Coding Challenge 1 - Answers

1. Provide a SQL script that initialises the database for the pet adoption platform "PetPals".

- CREATE DATABASE IF NOT EXISTS PetPals;
- USE PetPals;

2. Create tables for pets, shelters, donations, adoption events, and participants.

```sql
CREATE TABLE Pets (
    PetID INT PRIMARY KEY AUTO_INCREMENT,
    Name VARCHAR(50) NOT NULL,
    Age INT NOT NULL,
    Breed VARCHAR(50),
    Type VARCHAR(50) NOT NULL,
    AvailableForAdoption TINYINT(1) NOT NULL DEFAULT 0
);
-- Shelters table
CREATE TABLE Shelters (
    ShelterID INT PRIMARY KEY AUTO_INCREMENT,
    Name VARCHAR(100) NOT NULL,
    Location VARCHAR(255) NOT NULL
);
-- Donations table
CREATE TABLE Donations (
    DonationID INT PRIMARY KEY AUTO_INCREMENT,
    DonorName VARCHAR(100) NOT NULL,
    DonationType VARCHAR(50) NOT NULL,
    DonationAmount DECIMAL(10,2) DEFAULT NULL,
    DonationItem VARCHAR(255) DEFAULT NULL,
    DonationDate DATETIME NOT NULL
);

CREATE TABLE AdoptionEvents (
    EventID INT PRIMARY KEY AUTO_INCREMENT,
    EventName VARCHAR(100) NOT NULL,
    EventDate DATETIME NOT NULL,
    Location VARCHAR(255) NOT NULL
);

-- Participants table
CREATE TABLE Participants (
    ParticipantID INT PRIMARY KEY AUTO_INCREMENT,
    ParticipantName VARCHAR(100) NOT NULL,
    ParticipantType VARCHAR(50) NOT NULL,
    EventID INT,
    FOREIGN KEY (EventID) REFERENCES AdoptionEvents(EventID)
);
```
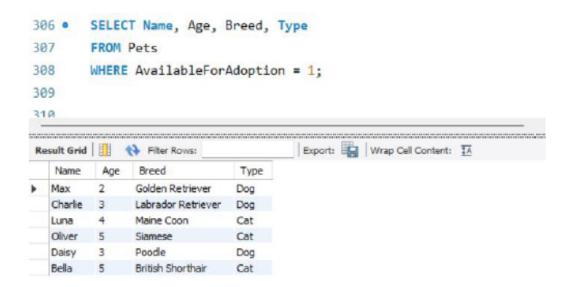
3. Define appropriate primary keys, foreign keys, and constraints

```
•   ALTER TABLE Pets
    ADD CONSTRAINT Available_Check CHECK (AvailableForAdoption IN (0,1));

•   ALTER TABLE Donations
  ⊖ ADD CONSTRAINT DonationType_Check CHECK (
        DonationType IN ('Cash', 'Item')
    );
```

4. Ensure the script handles potential errors

It is handled by the "If Not Exists" check for the database and tables

5. Write an SQL query that retrieves a list of available pets (those marked as available for adoption) from the "Pets" table. Include the pet's name, age, breed, and type in the result set. Ensure that the query filters out pets that are not available for adoption.

```
306 •    SELECT Name, Age, Breed, Type
307      FROM Pets
308      WHERE AvailableForAdoption = 1;
309
31A
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: TA

Name	Age	Breed	Type
Max	2	Golden Retriever	Dog
Charlie	3	Labrador Retriever	Dog
Luna	4	Maine Coon	Cat
Oliver	5	Siamese	Cat
Daisy	3	Poodle	Dog
Bella	5	British Shorthair	Cat

6. Write an SQL query that retrieves the names of participants (shelters and adopters) registered for a specific adoption event. Use a parameter to specify the event ID. Ensure that the query joins the necessary tables to retrieve the participant names and types.

```
310 •    SELECT ParticipantName, ParticipantType
311      FROM Participants
312      JOIN AdoptionEvents ON Participants.EventID = AdoptionEvents.EventID
313      WHERE AdoptionEvents.EventID = 2;
314
```

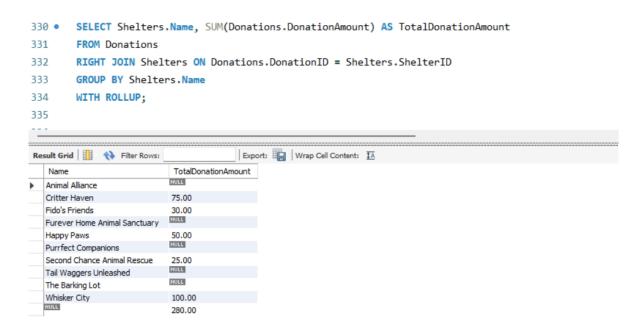| Result Grid | Filter Rows: | Export: | Wrap Cell Content: |
| --- | --- | --- |
| ParticipantName | ParticipantType |
| Furever Home | Shelter |
| David Lee | Adopter |

7. Create a stored procedure in SQL that allows a shelter to update its information (name and location) in the "Shelters" table. Use parameters to pass the shelter ID and the new information. Ensure that the procedure performs the update and handles potential errors, such as an invalid shelter ID.

