

# Database system of “Hotel complex”

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## Project description and business rules

The main purpose of this project is creating a database system for customers of a hotel industry. It allows managing data about hotel types, class, room types, variety of entertainment, services which are stored in this database. Inserted data will be helpful for ruling a hotel back-end data, while helping clients to book a room with suitable and preferred environment.

As a final assessment, course lecturer has requested this project with several offers and rules for more accurate completion of the task. Therefore, I have chosen this topic because of the wide and big amount of information.

The data that is in this database system have gathered through internet sources according to some questionnaires and analysis for making accurate mind map and plan to create tables and relationships between them.

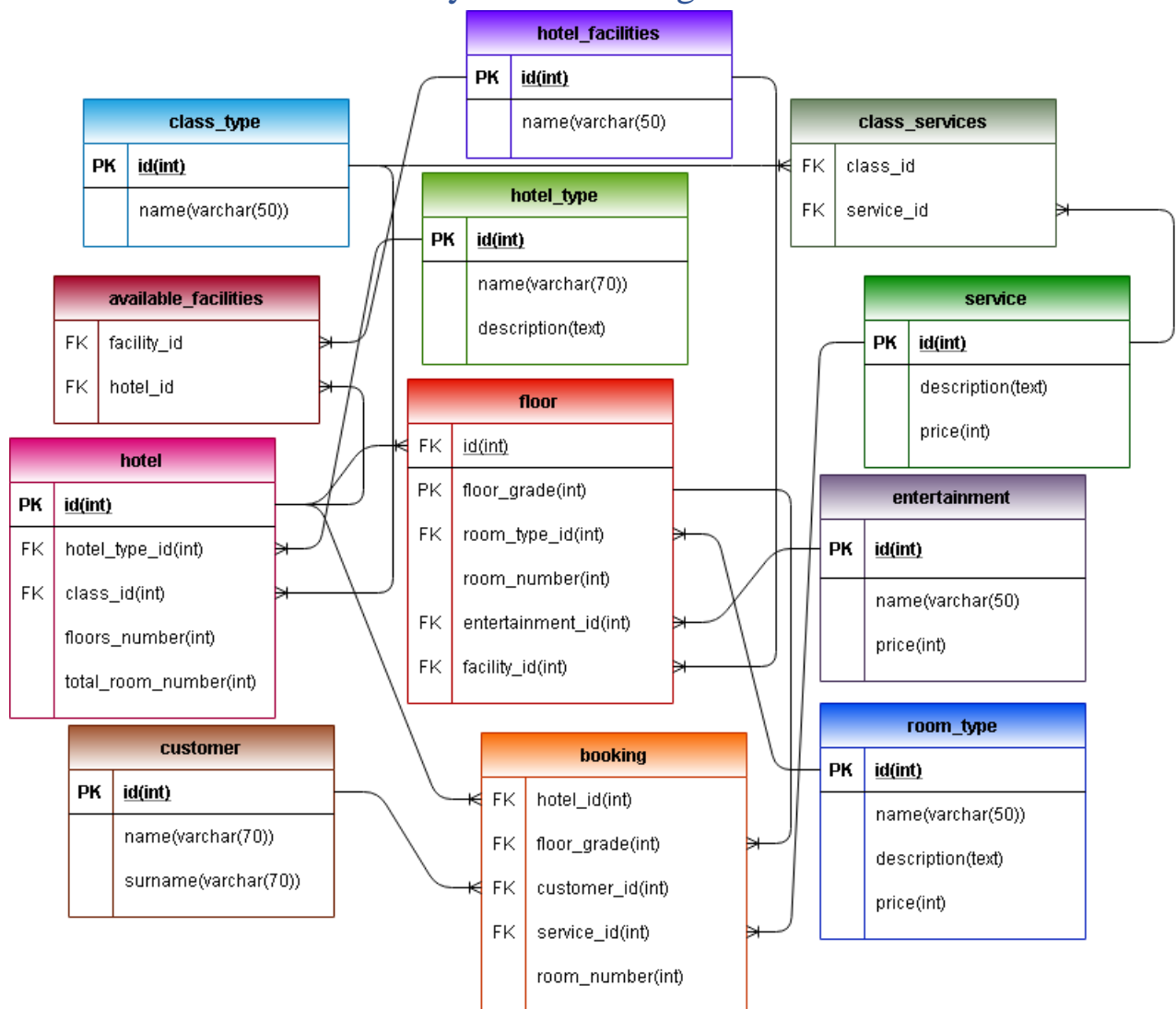
The real users of this database is a manager, administrator of a hotel or customers who needs a room. They can regulate the data in this system and provide better offers for their customers. That is why there exists various types of a hotels, classes, room, facilities, etc. while giving opportunity to build a hotel that will be suitable and comfortable for their residents.

In this report, I am willing to illustrate a way of making database system step by step.

Business rules of the system:

1. Entertainment (1:M) floor
2. Class type (1:M) hotel
3. Class type (1:M) class services
4. Room type (1:M) floor
5. Hotel type (1:M) hotel
6. Service (1:M) class services
7. Hotel facilities (1:M) available facilities
8. Hotel facilities (1:M) floor
9. Customer (1:M) booking
10. Hotel (1:M) floor
11. Hotel (1:M) available facilities
12. Hotel (1:M) booking
13. Floor (1:M) booking

## Entity Relation Diagram



(diagrams.net - free flowchart maker and diagrams online. (n.d.))

## Creating Database

The database contains 10 entities: class type, hotel type, room type, service, entertainment, available facilities, hotel facilities, hotel, floor, class services.

