**DATABOOK1 : The database narrative**

ZOO MANAGEMENT SYSTEM

The database is related to a zoo and its animal management, it can serve various purposes in the context of a zoo's operations and management. Zoos are complex organizations that require efficient management of various resources: Animals, Enclosures, Employees, Visitors, Sponsors, etc. This design is used to manage detailed animal records, employee details, visitor info, and sponsorship information.

Animal related entities:

This is a huge task and other entities are related to this in one or the other way, the zoo management can keep track of the animals, its enclosures, species they belong, and other details are further included in a separate entity table, like feeding requirement and caretaker/vet info. This info is important in managing animal welfare, tracking breeding programs, vaccinations and ensuring the animals get the right care provided to them.

Employee related entities:

The next important section in zoo DB would be managing employee information. We can store information about zoo employees, including their roles, wages, and contact information. This is essential for HR and payroll purposes. I have further split the employees to vet and caretakers who are related to working with animals, and they are joined by foreign key to animal entity table. Vet and Caretaker Information- their specializations, and the animals they care for can be valuable for animal health management.

Outsiders-related entities:

Visitor Information- can store information about visitor records, ticket sales, memberships, and visitor preferences. This information is useful for planning business, business analysts to track and read useful messages from data.

Sponsorships: sponsors and financial support play key role in managing these zoos, the database can track sponsors basic info like name, contact and have unique SPONSOR_ID linking them to the animals they support, and the financial details of these sponsorships can also be stored in case of detailed DB design.

