

E-HOTEL BUSINESS ANALYSIS & MODELING

TASK 1: ANSWERING QUESTIONS

BUSINESS ACTORS

1. TOURIST (TOURIST)

Concerns

- Availability of the desired room type (single or double) during the chosen dates
- Secure handling of credit card information for booking guarantees and penalty charges
- Ability to cancel within the grace period without incurring extra fees

Interests

- A straightforward and user-friendly reservation process
- Option to include additional services like breakfast, dinner, or internet
- Accurate final billing that transparently lists charges (room rate and extra services)

2. RECEPTIONIST (FRONT DESK STAFF)

Concerns

- Having immediate and accurate visibility into room availability
- Quickly accessing and updating tourist bookings for cancellations or modifications
- Enforcing cancellation rules consistently (applying grace period or penalties correctly)

Interests

- Streamlined workflow for handling bookings to minimize wait times and reduce manual data entry
- Smooth check-in and check-out procedures, contributing to tourist satisfaction
- Reliable payment collection processes (cash or card), along with automated invoice and coupon generation

3. HOTEL MANAGER

Concerns

- Monitoring revenue, occupancy rates, and cancellations to gauge overall performance
- Keeping the system's business rules (grace period, pricing, etc.) aligned with profitability goals
- Ensuring data integrity and security for tourist and transaction information

Interests

- Receiving accurate monthly reports (earnings, cancellations, popular room types) to inform strategic decisions
- Ability to revise policies (pricing, penalty fees) based on real-time and historical data
- Overseeing front-desk operations with minimal errors and high tourist satisfaction

PAYMENT GATEWAY

Concerns

- Maintaining the security and integrity of all payment data during transactions.
- Ensuring compliance with financial regulations and industry standards.
- Minimizing transaction failures, declines, and chargebacks.

Interests

- Processing transactions quickly and securely, providing real-time authorization.
- Seamless integration with the E-Hotel system to support reliable revenue collection.
- Enhancing tourist trust and satisfaction by ensuring smooth payment operations.

VALUE PRODUCED BY THE BUSINESS

FOR TOURISTS

- Quick and seamless booking experience
- Transparent cancellation policies with clear grace periods
- Streamlined check-out process, ensuring final payment is accurate and hassle-free

FOR RECEPTIONISTS (FRONT DESK STAFF)

- Real-time visibility of room availability and reservations
- Reduced manual effort and faster booking management through automated processes
- Consistency in applying policies (e.g., cancellation penalties, room pricing)

FOR HOTEL MANAGERS

- Automated collection of statistics (revenue, occupancy, cancellations)
- Improved decision-making based on up-to-date operational data
- Flexibility to adjust policies (pricing, grace periods) quickly, guided by system analytics

FOR PAYMENT GATEWAYS

- Increased transaction volume, contributing to revenue growth
- Enhanced security and trust through robust, compliant processing
- Seamless integration with the E-Hotel system, ensuring smooth payment operations
- Expanded market reach by supporting diverse payment methods and currencies

BUSINESS PROCESSES IN THE SYSTEM

1. RESERVATION (BOOKING)

Involves collecting tourist details, checking room availability, and creating a booking record. May include taking a credit card guarantee if needed.

2. CHECK-IN

Takes place when the tourist arrives, retrieves their existing reservation, and marks the room as occupied in the system.

3. CHECK-OUT & PAYMENT

Finalizes the guest's stay by calculating room charges (and any additional services used) and handling the payment process, whether by cash or card.

4. CANCELLATION

Allows a guest or a Receptionist to cancel an existing reservation. The system checks if it is within the grace period (no penalty) or past it (penalty applied).

5. MONTHLY STATISTICS GENERATION

Compiles essential data such as revenue, occupancy rates, and cancellation counts, enabling the Hotel Manager to review performance and make informed decisions.

6. PAYMENT PROCESSING

Securely validates and authorizes credit card details in real time, handles refunds and chargebacks, and ensures compliance with industry standards.

BUSINESS AGENTS THAT WORK IN THE SYSTEM

1. RECEPTIONIST (FRONT DESK STAFF)

Responsible for handling daily operational tasks such as:

- Creating and modifying bookings
- Checking guests in and out
- Processing payments
- Enforcing cancellation policies

2. HOTEL MANAGER

Oversees and configures business rules and operations by:

- Reviewing monthly statistics
- Adjusting pricing, grace periods, and other policies
- Monitoring overall performance to ensure quality and profitability

3. SYSTEM ADMINISTRATOR

Maintains the technical integrity and operability of the platform by:

- Managing user accounts and permissions for Receptionists, Hotel Managers, and other staff
- Monitoring system performance, applying software updates, and troubleshooting issues
- Ensuring data security and compliance with relevant regulations

RESOURCES USED BY AGENTS DURING BUSINESS PROCESSES

1. ROOM AVAILABILITY RECORDS

- Show which rooms are free, booked, or occupied at any given moment
- Updated continuously as reservations are made, modified, or canceled

2. BOOKING INFORMATION

- Stores reservation details, including the tourist's personal data, stay dates, and possible credit card information
- Accessible by agents to confirm or update a booking's status

3. PAYMENT TOOLS

- May include an integrated point-of-sale (POS) device that connects with the external Payment Gateway.
- Enables processing of cash and credit card transactions for check-out and penalty fees via the external Payment Gateway.

4. REPORTING INTERFACE

- Provides overviews of occupancy, revenue, and cancellations, often used by the hotel manager for operational insights
- Offers the ability to generate monthly or on-demand statistics

5. COMMUNICATION CHANNELS

- Telephone, email, or in-person interactions facilitate real-time coordination between the agents and the tourists
- Also used to disseminate booking codes, cancellation confirmations, and other tourist-facing information

6. INFRASTRUCTURE & DATA MANAGEMENT

- Relies on databases or storage solutions for quick access to room availability, tourist details, and booking data
- Requires a reliable hosting or server environment to ensure high uptime and performance

7. EXTERNAL INTEGRATIONS & SECURITY

- Integrates with third-party services such as the Payment Gateway (now an external actor) and email or SMS services for notifications.
- Employs robust authentication, firewalls, and encryption to safeguard sensitive tourist and financial information.

