Hotel Cowboy Hotel Conference Room Booking System

Project Mid-Semester Deliverable

Team Maverick Reservations

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ISDS 406: Systems Analysis & Design, Spring 2025

Dr. Bruce Hunt

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The Cowboy Hotel Conference Room Booking System project addresses inefficiencies in its outdated manual reservation process by developing an automated, secure, and user-friendly platform to manage its newly expanded conference facilities. In order to adapt to this expansion, a project aims to eliminate double bookings, reduce operational errors, and enhance customer satisfaction through streamlined booking workflows, integrated payment tracking, and robust reporting capabilities. The new system allows booking specialists to search for and reserve rooms by date, capacity, and amenities, track reservation statuses (confirmed, unconfirmed, canceled), and generate analytical reports on room utilization, customer history, and revenue trends to managerial oversight for compliance. Projected financial benefits include \$137,500 in additional conference room revenue in the first year, with growth reaching 30% by 2028, and \$38,276 in cost savings from reduced errors and refunds. The system's technical feasibility is ensured through compatibility with existing infrastructure (Windows 11, Office 2019), while its economic feasibility is confirmed by a 127.05% ROI and a breakeven point within 1.5 years, culminating in a cumulative net cash flow of \$369,074 by 2028. Organizational feasibility is supported by strong management alignment and phased staff training to ensure smooth adoption. Developed within a \$56,000 budget and a 6-month timeline, the solution prioritizes scalability, real-time performance (2-second query responses, 4 concurrent users), and integration with external payment systems. By aligning with the hotel's expansion strategy, this system positions the Cowboy Hotel to maximize revenue potential, improve operational efficiency, and leverage data-driven insights for strategic decision-making, ultimately reinforcing its competitive edge in the hospitality industry through innovation and enhanced customer experiences.

System Request Conference Room Booking System

Project Sponsor: Jamie Bradson, Hotel Manager

Business Need: The Cowboy Hotel has expanded its facilities with new conference rooms, requiring a new streamlined booking system to replace outdated manual processes. These inefficiencies have caused double bookings, missed revenue opportunities, and booking errors that undermine customer satisfaction and operational efficiency.

Business Requirements: The new system must enable booking specialists to:

- Search for rooms by date, time, type, capacity, availability, dimensions, setup preferences, and rental fees.
- Track reservation status (unconfirmed, confirmed, canceled) and support modifications without deleting canceled reservations (for reporting purposes).
- Manage payments by tracking total charges, payments made, and remaining balances. External hotel systems will handle
 payment processing.
- Allow only managers to handle catering-related changes or acknowledge cancellations/modifications involving catering (with caterers notified).
- Generate reports on frequent customers, their booking history, room popularity, and revenue analysis (weekly, monthly, quarterly).

Business Value: By implementing this conference room booking system, the Cowboy Hotel will benefit significantly.

- In the first year alone, we expect to generate an additional \$137,500 in conference room booking revenue, growing to 30% by 2028.
- The hotel will also generate 8% of hotel room sales from conference customers, which is projected to be \$51,322 by 2028.
- The new system should reduce costly errors and refunds. We expect the hotel will save \$38,276 by 2028 through fewer mistakes and greater customer satisfaction.

Special Issues or Constraints:

- Project budget is limited to \$56,000.
- New system must be delivered within 6 months to align with hotel expansion.
- Booking system is able to work on Windows 11 and Office 2019 integration.
- Protect customer data (names, emails, phone numbers, organizations) and implement an audit log for tracking system actions.
- Support 2–4 concurrent users with instant response times.

