The University of Newcastle, Australia

SCHOOL OF INFORMATION AND PHYSICAL SCIENCES

COMP3350 – Advanced Database

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Introduction

This report outlines the design of a data warehouse schema for LeisureAustralasia, a group operating hotels and resorts throughout Australia and Asia. The schema is designed to meet the decision-makers' information needs, facilitating strategic decision-making and operational efficiency.

Subjects covered within the dare warehouse

1. Reservations; The category is home to the specifics surrounding booking — dates, guest count, and any peculiar requests outlined by those seeking accommodation.

2. Customers; This is where details on clients are kept— along with how they can be reached, allowing easy customer segmentation for targeted marketing efforts.

3. Guests; A wealth of details resides here: guest specifics. Pulling from this resource can not only enrich a guest's stay but also aid in crafting programs that inspire loyalty from them as well.

4. Employees; This category holds employee details that're useful for managing staff and analyzing their performance.

5. Hotel: Data contained helps in effective management by providing detailed locations, ratings and capacity sizes for properties that can be used for comparison analysis.

6. Services; Details are organized into different groups which make it easier to identify what a specific category entails along with cost.

7. Packages; Information on packages is available here which proves beneficial for sales analysis and marketing strategies.

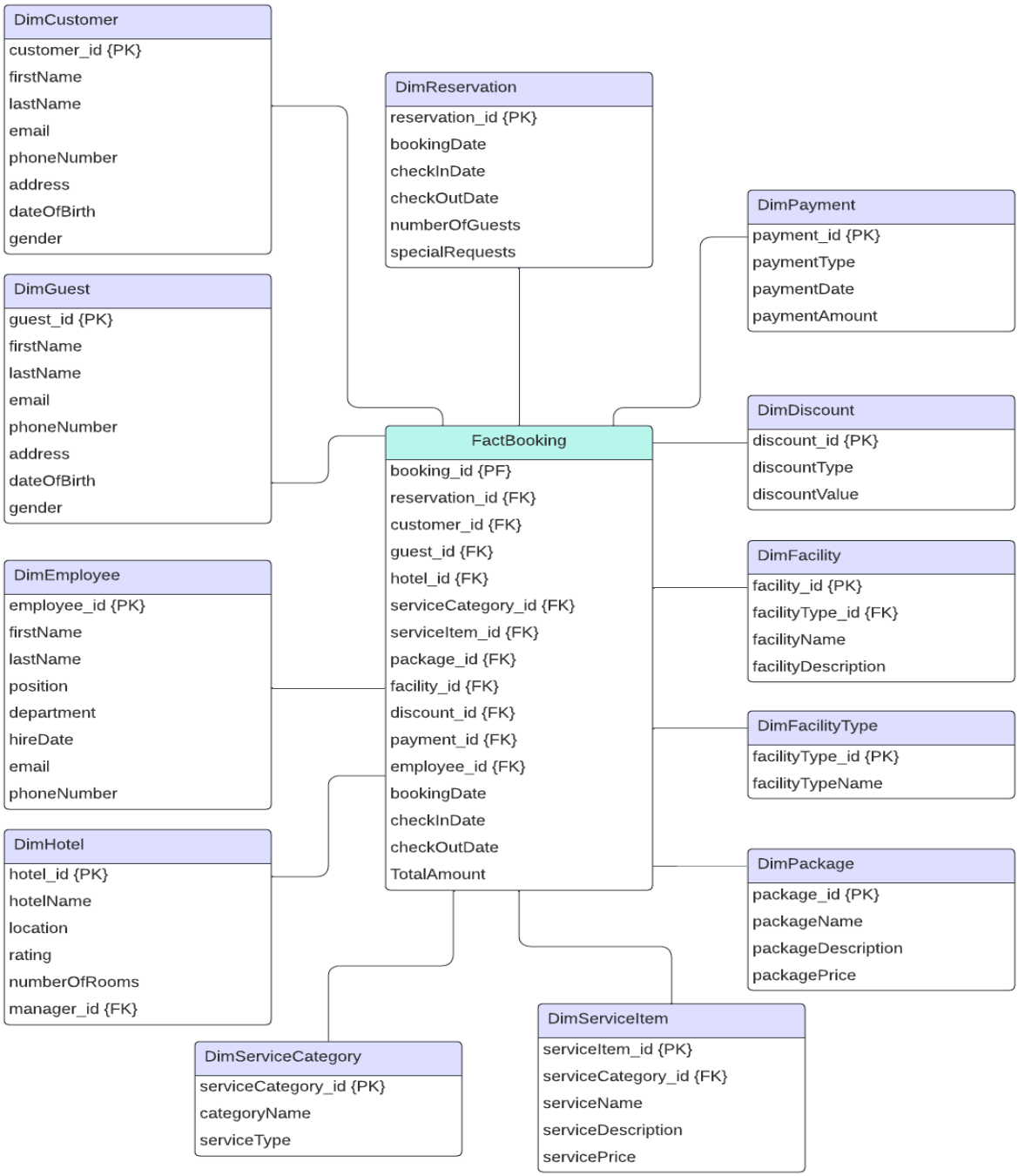
8. Facilities; Details regarding hotel facilities are stored here along with types of facilities to support asset management and analyze guest satisfaction levels.