BUSINESS ACTIVITIES THAT COULD BE AUTOMATED

1. REAL-TIME AVAILABILITY CHECKING

- Continuously updates room status (occupied, free, or booked)
- Minimizes manual tracking by Receptionist or front desk staff

2. DIGITAL BOOKING MANAGEMENT

- Allows creation, modification, and cancellation of reservations through an electronic interface
- Reduces paperwork and speeds up the reservation process

3. SELF-SERVICE KIOSKS OR ONLINE PLATFORMS

- Enables tourists to make or modify bookings independently
- Frees the front desk from repetitive tasks

4. AUTOMATED CHECK-IN / CHECK-OUT

- Streamlines process for assigning rooms and calculating final bills without extensive manual input
- Integrates with the external Payment Gateway to securely process electronic transactions.

5. REPORT GENERATION & ANALYTICS

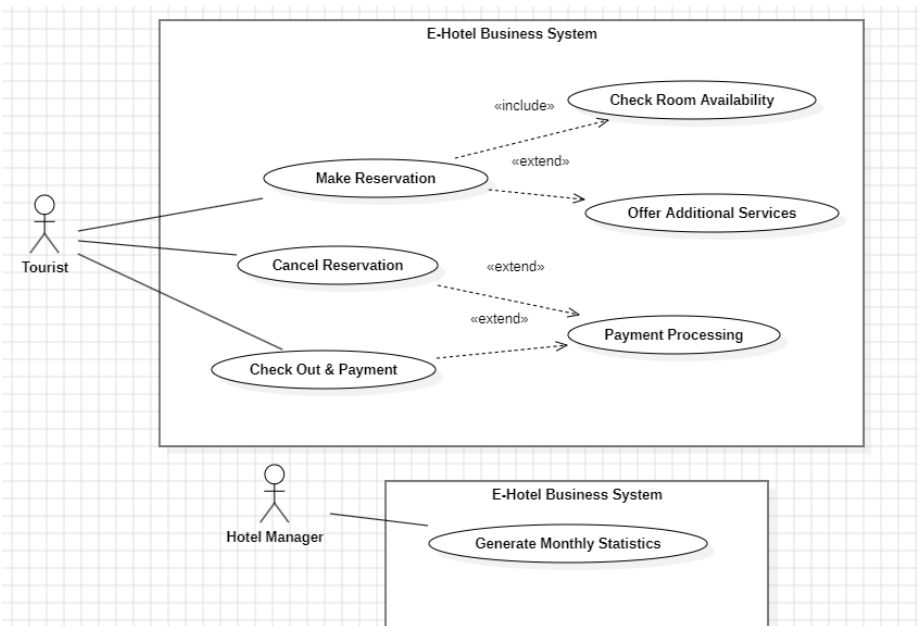
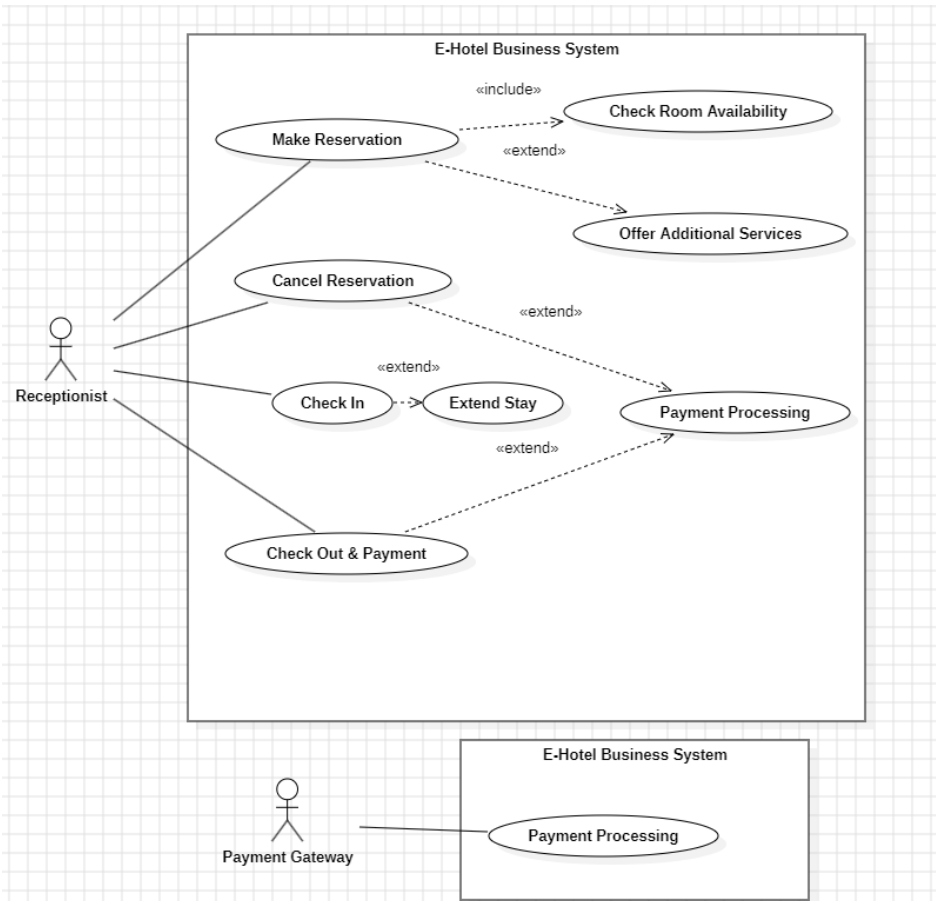
- Compiles monthly or on-demand statistics (revenue, cancellations, occupancy)
- Eliminates time-consuming manual data aggregation for the Hotel Manager

BUSINESS OBJECTS USED OR OBTAINED AFTER THE EXECUTION OF SOFTWARE COMPONENTS

Business Object	Description
Hotel	Contains details about each property on the platform, such as name, star rating, address, and total room inventory.
Room	Represents individual rooms with attributes such as room number, type (single/double), and current status (available, booked, or occupied).
Booking	A digital record of reservations including booking ID, tourist details, stay dates, selected room(s), and associated policies like cancellation grace period.
Payment Transaction	Logs details of payment operations, including the payment method (cash or card), amount, date/time, and transaction status during check-out or penalty processing.
Invoice/Bill	Generated at check-out, itemizing room charges and additional service fees incurred during the stay.
Coupon	A discount voucher issued to the tourist upon check-out, redeemable for future bookings.
Monthly Statistics Report	Aggregates operational data such as revenue, occupancy rates, and cancellation counts, providing performance insights for managerial decision-making.
Tourist	Stores personal details of the tourist making the reservation, such as name, contact information, and identification details (e.g., CNP).
Service Request	Captures additional service selections (e.g., breakfast, dinner, internet) made by the tourist, linked to their booking.
Cancellation Record	Logs details of booking cancellations, including the cancellation time, any penalty applied, and the reason for cancellation if provided.

