In the implementation of our application, we have used MySQL as our DBMS (Database Management System) and the programming language that we have used is Python and Tkinter.
Note: The user interface is constrained as most engineering went into properly constructing the database.

To install our application, please follow these steps:

1. Install and create a MySQL server.
2. Import the SQL file provided in the source code folder to your MySQL server using a MySQL client.
3. Execute the login.py python file in a terminal and connect it to your MySQL server.
4. Make sure the MySQL server is properly set up. To confirm this, click on the ‘show bookings’ button to view previously added bookings. You can also search by Id as well as delete bookings
5. As an aside, due to limits on the UI library used, to access the hotel chain admin dashboard, you could either open a separate terminal from the one running login.py and run loginH.py, this redirects to the hotel chain admin dashboard.
6. Repeat step 4 for the hotel chain, i.e click the “show hotels” button.

DDLs start on the next page.

CREATE TABLE booking_history (id varchar(20) NOT NULL, customer_id varchar(20) DEFAULT NULL, room_id int DEFAULT NULL, booking_date date DEFAULT NULL, PRIMARY KEY (id)
CREATE TABLE bookings (id varchar(20) NOT NULL, customer_id varchar(20) NOT NULL, room_id int NOT NULL, booking_date date NOT NULL, PRIMARY KEY (id), KEY bookings_ibfk_2 (room_id), KEY bookings_ibfk_1 (customer_id), KEY idx_booking_date (booking_date), CONSTRAINT bookings_ibfk_1 FOREIGN KEY (customer_id) REFERENCES customers (ssn_or_sin) ON DELETE CASCADE, CONSTRAINT bookings_ibfk_2 FOREIGN KEY (room_id) REFERENCES rooms (room_number) ON DELETE CASCADE
CREATE TABLE customers (ssn_or_sin varchar(20) NOT NULL, full_name varchar(255) NOT NULL, address varchar(255) NOT NULL, registration_date date NOT NULL, PRIMARY KEY (ssn_or_sin)
CREATE TABLE employees (ssn_or_sin varchar(20) NOT NULL, hotel_id int NOT NULL, full_name varchar(255) NOT NULL, address varchar(255) NOT NULL, role varchar(50) NOT NULL, PRIMARY KEY (ssn_or_sin), KEY hotel_id (hotel_id), CONSTRAINT employees_ibfk_1 FOREIGN KEY (hotel_id) REFERENCES hotel (id) ON DELETE CASCADE
CREATE TABLE hotel (id int NOT NULL AUTO_INCREMENT, name varchar(255) NOT NULL, star_category int NOT NULL, address varchar(255) NOT NULL, num_rooms int NOT NULL, contact_email varchar(255) NOT NULL, contact_phone varchar(20) NOT NULL, hotel_chain_id int NOT NULL, PRIMARY KEY (id), KEY hotel_chain_id (hotel_chain_id), KEY idx_hotel_name (name), CONSTRAINT hotel_ibfk_1 FOREIGN KEY (hotel_chain_id) REFERENCES hotel_chain (id) ON DELETE CASCADE
CREATE TABLE hotel_chain (id int NOT NULL AUTO_INCREMENT, name varchar(255) NOT NULL, central_office_address varchar(255) NOT NULL, num_hotels int NOT NULL, contact_email varchar(255) NOT NULL, contact_phone varchar(20) NOT NULL, PRIMARY KEY (id)) ENGINE=InnoDB AUTO_INCREMENT=7 DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci; CREATE TABLE renting (renting_id varchar(20) NOT NULL, customer_id varchar(20) NOT NULL, room_id int NOT NULL, employee_id varchar(20) NOT NULL, start_date date NOT NULL, end_date date NOT NULL, booking_id varchar(20) DEFAULT NULL, PRIMARY KEY (renting_id), KEY customer_id (customer_id), KEY employee_id (employee_id), KEY renting_ibfk_2 (room_id), KEY renting_ibfk_4 (booking_id), CONSTRAINT renting_ibfk_1 FOREIGN KEY (customer_id) REFERENCES customers (ssn_or_sin), CONSTRAINT renting_ibfk_2 FOREIGN KEY (room_id) REFERENCES rooms (room_number) ON DELETE CASCADE, CONSTRAINT renting_ibfk_3 FOREIGN KEY (employee_id) REFERENCES employees (ssn_or_sin), CONSTRAINT renting_ibfk_4 FOREIGN KEY (booking_id) REFERENCES bookings (id) ON DELETE CASCADE) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;
CREATE TABLE `hotel_chain` (
`id` int NOT NULL AUTO_INCREMENT,
`name` varchar(255) NOT NULL,
`central_office_address` varchar(255) NOT NULL,
`num_hotels` int NOT NULL,
`contact_email` varchar(255) NOT NULL,
`contact_phone` varchar(20) NOT NULL,

