Jade
Hotel Reservation System: L&M Towers

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Phase One
CSCI273 Project

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* Note: Functional Model not needed for our particular database project.

List of Team Members & Initial Responsibilities

Team Members: Dominique Ralph, Archana Patel, Erik Sisco, Jill Jones, Abe Miessler
Team Leader: Dominique Ralph

Division of Labor (Phase 1):
   All: Object Model, State Transition Diagrams, Evaluations
   Jill: ER to Relational Mapping
   Archana: User Views, Data Dictionary, Event Traces
   Erik: User Views, Data Dictionary, Event Traces
   Dominique: User Views, Data Dictionary, Event Traces
   Abe: Object Model, Event Traces
Problem Statement/Requirements Definition

Hotels have been around for a very long time, using various methods of keeping records. Historically, hotels have kept paper records in filing cabinets. However, hotels are much larger now with many customers to keep track of with regard to types of accommodations, whether low budget, luxury, or somewhere in between, as well as smoking or non-smoking preferences. Keeping track of large customer bases and all their attendant details would require an inordinate space for file cabinets, not to mention the time employees would spend going back and forth to file cabinets looking up each client’s information! JADE is a large new hotel, and requires more sophisticated methods of tracking customers and their preferences, as well as all the details about each customer and the rooms themselves. JADE is a complex of two towers, offering many differing types of accommodations with the prospect of a large customer base. JADE has decided to implement a relational database for record-keeping.

The general requirements for a new customer are: in order for the customer to make a reservation they need a first and last name, valid address, credit card number, and phone number. They will be informed about the two towers we have, the different room types available, and the prices for each of the room types. Then the customer can make an informed decision in what they want. After the reservation is complete the hotel database will assign a customer ID number to the new customer. But as far as the customer is concerned they are simply given a confirmation number for their reservation, which they present upon arrival.

If the customer is a returning guest and wants to make a reservation all their information is already in the database. Therefore, all they need to present is the arrival and departure dates and the room type they want. In return we give them the price and a confirmation number, which again they present upon arrival.
As the database development team, we will be creating a database which will have a three actor system. There will be the following actors: customer, employee, and administrator. Each will have a varied level of access to the details of the hotel and reservations made at the hotel. The customer will provide biographical information which will be entered in and alterable by any of the three actors. The main business process focused around the database will be creating reservations for J.A.D.E. hotel. After the employee submits the customer’s preferences a query will be done to the database to find a suitable accommodation. As a secondary process we will allow modification of data states by the Administrator (i.e. change which floors are smoking/non-smoking).

The problem of slow paper filing systems will be solved with merely accessing the database containing the customer and room entities rather than referencing multiple physical filing systems. The process of querying the hotel for a reservation shall need to be rather timely (less than 20 seconds) to facilitate speedy transactions between the employee and the customer. There are no necessary time constraints on the administrator-specific tasks though integrity of the reservation system will have to remain intact (i.e. if a person has reserved a non-smoking room and the administrator changes the floor to a smoking floor, then the confirmation number given to the customer shall then refer to a new room number which takes into account their room preferences). We will assume that the customer knows what his/her preferences are and he/she has all of their biographical information available for entry. The majority of stored information will be mandatory (i.e. we cannot have null for first and last names). The interface will have to be as simple and straightforward as possible (limit it to about 2 screens, one for initial customer data and for final reservation data) to allow ease of use by the employees and administrators.
Customer

- FirstName: string
- LastName: string
- Phone: integer
- CustID: integer
- AddrStreet: string
- AddrCity: string
- AddrState: string
- AddrZip: integer

InsertCust() UpdateCust()

Reservation

- ConfirmNo: integer
- Cost: float
- DntCde: integer
-DtofDep: integer
-DtofArr: integer
-Cancel: boolean
-CustID: integer
-CanelDt: integer
-RoomNo: integer

InsertReservation() UpdateReservation()

CreditCard

- Type: string
- ExpDate: integer
- CardNo: integer
- CustID: integer

InsertCard() DeleteCard()

Preference

- PrefType: string
- PrefValue: string
- CustID: integer

InsertPref() UpdatePref()

Room

- Location: string
- Description: string
- Name: string
- RoomNo: integer
- Floor: integer
- Availability: boolean

UpdateAvail() UpdateDesc()

