Entities, Attributes, and Keys for the Finsbury Happy Zoo Scenario

1. **Entity: Enclosure**
    - **Attributes**:
        - **EnclosureNumber** (Primary Key): Unique identifier for each enclosure.
        - **HabitatType**: Type of habitat (e.g., forest, tundra).
        - **Size**: Size of the enclosure in square metres.
        - **MainFeature**: The main feature of the enclosure (e.g., stream, cave).
    - **Relationships**:
        - Can contain multiple animals.
        - Matches with species for habitat suitability.
2. **Entity: Animal**
    - **Attributes**:
        - **AnimalID** (Primary Key): Unique identifier for each animal.
        - **Name**: Name of the animal.
        - **DateOfBirth**: Date of birth of the animal.
        - **Diet**: Type of diet (e.g., herbivore, carnivore).
        - **Description**: A general description of the animal.
    - **Relationships**:
        - Assigned to an enclosure.
        - Linked to species.
        - Notes can be recorded for each animal.
3. **Entity: Species**
    - **Attributes**:
        - **SpeciesName** (Primary Key): The species name (e.g., Lion, Penguin).
        - **Description**: A description of the species.
        - **HabitatType**: The habitat type the species prefers (e.g., forest, tundra).
    - **Relationships**:
        - Multiple animals belong to one species.
        - Matches with enclosures to determine habitat suitability.

4. **Entity: Enclosure Assignment**
    - **Attributes**:
        - **AnimalID** (Foreign Key): Identifies the animal placed in an enclosure.
        - **EnclosureNumber** (Foreign Key): Identifies the enclosure the animal is placed in.
        - **StartDate**: The date the animal was placed in the enclosure.
        - **EndDate** (Optional): The date the animal was removed or transferred to another enclosure.
    - **Relationships**:
        - Links animals to enclosures (one-to-many relationship).
        - Records movement of animals between enclosures.
5. **Entity: Animal Note**
    - **Attributes**:
        - **NoteID** (Primary Key): Unique identifier for each note.
        - **AnimalID** (Foreign Key): Identifies the animal the note refers to.
        - **NoteDate**: Date the note was recorded.
        - **NoteContent**: The content of the note (e.g., health observations).
    - **Relationships**:
        - Linked to an animal.
6. **Entity: Species Compatibility**
    - **Attributes**:
        - **SpeciesA** (Composite Primary Key with SpeciesB): Identifies the first species in the compatibility relationship.
        - **SpeciesB** (Composite Primary Key with SpeciesA): Identifies the second species in the compatibility relationship.
        - **CompatibilityRating**: Compatibility score between the species (1 to 5).
    - **Relationships**:
        - Defines the compatibility between two species.
7. **Entity: Enclosure Species Capacity**
    - **Attributes**:
        - **EnclosureNumber** (Foreign Key): Identifies the enclosure.

        - **SpeciesName** (Foreign Key): Identifies the species.
        - **MaxCapacity**: The maximum number of animals of the species allowed in the enclosure to prevent overcrowding.
    - **Relationships**:
        - Links enclosures and species.
        - Defines the maximum capacity of species in an enclosure.

Keys

- **Primary Keys**:
    - **EnclosureNumber** for Enclosure.
    - **AnimalID** for Animal.
    - **SpeciesName** for Species.
    - **NoteID** for Animal Note.
    - **(SpeciesA, SpeciesB)** for Species Compatibility (composite key).
    - **(EnclosureNumber, SpeciesName)** for Enclosure Species Capacity (composite key).
- **Foreign Keys**:
    - **EnclosureNumber** in Enclosure Assignment (references Enclosure).
    - **AnimalID** in Enclosure Assignment (references Animal).
    - **AnimalID** in Animal Note (references Animal).
    - **SpeciesName** in Enclosure Species Capacity (references Species).
    - **EnclosureNumber** in Enclosure Species Capacity (references Enclosure).

This structure captures the zoo’s layout, the animals and their movement, species compatibility, and notes for individual animals, as well as how species are assigned to enclosures.