I use “create table” command in order to create tables, their attributes, datatypes and primary key constraints.

```
create table entertainment (
id int primary key,
name varchar(50),
price int
);
create table class_type(
id int primary key,
name varchar(20)
);
```

```

create table room_type(
id int primary key,
name varchar(50) ,
description text ,
price int
);
create table hotel_type(
id int primary key,
name varchar(70) ,
description text
);
create table service(
id int primary key,
description text,
price decimal(2)
);
create table hotel_facilities(
id int primary key,
name varchar(50)
);
create table customer(
id int primary key,
name varchar(70),
surname varchar(70)
);
create table class_services(
);
create table hotel(
id int primary key,
floors_number int,
total_room_number int
);
create table floor(
id int,
floor_grade decimal primary key,
room_type_id int,
room_number int,
entertainment_id int,
facility_id int
);
create table available_facilities(
);
create table booking(
hotel_id int,
floor_grade decimal,

```

```
customer_id int,  
service_id int,  
room_number int  
);
```

## Alter table statements

To link tables I use foreign key:

```
alter table hotel add constraint hotel_type_id foreign key(hotel_type_id) references  
hotel_type(id);  
alter table hotel add constraint class_id foreign key(class_id) references class_type(id);  
alter table available_facilities add constraint hotel_id foreign key(hotel_id) references  
hotel(id);  
alter table available_facilities add constraint facility_id foreign key(facility_id) references  
hotel_facilities(id);  
alter table class_services add constraint class_id foreign key(class_id) references  
class_type(id);  
alter table class_services add constraint service_id foreign key(service_id) references  
service(id);  
alter table floor add constraint id foreign key(id) references hotel(id);  
alter table floor add constraint room_type_id foreign key(room_type_id) references  
room_type(id);  
alter table floor add constraint entertainment_id foreign key(entertainment_id) references  
entertainment(id);  
alter table floor add constraint facility_id foreign key(facility_id) references  
hotel_facilities(id);  
alter table booking add constraint hotel_id foreign key(hotel_id) references hotel(id);  
alter table booking add constraint customer_id foreign key(customer_id) references  
customer(id);  
alter table booking add constraint floor_grade foreign key(floor_grade) references  
floor(floor_grade);  
alter table booking add constraint service_id foreign key(service_id) references service(id);
```

To unable important columns to be empty, I use not null constraint:

```
alter table entertainment alter column name set not null;  
alter table entertainment alter column price set not null;  
alter table class_type alter column name set not null;  
alter table hotel_type alter column description set not null;  
alter table hotel_type alter column name set not null;  
alter table service alter column description set not null;  
alter table service alter column price set not null;  
alter table room_type alter column name set not null;  
alter table room_type alter column description set not null;  
alter table room_type alter column price set not null;
```

```
alter table hotel_facilities alter column name set not null;
alter table customer alter column name set not null;
alter table customer alter column surname set not null;
```

To add column I use “add column”:

```
alter table hotel_facilities add column exampl text;
```

To drop column I use “drop”:

```
alter table hotel_facilities drop column exampl;
```

To rename a table or column we need “rename to”:

```
alter table floor rename to floor_description;
```

## Data Manipulation Language (DML) statements (insert, delete, update)

### Insert

**To input data we need “insert into” statement:**

```
insert into entertainment(id,name,price) values
```

```
(1,'sauna',99.19),
(2,'aqua park',88.69),
(3,'billiards',99.78),
(4,'children playground',71.98),
(5,'computer room',20.18),
(6,'fishing',15.45),
(7,'carting',10.24),
(8,'mini cinema',5.23),
(9,'bowling',6.45),
(10,'swimming pool',10.00);
```

```
insert into class_type(id,name)values
```

```
(1,'Tourist'),
(2,'Standard'),
(3,'Comfort'),
(4,'First class'),
(5,'Luxury');
```

```
insert into hotel_type(id,name,description)values
```

```
(1,'Apartment hotel','An apartment hotel (also residential hotel, or extended-stay hotel) is a serviced apartment complex that uses a hotel-style booking system. It is similar to renting an apartment, but with no fixed contracts and occupants can "check out" whenever they wish. '),
(2,'Hotel barge','Some hotel barges just offer bed and breakfast; others also provide lunch, full board, or more. At least one hotel barge offers self-catering. Five Star barges have a qualified and experienced chef on board who can provide cuisine of an internationally high standard, from daily fresh local ingredients - together with local wines and spirits. Hotel barges provide luxurious guest rooms (cabins), with en-suite bathrooms. They will normally also include a saloon (lounge) and dining room, and an open sun deck. Some barges also feature Jacuzzi, hot tubs and small plunge pools on deck) . Many barges, especially those operating in southern France, are air-conditioned. Many hotel barges provide mobile internet access. '),
```

(3,'Bed and breakfast','A bed and breakfast (typically shortened to B&B or BnB) is a small lodging establishment that offers overnight accommodation and breakfast. Bed and breakfasts are often private family homes and typically have between four and eleven rooms, with six being the average.[1] In addition, a B&B usually has the hosts living in the house.'),

(4,'Botel','A motel or boatel is a boat that serves as a hotel or hostel. The word is a portmanteau of boat and hotel. Motels may range from small or larger purpose-built or converted boats or other watercraft, to converted ships. They may be permanently moored or grounded, or spend part of the year taking guests on tours.'),

(5,'Boutique hotel','A boutique hotel is a small hotel which typically has between 10 and 100 rooms[1] in settings with upscale accommodations and individualized unique selling points (USPs). Many boutique hotels are furnished in a themed, stylish and/or aspirational manner. The popularity of the boutique concept has prompted some multi-national hotel companies to try to capture a market share.'),

(6,'Bunkhouse','The modern bunkhouse today is still in existence on some large ranches that are too far away from towns for an easy daily commute, it now has electricity, central heating and modern indoor plumbing. Bunkhouses are very different from hotels: bunkhouses often just offer a basic accommodation with few amenities for passers-by such as hikers.'),

