AIUB
SOLUTION

- Case 1:
- In a hotel management system a guest can rent rooms. Hotel receptionist uses the system to assist in the renting. A guest can also book a room for future renting with the help of the receptionist, but he has to check if the room has prior booking or not. A Guest pays for the rooms at the time they check out. He can pay by cash, check or credit card. Receptionists has to logon to the system before they can use it, but to logon he has go through username/password verification.

- Case 2:
- Music Today is a audio recording company. There are several recordists in the company. Clients record their music with the help of the recordists. The recording is done in a session. A session is usually created by the office clerk. A session needs to be booked by the client beforehand and before booking the time needs to be verified by the office clerk for availability. The company maintains a list of preferred clients who book sessions like regular clients but also can create sessions according to their needs. Clerks have to log in to use the system. Clients can pay in cash or card. The accountant deals with the payment. The payment is only cleared when the accountant receives clearance from the office clerk.

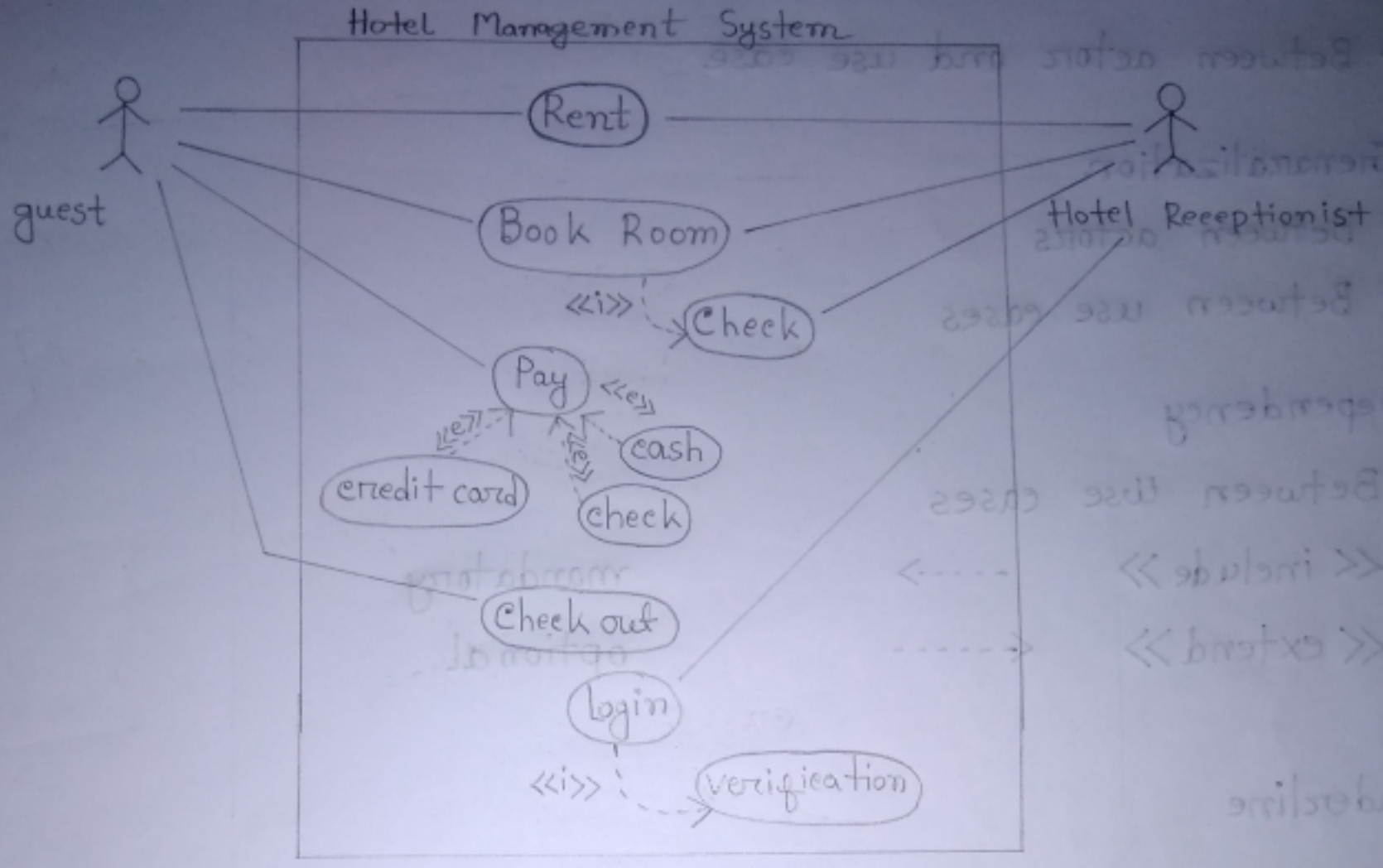
Use Case Diagrams - practice

- Case 1:
- ABCD Records is a mail order company that distributes CDs and tapes at discount prices to record club members. A member fills up an order form and sends it to the order processing clerk. When the order processing clerk receives an order form, she verifies that the sender is a club member by checking the member file. She also checks the status of the member whether he is a royal class member or regular class member. If the sender is not a member, the clerk returns the order along with a membership application form. If the customer is a member, the clerk verifies the order item data by checking the item file. Then the clerk enters the order data and saves it to the daily records file. At the same time the clerk also prints an invoice and shipping list for each order, which are forwarded to the collection department clerk for processing there. If the items are not available and if the member is a royal class member, items are ordered by the Order Processing Clerk. Royal class members also get discounts. The members can pay by cash, check or bank draft.

