

HW2-CS4331-CS5332-Summer2021

A hotel provides a self-checkout service, where a customer can check out a room by customer-self. Below is the use case description for a Self-Checkout use case.

Use case: Self-Checkout

Summary: A customer checks out a room.

Actors: Customer, Bank

Precondition: When a customer checked in a room, a hotel received the customer's credit card information to pay for a room at check-out. A customer can access the hotel website for self-checkout.

Main Sequence:

1. The customer enters a customer's room number for check-out.
2. The system displays the customer bill.
3. If the customer confirms the amount on the bill, the system requests a bank to charge the amount using the customer's credit card. If the card payment is successful, the system receives a reference number from the bank.
4. The system updates the bill with the reference number.
5. The system releases the room in that the customer stayed.
6. The system sends the receipt to the customer by email.
7. The system deletes the customer's credit card information.
8. The system displays a check-out confirmation message to the customer.

Alternative Sequences:

- Step 3: If the customer does not confirm the amount on the bill, the customer cancels check-out.
- Step 3: If the bank denies the customer's credit card payment, the system receives a payment denial message from the bank and cancels check-out.

Postcondition:

A customer has self-checked out.

1. Identify the threats of the self-checkout use case and analyze them in terms of threat name, security asset, description, vulnerability, and consequences. Define security measures in terms of threat, security service, and mitigation. Use the templates for threat identification/analysis and security measures in Lecture 4. (5 pts)
2. Develop the secure communication or sequence diagram for the Self-Checkout use case for main and alternative sequences. Show what objects are application objects and security objects on the diagram using the stereotype. (5 pts)