(7,'Capsule hotel','Capsule hotels vary in size, from 50 or so capsules to 700, and primarily cater to men. Some capsule hotels offer separate sections for male and female guests, or even separate floors and separate elevators. Clothes and shoes are exchanged for a yukata and slippers on entry, and a towel and bathrobe may also be provided. Luggage and valuables are usually stored in lockers or—if available—in-room safes. Guests are asked not to smoke or eat in the capsules.'),

(8,'Caravanserai','Caravanserai was a roadside inn where travelers (caravaners) could rest and recover from the days journey. Caravanserais supported the flow of commerce, information and people across the network of trade routes covering Asia, North Africa and Southeast Europe, most notably the Silk Road. Although many were located along rural roads in the countryside, urban versions of caravanserais were also historically common in cities throughout the Islamic world, though they were often called by other names such as khan, wikala, or funduq.'),

(9,'Casa particular','A casa particular is basically a private family establishment that provides paid lodging, usually on a short-term basis. This term applies to full apartments and houses, rooms inside peoples homes, mini-apartments or rooms with separate entrance (studio or efficiency type rooms).'),

(10,'Casino hotel','A casino hotel is an establishment consisting of a casino with temporary lodging provided in an on-premises hotel. Customers receive the benefits of both gambling facilities and lodging.'),

(11,'Choultry','Choultry is a resting place, an inn or caravansary for travelers, pilgrims or visitors to a site, typically linked to Buddhist, Jain and Hindu temples. A choultry provides seating space, rooms, water and sometimes food financed by a charitable institution. Its services are either at no cost, or nominal rates, or it is up to the visitor to leave whatever they wish as a donation. They were also used by officials traveling on public business.[1] Many major temples have mandapam and pillared halls, some called Thousand pillared halls with an attached kitchen for servicing pilgrims and travelers to the temple.'),

(12,'Coaching inn','The inn served the needs of travellers, for food, drink, and rest. The attached stables, staffed by hostlers, cared for the horses, including changing a tired team for a fresh one. Coaching inns were used by private travellers in their coaches, the public riding stagecoaches between one town and another, and (in England at least) the mail coach. Just as with roadhouses in other countries, although many survive, and some still offer overnight accommodation, in general coaching inns have lost their original function and now operate as ordinary pubs.'),



(13,'Condo hotel','Condo hotels are typically high-rise buildings developed and operated as luxury hotels, usually in major cities and resorts.[1] These hotels have condominium units which allow someone to own a full-service vacation home. When they are not using this home, they can leverage the marketing and management done by the hotel chain to rent and manage the condo unit as it would any other hotel room.'),

(14,'Albergo Diffuso ',Translated into English as "dispersed hotel", "scattered hotel" or "virtual hotel", it is a hotel that is not in a single block, but converted out of various historic buildings in a small community. Run directly by an individual owner and providing normal hotel services. Rooms distributed in existing converted buildings in historic centres. Central reception area with food available. Part of a genuine community so that guests can be part of local life'),

(15,'Eco hotel','These improvements can include non-toxic housekeeping practices, the use of renewable energy, organic soaps, energy-efficient light fixtures, and recycling programs. It is beneficial for these hotels to get certain certifications in order to be environmentally compliant. One beneficial certification specifically for hotels is the LEED certification. A LEED-certified hotel provides benefits to the environment through energy efficient practices. An eco hotel should follow a set of best practices in order to do their part to benefit the environment. Some of these best practices include serving local organic food in restaurants, reusing linens when a guest is staying for more than one night, and incorporating in-room recycling and composting programs.'),

(16,'Extended stay hotel','Extended stay hotels (also called serviced apartments) are a type of lodging with features unavailable at standard hotels. These features are intended to provide more home-like amenities. Extended-stay hotels typically have self-serve laundry facilities and offer discounts for extended stays, beginning at 5 or 7 days. They also have guestrooms (or "suites") with kitchens. The kitchens include at a minimum usually: a sink, a refrigerator (usually full size), a microwave oven, and a stovetop. Some kitchens also have dishwashers and conventional ovens. Extended stay hotels are aimed at business travelers on extended assignments, families in the midst of a relocation, and others in need of temporary housing.'),

(17,'Flophouse','The modern flophouses, sometimes branded as "pods", usually have partitions between beds for privacy, and are created from existing houses or apartments. They are often marketed toward commuters who stay in the city during the workweek.'),

(18,'Garden hotels','Many hotels converted from large private residences have gardens designed by famous garden designers or are particularly notable for their gardens. Alternative uses have had to be found for castles, palaces, monasteries, mansions and country seats which have become financially unviable as homes, and their conversion into hotels has often been successful. This has led to the creation of "garden hotels", many of which are better known for their gardens than for their modern use as hotels'),

(19,'Gasthaus','A Gasthaus (also called Gasthof, Landhaus, or Pension) is a German-style inn or tavern with a bar, a restaurant, banquet facilities and hotel rooms for rent. Gasthäuser are typically found in smaller towns and are often family-owned.'),

(20,'Guest house','A guest house (also guesthouse) is a kind of lodging. In some parts of the world (such as for example the Caribbean), guest houses are a type of inexpensive hotel-like lodging. In still others, it is a private home which has been converted for the exclusive use of lodging. The owner usually lives in an entirely separate area within the property and the guest house may serve as a form of lodging business. This type of accommodation presents some benefits such as personalized, healthy and homemade food, quietness, inexpensiveness.'),

(21,'Heuhotel','A heuhotel (German for "hay hotel") is a form of public lodging in which guests pay for sleeping accommodations in bedding made of hay, typically in shared quarters.'),

(22,'Holiday cottage','A holiday cottage, holiday home, or vacation property is accommodation used for holiday vacations, corporate travel, and temporary housing often for less than 30 days. Such properties are typically small homes, such as cottages, that travelers

can rent and enjoy as if it were their own home for the duration of their stay. The properties may be owned by those using them for a vacation, in which case the term second home applies; or may be rented out to holidaymakers through an agency.'),

