

# **Vaccination scheduling and alarming system**

## INTRODUCTION

After the provision of safe food, water and sanitation, the most important public health measure in the world is vaccination.

Parents want to do everything possible to make sure their children are healthy and protected from preventable diseases.

Vaccination is the best way to do that ,it's safe and effective,

Where many infectious diseases complications of vaccine-preventable diseases , previously responsible for millions of deaths, are being controlled through vaccination such as smallpox , amputation of an arm or leg, paralysis of limbs, hearing loss, convulsions, brain damage and death , have now been eradicated.

All vaccines undergo long and careful review by scientists, doctors, and the federal government to make sure they are safe.

How the vaccination works?!

The purpose of vaccination is to produce immunity, Immunity means the presence in a person's body of cells and substances known as antibodies that can produce a protective immune response. The immune cells and antibodies attack viruses and bacteria or the toxins they produce, stopping them from multiplying and causing disease, Antibodies are specific to each individual disease. Having antibodies to measles does not protect you from catching mumps or chickenpox, etc.

After we know what vaccination is and how it works let's talk about our system as we know that the key to a successful and

well-run medical practice is efficient and effective patient care  
Medical practices are moving away from paper charts and  
moving towards the software programs.

Our system will help parents to save a lot of time and make it  
easier to reserve appointments, follow up vaccination, doses  
and reschedule appointments It will also help to overcome  
many problems such as queues and forgetting the  
appointments, etc.

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## THE FUNCTIONAL REQUIREMENTS...

- A User shall be able to follow up vaccination time, doses, reschedule the appointment, view his baby vaccination history and have ability to ask doctor.
- A Nurse shall be able to follow up all appointments and their doses and reschedule all appointments and generate an access the finished cases report
- The system shall generate reports on number of cases finished ,financial invoices and reports, Provides a complete chart of the vaccines that your child needs along and take appointments according to the baby age, and it also tells parents about the importance of vaccinating children on time and have ability to validate that all of the fields are complete before allowing the user to submit the forms online .

- A Doctor shall be able to review reports and answer Questions
- A Financial employee shall be able to generate invoices , reports and control sales prices also review Re-Price the doses and Re-salaries

