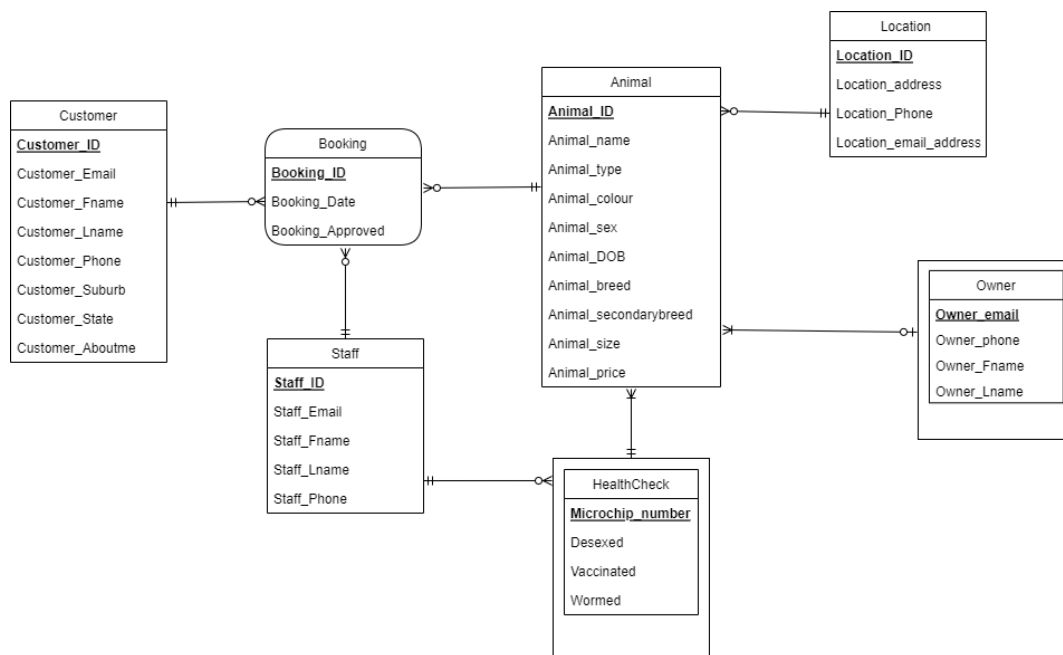


Database Design Assignment Part C

C. 1. Revised Business rules and assumptions (From part B)

- BR1: A customer needs to provide their name and location in order to submit a booking request
- BR2: A customer will be required to explain their living situation and lifestyle in their booking request
- BR3: A unique customer ID will be created once their details have been given
- BR4: A customer may not submit multiple bookings for the same animal
- BR5: A customer may have multiple booking for different animals
- BR6: An animal is required to have a health check before it is able to be listed for adoption
- BR7: The animals DOB, name, type, size, price will need to be provided
- BR8: A unique animal ID will be created once the animal is registered and listed
- BR9: An animal can only belong to one owner at most
- BR10: An animal does not need to have an owner
- BR11: An animal must belong to a location
- BR12: Staff are uniquely identified through their Staff ID
- BR13: A staff manages a booking and approves or denys it
- BR14: A staff can manage multiple bookings
- BR15: A healthcheck must be performed by a registered Staff
- BR16: A microchip number must be provided before or arfter a healthcheck to identify the animal and its health status
- BR17: details weather the animal is desexed, vaccinated and wormed must be provided
- BR18: A booking ID is generated by the system when the booking is created
- BR19: A booking will store information on the date and whether it has been approved or not
- BR20: If the location is an individual owners, the number and email will be the owners by default
- BR21: The address of a location must be provided to be registered
- BR22: If a location for an animal does not exist when it is registered a location ID will be generated
- BR23: A location may be a shelter or an individual owners
- BR24: An owner must provide their email, phone, and name to be registered
- BR25: An owner is identified through their email
- BR26: An owner cannot exist if it does not belong to at least one animal
- BR27: An owner may belong to mutiple animals
- BR28: An animal may have mutiple bookings

C. 2. Revised ERD of Part B



C. 3. Relations

CUSTOMER(Customer_ID, Customer_Email, Customer_Fname, Customer_Lname, Customer_phone, Customer_Suburb, Customer_State, Customer_Aboutme)

STAFF(Staff_ID, Staff_email, Staff_Fname, Staff_Lname, Staff_phone)

ANIMAL(Animal_ID, Animal_name, Animal_type, Animal_colour, Animal_sex, Animal_DOB, Animal_breed, Animal_secondarybreed, Animal_size, Animal_price)

HEALTHCHECK(Microchip_number, Animal_ID*, Staff_ID*, Desexed, Vaccinated, Wormed)
 FK (Animal_ID) references ANIMAL
 FK (Staff_ID) references STAFF

LOCATION(Location_ID, Animal_ID*, Location_Address, Location_Phone, Location_email_address)
 FK (Animal_ID) references ANIMAL

