Zookeeper Database Functional Dependencies and Normalization

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Species

Species_ID	Species_Name	Genus	Extinction_Probablity	Expected_Extinction_Year	Common_Name	Protection_Status

FD1

Animal

Animal_ID	Species_ID	Habitat_ID	Name	Age	Weight	Gender	Status

FD2

Zoo

Zoo_ID	Zoo_Name	Zoo_Address	Zoo_Continent	City	State	Zip

FD3

FD4

Habitat

Habitat_ID	Zoo_ID	Habitat_Type	Habitat_Name	Climate

FD5

Diet

Diet_ID	Animal_ID	Diet_Name	Nutrient	Serving_Size	Diet_Type

FD6

MedicalRecord

Record_ID	Animal_ID	Checkup_Date	Health_Condition	Treatment	Notes

FD7

-Functional Dependencies in Relational Notation

{Species_ID} ⟶ {Genus,SpeciesName,Protection_Status, Extinction_Probability, Expected_Extinction_Year, Common_Name,Recorded_Year}

{Animal_ID} ⟶ {Species_ID, Habitat_ID, Name,Age,Weight,Gender,Status}

{Zoo_ID} ⟶ {Zoo_Name,Zoo_Address,Zoo_Continent,Contact_Info}
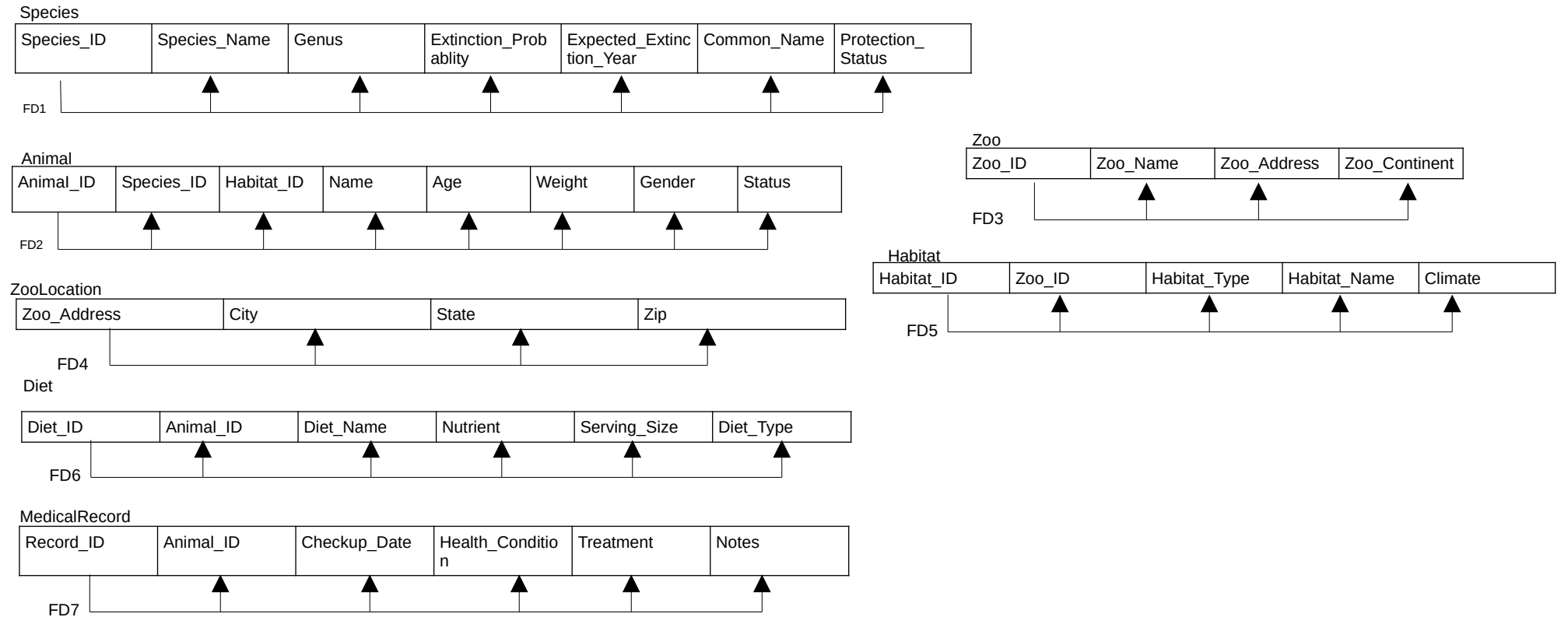
{Zoo_Address} ⟶ {City,State,Zip}