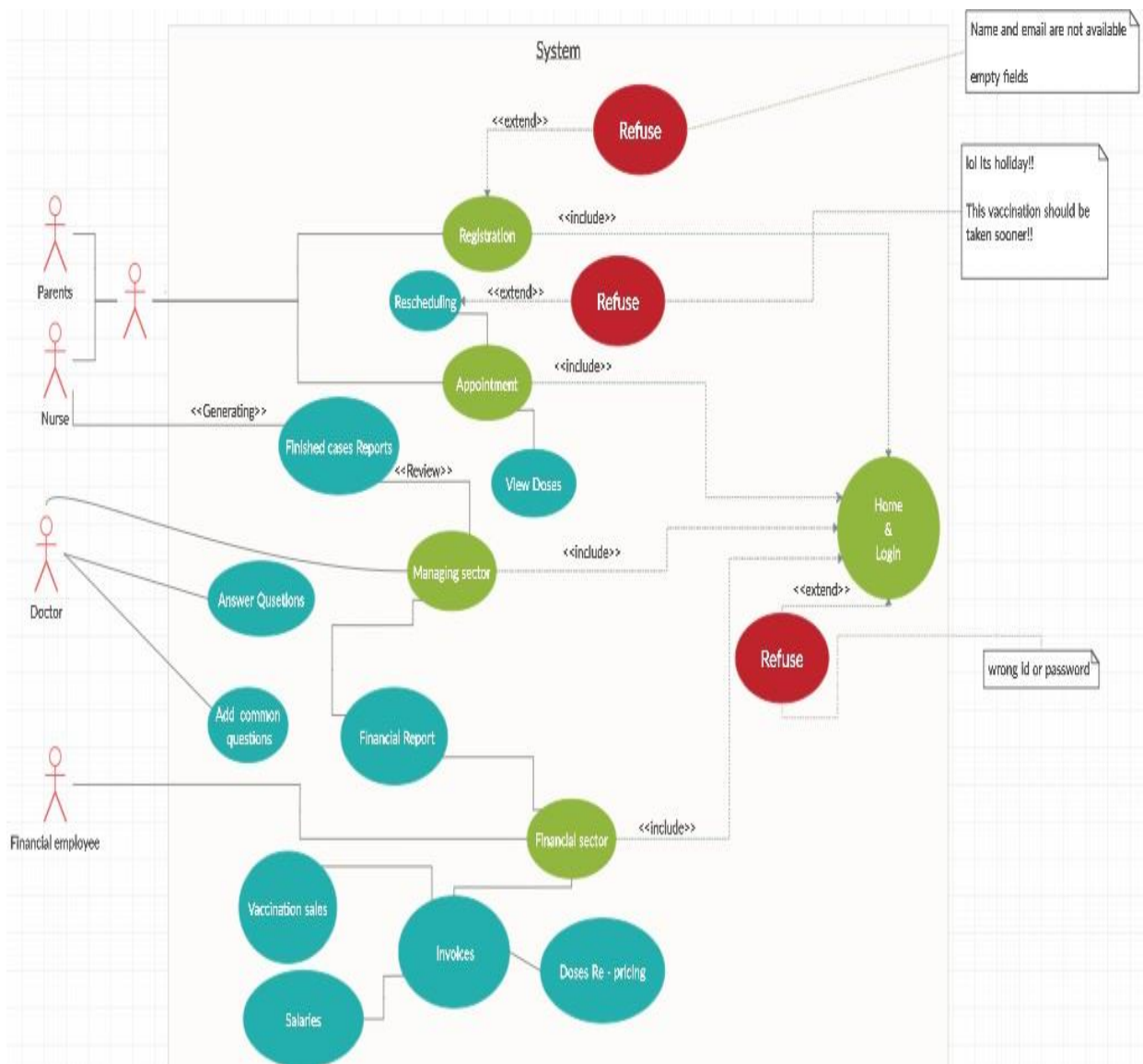
## THE NON-FUNCTIONAL REQUIREMENTS...

- The security of the system
  - 1-The only who can change the access permission for the system data should be the administrator
  - 2-There must be a file for logs which be updated every 24 system to keep the data saved as a spare if anything happened to the main system and also to check the activity of everyone who has permission to a specific access
  - 3-The payroll system shall ensure that the employee salary data can be accessed only by authorized users. The payroll system shall distinguish between authorized and non-authorized users.
  - 4-Employees shall not be allowed to update their own salary information, and any such attempt shall be reported to the administrator

- Usability
  - 1-Well organized user manuals
  - 2-Informative error messages
  - 3-User interface should be organized and understandable
- Safety
  - 1-The system should expect the negative effects of the common errors, such as deleting a specific data the user should get a message including a confirmation of deleting the data so if he was mistaken, he will say No, don't delete for example
- Ethical
  - 1- Statement of privacy, ownership
- Accessibility Requirements
  - 1-Help text will be provided in English and Arabic
- Accuracy Requirements
  - 1-Process: All comment fields will be spell checked.
  - Data: Date of Birth must be in the past.



# UseCase Diagram



## UseCase Description

**Identifier and name:** Issue invoice

**Initiator:** May be (patient or financial employee)

**Goal:** The patient gets an invoice

**Precondition:** patient wants to pay, Financial employee login

**Postcondition:** The system will record the patient info.

**Assumptions:** The expected initiator is a patient (using a web browser to perform the use case) or an employee. The patient is not already known to the system

**Main Success Scenario:**

- 1- Patient comes to the financial employee to pay
- 2- Financial employee asks for the Dose Name
- 3- Patient gives the Dose Name
- 4- The financial employee goes to the system to know its price
- 5- Financial employee will say the price to patient
- 6- Patient will pay
- 7- Financial employee records the payment process then print the invoice
- 8- Patient receives the invoice