(23,'Hostal','A hostel is a type of lodging found mostly in Spain and Hispanic America. Hostales tend to be cheaper than hotels. They normally have a bar, restaurant or cafeteria where drinks and food are sold to guests and locals alike. Accommodations typically include private bedrooms, and sometimes apartments, available for either short or long term rent. Linens and towels are usually provided, unless it is a long term apartment rental in which case the guest is considered a resident and does not receive cleaning and other services. Guests sometimes share a common bathroom, but a number of rooms with en suite bathrooms may also be available.'),

(24,'Hostel','A hostel is a form of low-cost, short-term shared sociable lodging where guests can rent a bed, usually a bunk bed in a dormitory, with shared use of a lounge and sometimes a kitchen. Rooms can be mixed or single-sex and have private or shared bathrooms. Private rooms may also be available, but the property must offer dormitories to be considered a hostel.[1][2] Hostels are popular forms of lodging for backpackers, cycle tourists, and gap year travelers. They are part of the sharing economy.[3] Benefits of hostels include lower costs and opportunities to meet people from all over the world, find travel partners, and share travel ideas.'),

(25,'Hotel garni','An hotel garni is an hotel that offers accommodation, breakfast, drinks and, at most, snacks,[1] but not the classical hotel restaurant. It is similar to a bed and breakfast but is designed and run as an hotel, not a private residence. The term is common in France and Germany. Hotels garnis are usually privately run and generally have fewer rooms than hotels that are part of a chain. Hotels garni dont generally have an all-night reception and no night porter.'),

(26,'Ice hotel','An Ice Hotel is a temporary hotel made up of snow and sculpted blocks of ice.[1] Ice hotels, dependent on sub-freezing temperatures, are constructed from ice and snow and typically have to be rebuilt every year. Ice hotels exist in several countries, and they have varying construction styles, services and amenities, the latter of which may include ice bars, restaurants, chapels, saunas and hot tubs.'),

(27,'Inn','Inns are generally establishments or buildings where travelers can seek lodging, and usually, food and drink. Inns are typically located in the country or along a highway; before the advent of motorized transportation they also provided accommodation for horses.'),

(28,'Love hotel','A love hotel is a type of short-stay hotel found around the world operated primarily for the purpose of allowing guests privacy for sexual activities. The period of a "rest" varies, typically ranging from one to three hours. Cheaper daytime off-peak rates are common. In general, reservations are not possible, and leaving the hotel will forfeit access to the room; overnight-stay rates become available only after 22:00. These hotels may be used for prostitution, although they are sometimes used by budget-travelers sharing accommodation.'),

(29,'Motel','Motels differ from hotels in their location along highways, as opposed to the urban cores favored by hotels, and their orientation to the outside (in contrast to hotels, whose doors typically face an interior hallway). Motels almost by definition include a parking lot, while older hotels were not usually built with automobile parking in mind. '),

(30,'Patient hotel','A patient hotel provides accommodation for patients, and often their family, who need to be close to a hospital, but do not need a hospital bed. They are usually in the grounds of a hospital, and are used by people who are recuperating or awaiting treatment.'),

(31,'Pension (lodging)','A pension is a type of guest house or boarding house. In contrast to bed and breakfasts, more usual in the United States, pensions typically offer not only breakfast, but also lunch, dinner and sometimes even tea. Rather than paying for the room and each meal separately, guests select a plan which either comprises overnight

accommodation, breakfast, lunch and dinner (full pension[3] / full board[4]) or the preceding minus the lunch (half board / demi-pension[5] / half pension[6])),

(32,'Pension hotel','In the Philippines a pension hotel is somewhat different from pension lodging. A pension hotel is usually not a boarding house, but is a real hotel. A pension hotel provides rooms with no or few amenities. They usually have private bathrooms with showers. A pension hotel usually has a window air conditioning unit, but the hallways and other areas of the hotel are usually cooled only by fans. Some pension hotels, especially in beach areas, provide only ceiling fans for cooling. The rates for pension hotels are much lower than midrange hotels.'),

(33,'Pop-up hotel','The pop-up hotel trend is part of a global approach of the hospitality industry to create authentic, ultra-local and transient experiences. The concept of pop-up hotels is also being reused by consumer brands and pop-up retail operations.'),

(34,'Resort hotel','A resort hotel is a hotel which often contains full-sized luxury facilities with full-service accommodations and amenities. These hotels may attract both business conferences and vacationing tourists and offer more than a convenient place to stay.[1] These hotels may be referred to as major conference center hotels, flagship hotels, destination hotels, and destination resorts. The market for conference and resort hotels is a subject for market analysis. These hotels as destinations may be characterized by distinctive architecture, upscale lodgings, ballrooms, large conference facilities, restaurants, and recreation activities such as golf or skiing. They may be located in a variety of settings from major cities to remote locations.'),

(35,'Roadhouse (premises)','A roadhouse (Australia and the United States) or stopping house (Canada) is a small mixed-use premises typically built on or near a major road in a sparsely populated area or an isolated desert region that services the passing travellers, providing food, drinks, accommodation, fuel and parking spaces to the guests and their vehicles. The premises generally consist of just a single dwelling, permanently occupied by a nuclear family, usually between two and five family members. The words meaning varies slightly by country. The historical equivalent was often known as a coaching inn, providing food, drinks, and rest to people and horses.'),

(36,'Ryokan (inn)','A ryokan (旅館)[a] is a type of traditional Japanese inn that typically feature tatami-matted rooms, communal baths, and other public areas where visitors may wear yukata and talk with the owner.'),

(37,'Serviced apartment','A serviced apartment (also known as a service apartment or an extended stay apartment) is a fully furnished apartment[1] available for short-term or long-term stay, providing hotel-like amenities such as room service, and professional house keeping services. '),

