

Assessments for SDE 3

As part of the recruitment process, you are required to complete the assessment mentioned below. A few things to note while attempting the assessments.

- You may upload a google doc with the relevant links (working app link, link to your code repository and a google doc with the solution)
- Please ensure that the privacy of the relevant google docs/files is set to “Anyone with the link”
- In case you have any questions, you may reach out to us at careers@unstop.com
- The deadline to complete the assessment is 3 days from the date of registration. In case you need an extension please drop us an email at careers@unstop.com
- Name your file as: YourName_AssessmentSubmission.
- Please avoid sharing your assessment over email and submit only on the link shared via mail <https://unstop.com/jobs/software-development-engineer-unstop-942370>

Important Notes:

- Verify that all links are accessible before submitting.
- Late submissions will not be considered.

Assignment : Hotel Room Reservation System

Problem Statement:

A hotel has **97 rooms** distributed across **10 floors**:

- **Floors 1-9:** Each floor has **10 rooms**, numbered sequentially (e.g., Floor 1: 101-110, Floor 2: 201-210, and so on).
- **Floor 10 (Top Floor):** Has only **7 rooms**, numbered **1001-1007**.
- **Building Structure:**
 1. A staircase and lift are located on the **left side** of the building.
 2. Rooms on each floor are arranged sequentially from **left to right**, with the **first room** on each floor being closest to the stairs/lift.
- **Room Proximity (Travel Time):**
 1. **Horizontal travel:** Moving between two adjacent rooms on the same floor takes **1 minute per room**.
 2. **Vertical travel:** Moving between floors takes **2 minutes per floor** using the stairs/lift.
- **Booking Rules:**
 1. A single guest can book up to **5 rooms** at a time.
 2. Priority is to book rooms on the same floor first.
 3. If rooms are not available on the same floor, Priority is to book rooms that minimize the **total travel time** between the first and last room in the booking.
 4. If the required number of rooms is unavailable on one floor, booking should span across floors, prioritizing rooms that minimize the combined vertical and horizontal travel time.

Example Scenario:

1. **Available Rooms:**
 - Floor 1: 101, 102, 105, 106
 - Floor 2: 201, 202, 203, 210
 - Floor 3: 301, 302
2. A guest wants to book 4 rooms:
 - Rooms **101, 102, 105, 106** on Floor 1 will be selected because they minimize total travel time.
3. If only **2 rooms** are available on Floor 1 (e.g., 101, 102):
 - The system will select rooms **201, 202** from Floor 2, as this minimizes vertical (2 minutes) and horizontal travel times.

Your task is to create a room reservation system that dynamically calculates the total travel time between booked rooms and optimally assigns rooms based on these rules.

Deliverables:

Submit a live url with following functionality:

- Interface to enter no of rooms and book them.
- Visualization of booking
- Button to generate random occupancy on rooms,
- Button to reset entire booking

No of Rooms

Book

Reset

Random

A 10x10 grid of squares, intended for drawing a 10-sided polygon. The grid is composed of 10 rows and 10 columns of squares. The first row contains 7 squares, the second row contains 10 squares, and the remaining rows (3 through 10) each contain 10 squares. The grid is used to draw a 10-sided polygon by connecting the centers of the squares.