID
142    GROUP BY S.StoreName;
143
144
```

Results | Messages

	StoreName	TotalSales
1	Critter Corner	1031.15
2	Furry Friends	1915.65
3	Paw Prints	199.99
4	Pet Haven	250.75
5	The Pet Place	1301.20

2. What are the total sales by store name?
3. What is the distribution of payment methods by transactions?

```
160
161    SELECT T.PaymentMethod, COUNT(*) AS NumberOfTransactions
162    FROM Transactions T
163    GROUP BY T.PaymentMethod;
164
```

Results | Messages

	PaymentMethod	NumberOfTransactions
1	Card	5
2	Cash	5

```sql
SELECT P.ProductName, P.Price, SUM(S.Quantity * P.Price) AS TotalRevenue
FROM Products P
JOIN Sales S ON P.ProductID = S.ProductID
GROUP BY P.ProductName, P.Price;
```

Results Messages

	ProductName	Price	TotalRevenue
1	PAWFECT CHEW	8.99	35.96
2	FETCH MASTER	9.99	49.95
3	TAIL WAGGERS	12.99	90.93
4	BARK BE GONE	14.99	89.94
5	DINNER TIME	15.99	31.98
6	WOOF WALKER	19.99	99.95
7	PUPPY PAD PLUS	24.99	74.97
8	SNUGGLE PUPS	49.99	199.96

4. How much revenue has each product generated?
5. What are the average minutes of employees worked at Happy Paws?

```sql
SELECT e.FirstName, e.LastName, AVG(DATEDIFF(MINUTE, tt.StartTime, tt.EndTime)) AS AvgMinutesWorked
FROM TimeTracking tt
JOIN Employees e ON tt.EmployeeID = e.EmployeeID
WHERE e.StoreID = 1
GROUP BY e.FirstName, e.LastName;
```

lts Messages

FirstName	LastName	AvgMinutesWorked
Emma	Brown	480
Jane	Doe	480
Oliver	Garcia	480
Alice	Johnson	480
Noah	Martinez	480
Sophia	Martinez	480
Amelia	Rodriguez	480
John	Smith	480
Ethan	Taylor	480
Michael	Williams	480