RoomType

- Type Code: string
- PriceNerNgt: float
- BedType: string
- SmokeOpt: boolean

UpdateSmoking() UpdatePricing()
ER to Relational Mapping

**Customer**

<table>
<thead>
<tr>
<th>CustID</th>
<th>FirstName</th>
<th>LastName</th>
<th>AddrStreet</th>
<th>AddrCity</th>
<th>AddrState</th>
<th>AddrZip</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>PK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Credit Card**

<table>
<thead>
<tr>
<th>CardNo</th>
<th>CustID</th>
<th>Type</th>
<th>ExpDate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PK</td>
<td>FK</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Composite Key

**Preference**

<table>
<thead>
<tr>
<th>CustID</th>
<th>PrefType</th>
<th>PrefValue</th>
</tr>
</thead>
<tbody>
<tr>
<td>FK</td>
<td>PK</td>
<td></td>
</tr>
</tbody>
</table>

Composite Key

**Room Type**

<table>
<thead>
<tr>
<th>TypeCode</th>
<th>PricePerNgt</th>
<th>BedType</th>
<th>SmokeOpt</th>
</tr>
</thead>
<tbody>
<tr>
<td>PK</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Reservation**

<table>
<thead>
<tr>
<th>Confirm#</th>
<th>CustID</th>
<th>Cost</th>
<th>Room#</th>
<th>DiscountCode</th>
<th>CancelDate</th>
<th>CancelOption</th>
<th>DepartDate</th>
<th>ArriveDate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PK</td>
<td>FK</td>
<td>FK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Composite Key

**Room**

<table>
<thead>
<tr>
<th>RoomNo</th>
<th>Name</th>
<th>Description</th>
<th>Location</th>
<th>Floor</th>
<th>Availability</th>
<th>TypeCode</th>
</tr>
</thead>
<tbody>
<tr>
<td>PK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FK</td>
</tr>
</tbody>
</table>
### User Views

**View 1**
- **Name:** Main Menu
- **View Number:** 1
- **Type:** Menu
- **Description:** This is the main menu of our hotel database system, \( \text{Ja}^2 \text{de} \). It is based on individual users who are accessing the system. Customer Menu, Employee Menu, Administrator Menu

**Graphical Design:**

![Ja2de](image)

**Hotel Reservation System:**
**L & M Towers**

**Please choose the user that you represent below:**

- [ ] Customer/Hotel Guest
- [ ] Employee
- [ ] Administrator

**View 2**
- **Name:** Customer Menu
- **View Number:** 2
- **Type:** Menu
- **Description:** This menu is viewed by customers to change their contact information, check room availability, and add or change preferences.

**Graphical Design:**

**Customer/Hotel Guest Main Menu**

**Please choose from the following options:**

- [ ] Change Contact Information
- [ ] Add Preferences
- [ ] Change Preferences
- [ ] Check Availability of Hotel

**Name:** Change Contact Information
- **View Number:** 2A
- **Type:** Form
- **Description:** A customer will be able to change their contact information by entering in their Customer ID Number. If the customer was found, their contact information will be placed on the screen. They may change the text in the boxes and click “Change Contact Info Now”. Otherwise, they will be redirected back to the Customer Menu.
Graphical Design:

Customer/Hotel Guest Main Menu
Change Contact Information

Please enter your Customer ID #: 

Submit  Reset

Customer ID #: 789123456

First Name: Joe
Last Name: Smith
Street Address: 1234 Maple Lane
City: Chico
State: CA
Zip Code: 95926
Phone Number: 530-852-1234

Number of Credit Cards on record: 1
Credit Card #1: 123456789012345  Exp. Date: 12/01/2009
Type: □ Visa □ MasterCard □ American Express
Credit Card #2: 
Exp. Date: 
Type: □ Visa □ MasterCard □ American Express
Credit Card #3: 
Exp. Date: 
Type: □ Visa □ MasterCard □ American Express

Change Contact Info Now!  Reset

Name  Add Preferences
View Number  2B
Type  Form
Description  A customer will be able to add personal preferences for their hotel rooms. They will enter their Customer ID Number. Then they will select the number of items requested for each preference. After clicking “Add Customer Preferences”, they will be added to the database.

Graphical Design:

Customer/Hotel Guest Main Menu
Add/Change Customer Preferences

Please enter your Customer ID #: 

Submit  Reset

Customer ID #: 789123456

Enter in the amount you would like to request.
Extra Blankets: 
Extra Roll-Away Beds: 
Extra Pillows: 
Extra Toiletries: 

Add Customer Preferences  Reset

Name  Change Preferences
View Number  2C
Type  Form
Description: A customer will be able to change personal preferences for their hotel rooms. They will enter their Customer ID Number. Then they will change the number of items requested for each preference. After clicking “Change Customer Preferences”, they will be updated in the database.