| | TABLE NAME | ATTRIBUTE NAME | DATA TYPE | FORMAT | RANGE | REQUIRED | PK/FK | REFERENCE |
|---|---|---|---|---|---|---|---|---|
| 1 | ENCLOSURES | ENCLOSURES_ID | INTEGER | 1122 | 1-999. | Y | PK | |
| | | E_TYPE | VARCHAR(30) | Xxxxxxx | | Y | | |
| | | E_SIZE | CHAR(3) | 99 | | Y | | |
| | | CAPACITY | CHAR(3) | 99 | | Y | | |
| | | | | | | | | |
| 2 | DEPARTMENT | DEPT_ID | VARCHAR(5) | A33 | | Y | PK | |
| | | DEPT_NAME | VARCHAR(35 | ASDFGH | | Y | | |
| | | DEPT_CONTACT | CHAR(14) | 999-999-999 | | Y | | |
| | | | | | | | | |
| 3 | EMPLOYEE | EMP_ID | INTEGER | 9999 | 1-999. | Y | PK | |
| | | EMP_FNAME | VARCHAR(35) | Xxxxxxx | | Y | | |
| | | EMP_LNAME | VARCHAR(35) | Xxxxxx | | Y | | |
| | | DEPT_ID | VARCHAR(5) | A33 | | Y | FK | |
| | | EMP_TITLE | VARCHAR(30) | Xxxxxx | | Y | | |
| | | EMP_CONTACT | CHAR(14) | 999-999-999 | | | | |
| | | | | | | | | |
| 4 | FEEDINGS | SPECIES_TYPE | VARCHAR(30) | ASDFGH | | Y | | |
| | | FEED_ID | INT(8) | 99999999 | | Y | PK | |
| | | FEED ITEM | VARCHAR(50) | Xxxxxx | | Y | | |
| | | EMP_ID | INT(3) | 999 | 1-999. | Y | FK | |
| | | FREQUENCY | CHAR(30) | asdsad | | Y | | |
| | | | | | | | | |
| 5 | SPECIES | SPECIES_ID | VARCHAR(5) | a99 | | Y | PK | |
| | | SPECIES_TYPE | VARCHAR(30) | ASDFGH | | Y | FK | |
| | | SPECIES_NAME | VARCHAR(30) | ASDFGH | | Y | | |
| | | ENDANGERMENT_LEVEL | VARCHAR(30) | Xxxxxxx | | Y | | |
| | | ENCLOSURE_ID | INT(3) | 99 | 1-999 | Y | FK | |
| | | SPECIES_COUNT | INT(3) | 99 | 1-999 | | | |
| | | | | | | | | |
| 6 | ANIMALS | ANIMAL_ID | INTEGER | 999 | 1-999. | Y | PK | |
| | | ANIMAL_NAME | VARCHAR(35) | ASDF | | Y | | |
| | | SPECIES_ID | VARCHAR(5) | a99 | | Y | FK | |
| | | DOB | DATE | yyyy-mm-dd | | Y | | |
| | | WEIGHT | DECIMAL(8, 2) | 99 | | | | |
| | | HEIGHT | DECIMAL(8, 2) | 99 | | | | |
| | | GENDER | CHAR(10) | ASDF | | Y | | |
| | | | | | | | | |
| 7 | SALARY_HISTORY | SALARY_ID | INT(4) | 9999 | 0-999 | Y | PK | |
| | | EMP_ID | INT(4) | 9999 | 0-999 | Y | FK | |
| | | SAL_FROM | DATETIME | Yyyy-mm-dd Hh:mm:ss | | | | |
| | | SAL_END | DATETIME | Yyyy-mm-dd Hh:mm:ss | | | | |
| | | SALARY_BRACKET | DECIMAL(4,2) | 99.99 | 0.01 >= | Y | | |
| | | SALARY | DECIMAL(7,2) | 99999.99 | 0.01 >= | Y | | |
| | | | | | | | | |
| 8 | VET | VET_ID | INT(3) | 999 | 1-999. | Y | PK | |
| | | EMP_ID | INT(4) | 9999 | 0-999. | Y | FK | |
| | | SPECIALIZATION | VARCHAR(30) | Xxxxxx | | Y | | |
| | | | | | | | | |
| 9 | CARETAKERS | CARETAKER_ID | INT(3) | 999 | 0-999 | Y | PK | |
| | | SPECIES_TYPE | VARCHAR(30) | ASDFGH | | Y | FK | |
| | | EMP_ID | INT(4) | 9999 | 0-999. | Y | FK | |
| | | CARETAKER_ROLE | VARCHAR(70) | ASDFGH | | Y | | |
| | | | | | | | | |
| 10 | SPONSOR | SPONSOR_ID | INT(5) | 999 | | Y | PK | |
| | | ANIMAL_ID | INT(5) | 99999 | | Y | FK | |
| | | SPONSOR_NAME | VARCHAR(70) | ASDFGH | 0 – 999... | | | |
| | | SPONSOR_CONTACT | CHAR(14) | 999-999-999 | | Y | | |
| | | SPONSOR_AMOUNT | DECIMAL(8,2) | 99999.99 | 0.01 >= | Y | | |
| | | | | | | | | |
| 11 | VISITOR | VISITOR_ID | INT(5) | 99999 | 0 – 999... | Y | PK | |
| | | V_FNAME | VARCHAR(30) | Xxxxxxx | | Y | | |
| | | V_LNAME | VARCHAR(30) | Xxxxxx | | Y | | |
| | | V_CONTACT | CHAR(12) | 999-999-999 | | Y | | |
| | | TICKET_ID | INT(5) | 99999 | 0 – 999... | Y | | |
| | | SPONSOR_ID | INT(3) | 999 | | | FK | |

Business Rules:

## ENCLOSURES Table:

Each enclosure is uniquely identified by its ENCLOSURE_ID.

ENCLOSURE_ID serves as the primary key for the table.

Each enclosure has a type (E_TYPE), size (E_SIZE), and capacity (CAPACITY).

## DEPARTMENT Table:

Each department is uniquely identified by its DEPT_ID.

DEPT_ID serves as the primary key for the table.

DEPT_NAME represents the name of the department.

DEPT_CONTACT is the contact information for the department.

## EMPLOYEE Table:

Each employee is uniquely identified by EMP_ID.

EMP_ID serves as the primary key for the table.

Employees have first names (EMP_FNAME), last names (EMP_LNAME), titles (EMP_TITLE), and contact information (EMP_CONTACT).

DEPT_ID is a foreign key referencing the DEPARTMENT table, indicating the department to which the employee belongs.

## FEEDINGS Table:

Each feeding entry is uniquely identified by FEED_ID.

FEED_ID serves as the primary key for the table.

FEED_ITEM represents the food item being fed.

FREQUENCY indicates how often the feeding occurs.

SPECIES_TYPE represents the type of species being fed and is unique.

