**Logical Schema**

CUSTOMER(CustomerId, Name, PermanentAddress)

ROOM(RoomId, RoomType, Bathroom, DailyPrice)

RESERVATION(ReservationId, CustomerId, RoomId, StartDate, EndDate, DateChanged, Cancelled)

STAY(StayId, CustomerId, RoomId, StartDate, EndDate, AmountDue)

**Data Volume Analysis**

CUSTOMER(CustomerId, Name, PermanentAddress)

3 30 100

Record Total: 133 Table Total: 2660

ROOM(RoomId, RoomType, Bathroom, DailyPrice)

4 1 1 4

Record Total: 10 Table Total: 70

RESERVATION(ReservationId, CustomerId, RoomId, StartDate, EndDate, DateChanged, Cancelled)

3 3 4 3 3 1 1

Record Total: 18 Table Total: 774

STAY(StayId, CustomerId, RoomId, StartDate, EndDate, AmountDue)

3 3 4 3 3 4

Record Total: 20 Table Total: 680

Total tables: 2660 + 70 + 774 + 680 = 4184

Index: primary key size + 4 bytes for the address

CUSTOMER: (3 + 4) \* 20 = 140

ROOM: (4 + 4) \* 7 = 56

RESERVATION: (3 + 4) \* 43 = 301

STAY: (3 + 4) \* 34 = 238

Total indexes: 735

Tables + indexes: 4919

Growth factor 20% : 984

Grand total: 5903

**Data Usage Analysis**

Transaction: Rank the popularity of each room

SELECT STAY.ROOMID, ROOM.ROOMTYPE, COUNT(STAY.ROOMID)

FROM STAY, ROOM

WHERE STAY.ROOMID=ROOM.ROOMID

GROUP BY STAY.ROOMID, ROOM.ROOMTYPE

ORDER BY COUNT DESC;

Transaction: Generates monthly bill for customers for February

SELECT CUSTOMER.NAME, CUSTOMER.PERMANENTADDRESS, STAY.STARTDATE, STAY.AMOUNTDUE

FROM CUSTOMER, STAY

WHERE CUSTOMER.CUSTOMERID=STAY.CUSTOMERID AND

STAY.STARTDATE>='2/1/2021' AND STAY.STARTDATE<='2/28/2021'

ORDER BY STAY.STARTDATE;