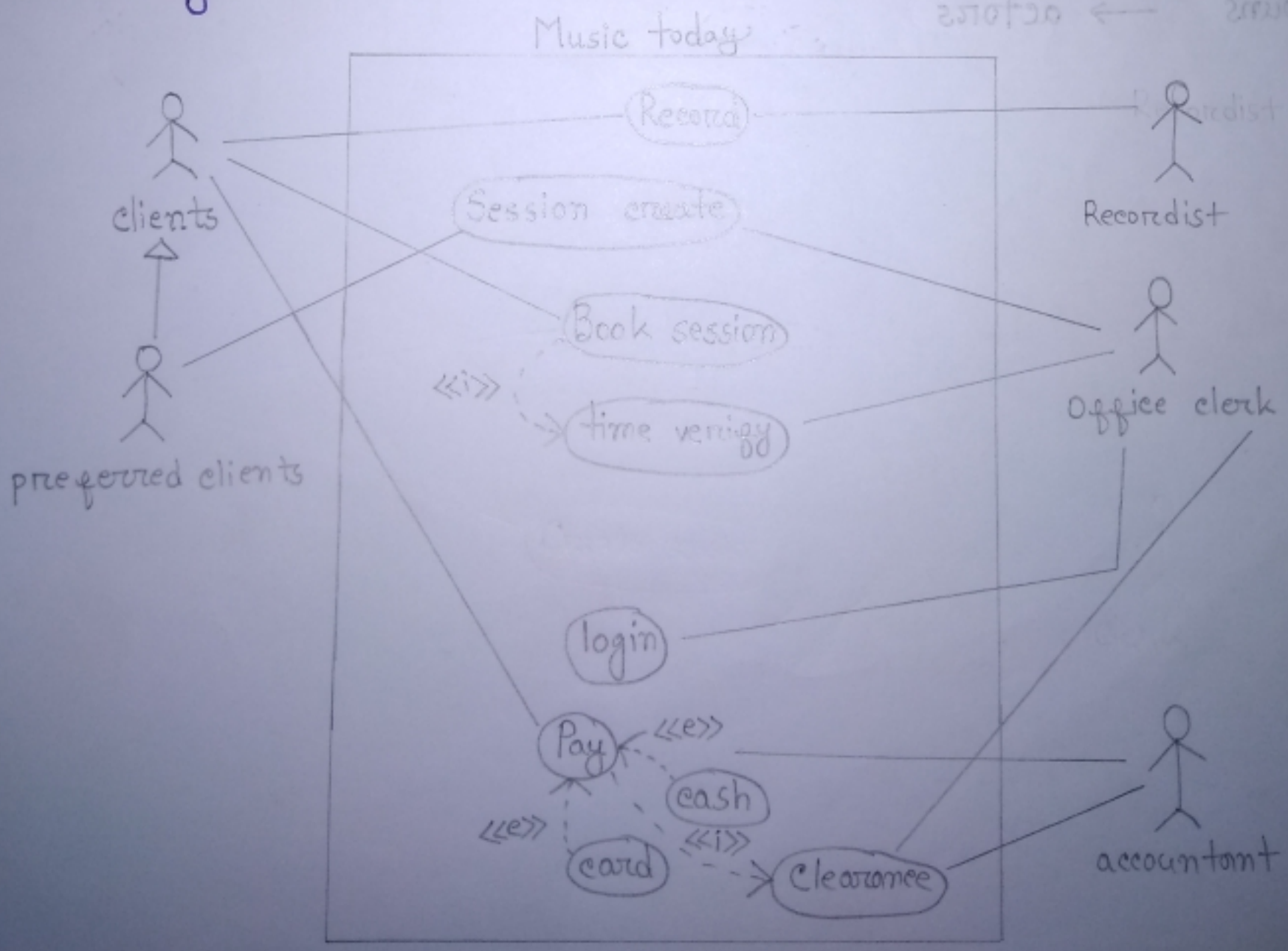
Use Case Diagrams - practice

- **Case 4:**
- In a hospital management system a patient's medical history is created by a doctor. A patient may be referred by a doctor to be admitted in the hospital. A patient can visit hospital facilities. An administrative officer deals with the renting. The system automatically checks whether the patient is referred by a doctor before he can rent any hospital facility. The types of facilities are rooms, beds or ICUs. Admitted patients are regularly visited by doctors and a nurse updates patient medical history after each visit. A doctor writes the discharge note of the patient when he leaves. An account clerk prepares the bill. The bill is calculated from the elements written in the medical history i.e. number of doctor's visit, prescribed medication, tests. When the nurse updates the medical history she writes either the date-time of doctor's visit or prescribed medication or test. The patient may pay by cash or card when the bill is prepared.

