

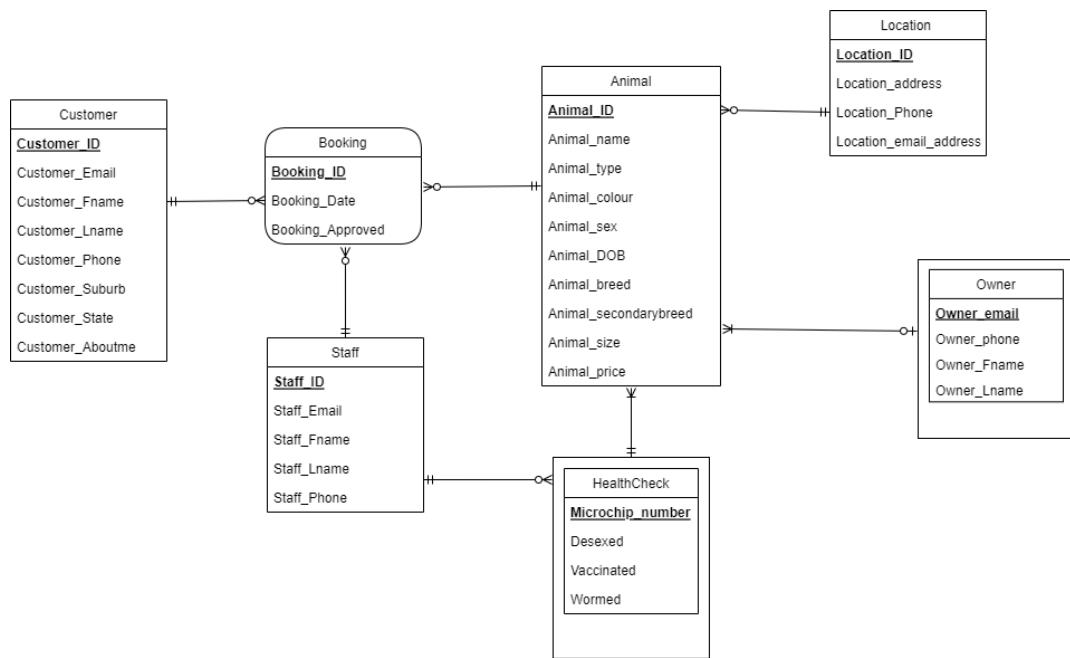
## Database Design Assignment Part C

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### 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 denies 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 after a healthcheck to identify the animal and its health status
- BR17: details whether 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 multiple animals
- BR28: An animal may have multiple 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\_secondarybreed, 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