{Habitat_ID} ⟶ {Zoo_ID, Habitat_Type,Habitat_Name, Climate}

{Diet_ID} ⟶ {Animal_ID,Diet_Name,Nutrient,Serving_Size,Diet_Type}

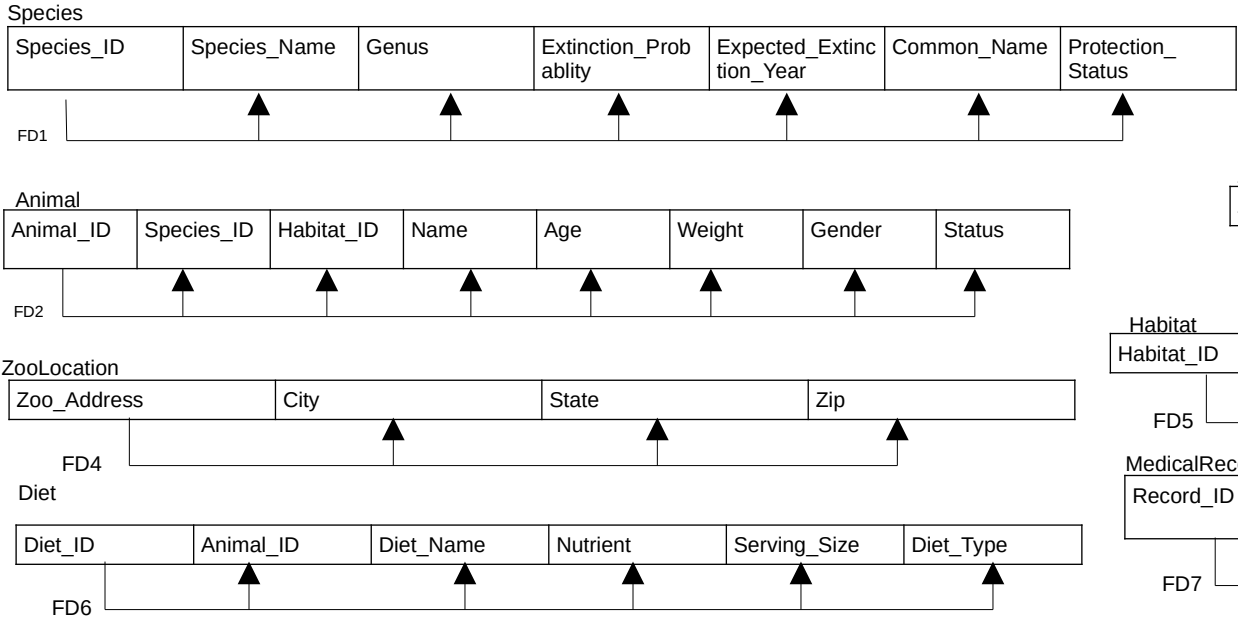{Record_ID} ⟶ {Animal_ID, Checkup_Date,Health_Condition,Treatment,Notes}
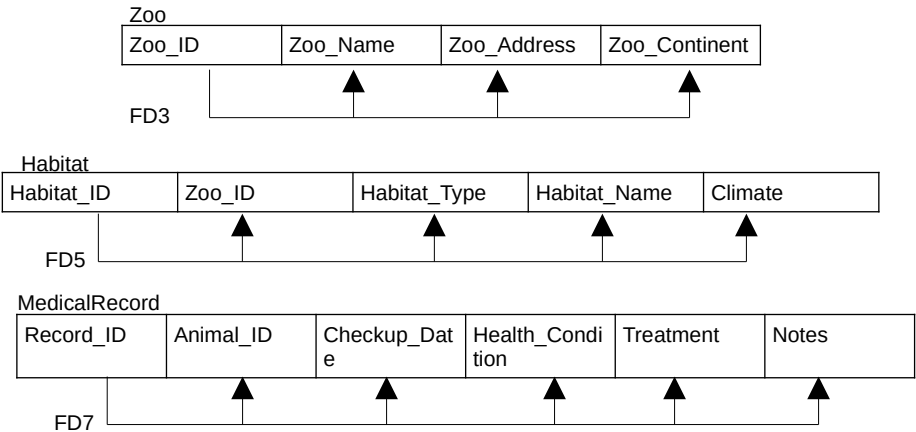
Key Of Unnormalized Relation: Key: Diet_ID, Record_ID

4.Normalize to 1ND, 2NF, and 3NF
1NF: no composite or multi valued attributes

Species

Species_ID	Species_Name	Genus	Extinction_Prob ablity	Expected_Extinc tion_Year	Common_Name	Protection_ Status

FD1

Animal

Animal_ID	Species_ID	Habitat_ID	Name	Age	Weight	Gender	Status

FD2

Zoo

Zoo_ID	Zoo_Name	Zoo_Address	Zoo_Continent

FD3

ZooLocation

Zoo_Address	City	State	Zip

FD4

Habitat

Habitat_ID	Zoo_ID	Habitat_Type	Habitat_Name	Climate

FD5

Diet

Diet_ID	Animal_ID	Diet_Name	Nutrient	Serving_Size	Diet_Type

FD6

MedicalRecord

Record_ID	Animal_ID	Checkup_Date	Health_Conditio n	Treatment	Notes

FD7

2NF: 1NF no composite or multi valued attributes

3NF: 2NF No transitive Dependencies

Species

Species_ID	Species_Name	Genus	Extinction_Prob ablity	Expected_Extinc tion_Year	Common_Name	Protection_ Status

FD1

Animal

Animal_ID	Species_ID	Habitat_ID	Name	Age	Weight	Gender	Status

FD2

Zoo

Zoo_ID	Zoo_Name	Zoo_Address	Zoo_Continent

FD3

ZooLocation

Zoo_Address	City	State	Zip

FD4

Habitat

Habitat_ID	Zoo_ID	Habitat_Type	Habitat_Name	Climate

FD5

Diet

Diet_ID	Animal_ID	Diet_Name	Nutrient	Serving_Size	Diet_Type

FD6

MedicalRecord

Record_ID	Animal_ID	Checkup_Dat e	Health_Condi tion	Treatment	Notes

FD7

Final Formal Schema :

1. Species

Species_ID	Species_Name	Genus	Extinction_Probablity	Expected_Extinction_Year	Common_Name	Protection_Status

2. Animal

Animal_ID	Species_ID	Habitat_ID	Name	Age	Weight	Gender	Status

3. ZooLocation

Zoo_Address	City	State	Zip

Zoo

Zoo_ID	Zoo_Name	Zoo_Address	Zoo_Continent

4. Diet

Diet_ID	Animal_ID	Diet_Name	Nutrient	Serving_Size	Diet_Type

5. MedicalRecord

Record_ID	Animal_ID	Checkup_Date	Health_Condition	Treatment	Notes

6. Habitat

Habitat_ID	Zoo_ID	Habitat_Type	Habitat_Name	Climate