(38,'Hotelship','River cruisers are used as hotelships for a limited time and intermittently. Whereas a hotel has a fixed address and is used permanently, hotelships are only in any one location for a defined duration. Ship owners and shipping companies are particularly keen on this use of river cruisers as, unlike in the case of deep sea cruise ships, there is no seasonal transfer of ships to warmer areas. The result is therefore more efficient use of the ships outside the main cruising season.'),

(39,'Single room occupancy','Single room occupancy (more commonly abbreviated to SRO) is a form of housing that is typically aimed at residents with low or minimal incomes who rent small, furnished single rooms with a bed, chair, and sometimes a small desk.'),

(40,'Timeshare','A timeshare (sometimes called vacation ownership) is a property with a divided form of ownership or use rights. These properties are typically resort condominium units, in which multiple parties hold rights to use the property, and each owner of the same accommodation is allotted their period of time. Units may be sold as a partial ownership, lease, or "right to use", in which case the latter holds no claim to ownership of the property. The ownership of timeshare programs is varied, and has been changing over the decades.'),

(41,'Transit hotel','A transit hotel is a short-stay hotel that is situated in the transit zone of international airports, where passengers on extended waits between planes (typically a minimum of six hours) can stay while waiting for their next flight. The hotel is within the airside security/passport checkpoints and close to the airport terminals.'),

(42,'Turbaza','A Turbaza (Russian: Турбаза, Ukrainian: Турбаза; also пансионат) is a holiday accommodation, a type of tourist camp or tourist base that arose in the Soviet era and is still common in the post-Soviet countries. Turbazas are commonly leased-out to groups or firms renting the entire facility to provide holiday accommodation for their members or employees. They are generally rustic, located in rural areas that offer outdoor recreation. Dining, and often sleeping, is accommodated in a large, open, common area.');

--( Category:Hotel types - Wikipedia. (n.d.).)

insert into hotel\_facilities(id,name)values

(1,'car park'),

(2,'conference hall'),

(3,'gym'),

(4,'fitness'),

(5,'pool bar'),

(6,'shops and boutiques'),

(7,'restaurant'),

(8,'bar/pub'),

(9,'lobby bar'),

(10,'salons'),

(11,'casino');

insert into room\_type(id,name,description,price)values

(1,'Single','A room assigned to one person. May have one or more beds',149),

(2,'Double','A room assigned to two people. May have one or more beds',151),

(3,'Triple','A room that can accommodate three persons and has been fitted with three twin beds, one double bed and one twin bed or two double beds',77),

(4,'Quad','A room assigned to four people. May have two or more beds',82),

(5,'Queen','A room with a queen-sized bed. May be occupied by one or more people',83),

(6,'King','A room with a king-sized bed. May be occupied by one or more people',187),

(7,'Twin','A room with two twin beds. May be occupied by one or more people',64),

(8,'Hollywood Twin Room','A room that can accommodate two persons with two twin beds joined together by a common headboard. Most of the budget hotels tend to provide many of these room settings which cater both couples and parties in two',84),

(9,'Double-double','A Room with two double ( or perhaps queen) beds. And can accommodate two to four persons with two twin, double or queen-size beds',109),

(10,'Studio','A room with a studio bed- a couch which can be converted into a bed. May also have an additional bed.',162),

(11,'Suite / Executive Suite','A parlour or living room connected with to one or more bedrooms. (A room with one or more bedrooms and a separate living space.)',67),

(12,'Mini Suite or Junior Suite','A single room with a bed and sitting area. Sometimes the sleeping area is in a bedroom separate from the parlour or living room.',173),

(13,'President Suite | Presidential Suite','The most expensive room provided by a hotel.

Usually, only one president suite is available in one single hotel property. Similar to the normal suites, a president suite always has one or more bedrooms and a living space with a strong emphasis on grand in-room decoration, high-quality amenities and supplies, and tailor-made services (e.g. personal butler during the stay).',177),

(14,'Apartments / Room for Extended Stay','This room type can be found in service apartments and hotels which target for long stay guests. Open kitchens, cooking equipment, dryer, washer etc. are usually available in the room. Housekeeping services are only provided once in a week or two times in a week.',160),

(15,'Connecting rooms','Rooms with individual entrance doors from the outside and a connecting door between. Guests can move between rooms without going through the hallway.',125),

(16,'Murphy Room','A room that is fitted with a sofa bed or a Murphy bed (i.e. a bed that folds out of a wall or closet) which can be transformed from a bedroom in the night time to a living room in daytime.',107),

(17,'Accessible Room / Disabled Room','This room type is mainly designed for disabled guests and it is required by law that hotels must provide a certain number of accessible rooms to avoid discrimination.',106),

(18,'Cabana','This type of room is always adjoining to the swimming pool or have a private pool attached to the room.',174),

(19,'Adjoining rooms','Rooms with a common wall but no connecting door.',118),

(20,'Adjacent rooms','Rooms close to each other, perhaps across the hall',57),

(21,'Villa','A special form of accommodation which can be found in some resort hotels. It is a kind of stand-alone house which gives extra privacy and space to hotel guests. A fully equipped villa contains not only bedrooms and a living room but a private swimming pool, Jacuzzi and balcony. It is suitable for couples, families and large groups',193),

(22,'Executive Floor/Floored Room','A room located on the 'executive floor' which enables convenient access to the executive lounge. Besides, some hotels also provide 'female executive floors' with their rooms assigned to female guests only due to safety and security reasons',122),

