Executive Summary

This Jupyter Notebook presents a **hotel management system** designed to handle **room allocations, customer data management, and reservation tracking** efficiently using **Python and MySQL**. The system integrates database operations to ensure real-time data storage, retrieval, and validation.

Key Features and Functionalities:

1. Database Integration with MySQL

- Establishes a connection with a MySQL database (`hotel`) to store and manage customer records.
- Uses SQL queries to fetch, insert, and update data dynamically.
- Ensures structured data storage for easy retrieval and management.

2. Room Allocation System

- Assigns rooms dynamically from a predefined range (`101-499`).
- Prevents duplicate bookings by checking if a room is already occupied before assignment.
- Implements automated room number allocation and tracking.

3. Customer Data Management

- Stores customer details, including name, room number, and other booking details.
- Retrieves customer records from the database efficiently.
- Uses structured error handling to validate user inputs and avoid inconsistencies.

4. Unique Reference Number (URN) System

- Generates **unique reference numbers (URNs)** to identify each booking.
- Ensures uniqueness by maintaining a record of already generated URNs.

5. User Interaction and Input Handling

- Provides an interactive prompt for users to enter booking details.
- Includes validation checks to handle incorrect or missing inputs gracefully.
- Allows a **"cancel"** option to exit operations without affecting stored data.

Conclusion

This **hotel management system** streamlines the booking process by integrating **database-driven automation, dynamic room allocation, and customer data management**. The use of

Python and MySQL enhances the efficiency of hotel operations, reduces manual errors, and ensures smooth management of customer reservations.