DB Topic & OBJ

Team Name: POLARIS

Project Name: Baggage and Catering Management System (Airport)

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Purpose of project

The Baggage Tracking and Catering Management System in Airport focuses on a relational database design to manage core operations such as passenger information, baggage tracking, catering, and meal preference. It would provide the smoothest data storage, retrieval, and analytics for efficiency and effectiveness.

Mission Statement

The aim is to develop an integrated database system that will involve entities like passenger management, baggage management, and catering management, which will enable the access of data in real time and, at the same time, improve the service and operational transparency.

Mission Objective

1. Design and then implement an entity-based database system, normalizing tables to manage data better.
2. Establish relationships among these entities such as Passenger, Baggage, and Meal to support complex queries and reports.
3. Integrate real-time updates to baggage tracking, meal preference, and catering inventory.
4. Ensure data security, accuracy, and scalability relevant to airport operations.

Project Outline

The Baggage Tracking and Catering Management System organizes major airport operations. It includes passengers, bookings, payments, flights, routes, airports, baggage, meals, and catering services. Passenger information, bookings, meal orders, flow of baggage, and damage occurrences are traced in the database. The relational schemas of the relations between entities use primary and foreign keys in order to ensure that the design of tables is normalized and the data are integral. The different functionalities include passenger management, baggage tracking, and catering management, all of which are based on real-time operations. SQL queries offer CRUD operations, while constraints and triggers maintain the accuracy of data. Reporting and analytics cover baggage status, meal inventory, passenger preferences, and flight operations. This system optimizes resource management and enhances the overall efficiency of the airport.

Project outcomes/key deliverables

- Database Schema: Normalized tables for each entity, which includes Passenger, Booking, and Payment.
- ER Diagram: It is a relationship and data flow diagram of the entities.
- SQL Queries: Baggage tracking, meal preference update queries, and payment management. Data Validation: Primary keys were added along with foreign keys and data types.
- Reports: Predefined queries to generate reports on metrics, including damaged baggage, catering inventory, and flight schedules.

Business Case

This database management system will meet these operational challenges of the airport by offering the following features:
1. Precise baggage tracking: This way, cases of misplaced or damaged baggage will be reduced.
2. Efficient catering: There is a smooth allocation of meals, and updating of inventories.
3. Data integration: Centralizes passenger, baggage, and flight data for real-time access.
4. Operational insights: Informs smarter decisions through analytical reports on baggage performance and catering services.
5. Scalability and reliability: Handles volumes of data but ensures data integrity and security.