



Hotel Bookings

You are writing a script that simulates booking reservations in a hotel. Guests will be requesting to book with the following search criteria:

- Start/End dates
- Smoking vs non-smoking room
- Single or double bed

You will be provided a set of input json files (rooms.json, reservations.json, and requests.json) that you should load up in your script. You can imagine rooms.json and reservations.json as the prior state of what rooms are available and what rooms are already booked and when.

Your task is to process the requests in requests.json one by one in the order provided, as if they were real time requests. Assign rooms to the requests and add them to the list of reservations. The contents of reservations.json contain the current reservations from prior requests to book (not provided). You must iterate through each requests.json in the order provided.

Note the following requirements (hopefully should be intuitive!):

- When a room is reserved, it cannot be reserved by another guest on overlapping dates.
- Whenever there are multiple available rooms for a request, assign the room with the lower final price.
- Whenever a guest requests a single, you may assign them to a double bed. When a guest requests a double, however, you must assign them a double.
- Do not put smokers in non-smoking rooms
- Do not put non-smokers in smoking rooms

The final price in a reservation is simply determined by the following formula:

$$(\text{daily_daily} * \text{num_days}) + \text{cleaning_fee}$$

You are also given a file answers.json to check your answer. The content of the json file is simply the full list of reservations, including the prior ones. You will find all the requests in requests.json will have a corresponding entry in there and your algorithm should generate the same output in the same order.

Please upload this submission in Github and send me the link. Also, make sure to answer the questions in the following page.

You may use whatever software packages or dependencies you'd like.

Feel free to reach out if you have any questions.



Questions

1. How long did it take you to complete this assignment? Did you get stuck anywhere?
2. Please analyze the runtime complexity of your solution in terms of Big O. Is your algorithm fast enough for 1000 requests?
3. Imagine a system in which it adjusted prices depending on various factors such as number of remaining availability, weekends, or whether there was an event in town that weekend. How might you accommodate this change through the schema?



Rooms Schema

id	String	Unique id for the room
num_beds	Number	Number of beds the room has (always 1 or 2)
allow_smoking	Boolean	Determines whether smoking or non-smoking room
daily_rate	Number	Daily rate (in dollars) used for the calculation of the final price
cleaning_fee	Number	Cleaning fee (in dollars) used to calculate the final price.

Reservation Schema

id	String	Unique id for the reservation
room_id	String	Reference to the room that is reserved
checkin_date	Date (String)	Start date of the reservation in YYYY-MM-DD format (ISO8601)
checkout_date	Date (String)	End date of the reservation in YYYY-MM-DD format (ISO8601)
total_charge	Number	The total price (in dollars) for this reservation

Request Schema

id	String	Unique id of the request
min_beds	Number	Minimum number of beds that the guest would like to stay in (always 1 or 2). Guests requesting 1 bed may stay in either singles or doubles in rooms schema.
is_smoker	Boolean	Whether the guest is a smoker. Must match to allow_smoking under rooms.
checkin_date	Date (String)	Date of check in. Duration of the stay cannot overlap another reservation.
checkout_date	Date (String)	Date of check out. Duration of the stay cannot overlap another reservation.