```
CREATE PROCEDURE UpdateShelter(
    IN shelterID INT,
    IN newName VARCHAR(100),
    IN newLocation VARCHAR(255)
)
BEGIN
    UPDATE Shelters
    SET Name = newName, Location = newLocation
    WHERE ShelterID = shelterID;

    IF @@ROW_COUNT = 0 THEN
        SIGNAL SQLSTATE '45000' SET MESSAGE_TEXT = 'Invalid Shelter ID';
    END IF;
END;
```
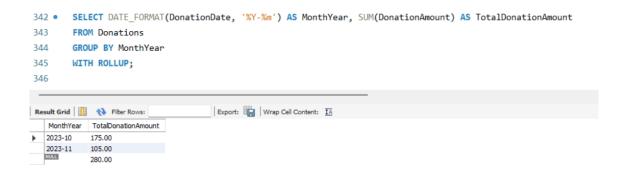
8. Write an SQL query that calculates and retrieves the total donation amount for each shelter (by shelter name) from the "Donations" table. The result should include the shelter name and the total donation amount. Ensure that the query handles cases where a shelter has received no donations.

```
330 •    SELECT Shelters.Name, SUM(Donations.DonationAmount) AS TotalDonationAmount
331      FROM Donations
332      RIGHT JOIN Shelters ON Donations.DonationID = Shelters.ShelterID
333      GROUP BY Shelters.Name
334      WITH ROLLUP;
335
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

Name	TotalDonationAmount
Animal Alliance	NULL
Critter Haven	75.00
Fido's Friends	30.00
Furever Home Animal Sanctuary	NULL
Happy Paws	50.00
Purrfect Companions	NULL
Second Chance Animal Rescue	25.00
Tail Waggers Unleashed	NULL
The Barking Lot	NULL
Whisker City	100.00
NULL	280.00

9. Write an SQL query that retrieves the names of pets from the "Pets" table that do not have an owner (i.e. where "OwnerID" is null). Include the pet's name, age, breed, and type in the result set.

```
•    SELECT Name, Age, Breed, Type
     FROM Pets
     WHERE OwnerID IS NULL;
```

10. Write an SQL query that retrieves the total donation amount for each month and year (e.g.. January 2023) from the "Donations" table. The result should include the month-year and the corresponding total donation amount. Ensure that the query handles cases where no donations were made.

```
342 •    SELECT DATE_FORMAT(DonationDate, '%Y-%m') AS MonthYear, SUM(DonationAmount) AS TotalDonationAmount
343      FROM Donations
344      GROUP BY MonthYear
345      WITH ROLLUP;
346
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

MonthYear	TotalDonationAmount
2023-10	175.00
2023-11	105.00
NULL	280.00

11. Retrieve a list of distinct breeds for all pets that are either aged between 1 and 3 years or older than 5 years.

```
347 •    SELECT DISTINCT Breed
348      FROM Pets
349      WHERE (Age BETWEEN 1 AND 3) OR Age > 5;
350
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

Breed
Golden Retriever
Persian
Labrador Retriever
German Shepherd
French Bulldog
Poodle

12. Retrieve a list of pets and their respective shelters where the pets are currently available for adoption.

```
351 •    SELECT Pets.*, Shelters.Name AS ShelterName
352      FROM Pets
353      JOIN Shelters ON Pets.PetID = Shelters.ShelterID
354      WHERE AvailableForAdoption = 1;
355
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

PetID	Name	Age	Breed	Type	AvailableForAdoption	ShelterName
1	Max	2	Golden Retriever	Dog	1	Happy Paws
3	Charlie	3	Labrador Retriever	Dog	1	Second Chance Animal Rescue
4	Luna	4	Maine Coon	Cat	1	Tail Waggers Unleashed
6	Oliver	5	Siamese	Cat	1	The Barking Lot
8	Daisy	3	Poodle	Dog	1	Animal Alliance
10	Bella	5	British Shorthair	Cat	1	Purrfect Companions

13. Find the total number of participants in events organised by shelters located in specific city. Example: City = Chennai

```
356 •    SELECT COUNT(*) AS TotalParticipants
357      FROM Participants
358      JOIN AdoptionEvents ON Participants.EventID = AdoptionEvents.EventID
359      WHERE AdoptionEvents.Location = 'Careville';
360
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