**Identifier and name:** Staff salary

**Initiator:** May be (employee or financial employee)

**Goal:** An employee gets his salary with an invoice

**Precondition:** the employee is registered on system,  
financial employee login

**Postcondition:** employee receive his\her salary

**Assumptions:** The expected initiator is an employee (using a web browser to perform the use case) or a financial employee. Employee is already known to the system

**Main Success Scenario:**

- 1- An employee comes to the financial employee to get his salary
- 2- The financial employee asks for the ID
- 3- The employee gives the ID
- 4- Financial employee goes to the system to check salary
- 5- Financial employee records the process then print the invoice
- 6- The employee receives the salary with an invoice

**EXTENSIONS:**

- 5.a) No Balance for this employee yet
  - 5.a.1) Financial employee says to an employee that there is No Balance yet
  - 5.a.2) The employee will confirm it
  - 5.a.3) End

**Identifier and name:** Ask doctor

**Initiator:** May be (patient or doctor)

**Goal:** Answering patient's Questions

**Precondition:** There are some patient's Questions that is needed to be answered

**Postcondition:** The patient's Questions have been answered

**Assumptions:** The expected initiator is a patient (using a web browser to perform the use case) or a doctor. The patient is not already known to the system

**Main Success Scenario:**

- 1- The patient will check the Common Questions list
- 2- (in case that the patient didn't find answer for his Question) patient will choose ask doctor button
- 3- Patient will send an email with Question that is needed to be answered
- 4- Doctor will check his Gmail
- 5- Doctor will answer all Questions

**EXTENSIONS:**

- 1.a) patient find an answer for his Question
- 1.a.1) end
- 4.a) There is new Questions
- 4.a.1) Doctor will login the system and add These Questions for common Questions list

**Identifier and name:** Updating doses price

**Initiator:** Financial employee

**Goal:** Improving the financial situation of the organization

**Precondition:** There is a financial crisis

**Postcondition:** Doses price will be updated

**Assumptions:** The expected initiator is a financial employee (using a web browser to perform the use case). The financial employee is already known to the system

**Main Success Scenario:**

- 1- The Manager checks the financial report
- 2- there is a financial crisis
- 3-the manager will take a decision to update doses price
- 4- The financial employee will update the doses price

**EXTENSIONS:**

- 1.a) There is a financial stability
  - 1.a.1) Manager will log out the system

**Identifier and name:** Login

**Initiator:** Nurse, Parent, Doctor and Financial employee.

**Pre-conditions:** The initiator has an account on the system.

**Post-condition:** Login to the system and can use the services.

**Assumption:** parent does not know how the system works

**Main success scenario:**

- 1- The user opened the login page.
- 2- Write the ID and the password.
- 3- Submit the inputs.
- 4- The user login into the system.

**Extensions:**

- 3.a) If the ID was not registered in the system do not login.
- 3.b) If the Password was not linked to the ID do not login.

**Identifier and name:** Finished cases report.

**Initiator:** Nurse and Manager.

**Pre-conditions:** The Nurse marks the cases that have finished, login, manager need a finished case report

**Post-condition:** View all finished cases in a single report file.

**Assumption:** none

**Main success scenario:**

- 1- The Manager requests the report.
- 2- The system generates the report depending on the patient data.
- 3-View the report on the Manager screen.

**Identifier and name:** Financial Report

**Initiator:** Manager or financial employee

**Goal:** Report about the financial activities

**Precondition:** none

**Postcondition:** Report about the financial activities

**Assumptions:** The expected initiator is a Manager (using a web browser to perform the company financial situation ) or a financial employee.

