CSCI 5408

DATA MANAGEMENT AND  
WAREHOUSING

Database Builder Project

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| **Table of contents** |

|  |  |  |
| --- | --- | --- |
| **Section 1:** Background Research & Summary ………………………………………………………………............................. | | **1** |
| **Section 2:** Initial model or rough sketch ……………………………………………………………………………………...…….  **Section 3:** Design issues (if any)……………………………………………………………………………………………………. | | **5**  **7** |
| **Section 4:** Final model (ERD)……………………………………………………………………………………………………….. | | **9** |
|  |
|  |
|  | |  |

**SECTION 1: Background Research & Summary**

**Background Research**

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| **NAME OF THE SOURCE** | **INFORMATION COLLECTED** | **URL OF THE SOURCE** |
| **Hilton Hotel for the Stay** | When selecting the Hilton Hotel website, they initially request your destination, check-in and check-out dates, the number of rooms, the number of guests (adults and kids), and whether you have any promotional codes or offers. After entering these details, they provide you with a variety of clubs and resorts based on your destination for you to choose from. Following this, they guide you through the payment procedure. | https://www.hilton.com/en/ |
| **Atlantica Hotel Halifax** | This website is an all-in-one solution for event planning. It offers a variety of event options, ranging from weddings to corporate conferences, and provides a wide range of venues to choose from. You can customize your event based on the number of guests, the type of event, and even include audio-visual and event planning teams from the hotel community itself if you wish. With multiple cuisine options and an easy inquiry form to obtain more information on the event process, it makes the process convenient and memorable. | https://www.atlanticahotelhalifax.com/venues |
| **Club Mahindra** | This hotel management website offers membership plans for people both within India and internationally. These memberships come with various benefits, including exclusive access to hotels and resorts. The unique feature of this website is that it includes reviews from members who share their experiences and the advantages they have gained from their memberships. These reviews also provide insights into the quality of services provided by Club Mahindra, helping potential members make informed decisions. | https://www.clubmahindra.com/memberships |
| **Club Mahindra** | This website stands out with an exceptional feature: "Experiences" tailored for different age groups, including children, adults, and senior citizens. These signature experiences encompass a wide range of options, from spiritual and sports-related activities to nature exploration, wellness programs, international adventures, and more. Additionally, the website offers specialized dining experiences and activities for children, making it a well-rounded platform that caters to the diverse interests and preferences of its guests. | https://www.clubmahindra.com/experiences |
| **Hotel Engine Blog** | From this blog, we learned about the growing popularity of various amenities in the hospitality industry. These include paid services like pet-friendly accommodations, digital concierge services, in-room beauty and wellness offerings, as well as the convenience of ordering room service from local restaurants, among others. | https://www.hotelengine.com/blog/business-travel-guide/10-hotel-amenities-growing-in-popularity/ |
| **International Research Journal of Modernization in Engineering Technology and Science Volume:02/Issue:03/March-2020   HOTEL MANAGEMENT SYSTEM** | In this Journal Paper, they have divided the project into 5 parts. In which they have included managers, front desk staff, dining/catering staff, housekeeping staff details and their payrolls, about inventory details too. So, we can add this to our information system for more clarity about staff members and their roles. | https://www.irjmets.com/uploadedfiles/paper/volume2/issue\_3\_march\_2020/276/1628082965.pdf |

**Summary:**

1. Hilton Hotel Website:

* The Hilton Hotel website allows users to select their destination, check-in and check-out dates, and other details.
* It provides a range of clubs and resorts based on the destination.
* Users can proceed with the payment process.

1. Atlantica Hotel Halifax:

* This website offers event planning solutions for various occasions, from weddings to corporate conferences.
* Users can choose from a variety of venues and customize their events based on guest numbers and event type.
* The website also offers audio-visual and event planning teams.
* Multiple cuisine options are available, and an inquiry form simplifies the process.

1. Club Mahindra Membership:

* Club Mahindra offers membership plans with exclusive access to hotels and resorts.
* The website features reviews from members, providing insights into the quality of services.

1. Club Mahindra Experiences:

* Club Mahindra offers tailored "Experiences" for different age groups, including children, adults, and seniors.
* These experiences cover a wide range of activities, from sports to wellness programs.
* Specialized dining and children's activities are also available.

1. Hotel Engine Blog:

* The Hotel Engine Blog discusses the growing popularity of hotel amenities in the hospitality industry.
* These amenities include pet-friendly accommodations, digital concierge services, and more.