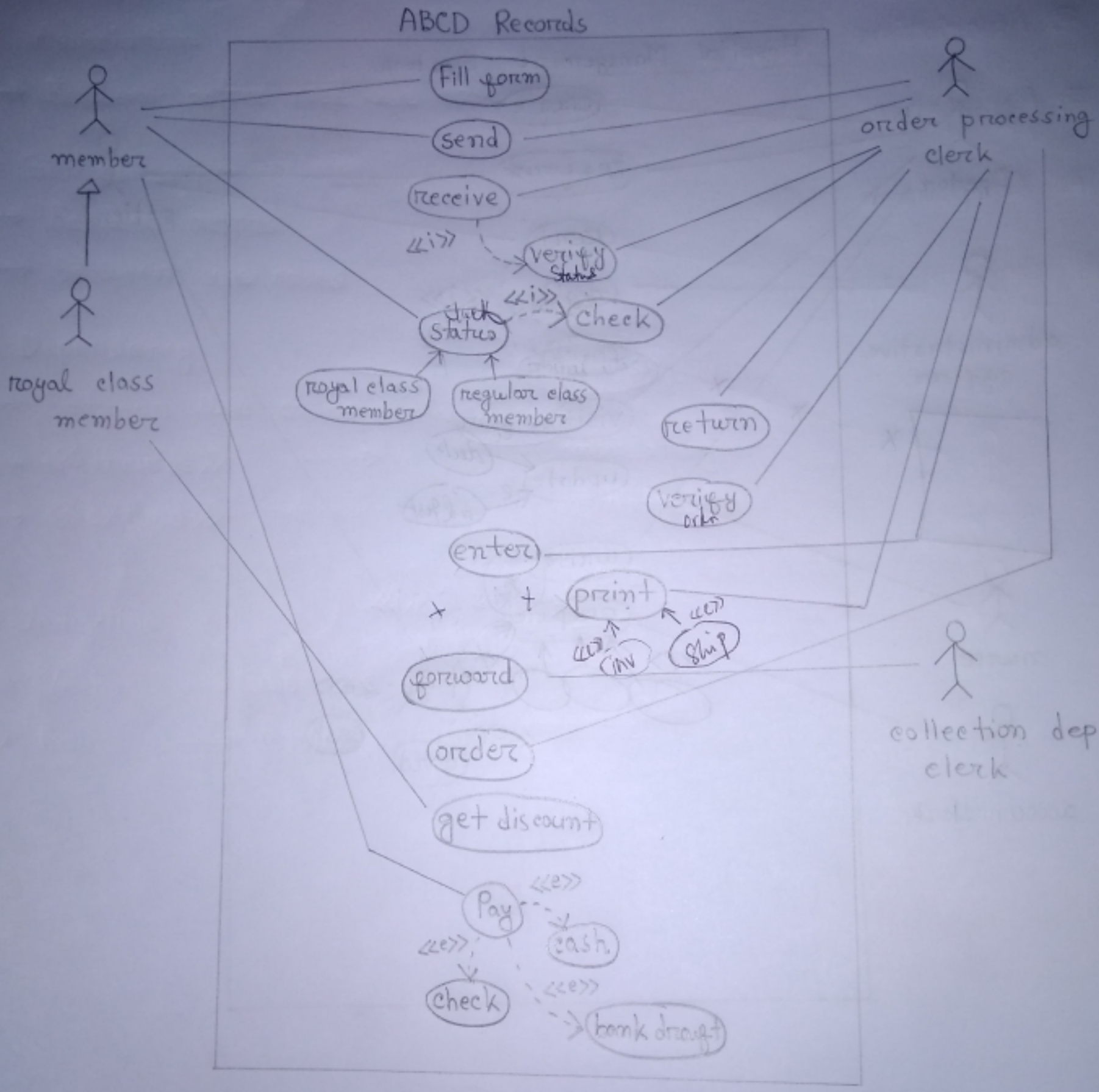
Case Study 1



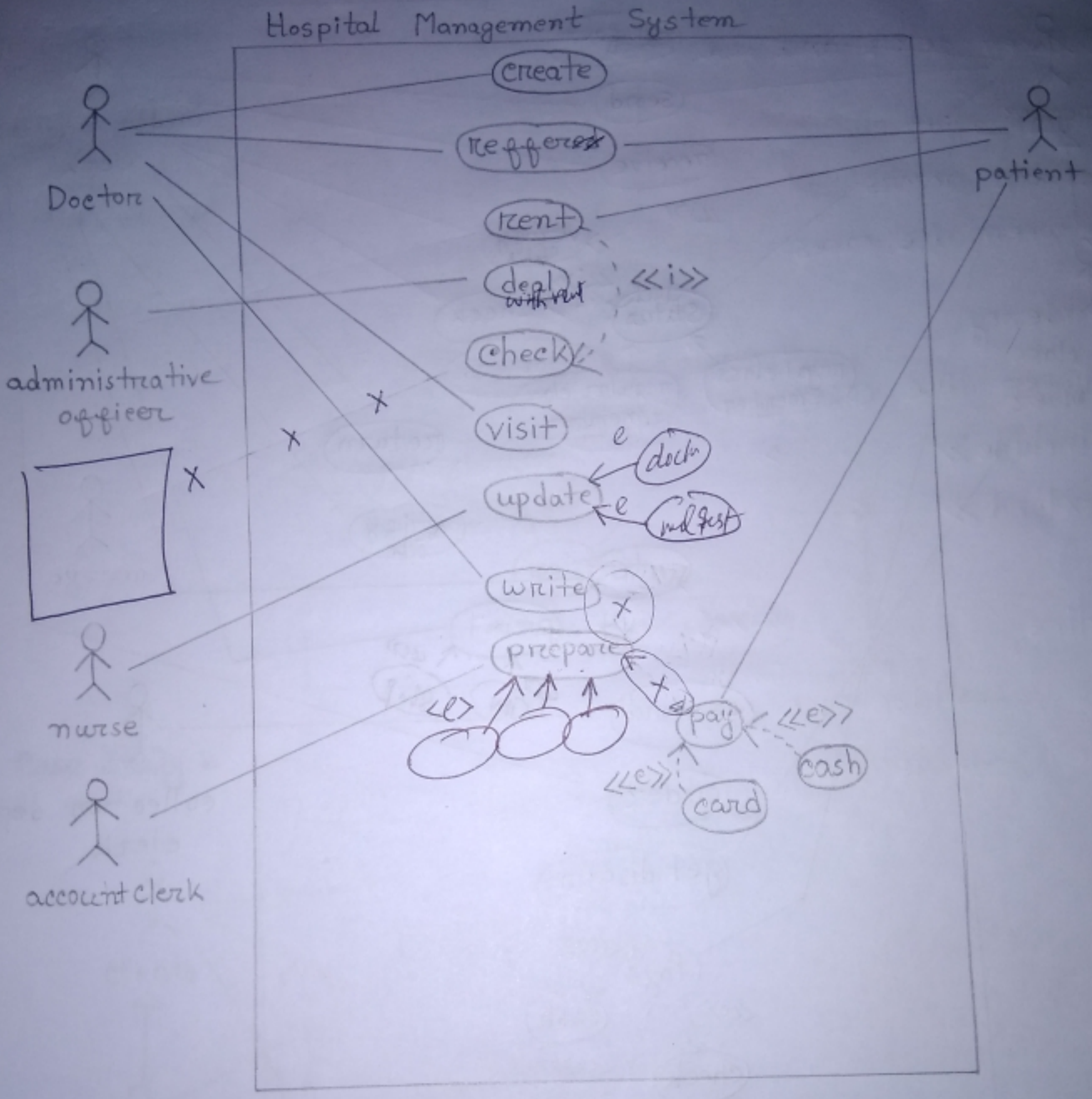
Case Study 2



Case Study 3


ABCD Records
member
royal class member
order processing clerk
collection dept. clerk
Fill form
send
receive
<<i>>
verify status
<<i>>
check status
check
royal class member
regular class member
return
verify order
enter
print
<<e>>
inv
<<e>>
ship
forward
order
get discount
Pay
<<e>>
cash
<<e>>
check
<<e>>
bank draft

Case Study-4



Hospital Management System
create
reffered
rent
deal
with rent
<<i>>
check
visit
update
e
docto
e
mdfest
write
prepare
pay
<<e>>
cash
<<e>>
card
Doctor
patient
administrative officer
nurse
account clerk

Case Study

Case 1:

- One Student may attend any number of courses
- One course may have any number of students
- Instructors teach courses
- For every course there is at least one instructor
- Every instructor may teach zero or more courses
- A school has zero or more students
- Each student may be a registered member of one or more school
- A school has one or more departments
- Each department belongs to exactly one school
- Every instructor is assigned to one or more departments
- Each department has one or more instructors
- For every department there is exactly one instructor acting as the department chair

Case 2:

- A building is owned by one person
- A person may own more than one building
- Each building is either a house or an apartment
- An apartment complex has one or more Rental Units
- A rental unit only belongs to one and only one apartment block

Case 3:

- A company has one or more divisions
- A division has one or more departments
- A company can have one or more persons working as employees
- A person is associated with the company as an employee
- A department can have one or more persons assigned to it
- A person is assigned to one department

Case 4:

- There are members in the library. Members can borrow books. There can be short term borrowing or long term borrowing. There are also journals in the library. There is a special type of member- Member of Staff, who can borrow the journals. The system must keep track when books and journals are borrowed

Case Study

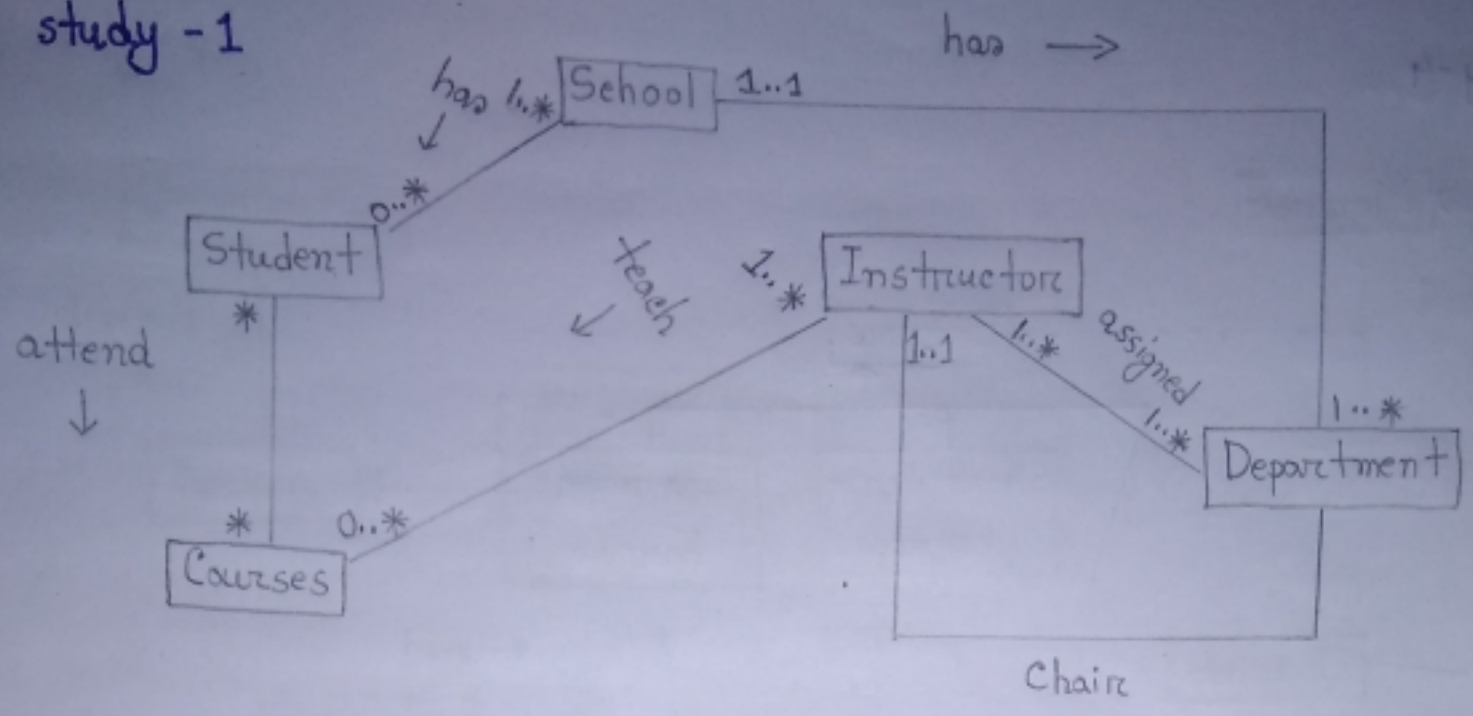
Case 5:

- A member can be of three types: potential member, past member and club member. Club members place orders. One order should include at least one product. One product can be in many orders. There are two types of products – club souvenirs and club facilities. Each member must sign an agreement. One agreement can be made for more than one member. Club facilities are courts, tables and halls. Courts are Multifunction court and Tennis Court. Tables are for Tennis and Pool. Club members can also book club facilities. For each booking, date and duration of booking must be stored.

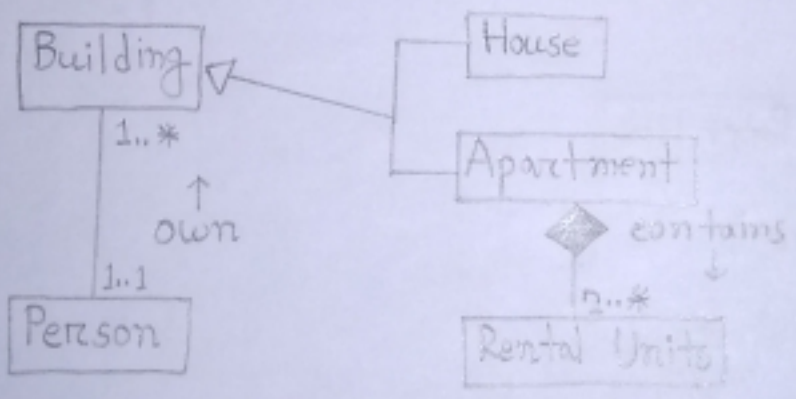
Case 6:

- A nonprofit organization depends on a number of different types of persons for its successful operation. Three types of persons are of greatest interest: employees, volunteers, and donors. Employees and volunteers work on various projects. One project consists of many sections. A volunteer works under the supervision of an employee. To become a recognized donor, a donor must have donated one or more items, and an item may have no donors, or one or more donors. Projects are sponsored by sponsors. Sometimes a single project is sponsored by multiple sponsors.