TASK 2: BUSINESS USE CASE MODEL

BUSINESS USE CASE DIAGRAMS



BUSINESS USE CASE DESCRIPTIONS

1. MAKE RESERVATION

- **Name:** Make Reservation
- **Actors:** Tourist (initiator) and Receptionist (assisting)
- **Brief Description:** Creates a booking for one or more rooms by gathering tourist details, verifying room availability, offering additional services if desired, and issuing a booking code.
- **Preconditions:**
 - At least one room is available for the selected dates.
 - Necessary tourist information is provided.
- **Main Flow:**
 - Tourist or Receptionist initiates the reservation request.
 - The system checks room availability (includes “Check Availability”).
 - If available, the system may offer additional services (extend: “Offer Additional Services”).
 - Tourist selects the desired room(s) and services.
 - System collects tourist and payment details.
 - The system issues a booking code (extend: “Issue Booking Code”) and confirms the reservation along with the cancellation grace period.
- **Alternative Flows:**
 - If no rooms are available, the system proposes alternative dates or options.
 - If payment details are invalid, the booking is either held or rejected.
- **Non-Functional Requirements:**
 - Quick processing (within seconds) and high accuracy.
 - User-friendly interface for both Tourist and Receptionist.

2. CANCEL RESERVATION

- **Name:** Cancel Reservation
- **Actors:** Tourist and Receptionist
- **Brief Description:** Cancels an existing booking by verifying the cancellation request against the allowed grace period and applying a penalty if required.
- **Preconditions:**
 - A valid booking with an issued booking code exists.
- **Main Flow:**
 - Tourist or Receptionist enters the booking code to initiate cancellation.
 - The system verifies whether the cancellation is within the grace period.

- If within the grace period, cancellation proceeds without penalty; if not, a penalty is applied.
- The booking status is updated to “canceled,” and a cancellation record is generated.
- **Alternative Flows:**
 - If the booking code is invalid, the system rejects the cancellation request.
 - If processing the penalty fails, the request is flagged for manual resolution.
- **Non-Functional Requirements:**
 - Immediate and reliable updates to booking status.
 - Clear communication regarding penalty application.

3. CHECK IN

- **Name:** Check In
- **Actors:** Receptionist
- **Brief Description:** Processes the guest’s arrival by retrieving booking details, verifying room availability, confirming guest identity, and marking the room as occupied.
- **Preconditions:**
 - A valid, active booking exists for the current day.
 - The booked room is available.
- **Main Flow:**
 - Receptionist retrieves booking details using the booking code or tourist ID.
 - The system verifies the booking and room availability.
 - Receptionist confirms the guest’s identity.
 - The room status is updated to “occupied.”
 - If the guest requests an extension, the system processes the extension (extend: “Extend Stay”).
- **Alternative Flows:**
 - If the room is unavailable, the system assigns an alternative room if possible.
 - If booking details are incomplete or mismatched, the process is halted until corrected.
- **Non-Functional Requirements:**
 - Fast and error-free processing.
 - Robust validation of room status and guest identity.

4. CHECK OUT & PAYMENT

- **Name:** Check Out & Payment
- **Actors:** Receptionist, Tourist, and Payment Gateway (external)
- **Brief Description:** Finalizes the guest’s stay by calculating total charges, securely processing payment through the external Payment Gateway, and generating an invoice and, if applicable, a discount coupon.

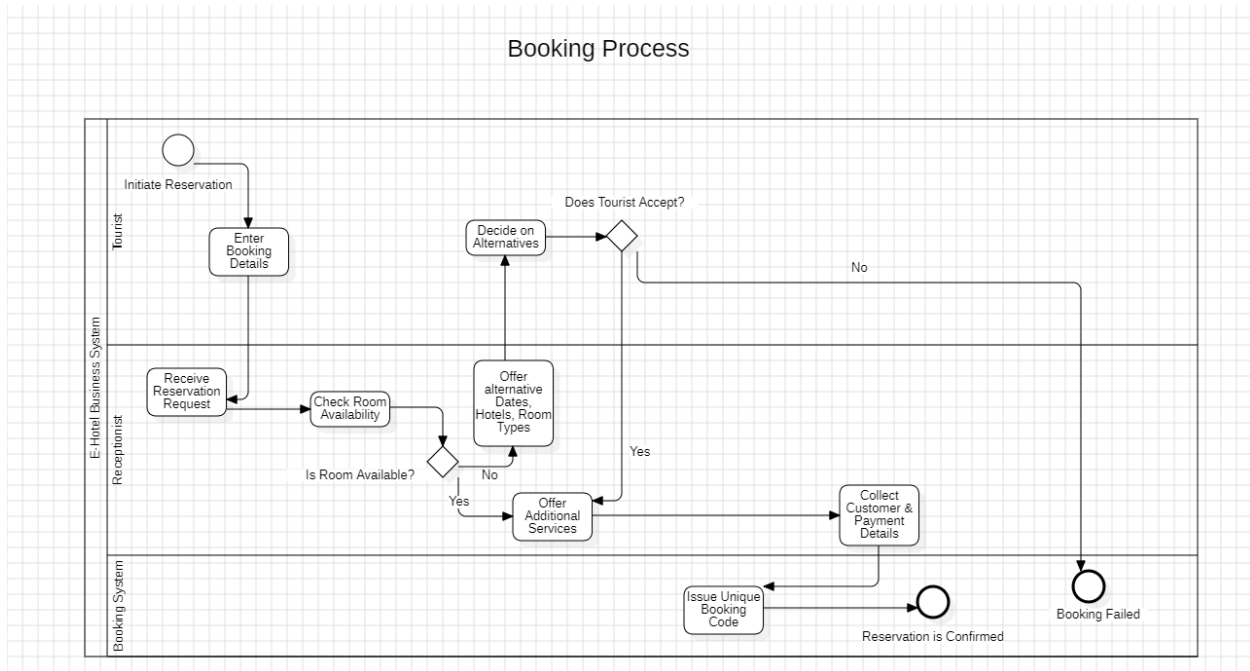
- **Preconditions:**
 - The guest has an active booking marked as “occupied.”
 - All service usage details are current.
- **Main Flow:**
 - Receptionist initiates the check-out process.
 - The system compiles charges for room rates and additional services.
 - Payment Processing is invoked, and the system interacts with the external Payment Gateway to authorize and process the payment (includes “Payment Processing”).
 - Payment is confirmed and the booking status is updated to “completed.”
 - The system generates an invoice/bill and issues a discount coupon if applicable.
- **Alternative Flows:**
 - If the payment is declined, the guest is prompted to provide an alternative payment method.
 - In case of disputes over charges, the booking is flagged for manual review.
- **Non-Functional Requirements:**
 - Secure, fast, and accurate payment processing with clear invoicing.
 - Seamless integration with the external Payment Gateway.