Graphical Design:

Customer/Hotel Guest Main Menu
Add/Change Customer Preferences

Please enter your Customer ID #: 

Submit | Reset

Customer ID #: 789123456

Enter in the amount you would like to request.
Extra Blankets: []
Extra Roll-Away Beds: []
Extra Pillows: []
Extra Toiletries: []

Change Customer Preferences | Reset

Name: Check Availability of Hotel
View Number: 2D
Type: Report
Description: A customer will be able to check if the hotel has any rooms available of a certain type. They may choose the tower they would like to stay in and the page will display the amount of rooms available, the room types, and prices for those rooms.

Graphical Design:

Customer/Hotel Guest Main Menu
Availability of Rooms in L & M Towers

<table>
<thead>
<tr>
<th>Room Types</th>
<th>Classic</th>
<th>Deluxe</th>
<th>Luxury</th>
<th>Premium</th>
<th>MT Suites</th>
<th>LT Suites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price per Night</td>
<td>$89</td>
<td>$99</td>
<td>$119</td>
<td>$149</td>
<td>$129</td>
<td>$189</td>
</tr>
<tr>
<td>No. Available</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Tower Location</td>
<td>Mountain</td>
<td>Mountain</td>
<td>Lake</td>
<td>Lake</td>
<td>Mountain</td>
<td>Lake</td>
</tr>
</tbody>
</table>

View 3
Name: Employee Menu
View Number: 3
Type: Menu
Description: This allows the user to preview the employee menu
Graphical Design:

Employee Main Menu

Please choose from the following options:

- Change Contact Information
- Add a Customer
- Add Preferences
- Print Reservation Receipt
- Change Preferences
- Make a Reservation
- Check Availability of Hotel
- Cancel a Reservation

Name: Make a Reservation
View Number: 3A
Type   Form
Description Employee will be prompted with menu screen. Then the employee will enter the customer’s ID number. Thereafter, the screen will show the customer’s information on the screen. Employee then will enter all the customer’s information and then the employee will reserve the room for the customer and give the customer a confirmation number.

Graphical Design:

Employee Main Menu
Make a Reservation

Please enter your Customer ID #: 

Submit  Reset

Employee Main Menu
Make a Reservation

Customer ID #: 789123456
Date of Arrival: 2/01/2013  Date of Departure: 12/05/2013
Discount Code (if applicable): 763854268
Requested Room Type:
- Classic
- Deluxe
- Luxury
- Premium
- MT Suites
- LT Suites

Generate Confirmation Number  Reset

Confirmation #: 459027
Total Cost Charged to Credit Card: $189
Room #: 508

Name  Add a Customer
View Number  3B
Type   Form
Description The employee will be prompted with a menu screen. The employee will add all the information of the customer. Thereafter the employee will add the customer to the database. A new customer ID will be given to the new customer.

Graphical Design:

Employee Main Menu
Add a Customer

First Name:  Last Name: 
Street Address: 
City:  State:  Zip Code: 
Phone Number: 

Number of Credit Cards on record: 1
Credit Card #1:  Exp. Date: 
Type:  Visa  MasterCard  American Express
Credit Card #2:  Exp. Date: 
Type:  Visa  MasterCard  American Express
Credit Card #3:  Exp. Date: 
Type:  Visa  MasterCard  American Express
Name: Cancel Reservation
View Number: 3C
Type: Form
Description: Employee will be prompted with menu screen. Employee will enter in the confirmation number and cancel the reservation. A cancellation number and date will be created and given to the customer.

Graphical Design:

Employee Main Menu
Cancel a Reservation

Please enter the Confirmation #: 

Submit | Reset |

The reservation has been cancelled.
Cancellation #: 2384932
Cancellation Date: 11/4/2003

Name: Print Reservation Receipt
View Number: 3D
Type: Report
Description: Employee will be prompted a menu screen. Employee will enter the customer ID number where the reservation receipt will displayed and print the current information in the system.

Graphical Design:

Employee Main Menu
Print Reservation Receipt

Please enter your Customer ID #: 

Submit | Reset |

Customer ID #: 2384389 Date of Arrival: 12/01/2003
Confirmation #: 134149023 Date of Departure: 12/04/2003

--------------------------------------------------------------------------------

Type of Room: Classic (MS) Room #: 508 Preferences: 2 Pillows

3 Nights @ $89 = $267
State Tax = $ 33

Total Amount Charged = $300
Charged on VISA *3467

Thank you for staying at L & M Towers!