Project Work Plan:

Task ID	Task Name	Assigned To	on (days)	Start Date	Finish Date	Start Date	Finish Date	on varian	Depende ncy	Status
1.			22	Sat 01/18/25	Sun 02/09/25		Sun 02/09/25		,	Complete
	Planning	Leo Tran						0		·
1.1	Define project scope		2	Sat 01/18/25	Mon 01/20/25	Sat 01/18/25	Mon 01/20/25			Completed
	and objectives	Leo Tran						0		
1.2			7	Sun 01/19/25	Sun 01/26/25	Sun 01/19/25	Sun 01/26/25		1.1	Completed
	Develop project charter	Leo Tran						0		
1.3	ldentify key		5	Sat 01/25/25	Thu 01/30/25	Sat 01/25/25	Thu 01/30/25		1.2	Completed
	stakeholders	Leo Tran						0		
1.4	Create high-level work		8	Sat 01/25/25	Sun 02/02/25	Thu 01/30/25	Thu 01/30/25		1.3	Completed
	plan	Leo Tran						0		
2.	i		43	Sat 02/08/25	Sun 03/23/25	Sat 02/08/25	Sun 03/23/25		1.4	Completed
	Analysis							0		
2.1	Conduct stakeholder	Blake Demarest ,	15	Sat 02/08/25	Sun 02/23/25	Sat 02/08/25	Mon 02/24/25			Completed
	interviews	John Park						1		1
2.2	Document business		8	Sat 02/15/25	Sun 02/23/25	Mon 02/24/25	Thu 02/27/25		2.1	Completed
	requirements definition	Leo Tran						-5		
2.3			8	Sat 02/22/25	Sun 03/02/25	Thu 02/27/25	Sun 03/02/25		2.2	Completed
		Blake Demarest,								1
		Ryan Dorta, Leo								1
	Use Case Analysis	Tran						-5		1
2.4	,		15	Sat 03/01/25	Sun 03/16/25	Sun 03/02/25	Sun 03/16/25		2.3	Completed
										1
	Map current booking	Ryan Dorta, Leo								1
	processes	Tran						-1		
2.5			8	Sat 03/15/25	Sun 03/23/25	Sat 03/15/25	Sun 03/23/25		2.4	Completed
	System Proposal							0		
3.	<u> </u>		54	Sat 03/22/25	Thu 05/15/25				2.5	
	Design									1
3.1	Design system		8	Sat 03/22/25	Sun 03/30/25					Open
	architecture									1
3.2			14	Sun 03/30/25	Sun 04/13/25				3.1	Open
	Create UI/UX wireframes									
3.3	Develop database		8	Sat 04/12/25	Sun 04/20/25				3.2	Open
	schema									1
3.4	Finalize technology		25	Sun 04/20/25	Thu 05/15/25				3.3	Open
	stack									1
4.			54	Thu 05/15/25	Tue 07/08/25				3.4	
	Implementation									1
4.1	Build core booking		15	Thu 05/15/25	Fri 05/30/25					Open
	module									
4.2			20	Fri 05/30/25	Thu 06/19/25				4.1	Open
	Conduct system testing									
4.3	Train staff on system		7	Thu 06/19/25	Thu 06/26/25				4.2	Open
	usage									
4.4	_		12	Thu 06/26/25	Tue 07/08/25					Open
	Post-launch support									

