**Description**

A new restaurant in Islamabad wants to establish a niche by providing an online reservation system for their customers. The administration wants to use the same system to ensure optimal resource (servers, tables, time) allocation for any impromptu guests. The restaurant plans to stay open between 11:00am – 10:00pm, serving both lunch and dinner. With experienced staff members, the maximum time required to prepare a single item from the full menu (25 items with 4 appetizers, 2 soups, 12 main course dishes, 3 side dishes, and 4 deserts) is 30 mins. The staff members include 4 chef, 6 servers, and 1 manager, besides other support staff.

**Lab Task**

Develop a restaurant reservation system for a medium sized restaurant in Islamabad. Ensure your implementation is correct by writing Unit Tests.

Once a schedule has been generated allow the staff to print a monthly schedule, listing the dates, times and the guest names for the reservations.

# Documentation

I am aiming to making a restaurant reservation system that will allow the restaurant to manage table, time and servers efficiently.

# Introduction

Following are the ways that will enable the required resource allocation:

## Table

Priority needs to be given to larger parties, booking the extra-large table. Such parties can set their own preferred time limit, as long as the hotel timing rules are not violated (11AM to 10PM). There are three other types of table, namely large (6 people), medium (4 people), and small (2 people). There are 3 large, 8 medium and 4 small tables. Except for the larger parties, the restaurant allocates time for the other parties itself, ensuring max bookings, while giving plenty of time to eat food simultaneously.

## Approach

1. Investigate and Understand the Problem

Restaurant reservation system for efficient time, table and servers management

1. Split into sub-problems

Two types of orders: Reservation or Impromptu

Case Impromptu:

There has to be 2 small, 3 medium and 1 large table for impromptu booking

Ask for number of people and number of dishes

Allocate table, chef and waiter accordingly

Case Reservation:

2 small, 5 medium, 2 large, and an extra large table available for booking

Ask for number of people and number of dishes

Allocate time, table, chef and waiter accordingly

1. Search for familiarity

Table, chef, waiter allocation

1. Solve by Analogy
2. Means-Ends Analysis
3. Divide and Conquer
4. Building solutions

Assumption 1: Large parties wanting to book extra large table have to inform at least 24 hours in advance.

Assumption 2: I’ve set identifiers for tables

|  |  |
| --- | --- |
| TABLE | NUMBER |
| Small | 1 to 4 |
| Medium | 5 to 12 |
| Large | 13 to 15 |
| Extra large | 16 |

## Design

Time slots

1 month schedule

Status of evey table,

3D data structure day,time, har time mein table ki info

4 chef in 30 misn 4 logo ko serve

Time allocation

Remove table after 2 hours,

# How to Run

# Analysis

Cin order type

Impromptu \

Class impromptu object

Reservation

Class reservarion object

3D array

Day, time, table

e.g on Monday, at 12:00 PM, table 1, 2, 6, 8 are booked