



# HUSKY RESORT

**Relational Database for Hotel Room  
Reservations**

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## Travel Booking Services

- The online travel bookings segment is growing at **10.7% CAGR** – outpacing growth of the travel agencies segment.
- In 2023, **82%** of customers surveyed said they preferred booking their trips online.
- Websites like Booking.com charge hotels **15-30%** in commissions for every reservation made on their platform.
- As a result, hotels like Husky Resort are facing reduced profit margins as customers increasingly use booking sites to book their hotel rooms.

### U.S. Online Travel Booking Service Market

size, by booking method, 2020 - 2030 (USD Billion)



# PROJECT OBJECTIVE

## Business Problem:

How can Husky Resort reduce its reliance on third party booking sites, and retain a bigger share of its profits?

## Strategy:



Implement a **room reservation system** that Husky Resort can use on their website



Offer **promotional discounts** exclusively on bookings made through the website



Enhance user engagement through guest **reviews and ratings**

# REQUIREMENTS

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## Guest Information Tracking

- Store relevant contact information about **guests**, allowing multiple values for phone numbers.
- Allow guests to make **reservations** and leave **reviews** about their stay.

## Room Booking System

- Ensure no rooms get double booked for overlapping dates
- Each reservation should specify the guest, the room booked, payment details and promotional discounts if applicable.

# REQUIREMENTS

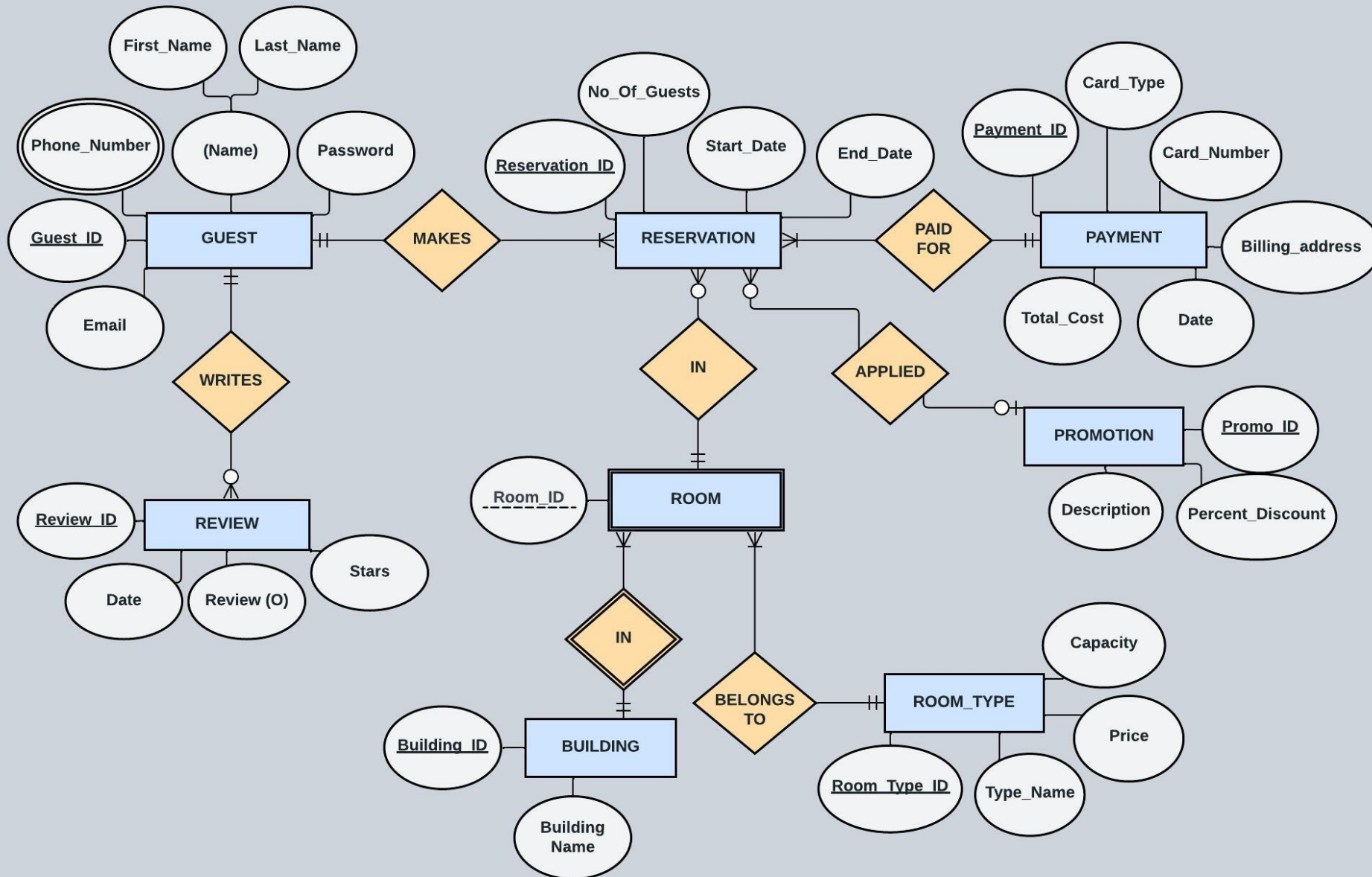
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## Hotel Accommodation Management