**Main Success Scenario:**

- 1- The financial employee or manager open the financial Report page.
- 2- The financial employee or manager review the report

**Identifier and name:** Registration

**Initiator:** Parents or Nurse

**Goal:** The new parent will have a new account

**Pre-condition:** User don't have any account

**Post-condition:** User becomes a registered Parent

**Main success scenario :**

- 1-Parent will request registration
- 2-Nurse will request information from parents
- 3-Parent will provide information
- 4- Nurse will record new patient on system
- 5-System will issue id
- 6- nurse will say the id
- 7-parents will receive the id

**Extensions:**

- 1.a) if parents are registering online skip 2,4,6
- 1.a.1) system request information
- 5.a) the children's information matched with other children
- 5.a.1) May be the parent provided wrong information and he will re-provide it
- 5.a.2) Maybe he is already registered so the nurse will tell him that he can't register twice



**Identifier and name:** Appointments and doses

**Initiator:** Parents, nurse

**Goal:** Know appointments and doses

**Pre-condition:** don't know the appointment or doses

**Post-condition:** Parent will know his appointment and dose

**Main success scenario:**

- 1- open appointments Page
- 2- checked appointment
- 3- open doses Page
- 4- check all the previous doses and the next dose

**Extensions:**

- 1.a) want to check the doses only
  - 1.a.1) Skip 1,2
- 1.b) Want to check appointments only
  - 1.b.1) Skip 3,4
- 2.a) the appointment isn't suitable
  - 2.a.1) the parent can do re-schedule

**Identifier and name:** Rescheduling

**Initiator:** Parents or Nurse

**Goal:** reschedule

**Pre-condition:** parent has unsuitable appointment

**Post-condition:** Parent will have a new appointment

**Main success scenario:**

- 1-Parent will request a new appointment
- 2-Nurse will request the child ID
- 3-Parent will provide the ID
- 4- Nurse will ask parents about the date that they want the new appointment on
- 5- parents will provide a date
- 6- nurse will enter the new date
- 7- the appointment rescheduled successfully

**Extensions:**

- 1.a) if parents are Rescheduling online skip 2,4,6
- 1.a.1) system request the child ID
- 6.a) can't book this date
- 6.a.1) The nurse will ask the parent to request another date

**Identifier and name:** First Appointment

**Initiator:** Patient

**Goal:** Generate an appointment

**Precondition:** None

**Postcondition:** Patient gets an Appointment

**Assumptions:** The expected initiator is a patient (using a web browser to perform the use case) the patient is not already known to the system

**Main Success Scenario:**

- 1-patient will make a registration
- 2-system will check his birth date
- 3-system will add a month to the patient's birth date
- 4-system send the appointment
- 5-patient receives the appointment