5. GENERATE MONTHLY STATISTICS

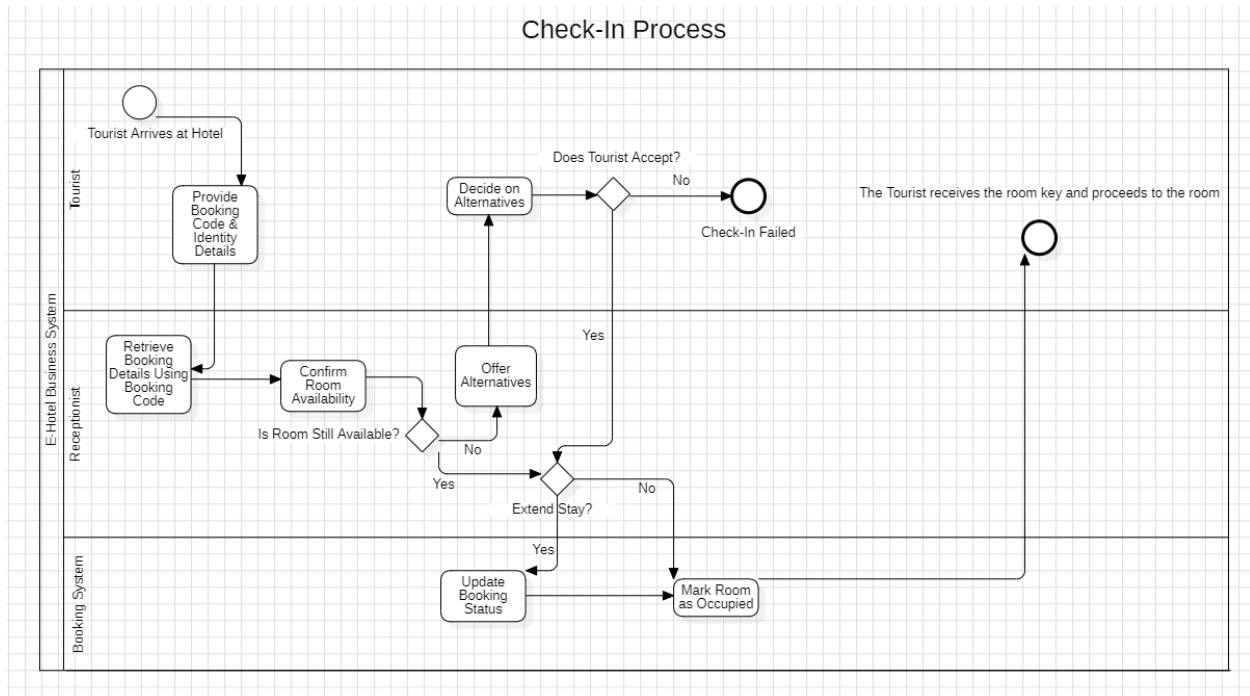
- **Name:** Generate Monthly Statistics
- **Actors:** Hotel Manager
- **Brief Description:** Aggregates data on bookings, cancellations, occupancy, and revenue to generate performance reports for managerial review.
- **Preconditions:**
 - Sufficient historical data is available in the system for the selected period.
- **Main Flow:**
 - Hotel Manager selects the reporting period.
 - The system aggregates data from bookings, cancellations, and payment transactions.
 - A comprehensive report is generated, summarizing key performance metrics such as revenue, occupancy rates, and cancellation counts.
 - The report is provided to the Hotel Manager for review or export.
- **Alternative Flows:**
 - If data is incomplete, the system generates a partial report and notifies the manager.
 - The manager may refine filters (e.g., by hotel or room type) to adjust the report.
- **Non-Functional Requirements:**
 - Report generation must be completed within an acceptable timeframe.
 - Reports should be clear, accurate, and easily interpretable.

