**📄 Zoo Shop Database Design Report**

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**Database Name**: Zoo Shop  
**ER Diagram Link**: [https://lucid.app/lucidchart/b969963d-2b7f-4d08-bb97-2bc27998fba2/edit?invitationId=inv\_e3836027-6936-4156-ac94-494568839749&page=0\_0#](https://lucid.app/lucidchart/b969963d-2b7f-4d08-bb97-2bc27998fba2/edit?invitationId=inv_e3836027-6936-4156-ac94-494568839749&page=0_0%23)

**1. System Overview**

The Zoo Shop is a retail business that sells pet-related products and live animals. Its offerings include pet accessories (such as collars and cages), pet food, toys, and small pets like snakes, rabbits, and fish. The shop serves individual customers who are primarily pet owners. The store needs to manage its inventory, record sales transactions, and track supplier information. Each product in the inventory has a category, price, and stock quantity. When a sale is made, the system should record which customer purchased which items and when. The system also tracks which suppliers deliver which products or pets, and when restocks occur. Reports can include best-selling products, inventory levels, and supplier performance.

**2. Entity Descriptions**

**A screenshot of a computer screen

AI-generated content may be incorrect.  
  
The table below outlines the key entities (tables) in the Zoo Shop database and summarizes the purpose of each:**

|  |  |
| --- | --- |
| **Entity Name** | **Description** |
| Customer | Stores information about customers who buy products or pets from the shop. |
| Product | Stores information about non-living items such as toys, food, and accessories. |
| Pet | Represents live animals sold in the store, with unique characteristics. |
| Category | Contains categories to classify products (e.g., Food, Accessories, Toys). |
| Supplier | Stores details about suppliers that provide products or pets to the store. |
| Sale | Captures individual transactions when a customer makes a purchase. |
| Sale\_product | Records which products were sold in a given sale, with quantity and price. |
| Sale\_pet | Records the sale of individual pets, linking one pet to one sale. |

**2.1 Customer**

Stores information about customers who make purchases at the Zoo Shop.

|  |  |  |
| --- | --- | --- |
| **Column** | **Data Type** | **Description** |
| customer\_id | SERIAL PRIMARY KEY | Unique customer ID |
| first\_name | VARCHAR(50) | First name |
| last\_name | VARCHAR(50) | Last name |
| email | VARCHAR(100) | Email address |
| phone | VARCHAR(20) | Phone number |
| street\_address | VARCHAR(100) | Address |
| city | VARCHAR(50) | City |
| state | VARCHAR(50) | State |
| postal\_code | VARCHAR(10) | Postal/ZIP code |
| created\_at | DATE | Registration date |

**2.2 Product**

Represents non-living inventory items such as toys, food, and accessories.

|  |  |  |
| --- | --- | --- |
| **Column** | **Data Type** | **Description** |
| product\_id | SERIAL PRIMARY KEY | Unique product ID |
| product\_name | VARCHAR(100) | Name of the product |
| category\_id | INT (FK) | Linked to product category |
| description | TEXT | Product description |
| price | DECIMAL(10,2) | Unit price |
| stock\_quantity | INT | Available units in stock |
| supplier\_id | INT (FK) | Supplier providing the product |
| created\_at | DATE | Date added to system |

**2.3 Pet**

Represents individual live animals for sale, each with unique characteristics.

|  |  |  |
| --- | --- | --- |
| **Column** | **Data Type** | **Description** |
| pet\_id | SERIAL PRIMARY KEY | Unique pet ID |
| name | VARCHAR(50) | Optional name |
| species | VARCHAR(50) | Species (e.g., rabbit, snake) |
| breed | VARCHAR(50) | Breed (if applicable) |
| age | INT | Age in months or years |
| gender | VARCHAR(10) | Gender of the pet |
| price | DECIMAL(10,2) | Sale price |
| supplier\_id | INT (FK) | Supplier providing the pet |
| arrival\_date | DATE | Date the pet was stocked |
| sold | BOOLEAN | TRUE if pet has been sold |