Benefits-Costs Analysis	2025	:	2026	2027	2028	Total
Benefits						
Conference Room Revenue		\$	137,500	\$148,500	\$192,456	\$ 478,456
Increase Hotel Room Revenue		\$	44,000	\$ 47,520	\$ 51,322	\$ 142,842
Reduced errors & refunds		\$	11,000	\$ 11,880	\$ 15,396	\$ 38,276
Total benefits		\$	192,500	\$207,900	\$259,174	\$ 659,574
Development Costs						
Software Development	\$ 10,000	\$	-	\$ -	\$ -	\$ 10,000
Hardware	\$ 2,000	\$	-	\$ -	\$ -	\$ 2,000
Training	\$ 1,500	\$	-	\$ -	\$ -	\$ 1,500
Setup	\$ 2,000	\$	-	\$ -	\$ -	\$ 2,000
Total Development Costs	\$ 15,500	\$	-	\$ -	\$ -	\$ 15,500
Operation Costs						
System maintenance & support		\$	500	\$ 500	\$ 500	\$ 1,500
Software updates		\$	4,000	\$ 4,000	\$ 4,000	\$ 12,000
Booking Specialist		\$	65,000	\$ 65,000	\$ 65,000	\$ 195,00
Annual Security & Compliance Fee		\$	3,000	\$ 3,000	\$ 3,000	\$ 9,00
Assistant		\$	55,000	\$ 55,000	\$ 55,000	\$ 165,00
Miscellaneous		\$	8,500	\$ 8,500	\$ 8,500	\$ 25,500
Total Operation Costs		\$	136,000	\$ 69,500	\$ 69,500	\$ 275,00
Total Costs	\$ 15,500	\$	136,000	\$ 69,500	\$ 69,500	\$ 290,500
Total Benefits - Total Costs	\$ (15,500)	\$	56,500	\$138,400	\$189,674	\$ 369,074
Cumulative Net Cash Flow	\$ (15,500)	\$	41,000	\$179,400	\$369,074	
ROI (Net Benefits/Total Costs)						127.05%

Technical Feasibility:

Feasibility Analysis:

The Conference Room Booking System is technically feasible, as it will utilize the hotel's existing infrastructure, including compatibility with Windows 11 and Office 2019. The system will be built as a database-driven internal application, a well-established and reliable technology, further supported by new assistant personnel for

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maintenance. With the project scope limited to internal booking management, complexity, and implementation risks are minimized. However, since the hotel's current booking system is outdated, transitioning to automation will require user training. The risk level is considered low to moderate, with the primary challenge being staff adaptation to the new system.

Economic Feasibility:

The cost-benefit analysis demonstrates that the Conference Room Booking System is financially viable, with projected revenue growth outweighing implementation expenses. The initial development cost is estimated at \$56,000, covering software development, hardware upgrades, and training. Industry projections suggest that conference room bookings will account for 25% of hotel room revenue in the first year, growing to 30% by year three, alongside an 8% increase in hotel room bookings due to conference events. The system's break-even point is estimated within 1.5 years, driven by increased bookings and improved operational efficiency. Additionally, intangible benefits include reducing manual booking errors, enhancing customer satisfaction, expediting the booking process, improving staff efficiency, and enabling better data tracking for strategic pricing and promotions

Organizational Feasibility:

The system strongly supports the hotel's expansion strategy by ensuring the new conference rooms achieve maximum revenue potential. Top management support is evident, as the hotel manager is fully committed to the project, viewing it as an avenue to boost revenue and operational efficiency. While staff adaptation is expected to be smooth due to the system's user-friendly design, potential resistance might arise from staff adapted to manual processes. However, comprehensive training and friendly use will ease this challenge. Regarding the impact on operations, Booking Specialists will benefit from automated scheduling and payment tracking, significantly improving efficiency. Additionally, managers will gain access to detailed reports, enabling informed, data-driven decision-making to support the hotel's strategic goals.

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Requirements Definition:

Functional Requirements

- 1. Manage Conference Room Bookings
- 1.1 The system allows booking specialists to create, modify, and cancel conference room reservations. 1.2 The system prevents double-booking by checking room availability before confirming a reservation.
- 1.3 The system allows booking specialists to assign customers to specific conference rooms.
- 1.4 The system tracks booking statuses, including unconfirmed, confirmed, and canceled reservations.
- 2. Payments Process
- 2.1 The system tracks payment details for monitoring purposes, including payment amount, payment date, and payment method (e.g., credit card, check, cash).
- 2.2 The system enables booking specialists to apply predefined discounts when applicable and logs the adjusted payment amounts for reference.
- 2.3 The system tracks the total charge for a reservation and provides payment details, such as amounts paid and remaining balance, for monitoring purposes only (not for calculation or automation).
- 2.4 The system integrates with the hotel's external payment system, which manages payment processing.
- 2.5 A reservation remains "unconfirmed" until a deposit or first payment is received. Booking specialists must manually update the reservation status to "confirmed" upon verifying the deposit or payment.
- 3. Room Availability and Scheduling
- 3.1 The system allows staff to search for conference rooms based on date, capacity, and features.
- 3.2 The system updates the Room Availability Database when a reservation is confirmed.
- 3.3 The system suggests alternative room options when a preferred room is unavailable.
- 4. Generate Reports & Manage Booking Data
- 4.1 The system generates weekly and monthly booking reports for management.
- 4.2 The system allows booking specialists to view customer booking history.
- 4.3 The system tracks frequently booked rooms and usage trends.
- 5. View Available Conference Rooms
- 5.1. The system allows booking specialists to retrieve and provide customers with details on available rooms, amenities, pricing, and payment requirements (e.g., deposit, partial payment for confirmation).
- 5.2. The system enables booking specialists to check additional services (e.g., catering, AV) and inform customers upon request, including estimated costs.
- 6. Manage Existing Bookings
- 6.1. The system enables booking specialists to modify or cancel reservations upon customer request while updating the payment and booking status as needed (e.g., reflecting refunded amounts for cancellations).
- 6.2. The system maintains a history of past bookings, allowing specialists to provide customers with details on previous reservations, including payment details (e.g., deposits paid and balances outstanding).
- 6.3. The system allows booking specialists to add services to an existing booking as customers request while ensuring updated payment tracking for new services.

Leo Tran, Moises Casillas, Pedro Garcia, Edward Garcia, John Park, Ryan Dorta, Blake Demarest, Luke Shellenbarge Nonfunctional Requirements

- 1. Operational
- 1.1 The system shall run on Windows 11 and be compatible with Office Professional 2019.
- 1.2 The system shall be accessible only on hotel-assigned computers to prevent unauthorized access.
- 2. Performance
- 2.1 The system shall process room availability queries within 2 seconds.
- 2.2 The system shall support up to 4 concurrent users during peak hours.
- 3. Security
- 3.1 The system shall require unique login credentials for all booking specialists.
- 3.2 The system shall store customer data securely using encryption.
- 3.3 The system shall maintain an audit log for all booking modifications and payments.
- 4. Cultural & Political
- 4.1 The system shall support multiple time zones for customers booking from different regions.
- 4.2 The system shall allow room descriptions and pricing customization to align with hotel policies.

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Set of use cases:

Use Case: Create a Conference Booking ID: UC-BK-101 Priority: High

Actor(s): Booking Specialist

Description: This use case describes how the Booking specialist manages reservation requests for the Cowboy Hotel's conference booking system.

Trigger: A customer requests a conference room reservation through a booking specialist.

Type: External/Temporal

Preconditions:

- 1. The booking specialist is logged into the internal system.
- 2. The system is operational.
- 3. The customer provides booking details.

Normal Course:

- 1.0 Create a Conference Booking
 - 1. Specialist selects "Create New Booking".
 - 2. Specialist inputs booking details (Date, Time, Capacity, e.g.,) with stored customer information.
 - 3. System displays available rooms based on the requested information.
 - 4. Specialist selects a room and additional services (e.g., catering, AV).
 - 5. System calculates the total rental fee, including additional services.
 - 6. Specialist informs the customer of the total fee and transfers all payment details to the hotel payment system.
 - 7. System creates a Reservation ID.
 - 8. Specialist manually updates the booking status to "Confirmed" after verifying the payment status.
 - 9. Booking details are stored in the log.

Postconditions:

- 1. The reservation details are successfully recorded in the system.
- 2. The selected room is marked "Unavailable" for the reserved time slot.
- 3. Customer is informed of the reservation status and details by the booking specialist.

