Entities and Relationships in the Zoo ER Diagram

Entities:
Animal
Attributes:
Animal_ID (Primary Key)
Name
Species
Date_of_Birth
Gender
Enclosure_ID (Foreign Key)
Constraints:
 Each animal must have a unique Animal_ID. Species should follow a predefined list of species.
Enclosure
Attributes:
Enclosure_ID (Primary Key)
Name

Size (square meters)
Habitat_Type
Constraints:
1. Each enclosure must have a unique Enclosure_ID.
2. Habitat_Type should match predefined categories like "Savannah," "Aquatic," etc
Zookeeper
Attributes:
Zookeeper_ID (Primary Key)
First_Name
Last_Name
Contact_Number
Specialization (e.g., Reptiles, Mammals, Birds)
Constraints:
1. Each zookeeper must have a unique Zookeeper_ID.

2. Contact_Number must follow a valid phone format.

Relationships:

Animal - Enclosure (Many-to-One)

Each animal is housed in one enclosure, but an enclosure can contain multiple animals.

Represented using a foreign key Enclosure ID in the Animal table.

Zookeeper - Enclosure (Many-to-Many)

A zookeeper can be responsible for multiple enclosures, and each enclosure can be managed by multiple zookeepers.

Implemented using a junction table

Zookeeper_Enclosure:

- Zookeeper_ID (Foreign Key)
- 2. Enclosure_ID (Foreign Key)

Justification of Constraints:

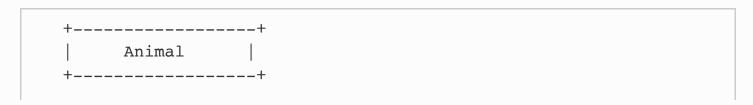
The **Animal-Enclosure** relationship ensures that each animal has a designated space while allowing multiple animals to be grouped in one enclosure for social or environmental reasons.

The **Zookeeper-Enclosure** relationship captures the reality that zookeepers often specialize in certain types of animals and manage multiple enclosures.

The **Species constraint** in the Animal table ensures data consistency and prevents incorrect entries.

The **Contact_Number constraint** for zookeepers ensures that valid phone numbers are stored.

ER Diagram



```
Animal_ID (PK)
 Name
 Species
Date of Birth
Gender
 Enclosure_ID (FK)
 ----+
        (Many-to-One)
----+
 Enclosure
+----+
Enclosure_ID (PK)
 Name
Size
Habitat_Type
       (Many-to-Many via Zookeeper Enclosure)
----+
  Zookeeper
 ----+
Zookeeper_ID (PK)
First Name
Last Name
Contact_Number
Specialization
+----+
```