TASK 3: BUSINESS PROCESSES

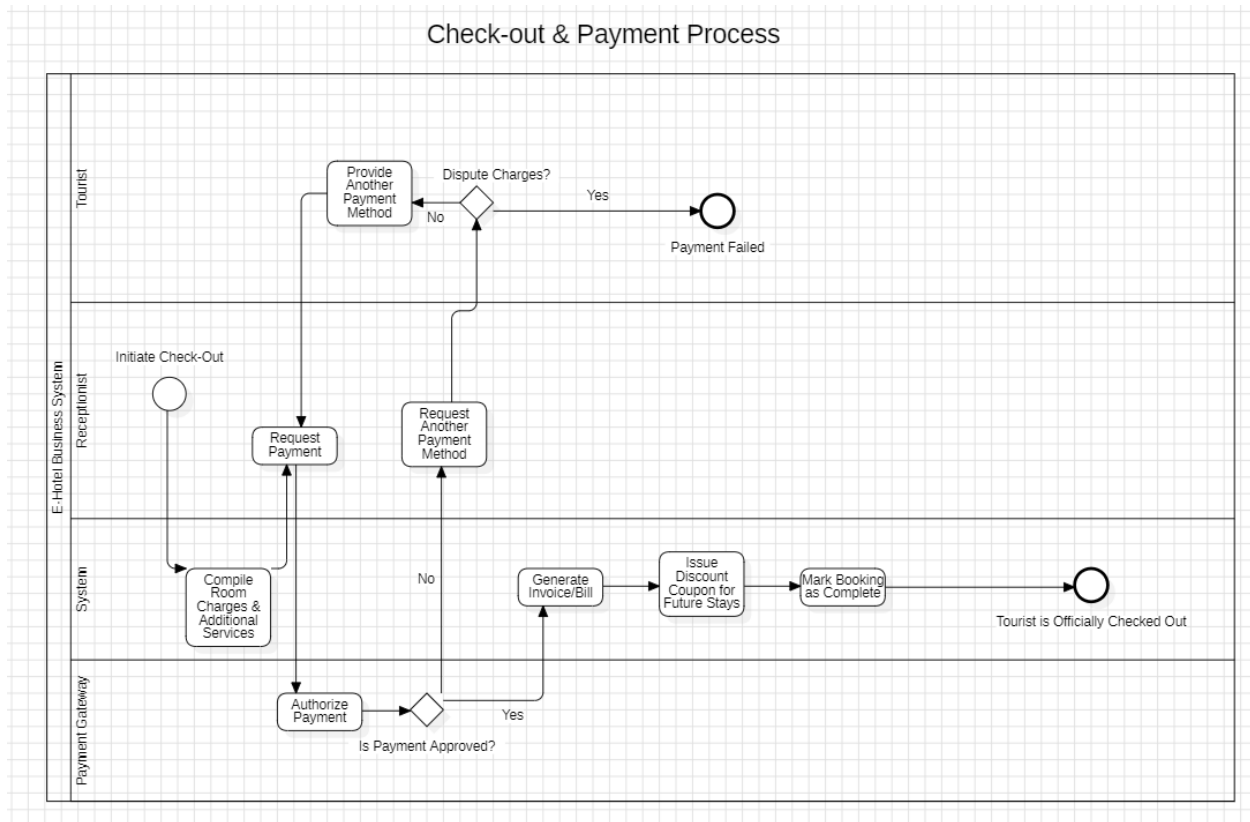
BOOKING PROCESS



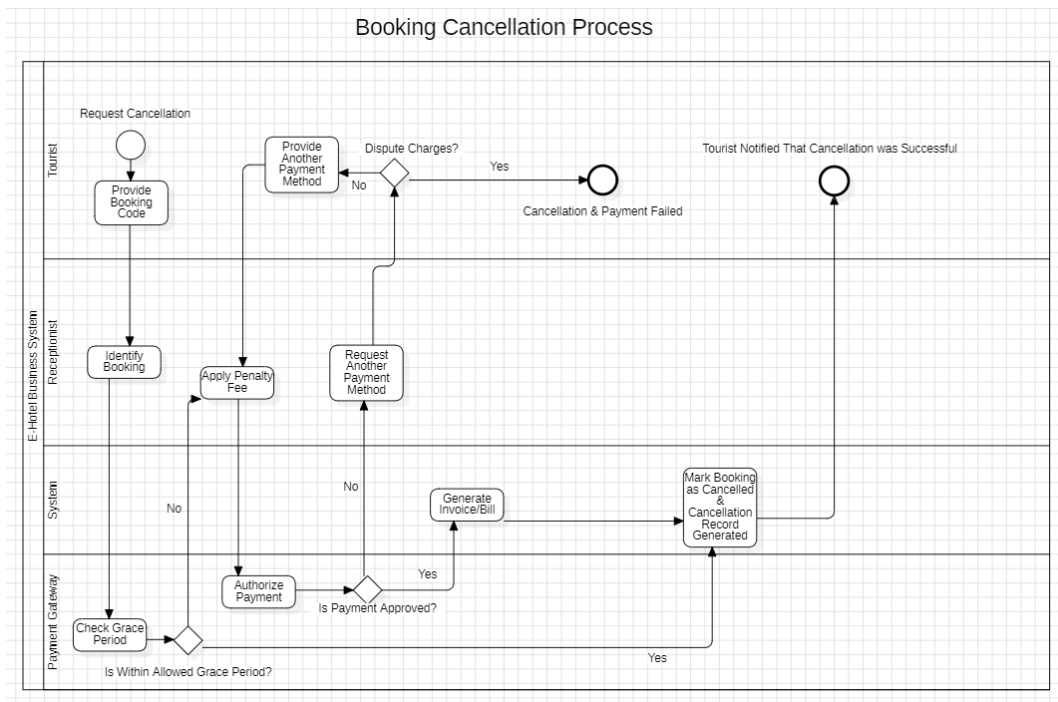
CHECK-IN PROCESS



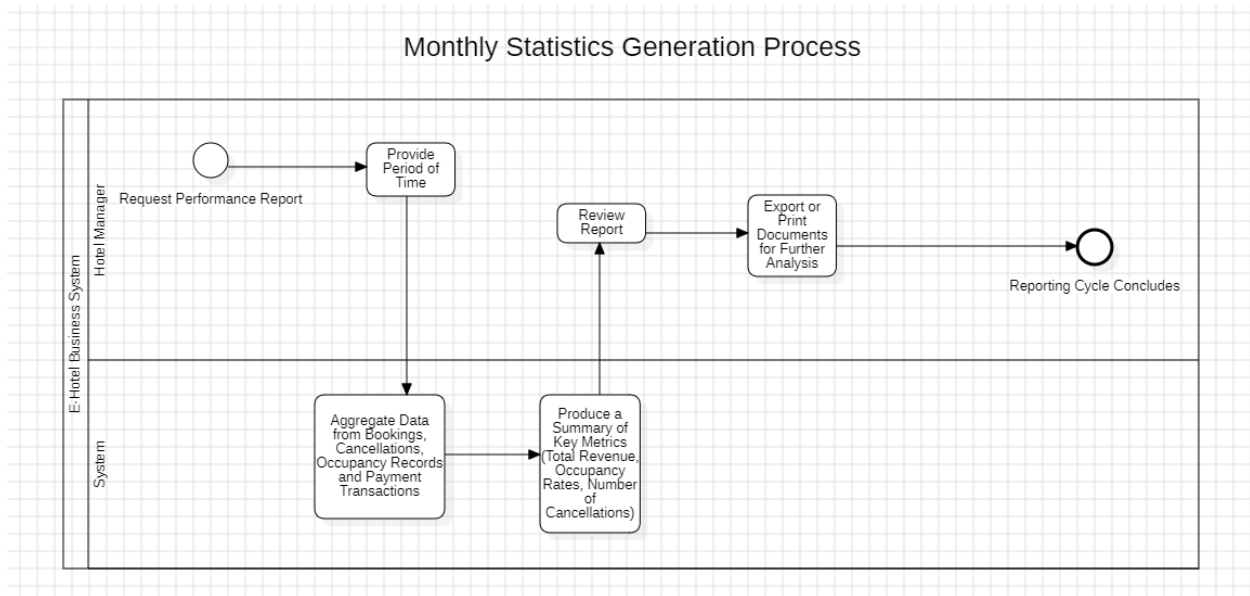
CHECK-OUT & PAYMENT PROCESS



BOOKING CANCELLATION PROCESS

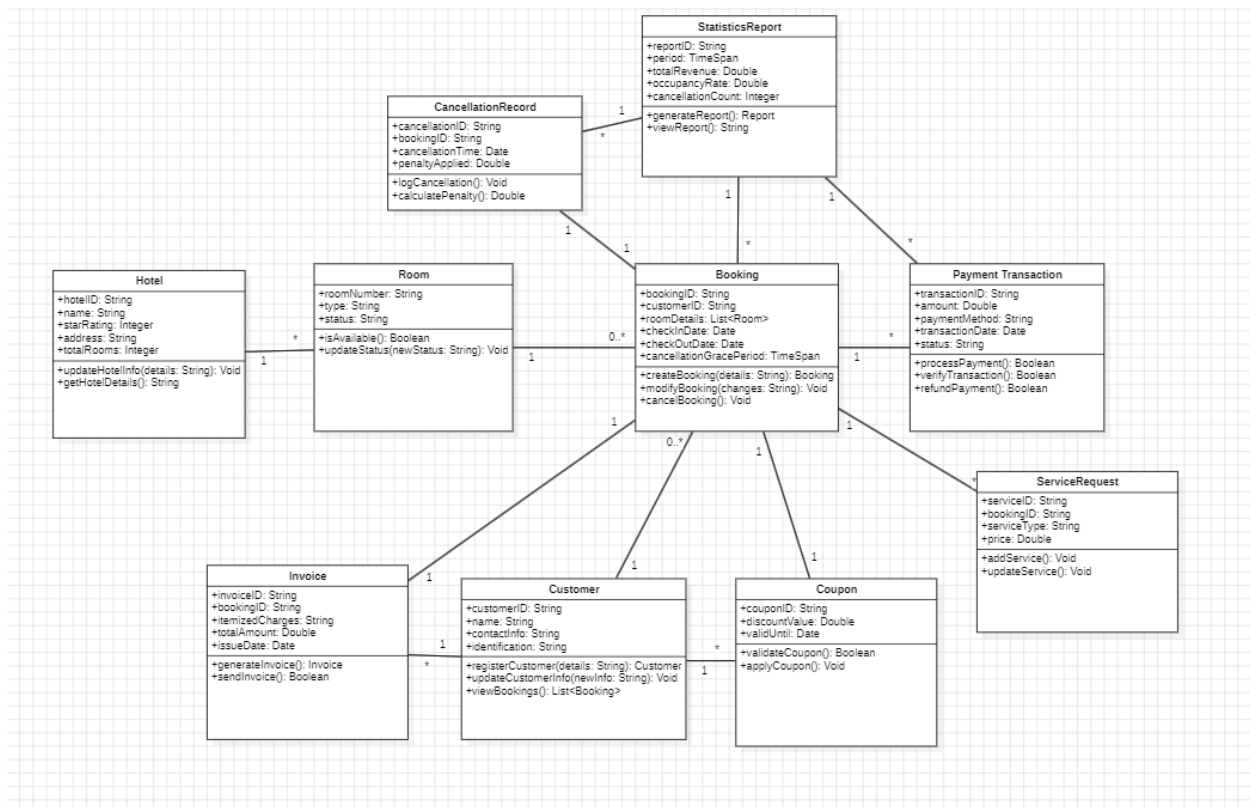


MONTHLY STATISTICS GENERATION PROCESS



TASK 4: BUSINESS DOMAIN MODEL

BUSINESS CLASS DIAGRAM



BUSINESS DOMAIN MODEL DESCRIPTIONS

HOTEL

Connections:

- Associated with multiple Rooms.
- Provides property details used by Hotel Managers for operational decisions.

Attributes:

- hotelID: String – Unique identifier for the hotel.
- name: String – The name of the hotel.
- starRating: Integer – The quality rating of the hotel.
- address: String – Physical location of the hotel.
- totalRooms: Integer – Total number of rooms available in the hotel.

Methods:

- updateHotelInfo(details: String): Void – Updates hotel information.
- getHotelDetails(): String – Retrieves current hotel details.

ROOM

Connections:

- Belongs to a Hotel.
- Linked to Bookings when a reservation is made.

Attributes:

- roomNumber: String – Unique number identifying the room.
- type: String – Type of room (e.g., "single" or "double").
- status: String – Current occupancy status (e.g., "available", "booked", "occupied").

Methods:

- isAvailable(): Boolean – Checks if the room is free for booking.
- updateStatus(newStatus: String): Void – Changes the room status.

BOOKING

Connections:

- Connects a Tourist with one or more Rooms.
- Triggers Payment Transactions and later generates an Invoice/Bill.
- May include additional Service Requests.

Attributes:

- bookingID: String – Unique booking identifier.
- touristID: String – Reference to the Tourist making the booking.
- roomDetails: List<Room> – Information on the selected Room(s).
- checkInDate: Date – Scheduled arrival date.
- checkOutDate: Date – Scheduled departure date.
- cancellationGracePeriod: TimeSpan – Duration during which cancellations incur no penalty.

Methods:

- createBooking(details: String): Booking – Initiates a new booking record.
- modifyBooking(changes: String): Void – Updates existing booking details.
- cancelBooking(): Void – Cancels the booking and generates a Cancellation Record.