- Categorize hotel **rooms** into different **room types** and price tiers
- Uniquely identify hotel rooms through combination of **building** and room number

## Payment Processing

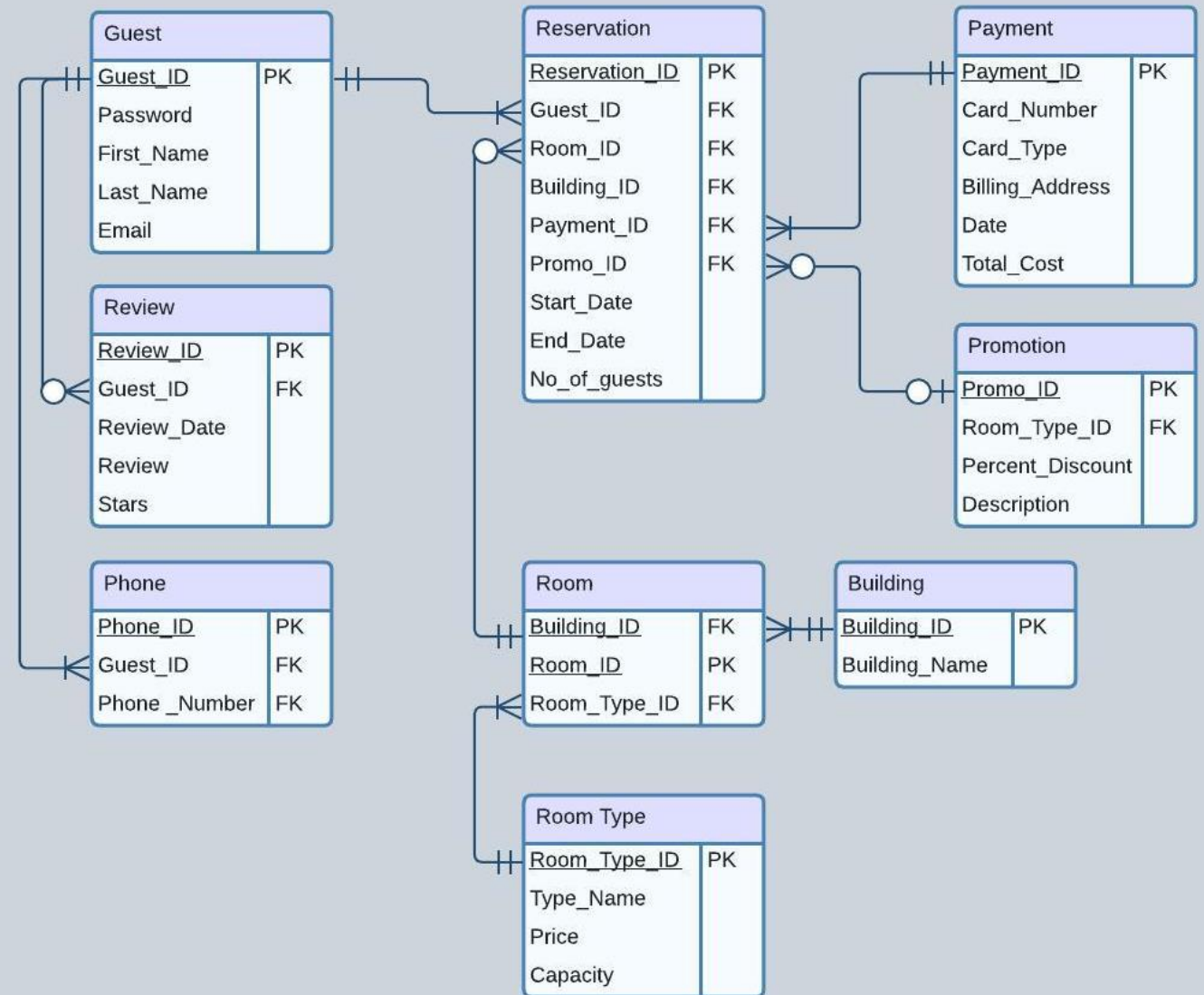
- Store **payment** records including card details, billing address, total price
- Associate every payment with one or more **reservations**



- *Phone\_Number* is a multi-valued attribute to account for international travelers
- *Name* is a composite attribute made up of *First\_Name* and *Last\_Name*
- In entity *Review*, while *Stars* are mandatory a written *Review* is an optional attribute.
- *Room* is a weak entity and *Room\_ID* cannot uniquely identify instances of the entity by itself.