Name: Change Contact Information
View Number: 3E
Type: Form
Description: A customer will be able to change their contact information by entering in their Customer ID Number. If the customer was found, their contact information will be placed on the screen. They may change the text in the boxes and click “Change Contact Info Now”. Otherwise, they will be rejected back to the Customer Menu.
**Graphical Design:**

**Please See View Number 2A**

**Name**    Add Preferences  
**View Number**  3F  
**Type**    Form  
**Description**  A customer will be able to add personal preferences for their hotel rooms. They will enter their Customer ID Number. Then they will select the number of items requested for each preference. After clicking “Add Customer Preferences”, they will be added to the database.

**Graphical Design:**

**Please See View Number 2B**

**Name**    Change Preferences  
**View Number**  3G  
**Type**    Form  
**Description**  A customer will be able to change personal preferences for their hotel rooms. They will enter their Customer ID Number. Then they will change the number of items requested for each preference. After clicking “Change Customer Preferences”, they will be updated in the database.

**Graphical Design:**

**Please See View Number 2C**

**Name**    Check Availability of Hotel  
**View Number**  3H  
**Type**    Report  
**Description**  A customer will be able to check if the hotel has any rooms available of a certain type. They may choose the tower they would like to stay in and the page will display the amount of rooms available, the room types, and prices for those rooms.

**Graphical Design:**

**Please See View Number 2D**

**View 4**

**Name**    Administrator Menu  
**View Number**  4  
**Type**    Menu  
**Description**  This view is displayed after the user selects Administrator at the initial log-in screen. It contains a list of options which the Administrator may perform:

1) Popularity of Room Report  
2) Change Floor Smoking Status  
3) Change Room Pricing  
4) Profit Made by Date  
5) Make a Reservation  
6) Add a Customer  
7) Cancel a Reservation  
8) Change Contact Information  
9) Check Room Availability  
10) Add/Change Preferences
Name: Popularity of Room Report
View Number: 4A
Type: Report
Description: This view is displayed after ‘Popularity of Room Report’ is selected from the Administrator Menu. It will provide fields for a “Start Date” and “End Date” along with fields for “Start Time” and “End Time” with which to do the Popularity (Count) query. The Administrator will enter the dates and then choose to print the report (via a ‘Print Report’ button). The screen will also display the data being printed; an organized listing of the number of reservations made (the room type and location included) associated with the date/time query.

Graphical Design:

<table>
<thead>
<tr>
<th>Room Types Reservations Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classic</td>
</tr>
<tr>
<td>57</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tower Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountain</td>
</tr>
</tbody>
</table>

Name: Change Floor Smoking Status
View Number: 4B
Type: Form
Description: This view is displayed after ‘Change Floor Smoking Status’ is selected from the Administrator menu. It will provide drop down menus to select the tower, floor number, and the current Smoking/Non-Smoking status. There will be an ‘Apply’ button to be selected after each drop-down menu item has been selected.

Graphical Design:
Change Room Pricing

This view is displayed after ‘Change Room Pricing’ is selected from the Administrator Menu. It will display a drop-down listing of room-types and a field with a heading of ‘Price’. After the room type is chosen the Administrator can type in a Price into the field. An ‘Apply’ button will be located at the bottom as a completion step once the changes are made.

Graphical Design:

Profit Made by Date

This view is displayed after ‘Profit Made by Date’ is selected from the Administrator Menu. It will display fields titled ‘Start Date’ and ‘End Date’ and a button ‘Show Me The Money’ which prints and displays the earnings associated with the Date/Reservation query; profits are grouped by room type.

Graphical Design:

Make a Reservation

Employee will be prompted with menu screen. Then the employee will enter the customer’s ID number. Thereafter, the screen will show the customer’s information on the screen. Employee then will enter all the
customer’s information and then the employee will reserve the room for the customer and give the customer a confirmation number.

