**Ceng 315**
**Hotel Booking Project**
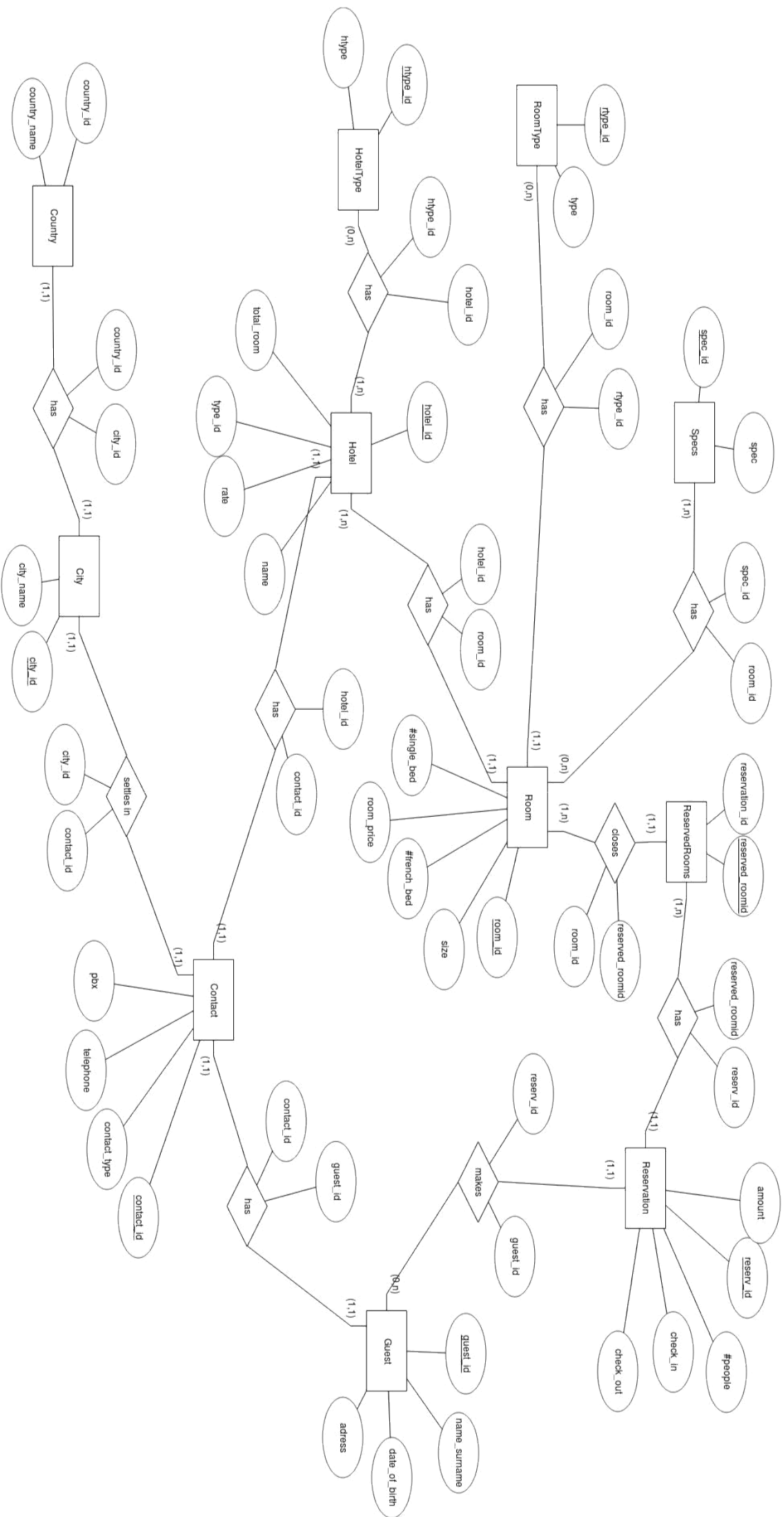**Initial Design**
**Report**

**Term Project**
**"Hotel Booking/Reservation**
**Project"**

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# INTRODUCTION

In our project our aim is creating database system for hotel bookings and reservations. In this project users can search for the hotels in their own city or worldwide, make reservations, hotels can reach to possible maximum guest reach, hotel directors can see their success graph using the relations in the database like which room is booked most, in which time of the year they had more guests. Guests can compare the hotels, see the prices for the desired room types. Hotels can add rooms, room specialities like it has a wifi or air-conditioner. Guests can rate the hotels and hotels can see their rates from all users.