(23,'Smoking / Non-Smoking Room','Many hotels provide both smoking and non-smoking rooms for their guests. In order to minimize the effects of secondhand smoke exposure on non-smoking guests',180);

insert into service(id,description,price)values

(1,'100% of the rooms with shower/WC or bath tub/WC',1.1),

(2,'Daily room cleaning',8.10),

(3,'100% of the rooms with colour-TV together with remote control',12.41),

(4,'Table and chair',17.11),

(5,'Soap or body wash',3.11),

(6,'Reception service',5.71),

(7,'Facsimile at the reception',19.68),

(8,'Publicly available telephone for guests',10.11),

(9,'Extended breakfast',10.11),

(10,'"Beverage offer in the hotel"',16.64),

(11,'"Deposit possibility"',10.11),

(12,'"Breakfast buffet"',30.71),

(13,'"Reading light next to the bed"',10.11),

(14,'"Bath essence or shower gel"',17.11),

(15,'"Bath towels"',18.17),

(16,'"Linen shelves"',13.27),

(17,'"Offer of sanitary products (e.g. toothbrush, toothpaste, shaving kit) "',13.45),

(18,'"Credit cards"',15.42),

(19,'"Reception opened 14 hours, accessible by phone 24 hours from inside and outside, bilingual staff (e.g. German/English) "',17.11),

(20,'"Three piece suite at the reception, luggage service"',14.14),

(21,'"Beverage offer in the room"',10.11),

(22,'"Telephone in the room"',10.11),

(23,'"Internet access in the room or in the public area"',10.11),

(24,'"Heating facility in the bathroom, hair-dryer, cleansing tissue"',10.11),

(25,'"Dressing mirror, place to put the luggage/suitcase"',10.11),

(26,'"Sewing kit, shoe polish utensils, laundry and ironing service"',10.11),

(27, "Additional pillow and additional blanket on demand",10.11),  
 (28, "Systematic complaint management system",10.11),  
 (29, 'Reception opened 18 hours, accessible by phone 24 hours from inside and outside',10.11),  
 (30, 'Lobby with seats and beverage service',10.11),  
 (31, 'Breakfast buffet or breakfast menu card via room service',10.11),  
 (32, 'Minibar or 24 hours beverages via room service',10.11),  
 (33, 'Upholstered chair/couch with side table',10.11),  
 (34, 'Bath robe and slippers on demand',10.11),  
 (35, "Cosmetic products (e.g. shower cap, nail file, cotton swabs), vanity mirror, tray of a large scale in the bathroom",10.11),  
 (36, "Internet access and internet terminal",10.11),  
 (37, "À la carte"-restaurant",10.11),  
 (38, "Reception opened 24 hours, multilingual staff",10.11),  
 (39, "Doorman-service or valet parking",10.11),  
 (40, "Concierge, page boy",10.11),  
 (41, "Spacious reception hall with several seats and beverage service",10.11),  
 (42, "Personalized greeting for each guest with fresh flowers or a present in the room",10.11),  
 (43, "Minibar and food and beverage offer via room service during 24 hours",10.11),  
 (44, "Personal care products in flacons",10.11),  
 (45, "Internet-PC in the room",10.11),  
 (46, "Safe in the room",10.11),  
 (47, "Ironing service (return within 1 hour), shoe polish service",10.11),  
 (48, "Turndown service in the evening",10.11),  
 (49, "Mystery guesting",10.11);  
 insert into customer (id, name, surname) values  
 (1, 'Conny', 'Bromehead'),  
 (2, 'Cati', 'O'Meara'),  
 (3, 'Katrine', 'Snoad'),  
 (4, 'Vivian', 'Wealleans'),  
 (5, 'Zaccaria', 'Maleby'),  
 (6, 'Dunc', 'Redwall'),  
 (7, 'Filia', 'Oliveira'),  
 (8, 'Martelle', 'Perillo'),  
 (9, 'Dylan', 'Somerlie'),  
 (10, 'Wenda', 'Kinforth');  
 insert into class\_services(class\_id,service\_id)values  
 (1,1),(1,2),(1,3),(1,4),(1,5),(1,6),(1,7),(1,8),(1,9),(1,10),(1,11),  
 (2,1),(2,2),(2,3),(2,4),(2,5),(2,6),(2,7),(2,8),(2,9),(2,10),(2,11),  
 (2,12),(2,13),(2,14),(2,15),(2,16),(2,17),(2,18),  
 (3,1),(3,2),(3,3),(3,4),(3,5),(3,6),(3,7),(3,8),(3,9),(3,10),(3,11),  
 (3,12),(3,13),(3,14),(3,15),(3,16),(3,17),(3,18),  
 (3,19),(3,20),(3,21),(3,22),(3,23),(3,24),(3,25),(3,26),(3,27),(3,28),  
 (4,1),(4,2),(4,3),(4,4),(4,5),(4,6),(4,7),(4,8),(4,9),(4,10),(4,11),  
 (4,12),(4,13),(4,14),(4,15),(4,16),(4,17),(4,18),  
 (4,19),(4,20),(4,21),(4,22),(4,23),(4,24),(4,25),(4,26),(4,27),(4,28),  
 (4,29),(4,30),(4,31),(4,32),(4,33),(4,34),(4,35),(4,36),(4,37),  
 (5,1),(5,2),(5,3),(5,4),(5,5),(5,6),(5,7),(5,8),(5,9),(5,10),(5,11),  
 (5,12),(5,13),(5,14),(5,15),(5,16),(5,17),(5,18),  
 (5,19),(5,20),(5,21),(5,22),(5,23),(5,24),(5,25),(5,26),(5,27),(5,28),  
 (5,29),(5,30),(5,31),(5,32),(5,33),(5,34),(5,35),(5,36),(5,37),

```

(5,38),(5,39),(5,40),(5,41),(5,42),(5,43),(5,44),(5,45),(5,46),(5,47),(5,48),(5,49);
insert into hotel(id,hotel_type_id,class_id,floors_number,total_room_number)values
(1,8,4,17,344),
(2,5,3,5,470),
(3,34,3,20,197),
(4,29,3,14,428),
(5,15,5,15,173),
(6,10,1,2,20),
(7,7,2,3,30),
(8,5,1,3,50),
(9,26,1,4,100),
(10,40,2,2,20);
insert into
floor(id,floor_grade,room_type_id,room_number,entertainment_id,facility_id)values
(1,1.01,null,null,null,null),
(1,1.02,null,null,null,6),
(1,1.03,null,null,null,11),
(1,1.04,null,null,null,7),
(1,1.05,null,null,4,null),
(1,1.06,1,50,null,null),
(1,1.07,1,50,null,null),
(1,1.08,1,50,null,null),
(1,1.09,2,40,null,null),
(1,1.10,2,40,null,null),
(1,1.11,4,25,null,null),
(1,1.12,4,25,null,null),
(1,1.13,9,20,null,null),
(1,1.14,9,20,null,null),
(1,1.15,13,10,null,null),
(1,1.16,13,10,null,null),
(1,1.17,14,4,null,null),
(2,2.01,null,null,null,7),
(2,2.02,1,135,null,null),
(2,2.03,1,135,null,null),
(2,2.04,2,100,null,null),
(2,2.05,2,100,null,null),
(3,3.01,null,null,1,null),
(3,3.02,null,null,1,null),
(3,3.03,null,null,1,null),
(3,3.04,null,null,null,6),
(3,3.05,null,null,null,10),
(3,3.06,null,null,null,11),
(3,3.07,null,null,null,8),
(3,3.08,null,null,4,null),
(3,3.09,1,40,null,null),
(3,3.10,7,30,null,null),
(3,3.11,2,30,null,null),
(3,3.12,3,20,null,null),
(3,3.13,4,20,null,null),
(3,3.14,5,20,null,null),
(3,3.15,13,10,null,null),
(3,3.16,14,5,null,null),