9. Discounts; This category keeps track of types of discounts offered along with their values which're crucial for revenue analysis and evaluating promotional effectiveness.

10. Payments; Records related to payment details are stored here to assist in analysis well as detecting any fraudulent activities.

Data Warehouse Schema

The architecture of this data warehouse is star schema, with several dimension tables linked to an essential FactBooking table. Reservations, clients, visitors, workers, hotels, packages, services, amenities, discounts, and payments are the main topics of discussion.



Achieving Analytical Requirements

The data warehouse fulfills the demands of the organization by serving as a complete data repository that enables various forms of analysis to be completed.

1. Operational Efficiency

Monitoring daily operations, including staff performance indicators, service usage information, and occupancy rates.

2. Insight on Client Behavior

We can make sure that our marketing plans are geared toward the happiness and satisfaction of our customers by using analysis to examine client specifics and preferences.

3. Evaluation of Financial Health

Analyzing revenue streams, cost management, and profitability using detailed payment and discount data.

4. Facility and Service Management

Evaluating the effectiveness and use of facilities and services in order to improve offerings and increase visitor fulfillment.

5.Strategic Planning Support

Provides information on market trends, competitor positioning, and future planning to support decision-making processes.

How the Data Warehouse Satisfies Information Analysis Needs

For LeisureAustralasia's data, the data warehouse acts as a centralized storage space that enables in-depth analysis. It satisfies the needs of the business in terms of comprehending effectiveness customer, habits, financial outcomes, and service oversight.

1.Occupancy Rate Analysis by Hotel

SQLQuery1.sql - LA...CTEV8P\thetp (76))*

```sql
SELECT
    H.HotelName,
    COUNT(B.BookingID) AS TotalBookings,
    AVG(DATEDIFF(DAY, B.CheckInDate, B.CheckOutDate)) AS AverageStay
FROM
    FactBooking B
JOIN
    DimHotel H ON B.HotelID = H.HotelID
WHERE
    B.BookingDate BETWEEN '2023-01-01' AND '2023-12-31'
GROUP BY
    H.HotelName;
```

Explanation: This analysis query calculates the total bookings and average stay duration per hotel over the past year

2.Revenue by Service Category

SQLQuery1.sql - LA...CTEV8P\thetp (76))*

```sql
SELECT
    SC.CategoryName,
    SUM(B.TotalAmount) AS TotalRevenue
FROM
    FactBooking B
JOIN
    DimServiceCategory SC ON B.ServiceCategoryID = SC.ServiceCategoryID
GROUP BY
    SC.CategoryName;
```

Explanation: This analysis query sum up the total revenue generated from each service category

3.Customer Spending Analysis

SQLQuery1.sql - LA...CTEV8P\thetp (76))*

```sql
SELECT
    C.CustomerType,
    COUNT(B.CustomerID) AS TotalCustomers,
    AVG(B.TotalAmount) AS AverageSpending
FROM
    FactBooking B
JOIN
    DimCustomer C ON B.CustomerID = C.CustomerID
GROUP BY
    C.CustomerType;
```

Explanation: This query classifies customers by type and determines their average expenditure

4.Employee Performance Analysis

SQLQuery1.sql - LA...CTEV8P\thetp (76))*

```sql
SELECT
    E.FirstName + ' ' + E.LastName AS EmployeeName,
    COUNT(B.BookingID) AS TotalBookingsHandled,
    SUM(B.TotalAmount) AS TotalRevenueGenerated
FROM
    FactBooking B
JOIN
    DimEmployee E ON B.EmployeeID = E.EmployeeID
GROUP BY
    E.FirstName, E.LastName;
```

Explanation: This query evaluates employee performance based on the number of bookings handled and total revenue generated.

5.Effectiveness of Promotional Discounts

SQLQuery1.sql - LA...CTEV8P\thetp (76))*

```
SELECT
    D.DiscountType,
    COUNT(B.BookingID) AS TotalBookings,
    SUM(B.TotalAmount) AS TotalRevenue
FROM
    FactBooking B
JOIN
    DimDiscount D ON B.DiscountID = D.DiscountID
GROUP BY
    D.DiscountType;
```

Explanation: This query measures the effectiveness of various discounts based on the number of bookings and total revenue

Conclusion

The LeisureAustralasia structured data warehouse layout provides an orderly, comprehensive, and unified data repository, effectively meeting the organization's information analysis needs. This configuration supports well-informed decision-making and strategic planning projects by facilitating analyses ranging from efficiency to financial outcomes.