Hotel Reservation System

Systems Analysis & Design

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# INTRODUCTION

The purpose of this report is to develop and analyse a hotel reservation system.

The hotel reservation system can handle online and face to face bookings made in person at the hotel reception desk or by telephone call to the desk.

The system will let the user (online or hotel) select the date they wish to stay and the type of room they will be looking for according to the party size and preference.

The system will be able to check for availability for the dates and specific rooms, if they are available it will allow the user to book the room and block the rooms out for the dates requested. This will ensure no double booking.

There is also billing in the system where it will record any deposits paid, total price of the room and stay and any charges made to the room such as meals in the hotel.

There is also a housekeeping department that will have a link into the system to tell the housekeeping department when the room will be vacant for cleaning after the guest has checked out, it will also allow a rotational daily clean.

To do this we will use UML using use cases descriptions with a use case diagram as a guide, class diagram and sequence diagrams.

Together working as a team, we came up with several use cases with alternative scenarios, these alternatives are not exhausted yet and may need further development with other situations that may arise.

# **USE CASES & DIAGRAMS**

## UC 1: Check In

Actors: Receptionist, Credit Card Processor

*Preconditions:* Receptionist has dates and room type from customer to book reservation.

1. System presents option to receptionist to select room reservation
2. Receptionist selects room reservation
3. System displays option of new or existing reservation
4. Receptionist selects new reservation
5. System requests check in and check out dates
6. Receptionist provides information including amount of rooms for the requested dates
7. System presents available rooms on the dates specified with available room types and price
8. Receptionist selects room type for available dates with price
9. System provides total price (including taxes and charges) and provides receptionist with option to continue
10. Receptionist indicates to continue
11. System indicates to receptionist to input guest information
12. Receptionist inputs all required information
13. System requests card information
14. Receptionist inputs card details
15. System verifies card validity from credit card processor
16. Credit card processor validates information provided
17. System checks result, stores new reservation and sends a confirmation email to new guest
18. Systems displays confirmation number for receptionist
19. System indicated to receptionist that email has been sent to customer

Alternative: Receptionist doesn’t select room type

Scenario 1: As above (1 to 7) but with the following modifications

7a System indicates a message that a room type must be selected. Receptionist has option to select room type or to discontinue room reservation

Alternative: Incorrect credit card information

Scenario 2: As above (1 to 14) but with the following modifications

14a System displays message card information is incorrect and allows receptionist to input information again

14b Receptionist checks information and inputs again

14c System approves and continues use case at step 13 or gives receptionist option to discontinue room reservation

## UC2: Check Availability

Check room availability for hotel reservation

Actors: Guest

1. System presents option to select room availability
2. Guest selects room reservation
3. The system presents option to input details regarding room type
4. The reservation requester selects room type
5. The system presents option of quantity of room required and displays a calendar to select dates being requested for arrival
6. The reservation requester presents all information being required
7. The system then presents the next stage of check in guest

Scenario 1: Room type unavailable

As above (1 to 4) but with the following modifications

4a System presents alternative room type

4b Reservation Requester proceeds with room type that is available

Scenario 2: Reservation Requester requires price

As above (1 to 6) but with the following modifications

6a System give option to view price in advance of booking in customer

6b Reservation selects option to view in advance

### Figure 1: Sequence Diagram Check Availability

A screenshot of a social media post

Description generated with very high confidence

## UC3: Make Booking

Actors: User (guest, hotel reception)

1. User indicates they wish to make a reservation.
2. System requests the check-in and check-out dates, and number of rooms.
3. User provides the requested information: check-in and check-out dates, and number of rooms.
4. System searches for available rooms on the specified dates and determines the available room types and prices.
5. System provides the list of available room types and prices, and requests the user to select a room type.
6. User selects a room type.
7. System allows the user to enter a promotion code, provides the total price and requests the user to continue the reservation request.
8. User indicates they wish to continue the reservation request.

System requests guest information.

1. User provides guest information.
2. System requests credit card information.
3. User provides credit card information.
4. System sends a request for credit card validation to the Credit Card Processor.
5. Credit Card Processor validates the credit card information.
6. System checks the credit card validation result.
7. System stores the new reservation.
8. System sends an email confirmation to the guest.
9. System displays the confirmation number to the user.
10. The System indicates an email message with the reservation information has been sent to the guest.

Post-condition(s) on Success:

* The new reservation exists in the system
* The system has sent an email confirmation to the guest.

**Alternate and Exception Flows:**

4. a. No rooms meeting criteria.

4. a.1 The system indicates there are no rooms meeting the specified criteria.

The use case continues at step 2.

5.a User does not select a room type.

5.a.1 The system presents a message indicating that a room type must be selected.

The use case continues at step 6.

15.a Credit card information not valid.

15.a.1. The system indicates the credit card information is invalid.

The use case continues at step 10

1.a Guest wants to extend stay

This is treated as a new booking.

The use case starts from step 1.