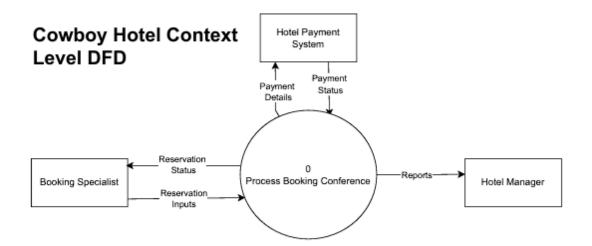
Exceptions:

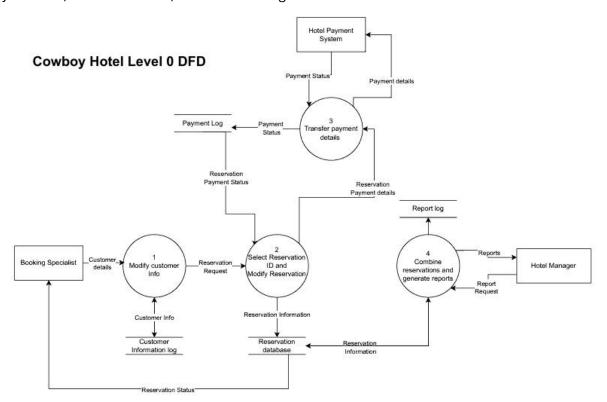
- 1. If the requested room is unavailable, the system suggests alternative rooms that meet the customer's requirements.
- 2. The system prompts the specialist to collect the missing information if the customer does not provide appropriate details.
- 3. If the system encounters an error while storing booking details or sending confirmation, the specialist is notified, and the booking process is paused until the error is resolved.

Use Case Description					
Use Case Name: Conference Room Boo	king Modification	ID: CRB_003	Importance Level: High		
Primary Actor: Customer					
Short Description: This describes how a customer modifies an existing reservation through the Cowboy Hotel Conference Room Booking System.					
Trigger: Customer calls to book a conference room or submits a booking request online.					
Type: External / Temporal					
Major Inputs:		Major Outputs:			
Description	Source	Description	Destination		
Customer name	Customer	Updated reservation	Customer		
Reservation ID	Customer	Confirmation Email	Customer		
New date and time	Customer	Updated booking	Booking System		
Reason for modification	Customer	Update email to manager	Hotel Manager		
Available rooms	Booking System	Booking modification report	Booking Specialist		
Existing reservations	Reservation database				
Major Steps Performed		Information for Steps			
1. Verify customer identity.		Customer name Reservation ID Customer database			
2. Retrieve existing booking details from	n the database.	Open request form Contact information Reservation details Reservation database			
3. Get modification request from custom	ner.	Desired room Desired date Desired time slot			
4. Check room availability for updated of	letails in the database.	Available rooms Existing reservations Room capacity Desired dates			