## SPECIES Table:

Each species is uniquely identified by SPECIES_ID.

SPECIES_ID serves as the primary key for the table.

SPECIES_TYPE represents the type of species.

SPECIES_NAME is the name of the species.

ENDANGERMENT_LEVEL indicates the conservation status of the species.

SPECIES_COUNT represents the count of individual species.

ENCLOSURE_ID is a foreign key referencing the ENCLOSURES table.

SPECIES_TYPE is a foreign key referencing the FEEDINGS table.

## ANIMALS Table:

Each animal is uniquely identified by ANIMAL_ID.

ANIMAL_ID serves as the primary key for the table.

ANIMAL_NAME is the name of the animal.

DOB represents the date of birth of the animal.

WEIGHT and HEIGHT represent the physical characteristics of the animal.

GENDER indicates the gender of the animal.

SPECIES_ID is a foreign key referencing the SPECIES table.

## SALARY_HISTORY Table:

Each salary history entry is uniquely identified by SALARY_ID.

SALARY_ID serves as the primary key for the table.

SAL_FROM and SAL_END represent the time period for the salary.

SALARY_BRACKET represents the salary bracket during that period.

SALARY represents the actual salary amount.

EMP_ID is a foreign key referencing the EMPLOYEE table.

**VET Table:**

Each veterinarian is uniquely identified by VET_ID.

VET_ID serves as the primary key for the table.

SPECIALIZATION indicates the area of specialization for the vet.

EMP_ID is a foreign key referencing the EMPLOYEE table.

**CARETAKERS Table:**

Each caretaker is uniquely identified by CARETAKER_ID.

CARETAKER_ID serves as the primary key for the table.

CARETAKER_ROLE represents the role of the caretaker.

SPECIES_TYPE represents the type of species the caretaker is responsible for.

EMP_ID is a foreign key referencing the EMPLOYEE table.

**SPONSOR Table:**

Each sponsor is uniquely identified by SPONSOR_ID.

SPONSOR_ID serves as the primary key for the table.

SPONSOR_NAME is the name of the sponsor.

SPONSOR_CONTACT is the contact information for the sponsor.

SPONSOR_AMOUNT represents the amount contributed by the sponsor.

ANIMAL_ID is a foreign key referencing the ANIMALS table.

**VISITOR Table:**

Each visitor is uniquely identified by TICKET_ID.

TICKET_ID serves as the primary key for the table.

V_FNAME and V_LNAME represent the first and last names of the visitor.

V_CONTACT is the contact information for the visitor.

SPONSOR_ID is a foreign key referencing the SPONSOR table.

Entity Relationship Model (ERM):

| Entity | Relationship | Connectivity | Related Entity |
|---|---|---|---|
| EMPLOYEE | Works_In | 1:N | DEPARTMENT |
| CARETAKERS | Cares_For | 1:M | ANIMALS |
| EMPLOYEE | Feeds | 1:M | ANIMALS |
| ENCLOSURES | hosts | 1:M | ANIMALS |
| SPECIES | Feeds_On | 01:01 | FEEDINGS |
| ANIMALS | Belongs_To | 01:01 | SPECIES |
| ENCLOSURES | Houses | 1:N | SPECIES |
| SPONSOR | Sponsors | 1:m | ANIMALS |
| SALARY_HISTORY | Records | 01:01 | EMPLOYEE |
| VET | Responsible for | 1:M | ANIMALS |
| CARETAKERS | Assigned_To | 01:01 | EMPLOYEE |

**DATABOOK 2 : The Entity Relationship Diagram**

ENCLOSURES Table:

1. ENCLOSURE_ID (PK)
2. E_TYPE
3. E_SIZE
4. CAPACITY

DEPARTMENT Table:

1. DEPT_ID (PK)
2. DEPT_NAME
3. DEPT_CONTACT

EMPLOYEE Table:

1. EMP_ID (PK)
2. EMP_FNAME
3. EMP_LNAME
4. EMP_TITLE
5. EMP_CONTACT
6. DEPT_ID (FK)

FEEDINGS Table:

1. FEED_ID (PK)
2. FEED_ITEM
3. FREQUENCY
4. SPECIES_TYPE (FK)
5. EMP_ID (FK)

SPECIES Table:

1. SPECIES_ID (PK)
2. SPECIES_TYPE
3. SPECIES_NAME
4. ENDANGERMENT_LEVEL
5. SPECIES_COUNT
6. ENCLOSURE_ID (FK)

ANIMALS Table:

1. ANIMAL_ID (PK)
2. ANIMAL_NAME
3. DOB
4. WEIGHT
5. HEIGHT
6. GENDER
7. SPECIES_ID (FK)

SALARY_HISTORY Table:

1. SALARY_ID (PK)
2. SAL_FROM
3. SAL_END
4. SALARY_BRACKET
5. SALARY
6. EMP_ID (FK)

VET Table:

1. VET_ID (PK)
2. SPECIALIZATION
3. EMP_ID (FK)

CARETAKERS Table:

1. CARETAKER_ID (PK)
2. CARETAKER_ROLE
3. SPECIES_TYPE (FK)
4. EMP_ID (FK)

SPONSOR Table:

1. SPONSOR_ID (PK)
2. SPONSOR_NAME
3. SPONSOR_CONTACT
4. SPONSOR_AMOUNT
5. ANIMAL_ID (FK)

VISITOR Table:

1. TICKET_ID (PK)
2. V_FNAME
3. V_LNAME
4. V_CONTACT
5. SPONSOR_ID (FK)

Non-normalized table:

| ANIMAL_ID | ANIMAL_NAME | DOB | WEIGHT | HEIGHT | GENDER | SPECIES_ID | ENCLOSURE_ID | SPECIES_TYPE | SPECIES_NAME | ENDANGERMENT_LEVEL | SPECIES_COUNT | EMP_ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1132 | Kardi | 2020-01-15 | 150.50 | 5.2 | f | o11 | 1122 | Omnivores | Bear | Endangered | 2 | 1 |
| 2324 | Simba | 2019-05-22 | 120.80 | 4.8 | m | c11 | 2233 | Carnivores | Lion | Vulnerable | 2 | 2 |
| 3434 | Pi | 2020-03-10 | 180.20 | 6.0 | m | c12 | 1122 | Carnivores | Tiger | Critically Endangered | 2 | 3 |
| 2454 | Jin | 2018-11-08 | 160.00 | 5.5 | m | h11 | 1122 | Herbivores | Deer | Least Concern | 2 | 4 |

| EMP_FNAME | EMP_LNAME | EMP_TITLE | EMP_CONTACT | DEPT_ID | FEED_ID | FEED_ITEM | FREQUENCY | SALARY_HISTORY_ID | SAL_FROM | SAL_END | SALARY_BRACKET | SALARY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jenny | KIM | Zoo Keeper | 2342342341 | z11 | 1 | Fruits, vegeta.. . | Daily | 121 | 2022-01-01 | 2022-12-31 | 50.99 | 50000.00 |
| Chae | Lee | Vet | 2342342343 | v22 | 2 | Beef & chicken | Once in the eve... | 122 | 2022-01-01 | 2022-12-31 | 60.00 | 60000.00 |
| Young | Hill | Vet | 3243433452 | v22 | 3 | Vegetables, con... | Twice daily | 123 | 2022-01-01 | 2022-12-31 | 70.00 | 70000.00 |
| Paris | FRA | Admin | 3243433452 | a33 | 4 | Fish | Alternate days | 124 | 2022-01-01 | 2022-12-31 | 50.44 | 55000.00 |

| VET_ID | SPECIALIZATION | VISITOR_ID | V_FNAME | V_LNAME | V_CONTACT | SPONSOR_ID | SPONSOR_NAME | SPONSOR_CONTACT | SPONSOR_AMOUNT |
|---|---|---|---|---|---|---|---|---|---|
| 2 | DIET | 12346 | Jung | Kook | 777555666 | 122 | Harry Potter | 3243433452 | 100.50 |
| 3 | SKIN | 12345 | Tae | Hyung | 222333444 | 120 | Hermoine Granger | 3243433452 | 4000.50 |

Conversion To First Normal Form

Step 1: Eliminate the Repeating Groups
Step 2: Identify the Primary Key
Step 3: Identify All Dependencies

Conversion To Second Normal Form:

Step 1: Make New Tables to Eliminate Partial Dependencies
Step 2: Reassign Corresponding Dependent Attributes

Conversion To Third Normal Form

Step 1: Make New Tables to Eliminate Transitive Dependencies
Step 2: Reassign Corresponding Dependent Attributes

| ANIMAL_ID | ANIMAL_NAME | DOB | WEIGHT | HEIGHT | GENDER | SPECIES_ID |
|---|---|---|---|---|---|---|
| 1132 | Kardi | 2020-01-15 | 150.50 | 5.20 | f | o11 |
| 2324 | Simba | 2019-05-22 | 120.80 | 4.80 | m | c11 |
| 2345 | Genesis | 2017-08-20 | 95.00 | 4.20 | m | r12 |
| 2454 | Jin | 2018-11-08 | 160.00 | 5.50 | m | h11 |
| 3434 | Pi | 2020-03-10 | 180.20 | 6.00 | m | c12 |
| 3465 | Tia | 2020-04-17 | 93.00 | 4.00 | f | h12 |
| 3473 | Kirk | 2019-04-29 | 85.50 | 4.00 | m | b12 |
| 4340 | Nili | 2019-07-25 | 110.20 | 4.50 | f | h12 |
| 4611 | Mia | 2019-06-22 | 97.50 | 4.10 | f | o12 |
| 5462 | Lisa | 2019-11-30 | 88.50 | 3.90 | f | h11 |
| 5464 | Adi | 2019-09-03 | 200.50 | 6.20 | m | h12 |
| 5465 | Barbi | 2020-06-08 | 110.00 | 4.50 | f | o11 |
| 5467 | Biu | 2018-12-01 | 75.00 | 3.80 | m | b11 |
| 5654 | Flo | 2020-05-14 | 90.50 | 4.00 | f | r11 |
| 6416 | Kai | 2018-09-14 | 85.00 | 3.80 | f | h12 |
| 6543 | Manga | 2020-02-18 | 130.00 | 5.00 | m | o12 |
| 6546 | Melly | 2018-10-05 | 98.00 | 4.10 | f | c12 |
| 9654 | Limba | 2019-01-12 | 105.50 | 4.30 | m | c11 |

| SPECIES_ID | SPECIES_TYPE | SPECIES_NAME | ENDANGERMENT_LEVEL | SPECIES_COUNT | ENCLOSURE_ID |
|---|---|---|---|---|---|
| b11 | Birds | Peacock | Least Concern | 1 | 3344 |
| b12 | Birds | Ostrich | Vulnerable | 1 | 3344 |
| c11 | Carnivores | Lion | Vulnerable | 2 | 2233 |
| c12 | Carnivores | Tiger | Critically Endangered | 2 | 1122 |
| h11 | Herbivores | Deer | Least Concern | 2 | 1122 |
| h12 | Herbivores | Nilagri | Least Concern | 2 | 2233 |
| h22 | Herbivores | Asian Elephant | Endangered | 2 | 2233 |
| o11 | Omnivores | Bear | Endangered | 2 | 1122 |
| o12 | Omnivores | Macaques | Near Threatened | 2 | 2233 |
| r11 | Reptiles | Crocodiles | Endangered | 1 | 4455 |
| r12 | Reptiles | Turtle | Critically Endangered | 1 | 4455 |

| DEPT_ID | DEPT_NAME | DEPT_CONTACT |
|---|---|---|
| a33 | Administration | 3243433452 |
| m44 | Misc | 3243333452 |
| v22 | Vet | 3243433452 |
| z11 | Zoo | 3243433452 |

| ENCLOSURE_ID | E_TYPE | E_SIZE | CAPACITY |
|---|---|---|---|
| 1122 | Safari | 12 | 20 |
| 2233 | Zoo | 12 | 10 |
| 3344 | Bird park | 11 | 20 |
| 4455 | Lake | 11 | 30 |