PAYMENT TRANSACTION

Connections:

- Directly associated with a Booking.
- Initiated during check-out or penalty processing upon cancellation.
- Interacts with the external Payment Gateway for secure processing and authorization.

Attributes:

- transactionID: String – Unique identifier for the transaction.
- amount: Double – Total amount processed.
- paymentMethod: String – Mode of payment (e.g., "cash" or "card").
- transactionDate: Date – Date and time of the transaction.
- status: String – Outcome of the transaction (e.g., "approved", "declined", "pending").

Methods:

- processPayment(): Boolean – Executes the payment process, interfacing with the external Payment Gateway (returns true if successful).
- verifyTransaction(): Boolean – Checks the transaction status via feedback from the Payment Gateway.
- refundPayment(): Boolean – Initiates a refund if applicable through the Payment Gateway.

INVOICE/BILL

Connections:

- Generated from a Booking at check-out.
- Provided to the Tourist as proof of payment.

Attributes:

- invoiceID: String – Unique invoice identifier.
- bookingID: String – Associated booking reference.
- itemizedCharges: String – Detailed list of room and service charges.
- totalAmount: Double – Total bill amount.
- issueDate: Date – Date when the invoice was generated.

Methods:

- generateInvoice(): Invoice – Compiles billing details into an invoice.
- sendInvoice(): Boolean – Dispatches the invoice to the Tourist (returns true if sent successfully).

COUPON

Connections:

- Issued after a successful check-out.
- Can be applied to future Bookings by the Tourist.

Attributes:

- couponID: String – Unique coupon identifier.
- discountValue: Double – The value or percentage discount offered.
- validUntil: Date – Expiry date of the coupon.

Methods:

- validateCoupon(): Boolean – Checks if the coupon is still valid.
- applyCoupon(): Void – Applies the discount to a new booking.

MONTHLY STATISTICS REPORT

Connections:

- Generated by the system for review by the Hotel Manager.
- Summarizes multiple operational aspects from various Business Objects.

Attributes:

- reportID: String – Unique identifier for the report.
- period: String – The time period covered by the report.
- totalRevenue: Double – Aggregated revenue data.
- occupancyRate: Double – Overall occupancy statistics (expressed as a percentage).
- cancellationCount: Integer – Number of cancellations recorded.

Methods:

- generateReport(): Report – Compiles data into a comprehensive report.
- viewReport(): String – Displays the report details.

TOURIST

Connections:

- Initiates Bookings and receives Invoices/Bills and Coupons.
- Their information is referenced in Service Requests and Payment Transactions.

Attributes:

- touristID: String – Unique identifier for the tourist.
- name: String – Full name of the tourist.

- **contactInfo:** String – Contact details such as phone number and email.
- **identification:** String – Official identification data (e.g., CNP).

Methods:

- **registerTourist(details: String):** Tourist – Creates a new tourist profile.
- **updateTouristInfo(newInfo: String):** Void – Updates existing tourist information.
- **viewBookings():** List<Booking> – Retrieves a history of bookings made by the tourist.

SERVICE REQUEST

Connections:

- Linked to a Booking to track additional services requested by the Tourist.
- Impacts the final Invoice/Bill with extra charges.

Attributes:

- **serviceID:** String – Unique identifier for the service request.
- **bookingID:** String – Associated booking reference.
- **serviceType:** String – Type of additional service (e.g., "breakfast", "dinner", "internet").
- **price:** Double – Cost of the requested service.

Methods:

- **addService():** Void – Adds a new service request to a booking.
- **updateService():** Void – Modifies the details of an existing service request.

CANCELLATION RECORD

Connections:

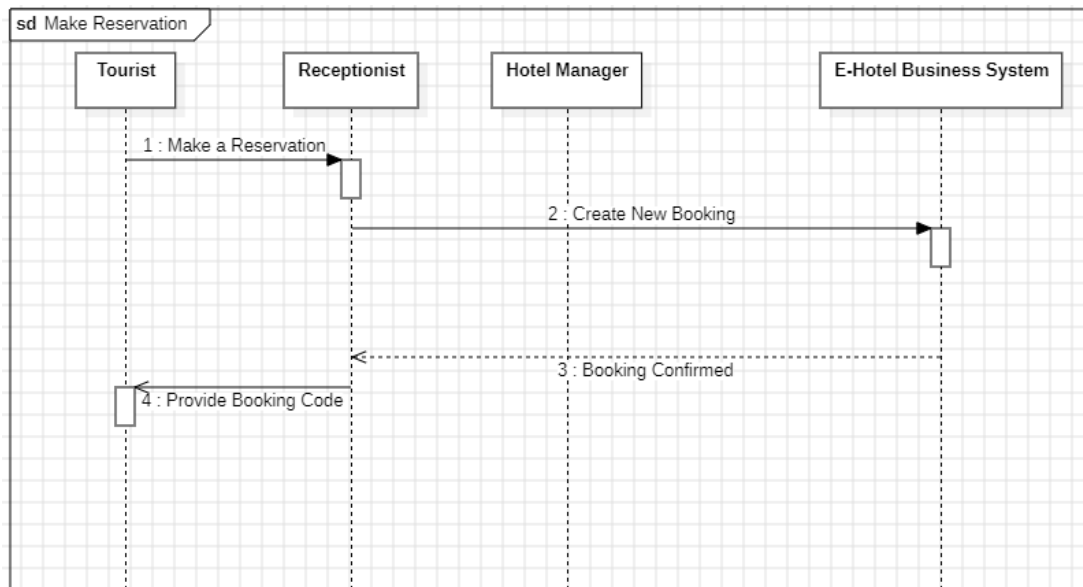
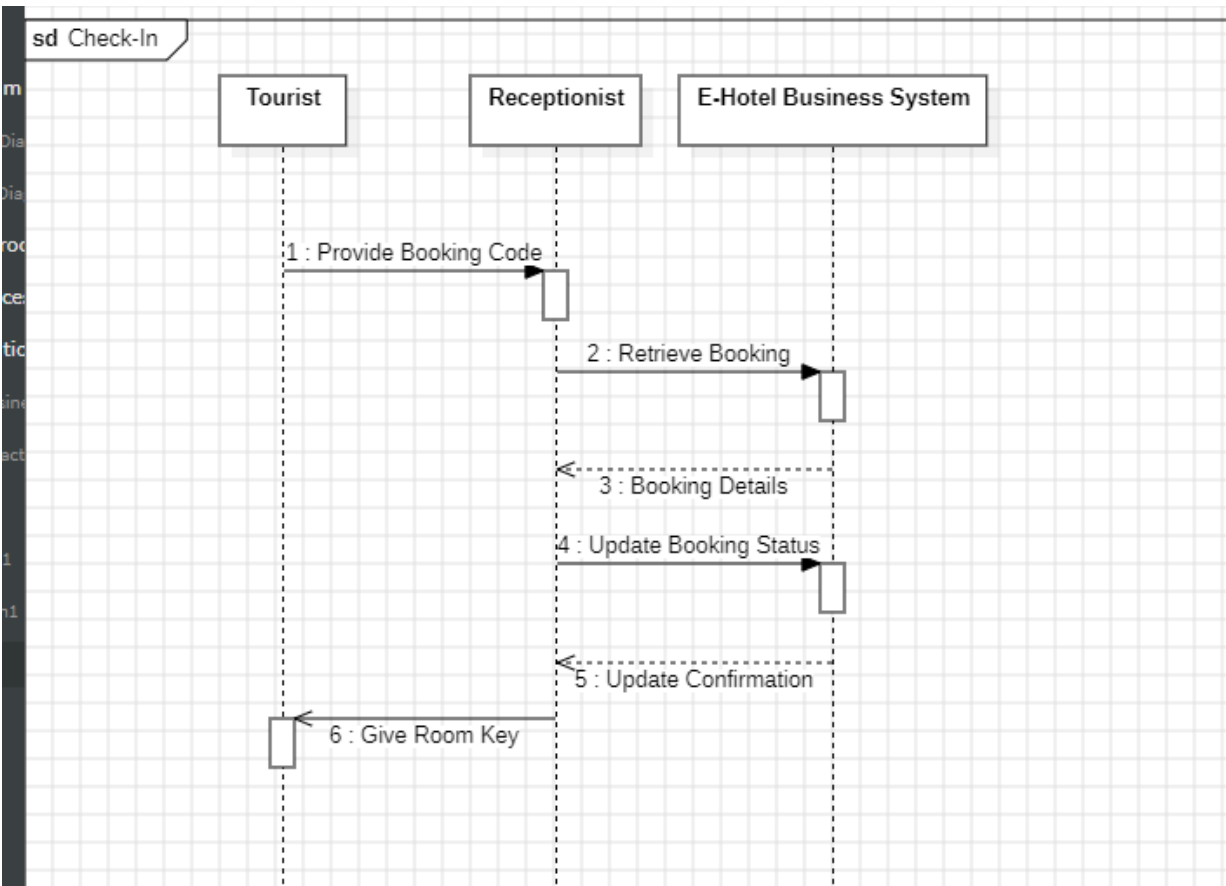
- Generated when a Booking is canceled.
- Provides data for calculating penalties and adjusting Monthly Statistics.

Attributes:

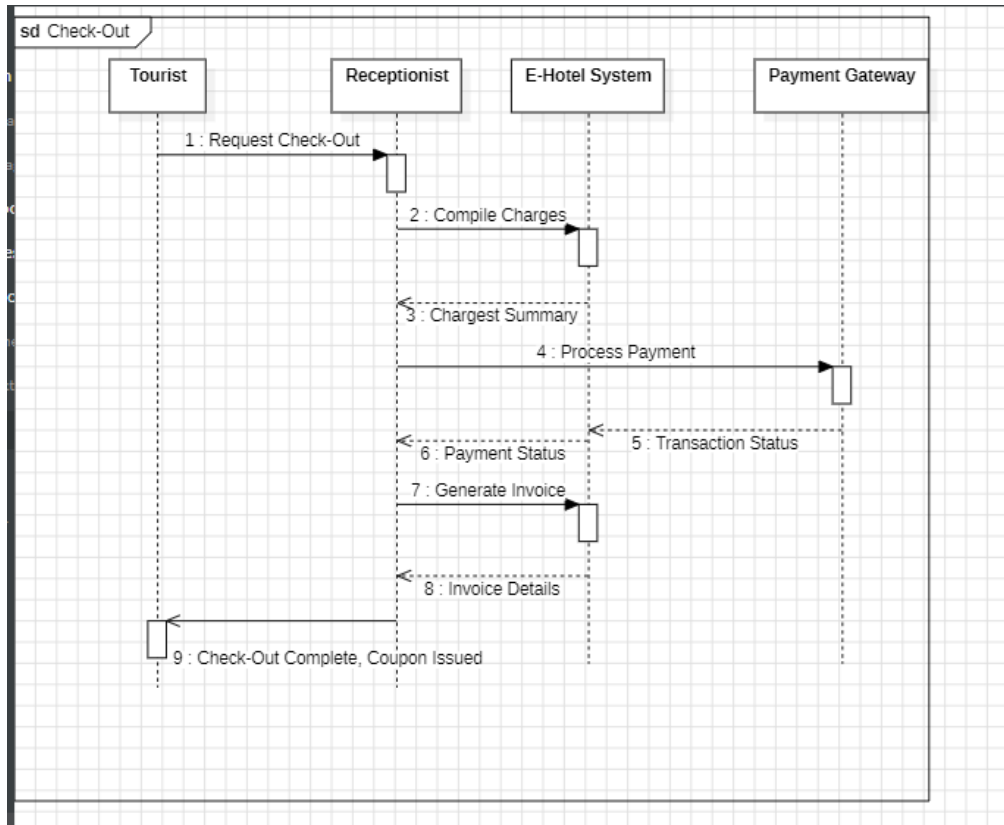
- **cancellationID:** String – Unique identifier for the cancellation record.
- **bookingID:** String – Reference to the canceled booking.
- **cancellationTime:** Date – Timestamp of when the cancellation occurred.
- **penaltyApplied:** Double – The penalty amount charged if applicable.

Methods:

- **logCancellation():** Void – Records the cancellation details.
- **calculatePenalty():** Double – Determines any applicable penalty based on the cancellation time relative to the grace period.

TASK 5: BUSINESS SEQUENCE DIAGRAMS**1. MAKE RESERVATION****2. CHECK-IN**

3. CHECK-OUT



4. CANCELLATION