ER Diagram

**RoomType** — rtype_id, htype_id, type

**HotelType** — htype_id, htype

**Country** — country_id, country_name

**City** — city_id, city_name

**Hotel** — hotel_id, total_room, type_id, rate, name

**Contact** — contact_id, pbx, telephone, contact_type

**Room** — room_id, #single_bed, room_price, #french_bed, size

**Specs** — spec_id, spec

**ReservedRooms** — reservation_id, reserved_roomid

**Reservation** — reserv_id, amount, check_out, check_in, #people

**Guest** — guest_id, adress, date_of_birth, name_surname

Relationships:

- RoomType — has (0,n) — Room (1,1)
- HotelType — has (0,n) / (1,n) — Hotel (hotel_id, htype_id)
- Country — has (1,1) — City (country_id, city_id)
- City — settles in (1,1) — Contact (city_id, contact_id)
- Hotel — has (1,1) — Room (hotel_id, room_id)
- Hotel — has (1,1) — Contact (hotel_id, contact_id)
- Room — has (1,1) / (1,n) — Specs (spec_id, room_id)
- Room — closes (1,1) / (0,n) — ReservedRooms (reserved_roomid, room_id)
- ReservedRooms — has (1,n) / (1,1) — Reservation (reserved_roomid, reserv_id)
- Reservation — makes (1,1) / (0,n) — Guest (reserv_id, guest_id)
- Guest — has (1,1) / (0,n) — Contact (guest_id, contact_id)

**ER DIAGRAM IS ON THE NEXT PAGE.**
After the reduction entities and attributes becomes this:
**Entities**

- Hotel
  - hotel_id
  - name
  - contact_id
  - rate
  - type_id
  - total_room
- HotelType
  - htype_id
  - htype
- Guest
  - guest_id
  - name_surname
  - date_of_birth
  - contact_id
  - address
- Contact
  - contact_id
  - contact_type
  - user_id
  - telephone
  - city_id
  - pbx
- Room
  - room_id
  - hotel_id
  - room_type
  - size
  - #single_bed
  - #french_bed
  - room_price

- RoomSpecs
  - rs_id
  - room_id
  - spec_id
- Specs
  - spec_id
  - spec
- RoomType
  - rtype_id
  - type

- Reservation
  - reserv_id
  - check_in
  - check_out
  - hotel_id
  - guest_id
  - #people
  - amount
- ReservedRoom
  - id
  - room_id
  - reservation_id
- City
  - city_id
  - city_name
  - country_id
- Country
  - country_id
  - country_name

## Actions

For guests,
- Making Reservation
- Comparing Hotels
- Rating Hotels
- Search hotels by City and Country
- Search hotels by available rooms and different room

types For hotels,
- See the all reservations since registration
- See the time when most reservations made
- See the rooms which reserved most
- See the popularity by rating
- Selecting the price of the room and make changes on it due to discounts or raise
- Changing the specifications of room
- Adding new specifications

## Possible Users

- Any director works for hotel
- Anyone who wants to make reservation at a hotel around the world

**Tables and Columns in ORACLE DBMS**

- **City**

| | | CITY | | +⌄ |
|---|---|---|---|---|
| EDIT | CITY_ID | CITY_NAME | COUNTRY_ID | |
| ✎ | 1 | ISTANBUL | 1 | |
| ✎ | 2 | ANKARA | 1 | |
| ✎ | 3 | IZMIR | 1 | |
| ✎ | 4 | BREE | 2 | |
| ✎ | 5 | SHIRE | 2 | |
| ✎ | 6 | PARIS | 4 | |
| ✎ | 7 | NEW YORK | 5 | |
| ✎ | 8 | MOSCOW | 6 | |
| ✎ | 9 | STOCKHOLM | 7 | |
| ✎ | 10 | SEVILLA | 9 | |
| ✎ | 11 | BIRMINGHAM | 2 | |

**CITY** +⌄

Table   Data   **Indexes**   Model   Constraints   Grants   Statistics   UI Defaults   Triggers   Dependencies   SQL

Add Column   Modify Column   Rename Column   Drop Column   Rename   Copy   Drop   Truncate   Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|---|---|---|---|---|
| CITY_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805032".nextval | 1 |
| CITY_NAME | VARCHAR2(30) | Yes | - | - |
| COUNTRY_ID | NUMBER(4,0) | Yes | - | - |

We created the CITY table as shown:
        City_id is auto incremented, primary key.
        City_name is the name of the city in varchar.
        Country_id is foreign key, comes from the country table.