| EMP_ID | EMP_FNAME | EMP_LNAME | EMP_TITLE | EMP_CONTACT | DEPT_ID |
|---|---|---|---|---|---|
| 1 | Jenny | KIM | Zoo Keeper | 2342342341 | z11 |
| 2 | Chae | Lee | Vet | 2342342343 | v22 |
| 3 | Young Hill | v22 | Vet | 3243433452 | v22 |
| 4 | Paris | FRA | Admin | 3243433452 | a33 |
| 5 | Jeon Lis | a33 | Researcher | 3243433452 | a33 |
| 6 | Pri JK | z11 | Zoo Keeper | 3243433452 | z11 |
| 7 | Jimin Park | m44 | Security Guard | 3243433452 | m44 |

| CARETAKER_ID | CARETAKER_ROLE | SPECIES_TYPE | EMP_ID |
|---|---|---|---|
| 1 | Feeding | Carnivores | 1 |
| 2 | Vaccinations | Herbivores | 6 |

| VET_ID | SPECIALIZATION | EMP_ID |
|---|---|---|
| 899 | DIET | 2 |
| 988 | SKIN | 3 |

- the VET and CARETAKER tables inherits from the common EMPLOYEE table.
- disjoint subtype-a specialization hierarchy, a unique and nonoverlapping subtype entity set.
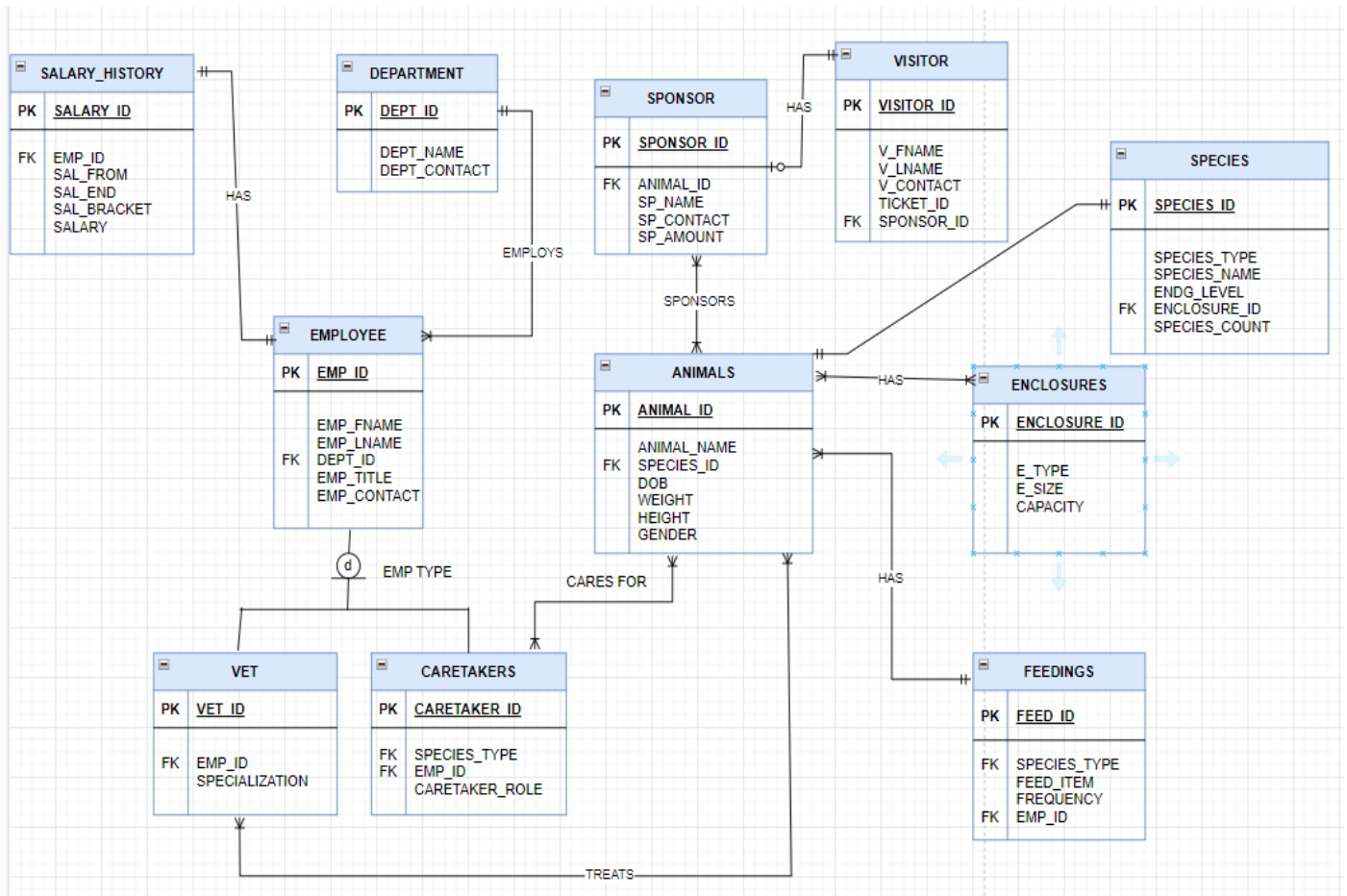
| FEED_ID | FEED_ITEM | FREQUENCY | SPECIES_TYPE | EMP_ID |
|---|---|---|---|---|
| 1 | Fruits, vegetables, grains, chicken and fish | Daily | Omnivores | 1 |
| 2 | Beef & chicken | Once in the evening | Carnivores | 1 |
| 3 | Vegetables, concentrates, grains, grass | Twice daily | Herbivores | 1 |
| 4 | Fish | Alternate days | Reptiles | 6 |
| 5 | Seasonal fruits, vegetables, concentrates, grains ... | Daily | Birds | 6 |