**2.4 Category**

Lookup table for product types (e.g., Food, Toys, Accessories).

|  |  |  |
| --- | --- | --- |
| **Column** | **Data Type** | **Description** |
| category\_id | SERIAL PRIMARY KEY | Unique category ID |
| category\_name | VARCHAR(50) | Category name |
| description | TEXT | Optional description |

**2.5 Supplier**

Suppliers provide both products and pets to the store.

|  |  |  |
| --- | --- | --- |
| **Column** | **Data Type** | **Description** |
| supplier\_id | SERIAL PRIMARY KEY | Unique supplier ID |
| name | VARCHAR(100) | Name of the supplier |
| email | VARCHAR(100) | Contact email |
| phone | VARCHAR(20) | Contact phone |
| address | VARCHAR(100) | Address |
| city | VARCHAR(50) | City |
| country | VARCHAR(50) | Country |

**2.6 Sale**

Stores sale transaction information.

|  |  |  |
| --- | --- | --- |
| **Column** | **Data Type** | **Description** |
| sale\_id | SERIAL PRIMARY KEY | Unique sale ID |
| customer\_id | INT (FK) | Customer making the purchase |
| sale\_date | DATE | Date of the transaction |
| total\_amount | DECIMAL(10,2) | Total value of the sale |

**2.7 Sale\_product**

Handles product items included in a sale.

|  |  |  |
| --- | --- | --- |
| **Column** | **Data Type** | **Description** |
| sale\_id | INT (FK) | Sale reference |
| product\_id | INT (FK) | Product being sold |
| quantity | INT | Quantity purchased |
| unit\_price | DECIMAL(10,2) | Price at sale time |
| **Primary Key**: (sale\_id, product\_id) |  |  |

**2.8 Sale\_pet**

Handles sales of individual pets.

|  |  |  |
| --- | --- | --- |
| **Column** | **Data Type** | **Description** |
| sale\_id | INT (FK) | Sale reference |
| pet\_id | INT (FK, UNIQUE) | Sold pet (only once) |
| price | DECIMAL(10,2) | Price at sale time |
| **Primary Key**: (sale\_id, pet\_id) |  |  |

**3. Relationships and Justification**

|  |  |  |
| --- | --- | --- |
| **Relationship** | **Type** | **Description** |
| Customer → Sale | One to Many | One customer can place many orders |
| Sale → Sale\_product | One to Many | A sale can contain multiple products |
| Sale → Sale\_pet | One to Many | A sale can include pet purchases |
| Product → Sale\_product | One to Many | A product can appear in many sales |
| Pet → Sale\_pet | One to One | A pet can only be sold once |
| Category → Product | One to Many | One category includes multiple products |
| Supplier → Product | One to Many | A supplier can provide many products |
| Supplier → Pet | One to Many | A supplier can provide many pets |

One-to-one justification:  
The **Pet** and **Sale\_pet** tables are connected by a **one-to-one** relationship. Each pet is a unique living entity and can only be sold once. The diagram reflects this by avoiding crow’s foot notation between **Pet** and **Sale\_pet**, and in implementation, this would be enforced using a **UNIQUE** constraint on **pet\_id** in **Sale\_pet**.

**4. Normalization**

The database is normalized to **Third Normal Form (3NF)**:

* 1NF: All tables contain atomic values with no repeating groups.
* 2NF: All non-key attributes are fully dependent on the primary key.
* 3NF: No transitive dependencies exist, all fields depend only on the key.

This ensures minimal redundancy and maximizes data integrity.

**5. Conclusion**

This database model effectively captures the core operations of a Zoo Shop, including customer management, product and pet inventory, supplier relationships, and transaction tracking. By separating products and pets, it accommodates the unique nature of live animal sales. The design is fully normalized and flexible for future scalability, making it suitable for both daily operations and analytical reporting.