```

```

(3,3.17,17,10,null,null),
(3,3.18,18,10,null,null),
(3,3.19,22,1,null,null),
(3,3.20,22,1,null,null),
(4,4.01,null,null,null,10),
(4,4.02,null,null,null,5),
(4,4.03,null,null,3,null),
(4,4.04,null,null,null,6),
(4,4.05,null,null,null,8),
(4,4.06,null,null,4,null),
(4,4.07,1,80,null,null),
(4,4.08,2,80,null,null),
(4,4.09,5,80,null,null),
(4,4.10,7,80,null,null),
(4,4.11,9,80,null,null),
(4,4.12,10,13,null,null),
(4,4.13,6,14,null,null),
(4,4.14,22,1,null,null),
(5,5.01,null,null,3,null),
(5,5.02,null,null,null,11),
(5,5.03,null,null,null,5),
(5,5.04,null,null,4,null),
(5,5.05,null,null,null,6),
(5,5.06,1,30,null,null),
(5,5.07,1,30,null,null),
(5,5.08,2,23,null,null),
(5,5.09,3,20,null,null),
(5,5.10,4,20,null,null),
(5,5.11,7,20,null,null),
(5,5.12,9,10,null,null),
(5,5.13,11,10,null,null),
(5,5.14,14,5,null,null),
(5,5.15,17,5,null,null),
(6,6.01,null,null,null,null),
(6,6.02,2,20,null,null),
(7,7.01,null,null,1,null),
(7,7.02,1,15,null,null),
(7,7.03,2,15,null,null),
(8,8.01,null,null,1,null),
(8,8.02,1,30,null,null),
(8,8.03,2,20,null,null),
(9,9.01,null,null,null,8),
(9,9.02,1,40,null,null),
(9,9.03,2,30,null,null),
(9,9.04,2,30,null,null),
(10,10.01,null,null,null,8),
(10,10.02,1,20,null,null);
insert into available_facilities(hotel_id,facility_id,entertainment_id)values
(1,5,null), (1,null,3), (1,null,1), (1,null,3),(2,7,null),(3,1,null),(3,6,null),(3,10,null),
(3,11,null),(3,8,null),(3,null,4),(4,10,null),(4,5,null),
(4,null,3), (4,6,null), (4,8,null), (4,null,4),(5,null,3), (5,11,null), (5,5,null),

```



```
(5,null,4), (5,6,null),(6,null,null) ,(7,null,1) ,(8,null,1),
(9,8,null) ,(10,8,null);
insert into booking(customer_id,hotel_id,floor_grade,room_number,service_id)values
(1,1,1.14,2,4),
(2,4,4.08,1,1),
(3,3,3.16,1,6),
(4,2,2.02,1,7),
(5,4,4.09,1,2),
(6,5,5.13,1,9),
(7,8,8.03,1,11),
(8,4,4.13,2,5),
(9,2,2.04,1,10),
(10,7,7.02,1,8);
```

### Update

**To alter the data we need “update” statement:**

Let’s say that price the entertainment have been changed, so to change data we write:

```
update entertainment set price=10.00 where id=3;
update entertainment set price=7.00 where id=9;
```

Let’s say that price for services is changed, so to change data we need to write:

```
update entertainment set price=7.00 where id=9;
update entertainment set price=6.00 where id=25;
update entertainment set price=15.50 where id=29;
```

Let’s say that the top floor of the fourth building is under repairing, hence the date of the hotel and floor needs changes, so we need to write:

```
update hotel set total_room_number=427 where id=4;
update floor set room_type_id=null,room_number=null,entertainment_id=null where
id=4 and floor_grade=4.14;
```

Let’s say that all hotel industry’s headmaster prohibited to install gym to hotels, instead of it he/she recommends to remake it as a ballroom and gym, in this case we need to write:

```
update hotel_facilities set name=“ballroom/gym” where id=3;
```

let’s say that the fifth hotel changed casino to billiards, so we need to change date of the floor and available facilities:

```
update floor set entertainment_id=4 where id=5 and floor_grade=2;
update available_facilities set facility_id=4 where hotel_id=5 and facility_id=11;
```

