Low Level Design Document

Introduction

This Low Level Design (LLD) document outlines the implementation details for **RoomRate - Hospitality Occupancy Dashboard**. The project aims to deliver a Power BI dashboard for monitoring hotel occupancy rates, average daily rates (ADR), and revenue per available room (RevPAR), with interactive date and location filtering.

---

1. System Components

Component	Description	Key Responsibilities
Data Source	Raw hotel data (CSV/DB/API)	Provide occupancy, ADR, RevPAR data
Data Model	Power BI data model	Structure and relate data
ETL Process	Data import and transformation	Clean, aggregate, and load data
Dashboard UI	Power BI report/dashboard	Visualize metrics, enable filtering
Slicers	Date and location filters	User-driven data filtering

---

2. Class/Interface Overview

Class/Interface	Description	Key Methods/Attributes
DataImporter	Loads data into Power BI	`importData()`, `validateData()`
DataTransformer	Cleans and aggregates data	`cleanData()`, `aggregateMetrics()`
OccupancyModel	Represents hotel metrics	`occupancyRate`, `adr`, `revpar`
DashboardView	Power BI visual interface	`renderCharts()`, `applySlicers()`
SlicerComponent	Date/location filter interface	`onChange()`, `selectedValue`

---

3. Data Structure Overview

Field Name	Type	Description
hotel_id	String	Unique hotel identifier
date	Date	Date of record
location	String	Hotel location
rooms_available	Integer	Total rooms available
rooms_occupied	Integer	Rooms occupied

revenue	Decimal	Total revenue for the day
occupancy_rate	Decimal	rooms_occupied / rooms_available
adr	Decimal	revenue / rooms_occupied
revpar	Decimal	revenue / rooms_available

---

4. Algorithms/Logic

Metric Calculation (Pseudocode):

```
for each record in data:
    occupancy_rate = rooms_occupied / rooms_available
    adr = revenue / rooms_occupied if rooms_occupied > 0 else 0
    revpar = revenue / rooms_available if rooms_available > 0 else 0
```

Filtering Logic:

- On slicer change, filter dataset by selected date range and location.
- Update all visuals to reflect filtered data.

---

5. Error Handling

Scenario	Handling Approach
Missing/invalid data fields	Skip record, log warning
Division by zero (ADR/RevPAR)	Set metric to 0, log info
Data import failure	Show error message, halt ETL
Slicer selection out of range	Show “No data available” message

---

End of Document