### Figure 2: Sequence Diagram, Make booking

A screenshot of a social media post

Description generated with very high confidence

## UC4: Cancel Booking

Actors: Receptionist

*Preconditions:* Cancellation made under agreement of refund as cancelled 24 hours prior to arrival

1. System presents option to receptionist to select room reservation
2. Receptionist selects room reservation
3. System displays option of new reservation or existing reservation
4. Receptionist selects existing reservation
5. System selects name of reserved room and room number
6. Receptionist inputs information
7. System displays all information of reserved room with an option to edit or cancel
8. Receptionist selects cancel reservation
9. System displays message to confirm cancellation with option of yes or no
10. Receptionist selects yes
11. System cancels reservation and sends email to customer that cancellation has been successful
12. System displays message to receptionist that cancellation email has been sent to customer

Alternative: System Failure

Scenario 1: As above (1 to 10) but with the following modifications

10a System fails to recognise user selection of yes to cancel reservation

10b System display message unable to continue and displays message error and helpdesk is being contacted

Alternative: Incorrect room information

Scenario 2: As above (1 to 6) but with the following modifications

6a System displays message incorrect information and allows option to input information again

6b Receptionist checks information and inputs correctly

Use case continues step 7

### Figure 3: Sequence diagram, Cancel booking

A screenshot of a cell phone

Description generated with very high confidence

## UC5: Check Out

Actors: Receptionist, Credit Card Processor

*Preconditions:* Customer checks out no later than noon and has authority to charge items if any to credit card

1. System presents option to receptionist to select room reservation
2. Receptionist selects room reservation
3. System displays option of new reservation or existing reservation
4. Receptionist selects existing reservation
5. System selects name of reserved room and room number
6. Receptionist inputs information
7. System presents option to check in or check out customer
8. Receptionist selects option to check out customer
9. System displays any room charges appointed and request card information to charge items
10. Receptionist input all card information
11. System verifies card validity from credit card processor
12. Credit card processor validates information provided
13. System checks result, stores information and sends email to guest with amount being charged
14. System indicates message to receptionist that all items are charged successfully and gives option to finish check out
15. Receptionist selects finalize check out
16. System displays message check out successful

Alternative:

Scenario 1: Credit card failure

As above (1 to 10) but with the following modifications

10a System displays message credit card information not valid

Use case continues at step 8

## UC6: Pay bill

Actors: Reservation Requester, Credit Card Processor, Receptionist

Pre-condition(s): None

1. Guest indicates they wish to pay the bill.
2. System requests the room or reservation number.
3. Guest provides the requested information: room or reservation number.
4. System searches for the room and determines final bill.
5. Guest confirms they are satisfied with the bill and want to proceed to payment.
6. System requests if the guest is going to pay by credit card or cash.
7. Guest provides credit card information.
8. System sends a request for credit card validation to the Credit Card Processor.
9. Credit Card Processor processes the credit card payment.
10. System checks the credit card payment result.
11. System confirms the booking is paid.
12. System sends a payment email confirmation to the guest.
13. System prints a receipt for the guest.

Post-condition(s) on Success:

* The new reservation is recorded as paid in the system.
* The system has sent a payment email confirmation to the guest.

**Alternate and Exception Flows:**

6. a. Guest pays cash

6. a.1 The guest indicates they will pay with cash.

6.a.2. The receptionist accepts the cash.

6.a.3 The receptionist counts the cash and enters the amount received into the system (change is provided if necessary.

The use case continues at step 11.

### Figure 4: Sequence Diagram, Pay Bill

A close up of text on a whiteboard

Description generated with very high confidence

## UC7: Clean Room

To ensure the cleaning department know which rooms are vacated for cleaning, if not vacated the system will tell cleaners if they have a daily clean or a 3-day clean.

Cleaning takes place daily with make beds, empty bins, clean bathroom, fresh towels and floor sweep/hoover. Every three days of the guests stay cleaning will include fresh bed linen.

When a room is checked out a full clean will take place.

Precondition: Guest has paid for stay and is checking out before noon.

Actors: Reception, Guest & Cleaning department.

Daily clean

1. Cleaner check system rooms not vacant
2. System presents rooms occupied
3. Cleaner cleans room
4. Cleaner changes room status on system to cleaned

Alternative:

Checked out room

1. Guest checks out with reception.
2. Reception enters room number into system, selects guest checked out option
3. System frees room for a time system highlights room is ready to clean
4. Cleaning department checks into system for rooms that are checked out ready to clean
5. System gives list of rooms vacant
6. Cleaner proceeds to vacant room to clean

### Figure 5: Sequence Diagram, Clean room

A close up of text on a whiteboard

Description generated with very high confidence

### Figure 6: Use Case Diagram

A close up of a map

Description generated with high confidence

### Figure 7: CRC Cards

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Description generated with high confidence

### Figure 8: Class Diagram

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### Figure 9: Activity Diagram

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# CONCLUSION

After many meetings and discussions between the team we had many revisions for our diagrams especially Sequence diagrams that relate to the Use cases and Class diagram.

The process is quite complex we found that the sequence diagrams must have the right messages sent to the right departments to ensure the correct actions can take place.

Also in the case of the Class Diagram we had to ensure we had the correct classes and their attributes and methods were correct.

This has been a very insightful assignment into how systems are designed and the analysis process that goes into it.

Hopefully we have managed to capture the design of the system, we are by no means experts in the hotel industry, but we have learned a great deal on the methods and concepts that take place when we look at the system in depth.

The Use cases are a great method to show what you want the system to do, where we have learned they work hand in hand with the sequence diagrams in showing how want the system to work. Then when we look at the Class diagram it shows the agents that can work together to achieve the Use cases.

We also had a look at the use of CRC cards in designing the Class diagram, we found these a helpful tool to look at the classes, the responsibilities and the collaborators.

When looking at the activity diagram it shows the methods and messages the system goes through.