**Graphical Design:**

*Please See View Number 3A*

<table>
<thead>
<tr>
<th>Name</th>
<th>Add a Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>View Number</td>
<td>4F</td>
</tr>
<tr>
<td>Type</td>
<td>Form</td>
</tr>
<tr>
<td>Description</td>
<td>The employee will be prompted with a menu screen. The employee will add all the information of the customer. Thereafter the employee will add the customer to the database. A new customer ID # will be given to the new customer.</td>
</tr>
</tbody>
</table>

**Graphical Design:**

*Please See View Number 3B*

<table>
<thead>
<tr>
<th>Name</th>
<th>Cancel Reservation</th>
</tr>
</thead>
<tbody>
<tr>
<td>View Number</td>
<td>4G</td>
</tr>
<tr>
<td>Type</td>
<td>Form</td>
</tr>
<tr>
<td>Description</td>
<td>Employee will be prompted with menu screen. Employee will enter in the confirmation number and cancel the reservation. A cancellation number and date will be created and given to the customer.</td>
</tr>
</tbody>
</table>

**Graphical Design:**

*Please See View Number 3C*

<table>
<thead>
<tr>
<th>Name</th>
<th>Print Reservation receipt</th>
</tr>
</thead>
<tbody>
<tr>
<td>View Number</td>
<td>4H</td>
</tr>
<tr>
<td>Type</td>
<td>Report</td>
</tr>
<tr>
<td>Description</td>
<td>Employee will be prompted a menu screen. Employee will enter the customer ID number where the reservation receipt will be displayed and printed.</td>
</tr>
</tbody>
</table>

**Graphical Design:**

*Please See View Number 3D*

<table>
<thead>
<tr>
<th>Name</th>
<th>Change Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>View Number</td>
<td>4I</td>
</tr>
<tr>
<td>Type</td>
<td>Form</td>
</tr>
<tr>
<td>Description</td>
<td>A customer will be able to change their contact information by entering in their Customer ID Number. If the customer was found, their contact information will be placed on the screen. They may change the text in the boxes and click “Change Contact Info Now”. Otherwise, they will be redirected back to the Customer Menu.</td>
</tr>
</tbody>
</table>

**Graphical Design:**

*Please See View Number 2A*

<table>
<thead>
<tr>
<th>Name</th>
<th>Add Preferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>View Number</td>
<td>4J</td>
</tr>
<tr>
<td>Type</td>
<td>Form</td>
</tr>
<tr>
<td>Description</td>
<td>A customer will be able to add personal preferences for their hotel rooms. They will enter their Customer ID Number. Then they will select the number of items requested for each preference. After clicking “Add Customer Preferences”, they will be added to the database.</td>
</tr>
</tbody>
</table>

**Graphical Design:**

*Please See View Number 2B*

<table>
<thead>
<tr>
<th>Name</th>
<th>Change Preferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>View Number</td>
<td>4K</td>
</tr>
<tr>
<td>Type</td>
<td>Form</td>
</tr>
<tr>
<td>Description</td>
<td>A customer will be able to change personal preferences for their hotel rooms. They will enter their Customer ID Number. Then they will change the number of items requested for each preference. After clicking “Change Customer Preferences”, they will be updated in the database.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Graphical Design:</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Check Availability of Hotel</td>
</tr>
<tr>
<td>View Number</td>
<td>4L</td>
</tr>
<tr>
<td>Type</td>
<td>Report</td>
</tr>
<tr>
<td>Description</td>
<td>A customer will be able to check if the hotel has any rooms available of a certain type. They may choose the tower they would like to stay in and the page will display the amount of rooms available, the room types, and prices for those rooms.</td>
</tr>
<tr>
<td>Graphical Design:</td>
<td>Please See View Number 2D</td>
</tr>
<tr>
<td>Object</td>
<td>Name</td>
</tr>
<tr>
<td>------------</td>
<td>----------</td>
</tr>
<tr>
<td>Customer</td>
<td>FirstName</td>
</tr>
<tr>
<td></td>
<td>LastName</td>
</tr>
<tr>
<td></td>
<td>CustID</td>
</tr>
<tr>
<td></td>
<td>Phone</td>
</tr>
<tr>
<td></td>
<td>AddrState</td>
</tr>
<tr>
<td></td>
<td>AddrStreet</td>
</tr>
<tr>
<td></td>
<td>AddrZip</td>
</tr>
<tr>
<td></td>
<td>AddrCity</td>
</tr>
<tr>
<td>CreditCard</td>
<td>CustID</td>
</tr>
<tr>
<td></td>
<td>CardNo</td>
</tr>
<tr>
<td></td>
<td>Type</td>
</tr>
<tr>
<td></td>
<td>ExpDate</td>
</tr>
<tr>
<td>Preference</td>
<td>PrefType</td>
</tr>
<tr>
<td></td>
<td>PrefValue</td>
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<td></td>
<td>CustID</td>
</tr>
<tr>
<td>Room</td>
<td>Name</td>
</tr>
<tr>
<td></td>
<td>RoomNo</td>
</tr>
<tr>
<td></td>
<td>Description</td>
</tr>
<tr>
<td></td>
<td>Floor</td>
</tr>
<tr>
<td></td>
<td>Availability</td>
</tr>
<tr>
<td>Reservation</td>
<td>ConfirmNo</td>
</tr>
<tr>
<td></td>
<td>RoomNo</td>
</tr>
<tr>
<td></td>
<td>Cost</td>
</tr>
<tr>
<td></td>
<td>DntCde</td>
</tr>
<tr>
<td></td>
<td>CancelDt</td>
</tr>
<tr>
<td></td>
<td>Cancel</td>
</tr>
<tr>
<td></td>
<td>DtofDep</td>
</tr>
<tr>
<td></td>
<td>CustID</td>
</tr>
<tr>
<td></td>
<td>DtofArr</td>
</tr>
<tr>
<td>RoomType</td>
<td>TypeCode</td>
</tr>
<tr>
<td></td>
<td>BedType</td>
</tr>
<tr>
<td></td>
<td>SmokeOpt</td>
</tr>
<tr>
<td></td>
<td>PricePerNgt</td>
</tr>
</tbody>
</table>
**Narrative Description of Project Use Cases**