Example insertion for city:
        INSERT INTO CITY(CITY_NAME,COUNTRY_ID) VALUES('ISTANBUL',1);

- **Country**

| EDIT | COUNTRY_ID | COUNTRY_NAME |
|---|---|---|
| | 1 | TURKEY |
| | 2 | UNITED KINGDOM |
| | 3 | GERMANY |
| | 4 | FRANCE |
| | 5 | UNITED STATES OF AMERICA |
| | 6 | RUSSIA |
| | 7 | SWEDEN |
| | 8 | NORWAY |
| | 9 | SPAIN |
| | 10 | ITALY |

**COUNTRY**

Table | Data | Indexes | Model | Constraints | Grants | Statistics | UI Defaults | Triggers | Dependencies | SQL

Add Column | Modify Column | Rename Column | Drop Column | Rename | Copy | Drop | Truncate | Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|---|---|---|---|---|
| COUNTRY_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805023".nextval | 1 |
| COUNTRY_NAME | VARCHAR2(30) | Yes | - | - |

We created the Country table as shown above:

Country_id is auto_incremented, primary key
Country name is the name of the country in varchar2 type
Example insertion for Country:
INSERT INTO COUNTRY(COUNTRY_NAME) VALUES('UNITED KINGDOM');

- **Contact**

**CONTACT**

| EDIT | CONTACT_ID | CONTACT_TYPE | TELEPHONE | CITY_ID | PBX | EMAIL |
|---|---|---|---|---|---|---|
| | 1 | h | 02321112233 | 1 | 12346789 | BUDAPEST@BUDAPEST.COM |
| | 2 | h | 1321564894 | 3 | 465465456 | SWISS@SWISS.COM |
| | 3 | h | 2312312312 | 3 | 234234324 | HILTON@HILTON.COM |
| | 4 | h | 7987987987 | 11 | 21321414124 | SHELBY@SHELBY.COM |
| | 5 | h | 1111111111 | 4 | 1111111111 | PRANCINGPONY@PRANCINGPONY.COM |
| | 6 | g | 1111111111 | 5 | 1111111111 | ringbearer@bagend.com |
| | 7 | g | 1111111111 | 3 | 1111111111 | oguzgul@std.iyte.edu.tr |
| | 8 | g | 1111111111 | 3 | 1111111111 | bugrahandonmez@std.iyte.edu.tr |
| | 9 | g | 1111111111 | 2 | 1111111111 | leventaozen@std.iyte.edu.tr |
| | 10 | g | 1111111111 | 3 | 1111111111 | tugbaaydogmus@std.iyte.edu.tr |

| | | | CONTACT | | | + ∨ |
|---|---|---|---|---|---|---|

Table  Data  Indexes  Model  Constraints  Grants  Statistics  UI Defaults  Triggers  Dependencies  SQL

Add Column   Modify Column   Rename Column   Drop Column   Rename   Copy   Drop   Truncate   Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|---|---|---|---|---|
| CONTACT_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805014".nextval | 1 |
| CONTACT_TYPE | CHAR(1) | Yes | - | - |
| TELEPHONE | VARCHAR2(50) | Yes | - | - |
| CITY_ID | NUMBER(4,0) | Yes | - | - |
| PBX | VARCHAR2(50) | Yes | - | - |
| EMAIL | VARCHAR2(50) | Yes | - | - |

We created Contact table as shown above:

Contact_id is auto incremented primary key,
Contact_type is the identicator for the type of the contact informations, in char data type takes 'h' for hotels, 'g' for guests,
Telephone keeps phone information in varhcar2 type,
city_id is foreign key, related to city table holds the city information,
Pbx is varchar2 type keeps the pbx no,
email is varchar2 type keeps the email informations

Example insertion for contact,
INSERT INTO CONTACT (CONTACT_TYPE,TELEPHONE,CITY_ID,PBX,EMAIL) VALUES('h','2322325689',4,'2324657812','PRANCINGPONY@PRANCINGPONY.COM' );