1. International Research Journal of Modernization in Engineering Technology and Science:

* A journal paper discusses a hotel management system divided into five parts, including details about managers, staff, and payroll.
* The paper offers insights into staff roles and responsibilities.

After conducting comprehensive research and visiting various websites and research papers, we have finalized the list of entities and their associated attributes to be integrated into our hotel database management system. These carefully selected entities and attributes are as follows:

**Entities and Attributes:**

1. **Stay:** Stay ID, landmark, type, address
2. **Reservations:** Reservation ID, Guest ID, Room ID, Check-in date, Check-out date, Number of adults, Number of children.
3. **Events:** Event ID, Event Type, Date and Time, Venue, Catering Options, Audio-Visual Equipment
4. **Memberships:** Membership ID, Membership Type, Benefits, Expiry Date, Points/Rewards, Renewal Status
5. **Experiences (Activities):** Experience ID, Age Group, Activity Type, Location, Duration, Pricing, Availability
6. **Reviews:** Review ID, Guest/Member ID, Rating, Comments, Date
7. **Amenities:** Amenity ID, Amenity name, Amenity Type, Description, Pricing, Availability
8. **Staff Members:** Employee ID, Name, Role/Position, Contact Information, Shift Schedule
9. **Payroll:** Payroll ID, Gross Salary, Bonus
10. **Users:** User ID, Username, Password, Role/Permissions, Contact Information
11. **Offers:** Offer ID, Offer Type, Discount Percentage, description, Validity Dates
12. **Careers:** Job ID, Job Title, Job Description, Qualifications, Application Deadline, Application Status
13. **Payment:** Payment ID, Reservation ID, Amount, Payment Method, Transaction Date, Status
14. **Host:** Host ID, Host Name, Host Contact Information, Agreement Document
15. **Owner:** Owner ID, Owner Name, Ownership Percentage, Property Ownership Details
16. **Inventory Stock:** Inventory ID, Item Name, Item Description, Stock Quantity, Supplier Information, Reorder Threshold
17. **Maintenance (Support):** Maintenance Request ID, Ticket ID, Description of Issue, Priority Level, Assigned Technician, Status
18. **Transportation:** Transport Request ID, User Name, Pick-up/Drop-off Location, Date and Time, Vehicle Type, Driver Information, Status
19. **Parking Services:** Parking Reservation ID, Guest/Member Name, Vehicle Details, Check-in/Check-out Times, Parking Space Number, Pricing, Payment Status
20. **Concierge Services:** Concierge requests, description, local recommendations.

**SECTION 2: Initial model or rough sketch**

The rough sketch for hotel management system has been build using the following observations:

* N User makes 1 reservation (group of users makes a booking)
* 1 User pays for 1 reservation (1 person among the group pays rent)
* 1 User pays in N Payments for 1 Booking (pay in installments for long term stay)
* 1 User can bring N guests
* 1 User raises N support tickets
* 1 User makes 1 Review
* 1 User uses N Transportation
* 1 User raises N Support ticket
* 1 User buys N Memberships
* 1 User uses N Amenities
* 1 User is rewarded with N Offer
* N Support services on 1 Stay
* 1 Stay is owned by N Owners
* 1 Stay has N Career openings
* 1 Stay is hosted by 1 Hosts
* 1 Stay has N Concierge service
* 1 Stay retains N inventory stocks
* 1 Stay organizes N events
* 1 Stay Provides N experiences
* 1 Stay has N Staff members
* 1 Staff member gets 1 Payroll
* 1 Stay Provides N Parking space

A diagram of a flowchart

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Figure : Rough sketch of hotel management system

**SECTION 3: Design Issues (If any)**

1. **Fan Trap:** Here the Fan Trap issue exists between User, Stay and Amenities, as Stay is in multiple 1:M relationship and is not consistent with real world

**A diagram of a diagram

Description automatically generated**

Figure 2: Fan-Trap between user, stay, and amenities.

This situation can be solved by establishing 1:M relationship between Stay and User, and 1:M relationship between User and Amenities.

A diagram of a user

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Figure 3: Fan-Trap solution for stay, user and amenities.

1. **Chasm Trap:** Model suggest there’s a relationship between the owner and user. But it’s not the case, because it is the host’s responsibility to host the user. Owner and user is NOT related.

**A diagram of a network

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Figure 4: Chasm trap in owner, stay and user

**SECTION 4: Final Model (ERD)**

A diagram of a flowchart

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Figure : Final model (ERD) hotel management system