<table>
<thead>
<tr>
<th>Use case 1: Make a Reservation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actor(s):</strong> Hotel Employees, Administrators</td>
</tr>
<tr>
<td><strong>Description:</strong> Employee/Admin will be prompted with menu screen. After choosing “Employee” and “Make a Reservation”, they will enter in the Customer ID Number. (Note: If it is a new customer, they must enter in the Customer Information before making a reservation – see Use Case: Add a Customer). The screen should populate the customer’s first and last name, address, phone number, and credit card information. Employee must enter in the date of arrival and departure, tower choice, and room type. The room number will be populated by availability, so they may choose any room number in the list. After clicking button “Reserve Room Now”, a confirmation number will be created.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use case 2: Add a Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actor(s):</strong> Hotel Employees, Administrators</td>
</tr>
<tr>
<td><strong>Description:</strong> Employee/Admin will be prompted with menu screen. After choosing “Employee” and “Add a Customer”, they will enter in the first and last name, address, city, state, zip code, phone number, and credit card information. After clicking button “Add Customer Now”, a customer ID number will be created.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use case 3: Cancel a Reservation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actor(s):</strong> Hotel Employees, Administrators</td>
</tr>
<tr>
<td><strong>Description:</strong> Employee/Admin will be prompted with menu screen. After choosing “Employee” and “Cancel a Reservation”, they will enter in the confirmation number. After clicking button “Cancel Reservation Now”, a cancellation date will be displayed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use case 4: Change Floor Smoking/Non Smoking Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actor(s):</strong> Administrators</td>
</tr>
<tr>
<td><strong>Description:</strong> Administrators will be prompted with menu screen. After choosing “Administrators”, and “Change Floor Status”, they will select the floor to change and enter in either S or NS. After clicking button “Change Floor Status”, the floor will be changed to new status.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use case 5: Change Room Pricing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actor(s):</strong> Administrators</td>
</tr>
<tr>
<td><strong>Description:</strong> Administrators will be prompted with menu screen. After choosing “Administrators”, and “Change Room Pricing”, they will select the room type and enter in new price. After clicking button “Change Room Pricing”, the price for the room type will be updated.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use case 6: Change Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actor(s):</strong> Customers, Employees, Administrators</td>
</tr>
<tr>
<td><strong>Description:</strong> They will be prompted with menu screen. After choosing “Change Contact Information”, they will enter in the Customer ID. Select from the menu what needs to be changed. They will enter in the new changes for customer. After clicking button “Change Contact Info Now”, the customer information will be updated.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use case 7: Add Customer Preferences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actor(s):</strong> Customers, Employees, Administrators</td>
</tr>
</tbody>
</table>

- 19 -
Description: They will be prompted with menu screen. After choosing “Add Customer Preferences”, they will enter in the Customer ID. Select the number of items requested for each preference. After clicking button “Add Customer Preferences”, the customer preferences will be added.