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PRIMARY KEY (`id`)
) ENGINE=InnoDB AUTO_INCREMENT=7 DEFAULT CHARSET=utf8mb4
COLLATE=utf8mb4_0900_ai_ci;
CREATE TABLE `renting` (
`renting_id` varchar(20) NOT NULL,
`customer_id` varchar(20) NOT NULL,
`room_id` int NOT NULL,
`employee_id` varchar(20) NOT NULL,
`start_date` date NOT NULL,
`end_date` date NOT NULL,
`booking_id` varchar(20) DEFAULT NULL,
PRIMARY KEY (`renting_id`),
KEY `customer_id` (`customer_id`),
KEY `employee_id` (`employee_id`),
KEY `renting_ibfk_2` (`room_id`),
KEY `renting_ibfk_4` (`booking_id`),
CONSTRAINT `renting_ibfk_1` FOREIGN KEY (`customer_id`) REFERENCES `customers`
(`ssn_or_sin`),
CONSTRAINT `renting_ibfk_2` FOREIGN KEY (`room_id`) REFERENCES `rooms`
(`room_number`) ON DELETE CASCADE,
CONSTRAINT `renting_ibfk_3` FOREIGN KEY (`employee_id`) REFERENCES `employees`
(`ssn_or_sin`),
CONSTRAINT `renting_ibfk_4` FOREIGN KEY (`booking_id`) REFERENCES `bookings` (`id`)
ON DELETE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;
CREATE TABLE `renting_history` (
`renting_id` varchar(20) NOT NULL,
`customer_id` varchar(20) DEFAULT NULL,
`room_id` int DEFAULT NULL,
`employee_id` varchar(20) DEFAULT NULL,
`start_date` date DEFAULT NULL,
`end_date` date DEFAULT NULL,
`booking_id` varchar(20) DEFAULT NULL,
PRIMARY KEY (`renting_id`),
KEY `customer_id` (`customer_id`),
KEY `employee_id` (`employee_id`),
KEY `renting_history_ibfk_3_idx` (`room_id`),
CONSTRAINT `renting_history_ibfk_1` FOREIGN KEY (`customer_id`) REFERENCES
`customers` (`ssn_or_sin`),
CONSTRAINT `renting_history_ibfk_2` FOREIGN KEY (`employee_id`) REFERENCES
`employees` (`ssn_or_sin`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;
CREATE TABLE `rooms` (
`room_number` int NOT NULL,
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`hotel_id` int NOT NULL,
`price` decimal(10,2) NOT NULL,
`amenities` text,
`capacity` enum('single','double','triple','quad') NOT NULL,
`view` enum('sea','mountain','none') NOT NULL,
`extendable` tinyint(1) NOT NULL,
`damages` text,
`status` enum('available','unavailable') NOT NULL DEFAULT 'available',
PRIMARY KEY (`room_number`),
KEY `idx_rooms_hotel_id` (`hotel_id`),
KEY `idx_room_status` (`status`),
CONSTRAINT `rooms_ibfk_1` FOREIGN KEY (`hotel_id`) REFERENCES `hotel` (`id`) ON
DELETE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;
CREATE TABLE renting_history ( renting_id varchar(20) NOT NULL, customer_id varchar(20)
DEFAULT NULL, room_id int DEFAULT NULL, employee_id varchar(20) DEFAULT NULL,
start_date date DEFAULT NULL, end_date date DEFAULT NULL, booking_id varchar(20)
DEFAULT NULL, PRIMARY KEY (renting_id), KEY customer_id (customer_id), KEY
employee_id (employee_id), KEY renting_history_ibfk_3_idx (room_id), CONSTRAINT
renting_history_ibfk_1 FOREIGN KEY (customer_id) REFERENCES customers (ssn_or_sin),
CONSTRAINT renting_history_ibfk_2 FOREIGN KEY (employee_id) REFERENCES employees
(ssn_or_sin) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
COLLATE=utf8mb4_0900_ai_ci; CREATE TABLE rooms ( room_number int NOT NULL,
hotel_id int NOT NULL, price decimal(10,2) NOT NULL, amenities text, capacity
enum('single','double','triple','quad') NOT NULL, view enum('sea','mountain','none') NOT NULL,
extendable tinyint(1) NOT NULL, damages text, status enum('available','unavailable') NOT
NULL DEFAULT 'available', PRIMARY KEY (room_number), KEY idx_rooms_hotel_id
(hotel_id), KEY idx_room_status (status), CONSTRAINT rooms_ibfk_1 FOREIGN KEY
(hotel_id) REFERENCES hotel (id) ON DELETE CASCADE ) ENGINE=InnoDB DEFAULT
CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;
```