OWNER(owner_email, Animal_ID*, owner_phone, owner_email_address, owner_Fname, owner_Lname)

BOOKING(Booking_ID, Customer_ID*, Staff_ID*, Animal_ID*, Booking_Date, Booking_approved)
 FK (Customer_ID) references CUSTOMER
 FK (Staff_ID) references STAFF
 FK (Animal_ID) references ANIMAL

C. 4. List of Functional Dependencies Related to Each Business Rules.

FD1: Customer_ID → Customer Email, Customer_Fname, Customer_Lname, Customer_phone, Customer_Suburb, Customer_State, Customer_Aboutme(refer to BR1, BR2, BR3)

FD2: Animal_ID → animal_DOB, animal_name, animal_type, animal_size, animal_price (Refer to BR7, BR8)

FD3: Animal_ID → animal_name, animal_type, animal_colour, animal_sex, Animal_DOB, animal_breed, animal_secondary breed, animal_size, animal_price(refer to BR11)

FD4: Staff_ID → Staff_email, Staff_fname, Staff_Lname, Staff_Phone (refer to BR12)

FD5: Staff_ID, Customer_ID, Animal_ID → Booking_ID (refer to BR5, BR13, BR14, BR26)

FD6: Microchip_Number → desexed, vaccinated, wormed (refer to BR15, BR16, BR17)

FD7: Location_ID → Animal_ID, Location_address, location_phone_number, location_email (refer to BR19, BR20, BR21)

FD8: Owner_email → owner_phone, owner_fname, owner_lname (refer to BR23, BR24)

FD9: Booking_ID → booking_date, booking_approved(refer to BR19)

C. 5. Normalization

Relation: CUSTOMER(Customer_ID, Customer_Email, Customer_Fname, Customer_Lname, Customer_phone, Customer_Suburb, Customer_State, Customer_Aboutme)

FD: Customer_ID → Customer Email, Customer_Fname, Customer_Lname, Customer_phone, Customer_Suburb, Customer_State, Customer_Aboutme

1NF- attributes are atomic and there is not derived attribute

2NF- no partial dependencies on the key Customer_ID (single attribute key)

3NF- no interdependencies between non-key attribute

Relation: STAFF(Staff_ID, Staff_email, Staff_Fname, Staff_Lname, Staff_phone)

FD: Staff_ID → Staff_email, Staff_fname, Staff_Lname, Staff_Phone

1NF- attributes are atomic and there is not derived attribute

2NF- no partial dependencies on the key Staff_ID (single attribute key)

3NF- no interdependencies between non-key attributes

Relation: ANIMAL(Animal_ID, Animal_name, Animal_type, Animal_colour, Animal_sex, Animal_DOB, Animal_breed, Animal_secondarybreed, Animal_size, Animal_price)

FD: Animal_ID → animal_name, animal_type, animal_colour, animal_sex, Animal_DOB, animal_breed, animal_secondary breed, animal_size, animal_price

1NF- attributes are atomic and there is not derived attribute

2NF- no partial dependencies on the key Animal_ID (single attribute key)

3NF- no interdependencies between non-key attributes

Relation: HEALTHCHECK(Microchip number, Animal_ID*, Staff_ID*, Desexed, Vaccinated, Wormed)

FK (Animal_ID) references ANIMAL

FK (Staff_ID) references STAFF

FD: Microchip_Number → desexed, vaccinated, wormed

1NF- attributes are atomic and there is not derived attribute

2NF- no partial dependencies on the key MicroChip_number (single attribute key)

3NF- no interdependencies between non-key attributes

Relation: OWNER(owner_email, Animal_ID*, owner_phone, owner_email_address, owner_Fname, owner_Lname)

FD: Owner_email → owner_phone, owner_fname, owner_lname

1NF- attributes are atomic and there is not derived attribute

2NF- no partial dependencies on the key owner_email (single attribute key)

3NF- no interdependencies between non-key attributes

Relation: LOCATION(Location_ID, Animal_ID*, Location_Address, Location_Phone, Location_email_address)

FK (Animal_ID) references ANIMAL

FD: Location_ID → Animal_ID, Location_address, location_phone_number, location_email

1NF- LOCATION(Location_ID, Animal_ID*, Location_StreetNumber, Location_Street, Location_suburb, Location_state, Location_Phone, Location_email_address)

2NF- no partial dependencies on the key Location_ID (single attribute key)

3NF- no interdependencies between non-key attributes

Relation: BOOKING(Booking_ID, Customer_ID*, Staff_ID*, Animal_ID*, Booking_Date, Booking_approved)

FK (Customer_ID) references CUSTOMER

FK (Staff_ID) references STAFF

FK (Animal_ID) references ANIMAL

FD: Booking_ID → booking_date, booking_approved

1NF- attributes are atomic and there is not derived attribute

2NF- no partial dependencies on the key Booking_ID (single attribute key)

3NF- no interdependencies between non-key attributes