OOP Case Studies

Q1. Banking System (Finance Domain)

Design a BankAccount class.

Methods to think about:

- withdraw money (object method)
- deposit money (object method)
- display account details (object method)
- update minimum balance (class method)

Q2. Hospital Patient Management (Healthcare Domain)

Design a Patient class.

Methods to think about:

- admit patient (object method)
- discharge patient (object method)
- calculate bill (object method)
- update consultation fee (class method)

Q3. Library Book System (Education Domain)

Design a LibraryBook class.

Methods to think about:

- issue book (object method)
- return book (object method)
- calculate fine (object method)
- update fine per day (class method)

Q4. Online Exam System (EdTech Domain)

Design an Exam class.

Methods to think about:

- start exam (object method)
- submit exam (object method)
- calculate score (object method)
- update pass marks (class method)

Q5. E-Commerce Order System (Retail Domain)

Design an Order class.

Methods to think about:

- place order (object method)
- cancel order (object method)
- calculate total price (object method)
- update tax percentage (class method)

Q6. Employee Payroll System (Corporate Domain)

Design an Employee class.

Methods to think about:

- calculate salary (object method)
- apply leave deduction (object method)
- display payslip (object method)
- update hra percentage (class method)

Q7. Railway Ticket Booking (Transport Domain)

Design a Ticket class.

Methods to think about:

- book ticket (object method)
- cancel ticket (object method)
- calculate fare (object method)
- update base fare (class method)

Q8. Hostel Management System (Accommodation Domain)

Design a HostelRoom class.

Methods to think about:

- allocate room (object method)
- vacate room (object method)
- calculate monthly fee (object method)
- update room rent (class method)

Q9. Mobile Recharge System (Telecom Domain)

Design a Recharge class.

Methods to think about:

- do recharge (object method)

- check validity (object method)

- show balance (object method)

- update recharge plans (class method)

Q10. Movie Ticket Booking (Entertainment Domain)

Design a MovieTicket class.

Methods to think about:

- book seat (object method)

- cancel booking (object method)

- calculate ticket price (object method)

- update ticket price (class method)

Note: Please do not use AI tools or internet search for these problems. The goal is to develop real brainstorming skills for solving real-world problems. Think independently, identify constraints on your own, and then design the solution. **Thinking matters more than coding.**