| SALARY_ID | SAL_FROM | SAL_END | SALARY_BRACKET | SALARY | EMP_ID |
|---|---|---|---|---|---|
| 121 | 2022-01-01 00:00:00 | 2022-12-31 00:00:00 | 50.99 | 50000.00 | 1 |
| 122 | 2022-01-01 00:00:00 | 2022-12-31 00:00:00 | 60.00 | 60000.00 | 2 |
| 123 | 2022-01-01 00:00:00 | 2022-12-31 00:00:00 | 70.00 | 70000.00 | 3 |
| 124 | 2022-01-01 00:00:00 | 2022-12-31 00:00:00 | 50.44 | 55000.00 | 4 |
| 125 | 2022-01-01 00:00:00 | 2022-12-31 00:00:00 | 65.00 | 65000.00 | 5 |
| 126 | 2022-01-01 00:00:00 | 2022-12-31 00:00:00 | 50.00 | 50000.00 | 6 |
| 127 | 2022-01-01 00:00:00 | 2022-12-31 00:00:00 | 45.00 | 45000.00 | 7 |

| SPONSOR_ID | SPONSOR_NAME | SPONSOR_CONTACT | SPONSOR_AMOUNT | ANIMAL_ID |
|---|---|---|---|---|
| 120 | Al Park | 3243433452 | 430.90 | 3434 |
| 122 | Hermoine Granger | 3243433452 | 400.00 | 2324 |
| 123 | Harry Potter | 3243433452 | 100.66 | 1132 |
| 124 | Jackie Chan | 3243433452 | 12.00 | 2454 |
| 125 | Chris Tucker | 3243433452 | 70.90 | 5464 |

| TICKET_ID | V_FNAME | V_LNAME | V_CONTACT | SPONSOR_ID |
|---|---|---|---|---|
| 12344 | Suga | August | 666777888 | NULL |
| 12345 | Tae | Hyung | 222333444 | 120 |
| 12346 | Jung | Kook | 777555666 | 122 |
| 12347 | Jim | In | 222111444 | 124 |
| 12388 | Jin | Wwh | 222333555 | NULL |

ERD:

**SALARY_HISTORY**

| | |
|---|---|
| PK | SALARY_ID |
| FK | EMP_ID |
| | SAL_FROM |
| | SAL_END |
| | SAL_BRACKET |
| | SALARY |

**DEPARTMENT**

| | |
|---|---|
| PK | DEPT_ID |
| | DEPT_NAME |
| | DEPT_CONTACT |

**SPONSOR**

| | |
|---|---|
| PK | SPONSOR_ID |
| FK | ANIMAL_ID |
| | SP_NAME |
| | SP_CONTACT |
| | SP_AMOUNT |

**VISITOR**

| | |
|---|---|
| PK | VISITOR_ID |
| | V_FNAME |
| | V_LNAME |
| | V_CONTACT |
| | TICKET_ID |
| FK | SPONSOR_ID |

**SPECIES**

| | |
|---|---|
| PK | SPECIES_ID |
| | SPECIES_TYPE |
| | SPECIES_NAME |
| | ENDG_LEVEL |
| FK | ENCLOSURE_ID |
| | SPECIES_COUNT |