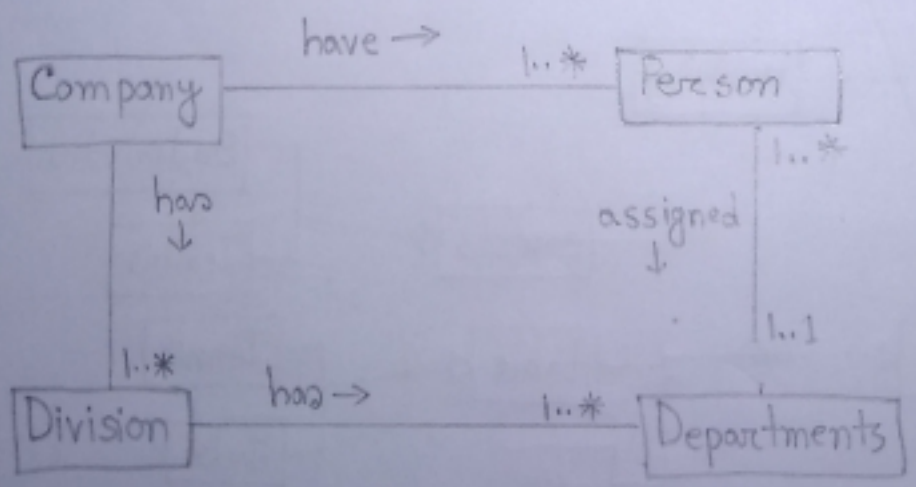
Case study - 1



Case study - 2



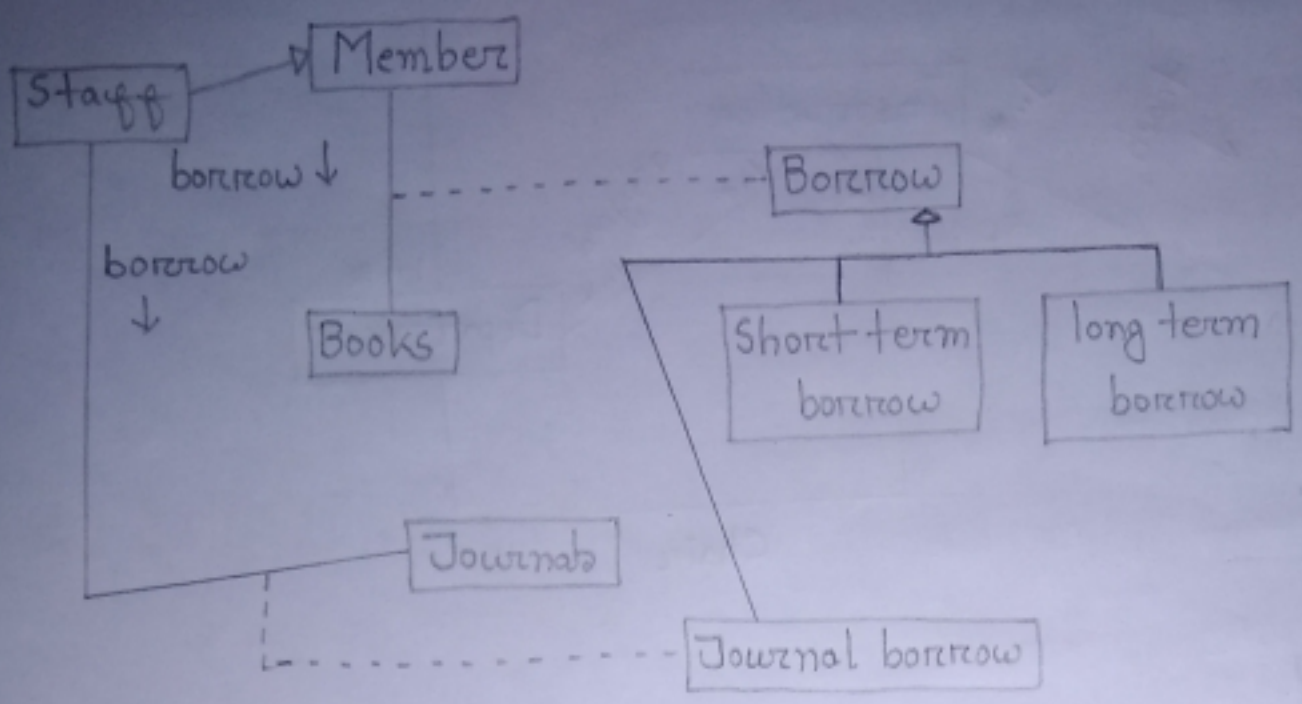
Case study-3



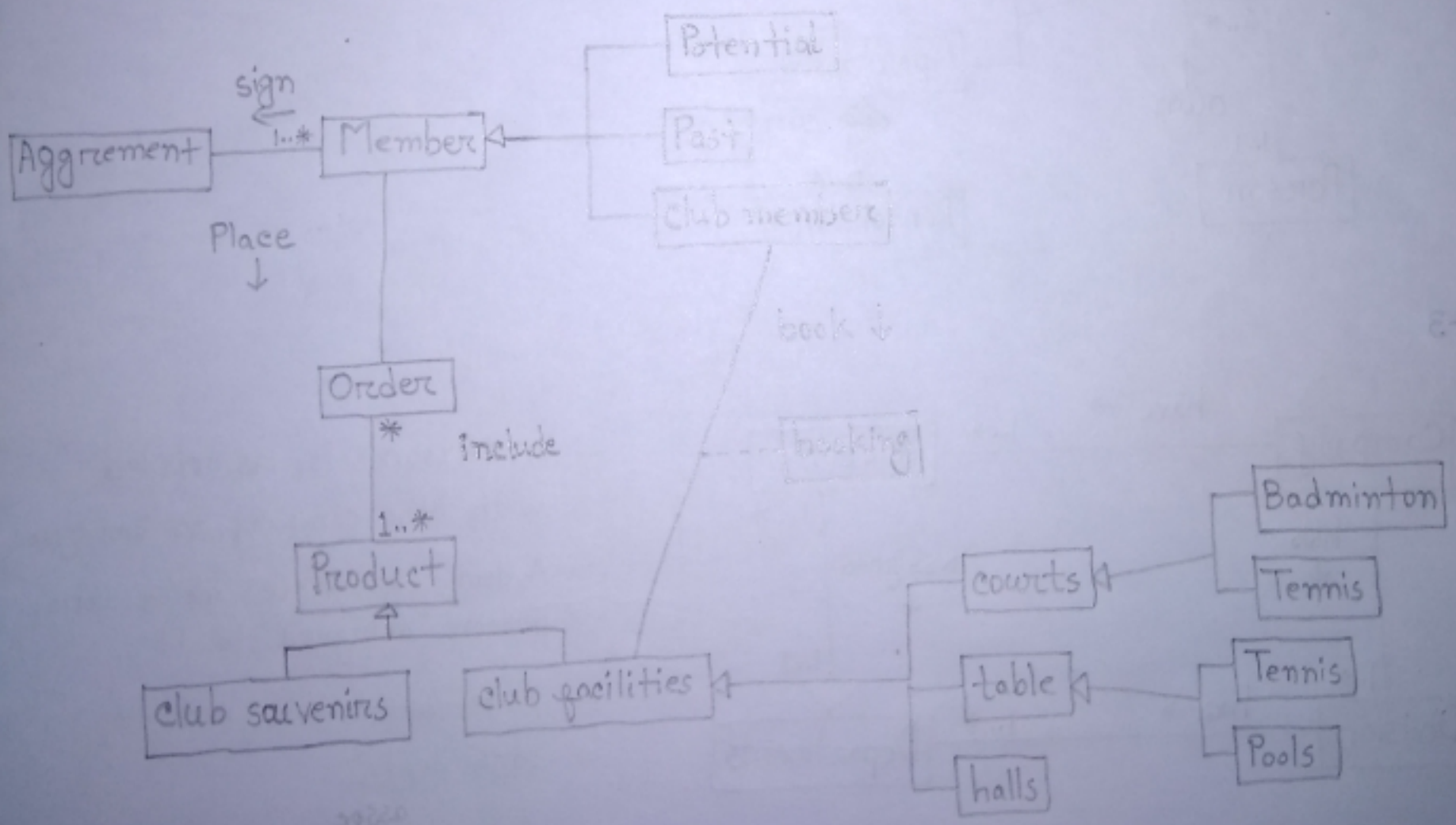
- a person is associated with the company as Employee
- A dept can have one or more persons assigned to it
- A person is assigned to one dept.