### Delete

**To delete some data rows we need “delete”statement”, but in order to manipulate with data we need to drop a connection between all tables:**

```
alter table hotel drop constraint hotel_type_id;
alter table hotel drop constraint class_id;
alter table available_facilities drop constraint hotel_id;
alter table available_facilities drop constraint entertainment_id;
alter table available_facilities drop constraint facility_id;
```

```

alter table class_services drop constraint service_id;
alter table floor drop constraint id;
alter table floor drop constraint room_type_id;
alter table floor drop constraint entertainment_id;
alter table floor drop constraint facility_id;

```

Let's say customer Dunc Redwall cancelled booking, in this case we write:

```
delete from booking where customer_id=6;
```

We deleted his booking so we also need to delete data about customer:

```
delete from customer where id=6;
```

Let's say that third buildings fourth floor under repairs, so we need to delete data about that floor and facility that located there:

```

delete from floor where floor_grade=3.04;
delete from available_facilities where hotel_id=3 and facility_id=6;

```

Let's say that requirement for class assessment have been changed and now "À la carte-restaurant" service is will be demanded to get "luxury" class, so we need to write:

```
delete from class_services where class_id=4 and service_id=37;
```

## Queries

To find a most expensive room type we need to use aggregate function "max":

```
select max(price) from room_type;
```

To find a cheapest entertainment we need to use aggregate function "min":

```
select min(price) from entertainment;
```

To find an average price of all services we need to use aggregate function "avg":

```
select avg(price) from service;
```

Let's say that receptionist wants to find free single, double, king rooms and their location to register new client, then we will write:

```

select distinct hotel.id, floor.floor_grade, room_type.name, floor.room_number-
booking.room_number as free_rooms from hotel
inner join floor on hotel.id=floor.id
inner join booking on booking.floor_grade=floor.floor_grade
inner join room_type on floor.room_type_id=room_type.id
where room_type.name in('Single','Double','King')
order by hotel.id asc;

```

To find amount of different room types worldwide we need to use aggregate function "count" and "distinct" to differentiate them:

```
select count(distinct name) from room_type;
```

To find how much each client need to pay:

```
select customer.id, customer.name, customer.surname,
booking.room_number*room_type.price+service.price as cheque from booking inner
join customer on booking.customer_id=customer.id inner join service on
booking.service_id=service.id inner join floor on
booking.floor_grade=floor.floor_grade inner join room_type on
floor.room_type_id=room_type.id;
```

In case if clients request more rooms ore services we need to write:

```
select customer.id, customer.name, customer.surname,
sum(booking.room_number*room_type.price+service.price) as cheque from booking
inner join customer on booking.customer_id=customer.id inner join service on
booking.service_id=service.id inner join floor on
booking.floor_grade=floor.floor_grade inner join room_type on
floor.room_type_id=room_type.id group by customer.id order by customer.id;
```

let's say that clients wants to know about room types on each floor of each building, so we need to write:

```
select floor.floor_grade, room_type.name from floor left join room_type on
floor.room_type_id=room_type.id order by floor.floor_grade;
```

Let's say administrators want to find a data about residents who lives in 3 star and upper hotels which length of name is not bigger than 20 characters. We need to write:

```
select customer.id, customer.name, customer.surname,class_type.name from
customerleft join booking on customer.id=booking.customer_id inner join hotel on
booking.hotel_id=hotel.id inner join class_type on hotel.class_id=class_type.id inner
join hotel_type on hotel.hotel_type_id=hotel_type.idwhere class_type.id>=3 and
length(hotel_type.name) between 0 and 20;
```

Let's say customer wants to find a hotel where exists "King" type rooms. To show it we need a query:

```
select hotel.id,room_type.name from hotel
left join floor on hotel.id=floor.id
inner join room_type on floor.room_type_id=room_type.id where room_type.name
in('King')
group by hotel.id,room_type.name order by hotel.id;
```

## Subqueries

Let's say, I have an interest in type of rooms in 14<sup>th</sup> floor of the first building. This condition requires query:

```
select room_type.name, room_type.description from room_type where id=(select
room_type_id from floor where floor_grade=1.14);
```

Let's find a client who ordered "Reception service" service:

```
select name,surname from customer where id=(select customer_id from booking
where service_id=6);
```

To show all available services in 3 star hotel we need to write:

```
select service.description from service where id in (select service_id from
class_services where class_id=3);
```

Let's find entertainments in the 3<sup>rd</sup> hotel:

```
select entertainment.name from entertainment where id=any(select entertainment_id
from floor where id=3);
```

To check the facilities of hotels we need to write:

```
select hotel.id,hotel_facilities.name from hotel,hotel_facilities
where (hotel_facilities.id,hotel.id) in (select facility_id,hotel_id from
available_facilities) group by hotel.id,hotel_facilities.name order by hotel.id;
```

## Reflection

The first time when I was searching the topic for my project, I had a think about something simple and interesting, therefor I chose system “Hotel complex”, but who would think it will be harder and complicated along the development of the database. The start point was common. I made a questionnaire for myself in order to get clear the vision of where I should aim. After this challenge, I figured out some points and started analyzing the results of previous questionnaire. Eventually I made the first business rule and ERD of the system.

The most complex part of making a database was storing them with data and checking the connection between them. To be honest, I did not think that it would take approximately a week since for me at that time everything was clear. The problems appeared when I started researching an information as a data in the internet, so that I had to remodel my ERD several times, because every time I had feeling that something is strange and always kept in mind the reasons of an attribute existence and bounding them between each other. As a sequence, I used alter statements to highlight important attributes and to set a connection according to diagram. Writing DML statements have been time-consuming part of whole project, since the main process was editing each data taken from the internet and spent much of energy with several days to it. Update and delete parts really was confusing and the reason of this situation belongs to my disagreement with changing all tables, hence I used them to some entities.

I found it easy to make join statements since I memorized and have been taught very well while queries and subqueries took more time than expected. The hardest point of this part was seeking what to write whereas easiest was proper writing by order.

After, completing report I made a .ppt file for demonstration as required, because I needed this information for a base of making slides.

## References

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