- **Guest**

| | | | GUEST | | | + ∨ |
|---|---|---|---|---|---|---|

Table  Data  Indexes  Model  Constraints  Grants  Statistics  UI Defaults  Triggers  Dependencies  SQL

Query   Count Rows   Insert Row

Data

| EDIT | GUEST_ID | NAME_SURNAME | DOB | CONTACT_ID | ADDRESS |
|---|---|---|---|---|---|
| 🖉 | 1 | FRODO BAGGINS | 09/22/2968 | 6 | SHIRE BAGEND |
| 🖉 | 2 | OGUZ GUL | 08/22/1995 | 7 | IYTE |
| 🖉 | 3 | BUGRAHAN DONMEZ | 12/13/1995 | 8 | IYTE |
| 🖉 | 4 | LEVENT ANIL OZEN | 01/01/1995 | 9 | IYTE |
| 🖉 | 5 | TUGBANUR AYDOGMUS | 01/01/1995 | 10 | IYTE |

| | | | GUEST | | | + ∨ |
|---|---|---|---|---|---|---|

Table  Data  Indexes  Model  Constraints  Grants  Statistics  UI Defaults  Triggers  Dependencies  SQL

Add Column   Modify Column   Rename Column   Drop Column   Rename   Copy   Drop   Truncate   Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|---|---|---|---|---|
| GUEST_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805011".nextval | 1 |
| NAME_SURNAME | VARCHAR2(30) | Yes | - | - |
| DOB | DATE | Yes | - | - |
| CONTACT_ID | NUMBER(4,0) | Yes | - | - |
| ADDRESS | VARCHAR2(50) | Yes | - | - |

We created the guest table with given specifications above,

Guest_id is auto_incremented primary key

name_surname holds the necessary information for name and surname of the guests(clients) in varchar2 type

DOB is in the Date format holds the information for date of birth

Contact_id is foreign key related to contact table

Adress is the varchar2 type home adress.

- **Hotel**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **HOTEL** | | | | | | | + ⌄ |

Table **Data** Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Query    Count Rows    Insert Row

Data

| EDIT | HOTEL_ID | NAME | CONTACT_ID | RATE | RATE_COUNT | TYPE_ID | TOTAL_ROOM |
|---|---|---|---|---|---|---|---|
| ✎ | 1 | GRAND BUDAPEST HOTEL | 1 | 4 | 1 | 1 | 100 |
| ✎ | 2 | Swissotel | 2 | 0 | 0 | 7 | 200 |
| ✎ | 3 | HILTON | 3 | 0 | 0 | 4 | 150 |
| ✎ | 4 | Peaky Blinders | 4 | 0 | 0 | 5 | 1500 |
| ✎ | 5 | Inn of the Prancing Pony | 5 | 0 | 0 | 5 | 5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **HOTEL** | | | | | | | + ⌄ |

**Table** Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Add Column    Modify Column    Rename Column    Drop Column    Rename    Copy    Drop    Truncate    Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|---|---|---|---|---|
| HOTEL_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805000".nextval | 1 |
| NAME | VARCHAR2(30) | Yes | - | - |
| CONTACT_ID | NUMBER(4,0) | Yes | - | - |
| RATE | NUMBER(2,1) | Yes | - | - |
| RATE_COUNT | NUMBER(4,0) | Yes | - | - |
| TYPE_ID | NUMBER(4,0) | Yes | - | - |
| TOTAL_ROOM | NUMBER(4,0) | Yes | - | - |

We created the Hotel as table with specifications given above:

Hotel_id is auto incremented primary key

name is varchar2 type hotel name

contact_id if foreign key from contact table

rate is the point of the hotel given by users out of 5

rate_count is the number of people who vote for the hotel

type_id is the foreign key holds the information for the hotel type

total_room is the total number count in the hotel

- **Hotel_type**

| HOTEL_TYPE | | | +˅ |
|---|---|---|---|
| **EDIT** | **HTYPE_ID** | **HTYPE** | |
| ✎ | 1 | RESORT | |
| ✎ | 2 | HOLIDAY VILLAGE | |
| ✎ | 3 | CAMPING | |
| ✎ | 4 | HOSTEL | |
| ✎ | 5 | CASINO HOTEL | |
| ✎ | 6 | BOUTIQUE HOTEL | |
| ✎ | 7 | GARDEN HOTEL | |
| ✎ | 8 | MOTEL | |
| ✎ | 9 | PENSION | |
| ✎ | 10 | CAPSULE HOTEL | |

| HOTEL_TYPE | | | | +˅ |
|---|---|---|---|---|

Table   Data   Indexes   Model   Constraints   Grants   Statistics   UI Defaults   Triggers   Dependencies   SQL