assoc

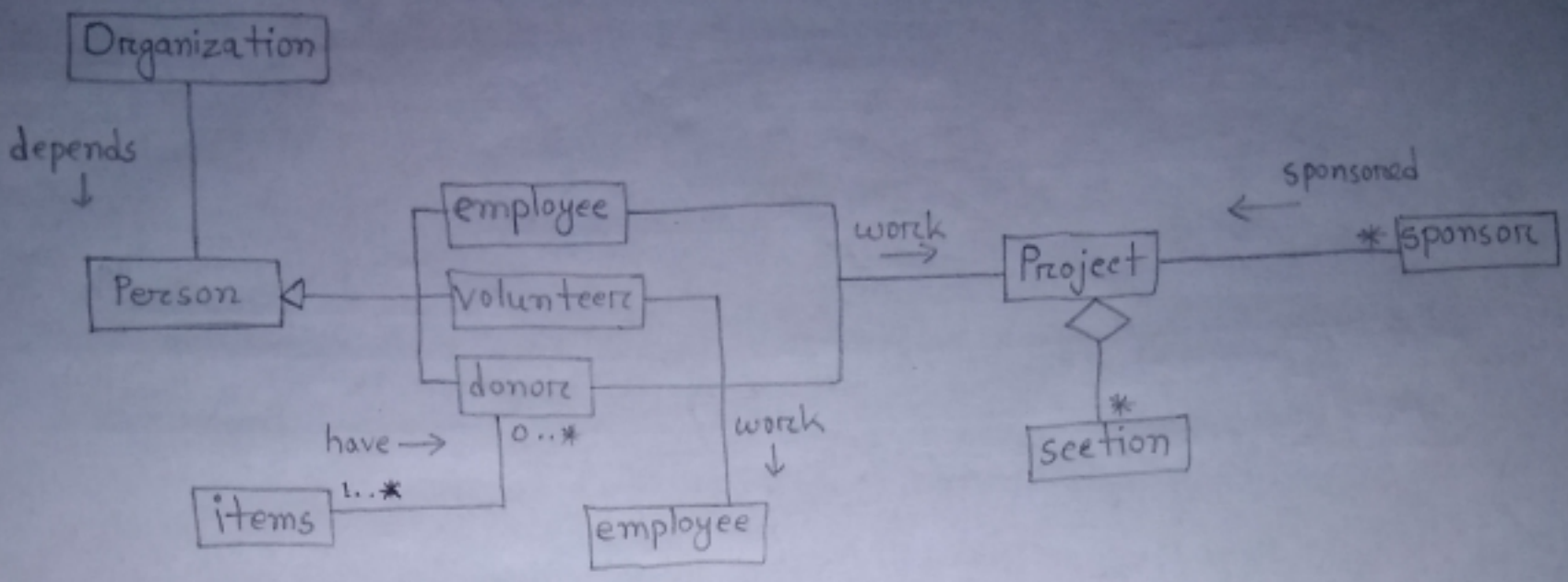
Case study-4



Case study-5



Case study - 6



* To become a recognised donorz, a donorz must donate one or more items

Case Studies

(Without Structured Control Operators)

Case 1

- In a withdrawal transaction of an ATM Machine system the customer inserts his ATM card in the machine. The machine then verifies the customer authentication using the information provided in customer account. After successful verification the machine takes withdrawal request from the customer and checks whether the request is valid or not. A valid request is carried out by the machine.

Case 2

- In a library management system of a university a member can place a request to book a journal to the librarian. Before the librarian can complete the booking the member has to be verified of his status whether he is allowed to borrow journals or not. The journal then has to be located whether it is in the campus where the request was made or it is in a different campus. If the journal is in a different campus the librarian makes a request for the journal to be sent at the requested campus. The librarian then informs the member about the time required for the journal to reach and completes the transaction.

Case Studies

(With Structured Control Operators)

Case 3

- In a withdrawal transaction of an ATM Machine system the customer inserts his ATM card in the machine. The machine then verifies the customer authentication using the information provided in customer account. After successful verification the machine takes withdrawal request from the customer and checks whether the request is valid or not. A valid request is carried out by the machine. If the withdrawal request is not valid, the request is declined. In case of unsuccessful verification customer authentication the customer request is denied.

Case 4

- In a library management system of a student can borrow books. When a student brings the books he wants to borrow to the librarian, the librarian places a borrowing request by scanning the student ID. A borrowing object is created at that time which performs all the borrowing related tasks. It checks the student status from the database. If the student is a regular student and doesn't have any overdue book, the system allows for the books to be scanned. After the books are scanned the data is written in the database and the librarian is informed at the same time. If the student is regular but already has overdue books with him, the request is denied. If the student status is not regular, the request is also denied.