Use case 8: **Change Customer Preferences**  
Actor(s): Customers, Employees, Administrators  
Description: They will be prompted with menu screen. After choosing “Change Customer Preferences”, they will enter in the Customer ID. Select the preference that needs to be changed. Enter in new amount for that preference. After clicking button “Change Customer Preferences”, the customer preferences will be updated.

Use case 9: **Check Availability of Hotel**  
Actor(s): Customers, Employees, Administrators  
Description: They will be prompted with menu screen. After choosing “Check Availability”, they will choose tower they would like to stay in. After clicking button “Check Availability”, the page should display the room types, prices for room types, and number of rooms available.

Use case 10: **Profit by Date Report**  
Actor(s): Administrators  
Description: Administrators will be prompted with menu screen. After choosing “Profit by Date”, they will enter the start and end dates (this time frame will show the profit made). After clicking button “Show Me the Money”, the page should display the room types and profit made for those types.

Use case 11: **Reservation Receipts Reporting**  
Actor(s): Employees, Administrators  
Description: Employees and Administrators will be prompted with menu screen. After making a reservation, they will enter the customer’s ID number where the reservation receipt page should display and print out the most current reservation information.

Use case 12: **Popularity of Rooms Report by Date and/or Time**  
Actor(s): Administrators  
Description: Administrators will be prompted with menu screen. After choosing “Popularity of Rooms Report”, they will enter the start and end dates (this time frame will show the profit made) and/or choose a time from (e.g. 9AM to 11AM). After clicking button “Print Report”, the page should display and print out the room types and amount of reservations made for those types.

Scenarios and Event Traces

**Scenario for Make a Reservation**
- The user enters the Customer ID #
- The user enters the reservation criteria (start date, end date, room type)
- The room # is populated by availability
- User chooses to reserve the room
- A confirmation # is created and displayed

Please See Figure #1 (Page 25) For Make A Reservation

Scenario for Add a Customer
- The user enters the customer information (name, address, phone, credit card, etc.)
- The user chooses to "Save Customer"
- The Customer ID # is created and displayed

```
User | User Interface | Customer
---|----------------|---------
Enter Customer Information | Choose Save Customer | Customer ID # Generated
                     |                          | Customer ID # Displayed
```

Scenario for Cancel a Reservation
- The user enters the Reservation Confirmation #
- The user chooses to "Cancel Reservation"
- The Room # is made available
- Cancellation Number and Date is displayed

Please See Figure #2 (Page 25) For Cancel Reservation

Scenario for Change Floor Smoking Status
- User enters Floor Number and changes smoking status
- User saves new changes
- New floor status is displayed

```
User | User Interface | Room Type
---|----------------|---------
User enters room number | Retrieve floor status | Display floor status
User changes smoking status | Save entry | Store entry
                     | Retrieve floor status | Display floor status
```

Scenario for Change Room Pricing
- User selects a room type
- Enters in new price for that room type
- User saves new changes
- New room type is displayed

**Scenario for Change Contact Information**
- User enters customer ID #
- Makes new changes to the customer’s contact information
- User saves new changes
- New contact information is displayed

**Scenario for Add a Customer Preference**
- The user enters customer ID number
- The user enters number of items requested for each preference
- The system displays the information
- The user saves the entry
- The system stores the entry
Scenario for *Change Customer Preferences*
- The user enters customer ID number
- The user enters makes changes to number of items preferred
- The system displays the changed information
- The user saves the entry
- The system stores the entry

Scenario for *Checking Availability of Hotel*
- The user selects tower
- The systems looks for availability for specified tower
- The system retrieves information
- Display availability information

Scenario for *Profit by Date Report*
- The user will enter a start and end date
- The user will submit the entry
- A report will be generated with the room types and profit made
Scenario for Reservation Receipts Reporting
- The user will enter Confirmation #
- The user will submit the entry
- A report will be generated with the reservation information

<table>
<thead>
<tr>
<th>User</th>
<th>User Interface</th>
<th>Reservation</th>
</tr>
</thead>
<tbody>
<tr>
<td>User enters the Confirmation #</td>
<td>Retrieves the reservation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Displays the reservation</td>
<td></td>
</tr>
<tr>
<td>Print out receipt</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Scenario for Popularity of Rooms Report by Date and/or Time
- The user enters a start and end date
- There is an option for time as well if chosen
- The user will submit the entry
- A report will be generated with room types and amount of reservations made

Please See Figure #4 (Page 26) For Popularity of Rooms
Figure #1 Make A Reservation