Add Column    Modify Column    Rename Column    Drop Column    Rename    Copy    Drop    Truncate    Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|---|---|---|---|---|
| HTYPE_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805008".nextval | 1 |
| HTYPE | VARCHAR2(30) | Yes | - | - |

We created this table for different types of hotels(resort, casino hotel etc.)
htype_id is auto incremented primary key
htype holds the type information in varchar2 type

- **Reservation**

| RESERVATION | | | | +˅ |
|---|---|---|---|---|

Table   Data   Indexes   Model   Constraints   Grants   Statistics   UI Defaults   Triggers   Dependencies   SQL

Add Column    Modify Column    Rename Column    Drop Column    Rename    Copy    Drop    Truncate    Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|---|---|---|---|---|
| RESERVATION_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805035".nextval | 1 |
| CHECK_IN | DATE | Yes | - | - |
| CHECK_OUT | DATE | Yes | - | - |
| HOTEL_ID | NUMBER(4,0) | Yes | - | - |
| GUEST_ID | NUMBER(4,0) | Yes | - | - |
| PEOPLE_COUNT | VARCHAR2(2) | Yes | - | - |
| AMOUNT | VARCHAR2(8) | Yes | - | - |

We created this table to keep the reservations:

       reservation_id is the auto incremented primary key,

       check_in is the date of the check in in date data type.

       Check_out is the date of the check out in date data type

       hotel_id is foreign from hotel table keeps the information for the hotel which reservation made,

       guest_id is foreign from guest table keeps the information for the guest who made the reservation,

       people_count is the number of people in the reservation

       amount is the total price for the reservation

- **Reserved Rooms**

**RESERVED_ROOM**   + ⌄

Table | Data | Indexes | Model | Constraints | Grants | Statistics | UI Defaults | Triggers | Dependencies | SQL

Query   Count Rows   Insert Row

Data

| EDIT | RESERVED_ID | ROOM_ID | RESERVATION_ID |
|------|-------------|---------|----------------|
| ✎ | 1 | 2 | 1 |
| ✎ | 21 | 5 | 2 |

**RESERVED_ROOM**   + ⌄

Table | Data | Indexes | Model | Constraints | Grants | Statistics | UI Defaults | Triggers | Dependencies | SQL

Add Column   Modify Column   Rename Column   Drop Column   Rename   Copy   Drop   Truncate   Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|-------------|-----------|----------|---------|-------------|
| RESERVED_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805038".nextval | 1 |
| ROOM_ID | NUMBER(4,0) | Yes | - | - |
| RESERVATION_ID | NUMBER(4,0) | Yes | - | - |

Reserved room table keeps the data for each reservation which rooms are reserved:

       Reserved_id is auto incremented primary key

       room_id is foreign key from room table

       reservation_id is foreign key from reservation table

- **Room**

**ROOM**   + ⌄

Table | Data | Indexes | Model | Constraints | Grants | Statistics | UI Defaults | Triggers | Dependencies | SQL

Query   Count Rows   Insert Row

Data

| EDIT | ROOM_ID | HOTEL_ID | ROOM_TYPE | ROOM_SIZE | SINGLE_BED | FRENCH_BED | ROOM_PRICE |
|------|---------|----------|-----------|-----------|------------|------------|------------|
| ✎ | 1 | 1 | 1 | 80 | 0 | 1 | 150 |
| ✎ | 2 | 1 | 6 | 50 | 2 | 1 | 100 |
| ✎ | 3 | 2 | 2 | 100 | 0 | 1 | 250 |
| ✎ | 4 | 2 | 5 | 20 | 1 | 0 | 40 |
| ✎ | 5 | 3 | 3 | 80 | 1 | 1 | 150 |
| ✎ | 6 | 3 | 4 | 80 | 1 | 1 | 100 |

| | ROOM | | | | +˅ |
|---|---|---|---|---|---|

Table  Data  Indexes  Model  Constraints  Grants  Statistics  UI Defaults  Triggers  Dependencies  SQL