**EMPLOYEE**

| | |
|---|---|
| PK | EMP_ID |
| | EMP_FNAME |
| | EMP_LNAME |
| FK | DEPT_ID |
| | EMP_TITLE |
| | EMP_CONTACT |

**ANIMALS**

| | |
|---|---|
| PK | ANIMAL_ID |
| FK | ANIMAL_NAME |
| | SPECIES_ID |
| | DOB |
| | WEIGHT |
| | HEIGHT |
| | GENDER |

**ENCLOSURES**

| | |
|---|---|
| PK | ENCLOSURE_ID |
| | E_TYPE |
| | E_SIZE |
| | CAPACITY |

**VET**

| | |
|---|---|
| PK | VET_ID |
| FK | EMP_ID |
| | SPECIALIZATION |

**CARETAKERS**

| | |
|---|---|
| PK | CARETAKER_ID |
| FK | SPECIES_TYPE |
| FK | EMP_ID |
| | CARETAKER_ROLE |

**FEEDINGS**

| | |
|---|---|
| PK | FEED_ID |
| FK | SPECIES_TYPE |
| | FEED_ITEM |
| | FREQUENCY |
| FK | EMP_ID |

Relationships:
HAS, EMPLOYS, SPONSORS, HAS, HAS, CARES FOR, HAS, EMP TYPE (d), TREATS

**DATABOOK 3 : Develop working SQL queries**

1. A query that pulls data from one table:

Q: How many animals are there in the zoo?

Simple Query:
SELECT COUNT(*) AS TotalAnimals
FROM ANIMALS;

Your SQL query has been executed successfully.

SELECT COUNT(*) AS TotalAnimals FROM ANIMALS

+ Options
**TotalAnimals**
18

2. A query that pulls data from two tables:

Q: What are the names and contact information of the sponsors for each animal?

Two tables Query:
SELECT A.ANIMAL_NAME, S.SPONSOR_NAME, S.SPONSOR_CONTACT
FROM ANIMALS A
JOIN SPONSOR S ON A.ANIMAL_ID = S.ANIMAL_ID;

Showing rows 0 - 4 (5 total, Query took 0.0016 seconds.)

SELECT A.ANIMAL_NAME, S.SPONSOR_NAME, S.SPONSOR_CONTACT FROM ANIMALS A JOIN SPONSOR S ON A.ANIMAL_ID = S.ANIMAL_ID

☐ Profiling [Edit inlir

☐ Show all | Number of rows: 25 ∨    Filter rows: Search this table

+ Options

| ANIMAL_NAME | SPONSOR_NAME | SPONSOR_CONTACT |
|---|---|---|
| Pi | Al Park | 3243433452 |
| Simba | Hermoine Granger | 3243433452 |
| Kardi | Harry Potter | 3243433452 |
| Jin | Jackie Chan | 3243433452 |
| Adi | Chris Tucker | 3243433452 |

3. A query that also includes a subquery:

Q: what is the average salary of zookeepers?

Subquery query:
SELECT AVG(SH.SALARY) AS AverageSalary
FROM SALARY_HISTORY SH
WHERE SH.EMP_ID IN (
    SELECT E.EMP_ID
    FROM EMPLOYEE E
    WHERE E.EMP_TITLE = 'Zoo Keeper'
);

✔ Showing rows 0 - 0 (1 total, Query took 0.0022 seconds.)

SELECT AVG(SH.SALARY) AS AverageSalary FROM SALARY_HISTORY SH WHERE SH.EMP_ID IN ( SELECT E.EMP_ID FROM EMPLOYEE E WHERE E.EMP_TITLE = 'Zoo Keeper' )

☐ Profiling [Edit inline] [ Edit ] [ Explain SQL ] [ Create

☐ Show all | Number of rows: 25 ∨ Filter rows: Search this table

+ Options

| AverageSalary |
| --- |
| 50000.000000 |