Case Studies

(With Structured Control Operators)

Case 3:

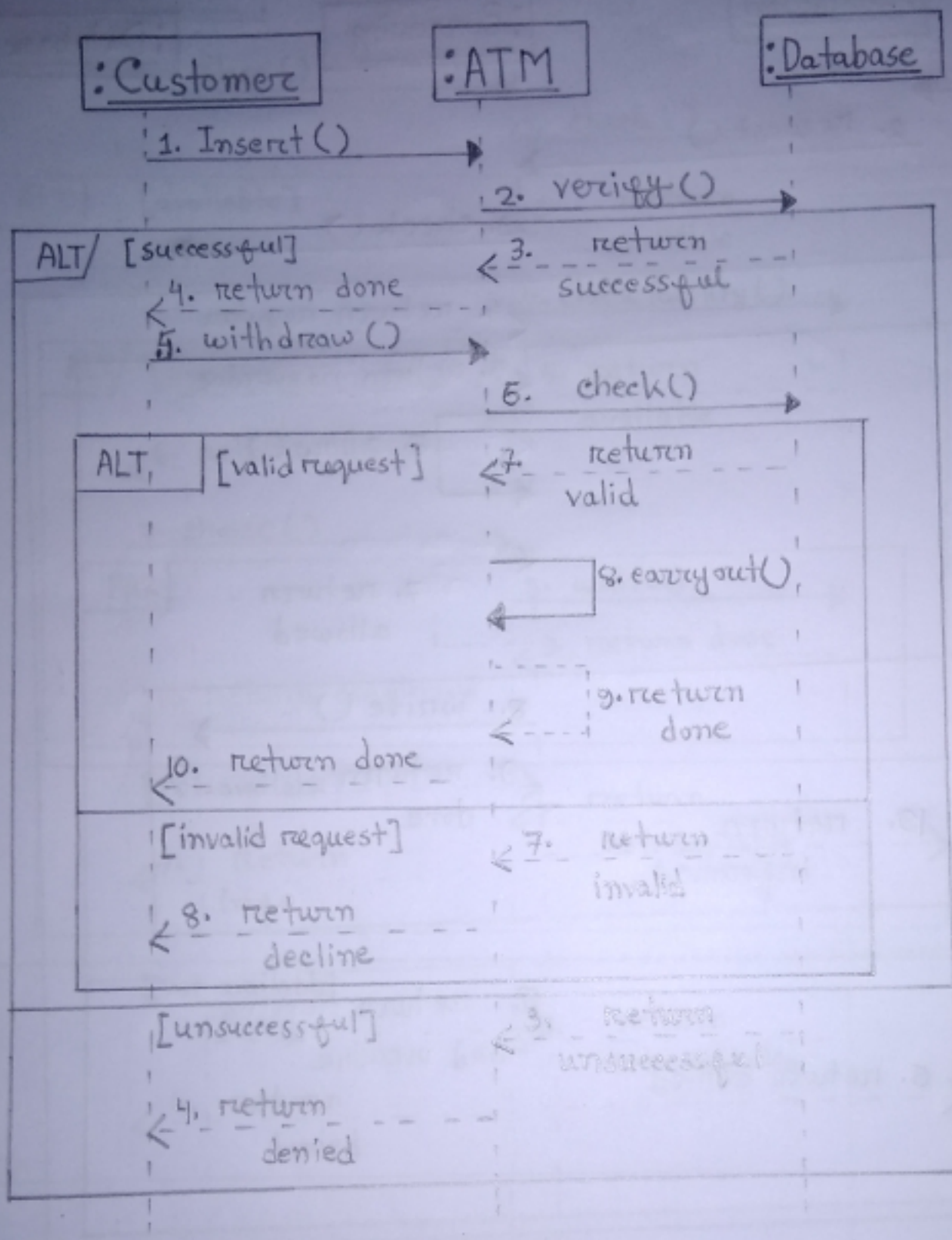
- When a patient places a request for hospital bed, the system checks if the patient has a reference of a doctor or not. If doctor's reference is available, the system checks if hospital facilities are available. If facilities are available, the list is sent to the patient. The patient chooses a room or bed. The booking is written in the booking database and the patient is confirmed at the same time. If no facility is available, the system notifies the patient. If doctor's reference is not available, patient's request is denied.

Case 4:

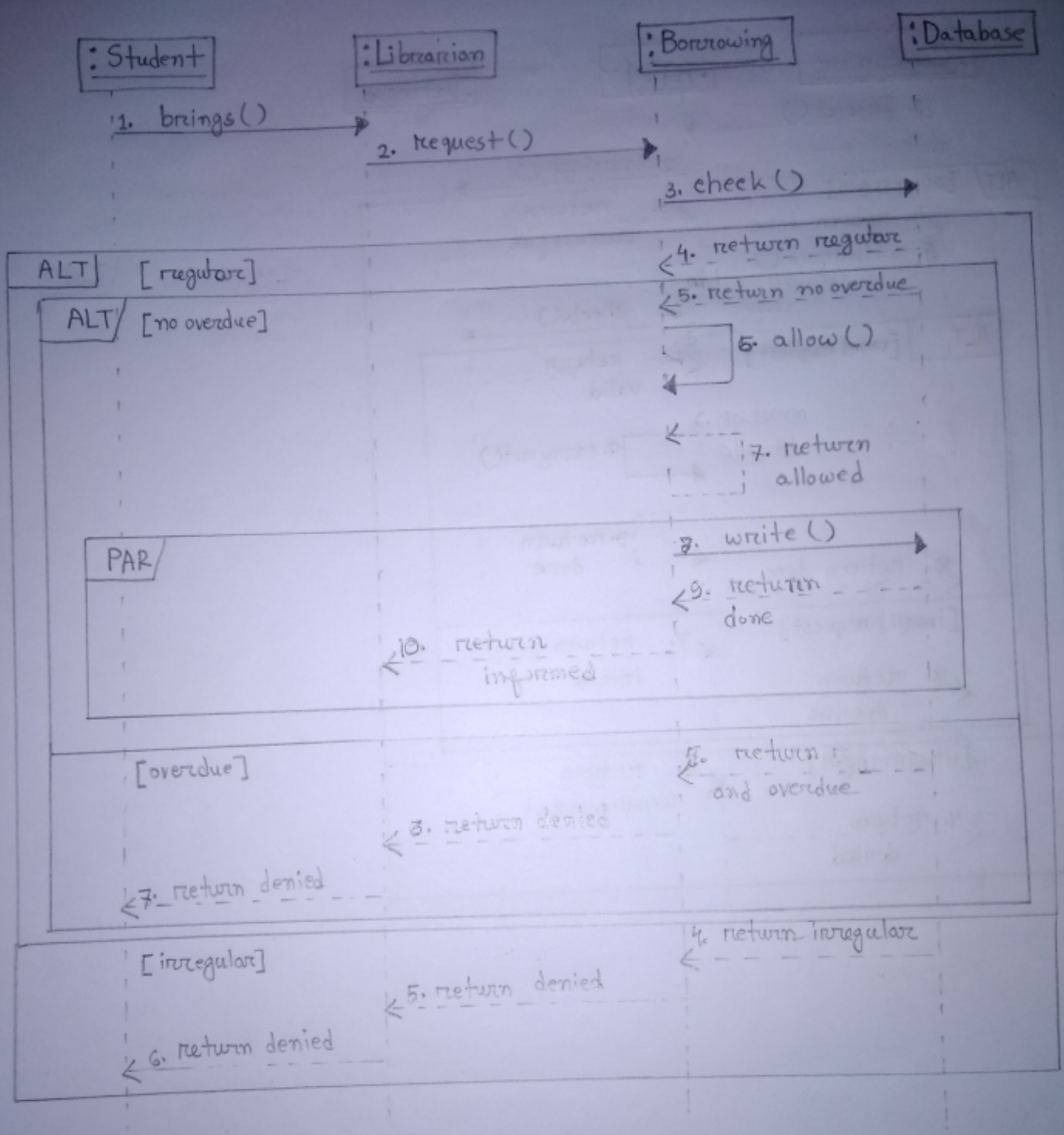
- In a web based login system a user types his username and password and then clicks login button. The system creates a session object to run the verification process. The session object sends the information to the database for verification. If the verification is successful, the user is notified. If the verification is not successful and attempt is three or less, the user is allowed to type the password for verification. If the attempt is more than three times, the username is blocked and user is notified.