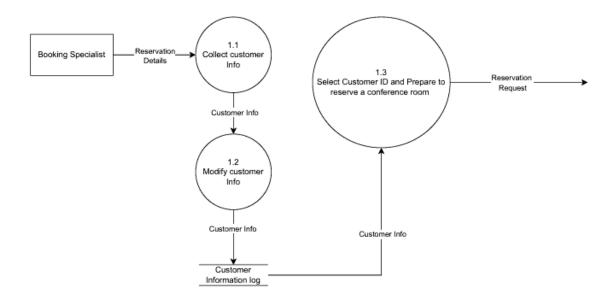
Use Case Description					
Use Case Name: Create a Conference Booking	ID: CRB_002	Priority: High			
Actor(s): Booking Specialist					
Description: This use case describes how the Booking Specialist manages reservation requests for the Cowboy Hotel's conference booking system.					
Trigger: A customer requests a conference room reserva	tion through a booking special	list.			
Type: External / Temporal					
Major Inputs:	Major Outputs:	Major Outputs:			
Description	Source	Description	Destination		
Booking details (date, time, capacity, services)	Booking Specialist	Reservation ID	Booking System		
Customer information	Booking Specialist	Confirmation details	Customer		
Payment details	Booking Specialist	Updated room availability	Reservation Database		
Service requests (catering, AV)	Booking Specialist	Payment record	Payment System		
Major Steps Performed	Information for Steps	•			
1. Specialist selects "Create New Booking".	Booking system interface opt	Booking system interface options			
2. Specialist inputs booking details and retrieves stored	Booking form fields; Customer database				
3. System displays available rooms based on requested	Requested date/time; Room availability data				
4. Specialist selects a room and additional services.	Room list; Service menu				
5. System calculates total fee.	Room rates; Service pricing				
6. Specialist confirms fee with customer and initiates pa	Fee details; Payment system interface				
7. System creates Reservation ID and stores booking.	Reservation ID; Booking log	Reservation ID; Booking log			
8. Specialist updates status to "Confirmed" upon payme	Payment confirmation; Book	Payment confirmation; Booking status			
9. System sends confirmation to customer.	Confirmation email; Custome	Confirmation email; Customer contact info			

Use Case Description						
Use Case Name: Conference Room Book	ID: CRB-001	Importance Level: High				
Primary Actor: Customer						
Short Description: This describes how a constraint System.	sustomer selects and reserves a conference room the	hrough the Cowboy Hotel Co	nference Room Booking			
Trigger: Customer calls to book a confere	ence room or submits a booking request online.					
Type: External / Temporal						
Major Inputs:		Major Outputs:	Major Outputs:			
Description	Source	Description	Destination			
Customer name	Customer	Confirmed reservation	Customer			
Desired room	Customer	Reserved time slot	Booking System			
Desired date and time	Customer	Confirmation email	Customer			
Contact information	Customer	Catering order	Hotel Manager			
Available rooms	Booking System	Booking report	Booking Specialist			
Existing reservations	Reservation database					
Major Steps Performed		Information for Steps	Information for Steps			
1. Get customer's name. Verify customer	Customer name Customer database					
2. If new customer, get contact information	Contact information Organization details New customer record	Organization details				
3. Get desired room, date, and time slot.	Desired room Desired date Desired time slot	Desired date				
4. Check room availability for requested	Available rooms Existing reservations Room capacity					
5. If room is available, create reservation	Room availability Alternative slots Confirmation details					
6. Record catering requests if applicable a	Catering options Catering requests Manager approval flag					
7. Booking specialist reviews and confirm	Reservation details Specialist approval Booking system					
8. Send confirmation to customer with re-	Confirmation email Reservation ID Customer details					