# DATABASE SCHEMA

- Phone numbers stored in new table 'Phone' to handle multiple values for one *Guest\_ID*
- 'Room' table given composite key with combination of *Building\_ID* and *Room\_ID*
- Is in 3NF form since no multivalued columns, partial keys or transitive dependencies in schema





# Database Creation

## Constraints Used:

- Primary Key Constraint
- Foreign Key Constraint
- Not Null Constraint
- Check Constraint

```
CREATE TABLE `Room` (  
  `Room_ID` INT NOT NULL,  
  `Building_ID` VARCHAR(10) NOT NULL,  
  `Room_Type_ID` INT NOT NULL,  
  PRIMARY KEY (`Room_ID`, `Building_ID`),  
  FOREIGN KEY (`Building_ID`) REFERENCES `Building`(`Building_ID`),  
  FOREIGN KEY (`Room_Type_ID`) REFERENCES `RoomType`(`Room_Type_ID`)  
) ENGINE=InnoDB;
```

```
CREATE TABLE `Review` (  
  `Review_ID` INT NOT NULL,  
  `Guest_ID` INT NOT NULL,  
  `Review_Date` DATE NOT NULL,  
  `Review` TEXT,  
  `Stars` INT NOT NULL,  
  PRIMARY KEY (`Review_ID`),  
  FOREIGN KEY (`Guest_ID`) REFERENCES `Guest`(`Guest_ID`),  
  CHECK (Stars BETWEEN 1 AND 5)  
) ENGINE=InnoDB;
```



# Database Creation

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Trigger Used:

'CheckDateOverlap' trigger created to avoid double booking rooms, by ensuring there is no overlap in reservation dates for the same room.

```
DELIMITER |

CREATE TRIGGER CheckDateOverlap
BEFORE INSERT ON Reservation
FOR EACH ROW
BEGIN
    DECLARE conflict_count INT DEFAULT 0;

    SELECT COUNT(*)
    INTO conflict_count
    FROM Reservation
    WHERE NEW.Room_ID = Room_ID
        AND NEW.Building_ID = Building_ID
        AND (
            (NEW.Start_Date < End_Date AND NEW.End_Date > Start_Date) OR
            (NEW.End_Date > Start_Date AND NEW.Start_Date < End_Date)
        );

    IF conflict_count > 0 THEN
        SIGNAL SQLSTATE '45000'
        SET MESSAGE_TEXT = 'Error: New reservation dates overlap with an existing reservation.';
    END IF;
END
|

DELIMITER ;
```

## Business Question #1

How many guests have stayed in rooms of each room type in 2023?

### Query

```
SELECT rt.Type_Name, SUM(r.No_of_guests) AS Guests_Served
FROM RoomType rt
JOIN Room rm
ON rt.Room_Type_ID = rm.Room_Type_ID
JOIN Reservation r
ON rm.Building_ID = r.Building_ID
AND rm.Room_ID = r.Room_ID
WHERE YEAR(r.Start_Date) = 2023
GROUP BY rt.Room_Type_ID
ORDER BY Guests_Served DESC;
```

### Output

Type_Name	Guests_Served
Deluxe Room	14
Standard Room	9
Penthouse Suite	9
Executive Suite	6
Family Suite	6

## Business Question #2

What were the reviews and ratings left by guests staying in building 'A'?

### Query

```
SELECT g.Guest_ID, re.Review, re.Stars
FROM Building b
JOIN Reservation r
ON b.Building_ID = r.Building_ID
JOIN Guest g
ON r.Guest_ID = g.Guest_ID
JOIN Review re
ON g.Guest_ID = re.Guest_ID
WHERE b.Building_ID = 'A'
ORDER BY re.Stars DESC;
```

### Output

101	Fantastic stay! The room was clean and well-furnished.	5
103	Had a great time. The staff were very friendly and helpful.	5
102	Comfortable, but the room service was a bit slow.	4
104	Overall good, but the Wi-Fi connection was poor.	3

## Business Question #3

How many reservations were associated with each promotional offer?

### Query

```
SELECT r.Promo_ID,  
       p.Description,  
       COUNT(r.Reservation_ID) AS No_Of_Bookings  
FROM Reservation r  
JOIN Promotion p  
ON r.Promo_ID = p.Promo_ID  
WHERE r.Promo_ID IS NOT NULL  
GROUP BY r.Promo_ID  
ORDER BY No_Of_Bookings DESC;
```

### Output

Promo_ID	Description	No_Of_Bookings
SR320	10% off on Standard Rooms for stays of 3 days or more	4
DR515	15% discount for Deluxe Rooms on bookings of at least 5 days	2
ES220	20% off on Executive Suite bookings for a minimum of 2 days	1

## Conclusion

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The reservations database can:

- Allow Husky Resort to build a functional online reservation system
- Effectively store reservation, promotions and review data
- Serve as the back-end for the Resort's updated website
- Be easily queried to answer highly specific business questions
- Ensure no rooms get booked for overlapping dates

THANK  
YOU!

ANY QUESTIONS?

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