Sequence Diagram

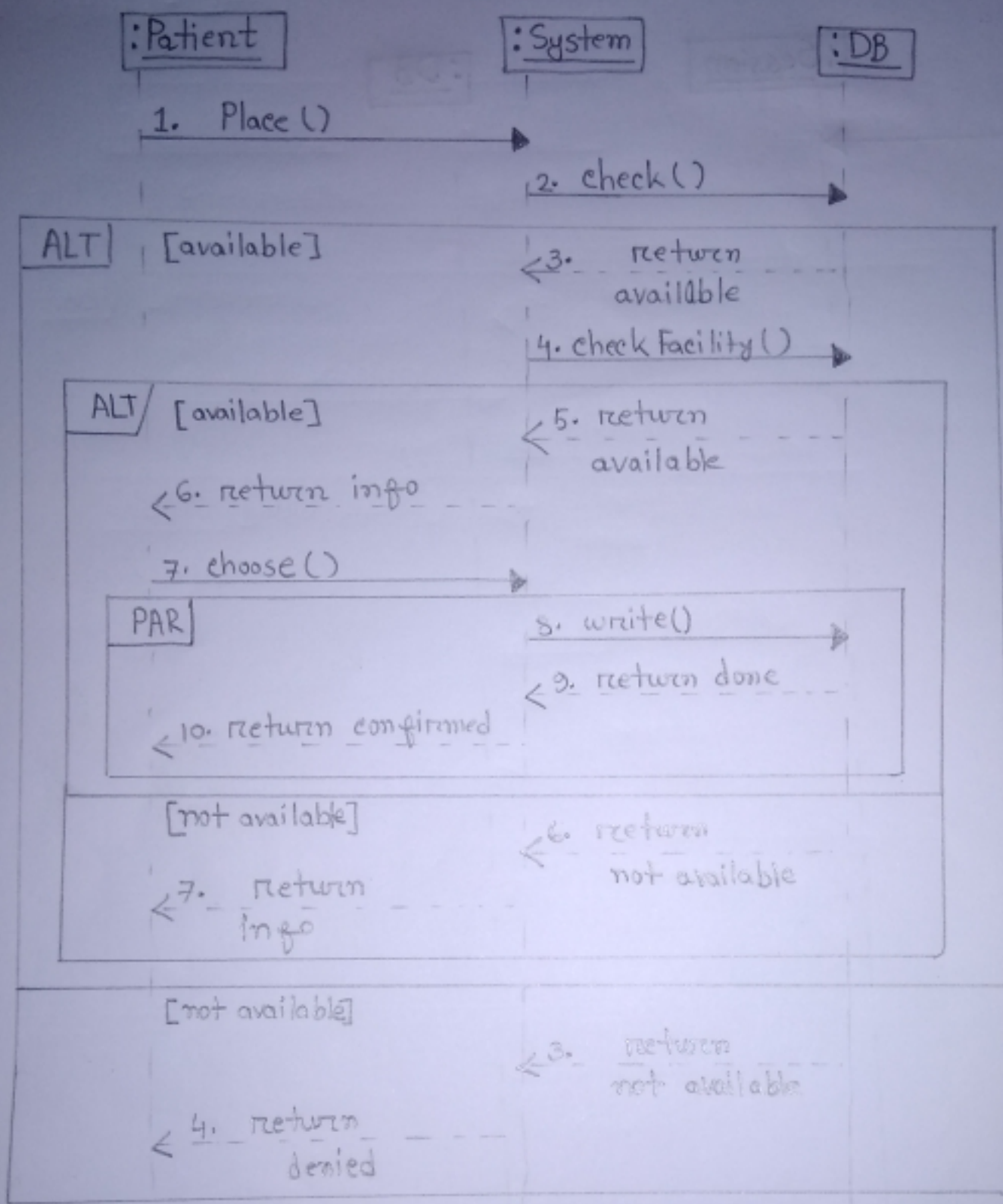
Case study - 1+3



Case Study #4


:Student
:Librarian
:Borrowing
:Database
1. brings()
2. request()
3. check()
ALT [regular]
4. return regular
ALT [no overdue]
5. return no overdue
5. allow()
7. return allowed
PAR
8. write()
9. return done
10. return informed
[overdue]
5. return and overdue
8. return denied
7. return denied
[irregular]
4. return irregular
5. return denied
6. return denied

Case study - 5


:Patient
:System
:DB
1. Place ()
2. check ()
ALT
[available]
3. return available
4. check Facility ()
ALT
[available]
5. return available
6. return info
7. choose ()
PAR
8. write()
9. return done
10. return confirmed
[not available]
6. return not available
7. return info
[not available]
3. return not available
4. return denied