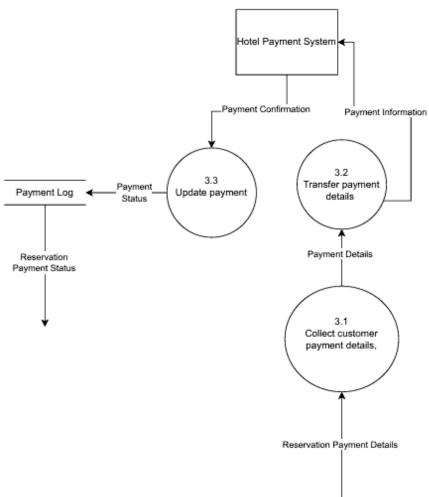




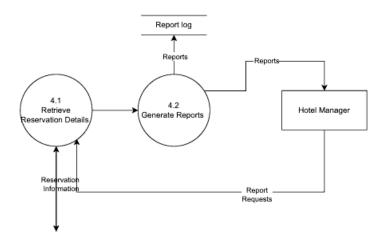
Cowboy Hotel Level 1 DFD



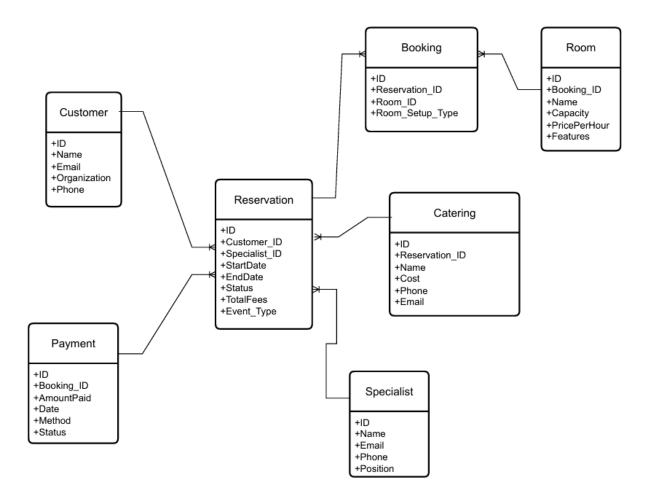
Cowboy Hotel Level 1 DFD



Cowboy Hotel Level 1 DFD



Data model:



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Appendix:

1. Interview Summaries:

Interview Report

Person Interviewed: Bruce Hunt **Title:** Hotel General Manager **Interviewer:** Blake Demarest

Date of Interview: February 24, 2025

Purpose of Interview:

- Gather functional and non-functional system requirements for the Cowboy Hotel Conference Room Booking System.
- Identify existing booking challenges and how the system should address them.
- Determine the new system's key security, reporting, and user access needs.

Summary of Interview:

Current System Issues to be addressed:

1. Manual Booking Process:

- The current conference room booking system is manual; errors like double booking and reservation inefficiencies are commonplace.
- The hotel's existing hotel booking process is unsuitable for conference room reservations.

2. Limited Staff Access & Approval Controls:

- All staff should have general system access, but only managers should be able to acknowledge catering-related changes.
- Managers will also oversee final approvals on modifications and cancellations related to catering services.

3. Reservation Modifications & Cancellations:

- Customers must contact a booking specialist to modify or cancel a reservation.
- Canceled reservations will not be deleted; they will be marked as canceled for reporting and audit tracking.

4. Pricing & Payment Tracking:

- Room rental rates range from \$75 to \$100 per hour.
- Discounts will be made available for multiple room bookings or special events.
- The system will not process payments but track payments, outstanding balances, and deposits.

5. Security & Authentication:

- The system will store sensitive customer information, including names, phone numbers, email addresses, and organizational affiliations.
- Strong security measures will be implemented, including password and potential multi-factor authentication.
- The system must maintain an audit log of all booking modifications and staff actions.

6. Concurrent Users & System Performance:

- The system should support 2-4 concurrent users.
- Response time for booking queries and data retrieval should be within seconds to ensure quick service.

7. Reporting & Data Insights:

- The system should generate customer booking history reports, room utilization statistics, and financial summaries (weekly, monthly, and quarterly).
- Identify which rooms are frequently booked and which are underutilized.

8. IT Support & Maintenance:

- Remote IT support is preferred, with on-site escalation only if necessary.
- Automated error reporting should be considered for system failures or critical issues.

Open Items:

- 1. Confirm the final list of security measures to be implemented.
- 2. Determine the level of training required for employees to use the system efficiently.

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- 3. Decide whether to integrate the new system with the hotel's existing room booking software.
- 4. Specify how catering services will be logged and managed in the system.
- 5. Finalize the rules for unconfirmed reservations, including deposit handling.

Next Steps:

- Develop a high-level system design that includes user roles, security measures, and reporting functionalities.
- Refine pricing and discount logic for event-based reservations.
- Define the criteria for reservation statuses (e.g., confirmed, unconfirmed, canceled).

Detailed Notes: See attached transcript.

Follow-up question:

- 1. Are there any restrictions on how far in advance a customer can book or cancel?
- 2. How long should the booking history be stored for auditing purposes?