BCNF

STAFF

- 1NF
    - There is one multivalued key: Assigned rooms
    - To put it into 1NF, we created a separate relation called STAFF_ROOM where the ‘Ssn’ and ‘Assigned_Room’ form the primary key for the relation.
- 2NF
    - Since the primary key contains no multiple attributes, it is in 2NF.
- 3NF
    - Since there are no transitive dependencies, it is in 3NF.
- BCNF
    - With the 1NF change, it is in BCNF because every left-hand side of every functional dependency is either a primary/candidate key.

INVENTORY, ROOM and CUSTOMER

- 1NF
    - Since there are no multivalued or composite/nested attributes, it is in 1NF.
- 2NF
    - Since the primary key contains no multiple attributes, it is in 2NF.
- 3NF
    - Since there are no transitive dependencies, it is in 3NF.
- BCNF

- It is in BCNF because every left-hand side of every functional dependency is either a primary/candidate key.

DEPENDENTS and GUESTS

- 1NF
  - Since there are no multivalued or composite/nested attributes, it is in 1NF.
- 2NF
  - Since the relation's primary key contains multiple attributes, all nonkey attributes are functionally dependent on the primary key.
- 3NF
  - Since there are no transitive dependencies, it is in 3NF.
- BCNF
  - It is in BCNF because every left-hand side of every functional dependency is either a primary/candidate key.

Complete Set of Queries

Possible Queries

- Room_Status (returns person in room or vacant)
  SELECT NUMBER, OCCUPANCY
  FROM ROOM
- Room_Vacant (returns the numbers of rooms that are vacant)
  SELECT NUMBER, OCCUPANCY
  FROM ROOM
  WHERE OCCUPANCY = "VACANT"
- Room_Rate (returns the number of each room, and its rate)
  SELECT NUMBER, RATE
  FROM ROOM
- Inventory_Summary (returns each type and quantity of each type)
  SELECT TYPE, QUANTITY
  FROM INVENTORY
- Customer_Name (returns the first and last name of all customers, and their room number)
  SELECT FNAME, LNAME, ROOM_NUMBER
  FROM CUSTOMER
- Guest_Name (returns the first and last name of all customers and guests, and their room numbers)
  SELECT FNAME, LNAME, CUSTOMER_ID
  FROM GUESTS
- Staff_Name (returns the first and last name of all staff)
  SELECT FNAME, LNAME
  FROM STAFF
- Find_Cheapest (returns cheapest room in hotel by room type)
  SELECT NUMBER, NUM_BEDS, min(RATE)
  FROM ROOM
  GROUP BY NUM_BEDS

Transactions

- Setting_Vacant (change a rooms occupancy to vacant)
  UPDATE ROOM,
  SET OCCUPANCY = "VACANT"
  WHERE NUMBER = input(<- roomNumber)
- Guest_Booking (change a rooms occupancy to customer)
  UPDATE ROOM
  SET OCCUPANCY = input1 (<- customerID)
  WHERE NUMBER = input2 (<- roomNumber)
- Add_Roster (adds a staff member)
  INSERT INTO STAFF
  VALUES (SSN, EMPLOYEE_NUM, FNAME, LNAME, SALARY, AGE, BIRTHDAY, SEX) (all of these values would be an input from the user)

- Remove_Roster (remove a staff member)
- **DELETE** STAFF
  WHERE EMPLOYEE_NUM = INPUT
- Modify_Staff (change a value of a staff member)
  UPDATE STAFF
  SET SSN = INPUT, EMPLOYEE_ID = INPUT FNAME = INPUT, LNAME = INPUT, SALARY = INPUT, AGE = INPUT, BIRTHDAY = INPUT, SEX = INPUT
  WHERE SSN = INPUT
- Modify_Quantity (changes the quantity of an item in the inventory)
  UPDATE INVENTORY
  SET QUANTITY = INPUT (new quantity of item)
  WHERE TYPE = INPUT2 (the type of item that is having its quantity changed)
- Add_Inventory (adds a new type of item to the inventory)
  INSERT INTO INVENTORY
  VALUES (TYPE, QUANTITY, ESSN) (all of these values would be an input from the user)
- Change_Rate (changes the rate of a room)
  UPDATE ROOM
  SET RATE = INPUT (new rate of room)
  WHERE NUMBER = INPUT2 (the room that is getting a new rate)