**Identifier and name:** Next Appointments

**Initiator:** patient

**Goal:** Patient knows his next appointment

**Precondition:** patient has first appointment ,patient attends in his first appointment

**Postcondition:** Patient receives his next appointment

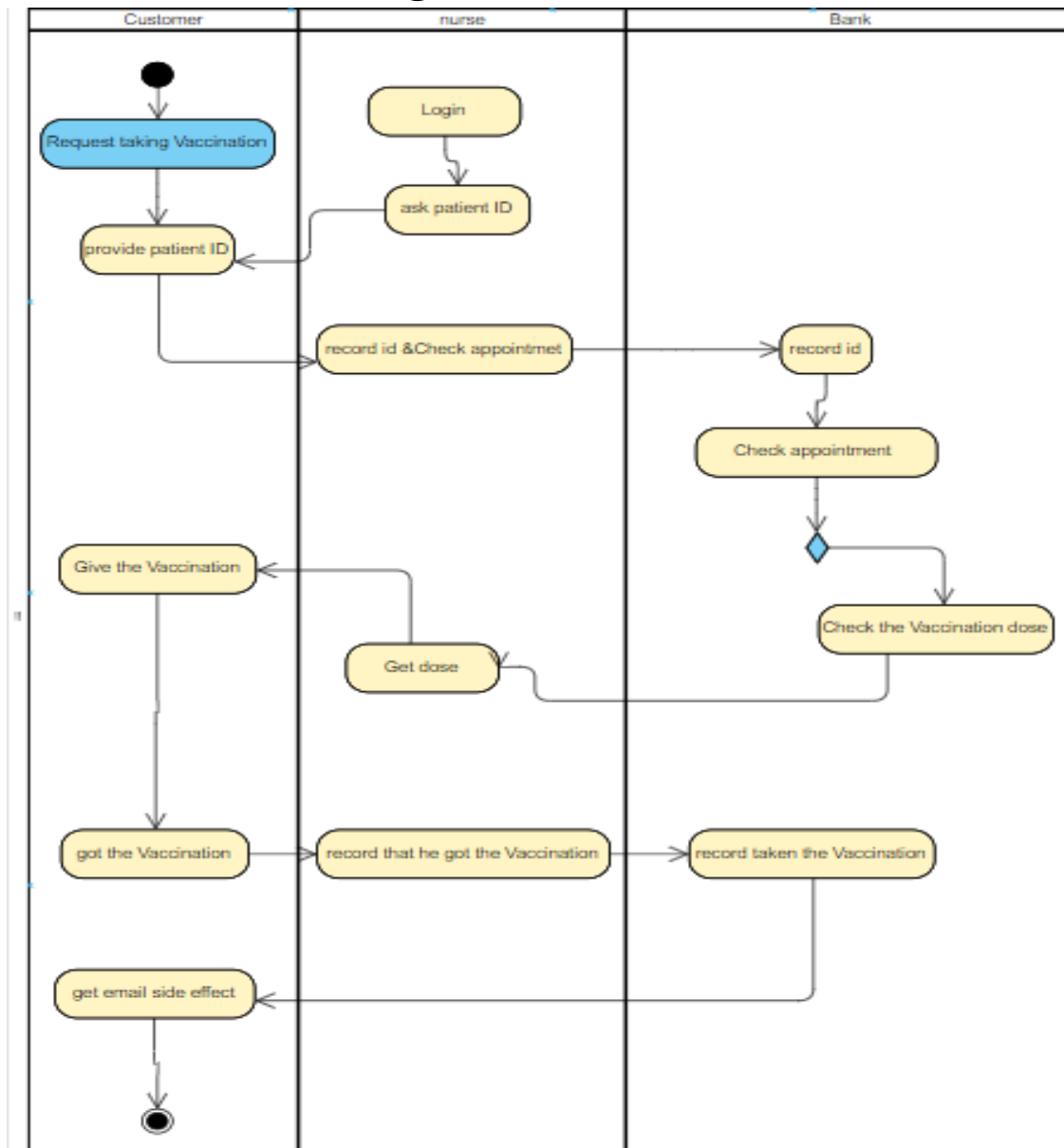
**Assumptions:** the expected initiator is a patient (using a web browser to perform the use case) the patient is already known to the system