Add Column   Modify Column   Rename Column   Drop Column   Rename   Copy   Drop   Truncate   Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|---|---|---|---|---|
| ROOM_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805026".nextval | 1 |
| HOTEL_ID | NUMBER(4,0) | Yes | - | - |
| ROOM_TYPE | NUMBER(4,0) | Yes | - | - |
| ROOM_SIZE | VARCHAR2(3) | Yes | - | - |
| SINGLE_BED | NUMBER | Yes | - | - |
| FRENCH_BED | NUMBER | Yes | - | - |
| ROOM_PRICE | VARCHAR2(8) | Yes | - | - |

Room table keeps the information of the rooms owned by each hotel:
  room_id is auto incremented primary key,
  hotel_id is foreign key from hotel table,
  room_type is foreign key comes from roomtype table,
  room_size is the size of the room in squaremeter unit,
  single_bed keeps the information of one person sized bed counts
  french_bed keeps the information of double person sized bed counts
  room_price is price of the room for one night stay.

- 

| | ROOM_SPECS | | | +˅ |
|---|---|---|---|---|

Table  Data  Indexes  Model  Constraints  Grants  Statistics  UI Defaults  Triggers  Dependencies  SQL

Query   Count Rows   Insert Row

Data

| EDIT | RS_ID | ROOM_ID | SPEC_ID |
|---|---|---|---|
| ✎ | 1 | 1 | 1 |
| ✎ | 2 | 1 | 2 |
| ✎ | 3 | 2 | 1 |
| ✎ | 4 | 2 | 5 |
| ✎ | 5 | 3 | 4 |
| ✎ | 6 | 4 | 6 |

## RoomSpecs

| | ROOM_SPECS | | | | +˅ |
|---|---|---|---|---|---|

Table  Data  Indexes  Model  Constraints  Grants  Statistics  UI Defaults  Triggers  Dependencies  SQL

Add Column   Modify Column   Rename Column   Drop Column   Rename   Copy   Drop   Truncate   Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|---|---|---|---|---|
| RS_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805029".nextval | 1 |
| ROOM_ID | NUMBER(4,0) | Yes | - | - |
| SPEC_ID | NUMBER(4,0) | Yes | - | - |

RoomSpecs keeps the information for the special extras for the each room(air-conditioner, wifi,minibar):

    rs_id is auto incremented primary key

    room_id is the foreing key from room table

    spec_id is foreign key from spec table

- **Specs**

| | SPECS | |
|---|---|---|
| **EDIT** | **SPEC_ID** | **SPEC** |
| ✐ | 1 | AIR-CONDITIONER |
| ✐ | 2 | WIFI |
| ✐ | 3 | MINIBAR |
| ✐ | 4 | SECURE SAFE |
| ✐ | 5 | TV |
| ✐ | 6 | SEA VIEW |
| ✐ | 7 | MOUNTAIN VIEW |
| ✐ | 8 | POOL VIEW |
| ✐ | 9 | AIR VIEW |
| ✐ | 10 | JACUZZI |

**SPECS**

Table   Data   Indexes   Model   Constraints   Grants   Statistics   UI Defaults   Triggers   Dependencies   SQL

Add Column   Modify Column   Rename Column   Drop Column   Rename   Copy   Drop   Truncate   Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|---|---|---|---|---|
| SPEC_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805017".nextval | 1 |
| SPEC | VARCHAR2(30) | Yes | - | - |

Specs table holds the information for different type of specifications that can be seen on rooms:

    spec_id is auto incremented primary key

    spec is the specification for the room

- **RoomType**

**ROOM_TYPE**

Table   Data   Indexes   Model   Constraints   Grants   Statistics   UI Defaults   Triggers   Dependencies   SQL

Query   Count Rows   Insert Row

Data

| EDIT | RTYPE_ID | RTYPE |
|---|---|---|
| ✐ | 1 | HONEYMOON SUITE |

**ROOM_TYPE**

Table   Data   Indexes   Model   Constraints   Grants   Statistics   UI Defaults   Triggers   Dependencies   SQL

Add Column   Modify Column   Rename Column   Drop Column   Rename   Copy   Drop   Truncate   Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|---|---|---|---|---|
| RTYPE_ID | NUMBER | No | "IM_COURSE"."ISEQ$$_71805020".nextval | 1 |
| RTYPE | VARCHAR2(30) | Yes | - | - |

RoomType table holds the information for different type of rooms that can be seen on hotels:

Rtype_id is auto incremented primary key
rtype is information for room type