User Interface

Enter Customer ID#

Enter Reservation Criteria

Search Location/Type

Send Available Room #

Reservation

Choose To Reserve Room

Save Reservation Information

Confirmation # Generated

Room

Figure #2 Cancel A Reservation

User Interface

Enter Confirmation #

Choose Cancel Reservation

Retrieve Room Number

Make Room Available

Reservation

Display Cancellation Date & #

Room
Figure #3 Profit By Date Report

User Interface
- Request Profit by Date report
- Enter date range

Room
- Get Reservations

Reservation
- Group by Type & Cost
- Display type, location, cost
- Print Out Report

Figure #4 Popularity of Rooms Report

User Interface
- Request Profit by Date report
- Enter date range

Room
- Get Reservations

Reservation
- Group by Room Type
- Display type, location, # of res.
- Print Out Report
State Transition Diagrams

The dynamic model is shown in twelve state transition diagrams for the highest user of our database, the administrator. The hotel guest and employee would have the similar choices, but the administrator has all possible choices for the User Interface. The selection state is represented with an S. The hotel guest would have access to Figure 2, & 7 – 9 and the employee would have access to Figure 1 – 4, 7 – 9, & 11. After choosing a selection S, it would move to the corresponding state diagram.

![State Transition Diagrams](image)

**Figure 1**

- Do: request new customer name
  - New customer name entered
- Do: request customer address
  - New customer address entered
- Do: request customer phone #
  - New customer phone # entered
- Do: request customer credit card
  - Customer credit card entered

**Add a Customer**

- Enter Customer Information
- Reset
- Do: Go Back To Menu
- Save Customer
- Do: add new customer

**User Interface**

- Make a Reservation
- Change Room Pricing
- Check Availability of Hotel
- Add a Customer
- Change Contact Information
- Profit by Date Report
- Cancel a Reservation
- Add Customer Preferences
- Reservation Receipts Reporting
- Change Floor Status
- Change Customer Preferences
- Popularity of Room Report
Change Customer Information

Do: request customer ID
Customer ID entered

Do: search for associated customer

Do: request alterations
Alterations made

Do: request verification
Verify it

Found

Customer not found

Do: Go Back

Make a Reservation

Do: request customer ID
Customer ID entered

Do: search for associated customer

Found

Reservation Info Criteria

Do: request start date, end date, and room type.
Start date, end date, and room type entered

Do: Search Available Rooms

Do: Display Room #

Do: display cost

Do: calculate cost

Do: Generate and Display Confirmation #

Do: request ‘Make Reservation’

Figure 2

Figure 3
Change Floor Smoking Status

Do: request floor number
Floor number entered

Floor # not found

Do: request smoking status
Smoking status entered

Do: enter new price

Figure 5

Cancel a Reservation

Do: Requests confirmation #
Confirmation # entered

Confirmation # not found

Do: retrieve for confirmation #

Confirmation Number information

Do: cancel reservation

Confirm Cancellation

Cancel Operation

Cancel Reservation

Reset

Figure 4
Change Room Pricing

[Diagram of process]

Figure 6

Add Customer Preference

[Diagram of process]

Figure 7
Do: request customer ID
Customer ID entered

Do: retrieve customer
Customer found

Do: request customer preference
Customer preference entered

Do: update customer preference

Customer not found

Figure 8

Change Customer Preference

Do: request customer ID
Customer ID entered

Do: retrieve customer
Customer found

Do: request customer preference
Customer preference entered

Do: update customer preference

Customer not found

Reset

Figure 8

Check Availability of Room

Do: request date of arrival
Arrival date entered

Do: request date of departure
Departure date entered

Reset

Do: request room number
Room number entered

Do: check availability of room on specified dates

Open

Not open

Do: display room is not available

Do: display room is available

Figure 9
**Profit by Date Report**

1. Start
2. Do: request report
3. Do: request date range
   - Date range entered
   - Profit Report selected
4. Profit Report
5. Print selected
6. Do: print report
7. Do: go back to main menu

**Reservation Receipts Reporting**

1. Start
2. Do: request report
3. Do: request customer ID #
   - Customer ID # entered
4. Current reservation selected
5. Reservation Receipt
6. Print selected
7. Do: print report
8. Do: go back to main menu

**Figure 10**

**Figure 11**
Figure 12

Popularity of Rooms Report by Date and/or Time

- Start
- Do: request report
  - Do: request date/time range
    - Date/time range entered
      - Popularity Report selected
        - Do: print report
          - Print selected
          - Do: go back to main menu

Figure 12