**Main Success Scenario:**

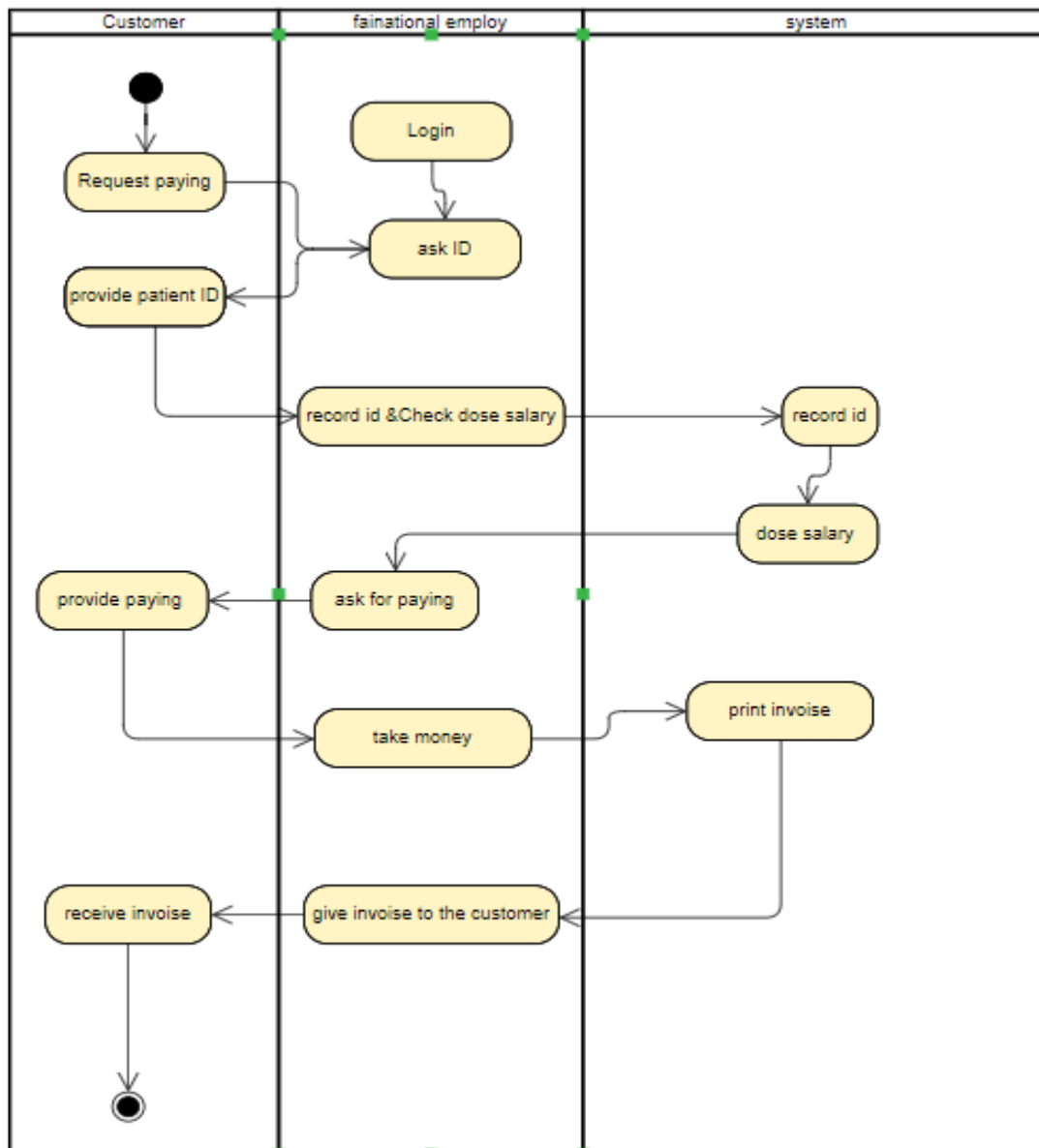
- 1-patient goes to take his first dose
- 2-system will add a month to the latest appointment
- 3-system sends the next appointment
- 4-patient receives it