TotalParticipants
0

14. Retrieve a list of unique breeds for pets with ages between 1 and 5 years.

```
361 •   SELECT DISTINCT Breed
362     FROM Pets
363     WHERE Age BETWEEN 1 AND 5;
364
```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:

Breed
Golden Retriever
Persian
Labrador Retriever
Maine Coon
German Shepherd
Siamese
French Bulldog
Poodle
Ragdoll
British Shorthair

15. Find the pets that have not been adopted by selecting their information from the 'Pet' table.

```
•   SELECT PetID, Name, Age, Breed, Type
    FROM Pets
⊖ WHERE NOT EXISTS (
        SELECT * FROM AdoptionEvents
        WHERE AdoptionEvents.PetID = Pets.PetID
  );
```

16. Retrieve the names of all adopted pets along with the adopter's name from the 'Adoption' and 'User' tables.

```
•   SELECT Pets.Name AS PetName, Users.Name AS AdopterName
    FROM Pets
    JOIN Adoption ON Pets.PetID = Adoption.PetID
    JOIN Users ON Adoption.UserID = Users.UserID;
```
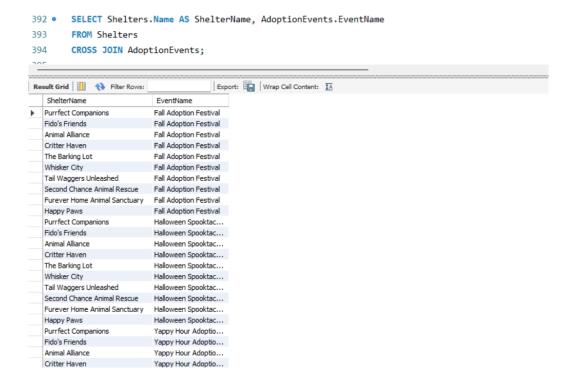
17. Retrieve a list of all shelters along with the count of pets currently available for adoption in each shelter.

```sql
SELECT Shelters.Name AS ShelterName, COUNT(*) AS AvailablePets
FROM Shelters
JOIN Pets ON Shelters.ShelterID = Pets.ShelterID
WHERE AvailableForAdoption = 1
GROUP BY Shelters.ShelterID;
```

18. Find pairs of pets from the same shelter that have the same breed.

```sql
SELECT Pet1.Name AS Pet1Name, Pet2.Name AS Pet2Name
FROM Pets AS Pet1
JOIN Pets AS Pet2 ON Pet1.ShelterID = Pet2.ShelterID
WHERE Pet1.Breed = Pet2.Breed AND Pet1.PetID <> Pet2.PetID;
```

19. List all possible combinations of shelters and adoption events.

```sql
392   SELECT Shelters.Name AS ShelterName, AdoptionEvents.EventName
393   FROM Shelters
394   CROSS JOIN AdoptionEvents;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

ShelterName	EventName
Purrfect Companions	Fall Adoption Festival
Fido's Friends	Fall Adoption Festival
Animal Alliance	Fall Adoption Festival
Critter Haven	Fall Adoption Festival
The Barking Lot	Fall Adoption Festival
Whisker City	Fall Adoption Festival
Tail Waggers Unleashed	Fall Adoption Festival
Second Chance Animal Rescue	Fall Adoption Festival
Furever Home Animal Sanctuary	Fall Adoption Festival
Happy Paws	Fall Adoption Festival
Purrfect Companions	Halloween Spooktac...
Fido's Friends	Halloween Spooktac...
Animal Alliance	Halloween Spooktac...
Critter Haven	Halloween Spooktac...
The Barking Lot	Halloween Spooktac...
Whisker City	Halloween Spooktac...
Tail Waggers Unleashed	Halloween Spooktac...
Second Chance Animal Rescue	Halloween Spooktac...
Furever Home Animal Sanctuary	Halloween Spooktac...
Happy Paws	Halloween Spooktac...
Purrfect Companions	Yappy Hour Adoptio...
Fido's Friends	Yappy Hour Adoptio...
Animal Alliance	Yappy Hour Adoptio...
Critter Haven	Yappy Hour Adoptio...

20. Determine the shelter that has the highest number of adopted pets.

```sql
SELECT Shelters.Name AS ShelterName, COUNT(*) AS TotalAdoptedPets
FROM Shelters
JOIN Pets ON Shelters.ShelterID = Pets.ShelterID
JOIN Adoption ON Pets.PetID = Adoption.PetID
GROUP BY Shelters.ShelterID
ORDER BY TotalAdoptedPets DESC
LIMIT 1;
```