# Activity Diagrams

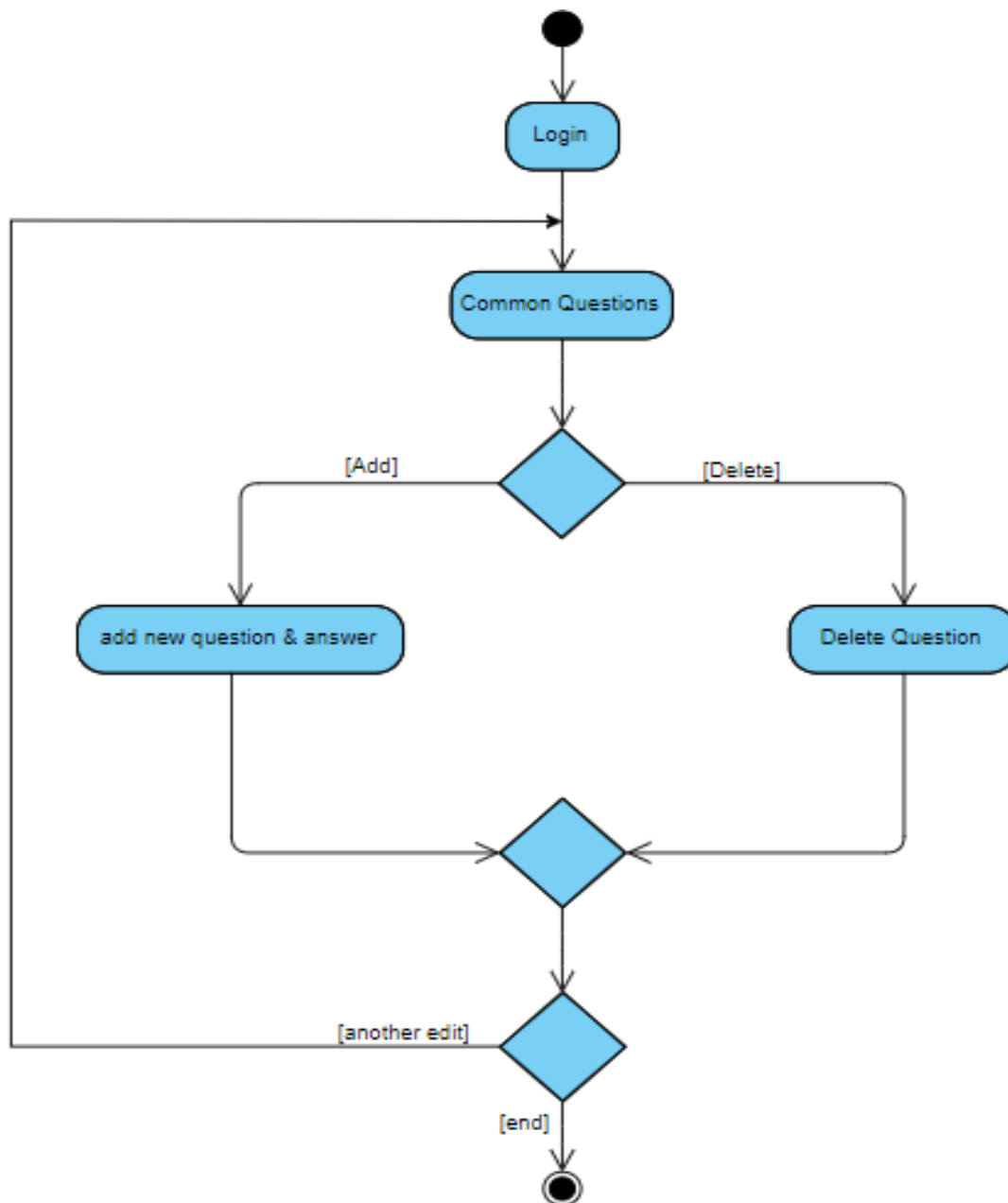
## Vaccination Taking:



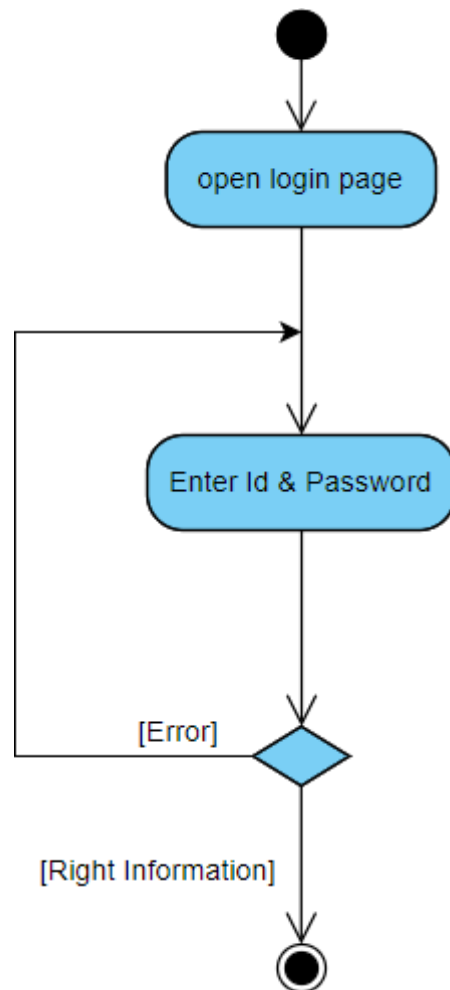
## Vaccination Payment:



Common Questions:

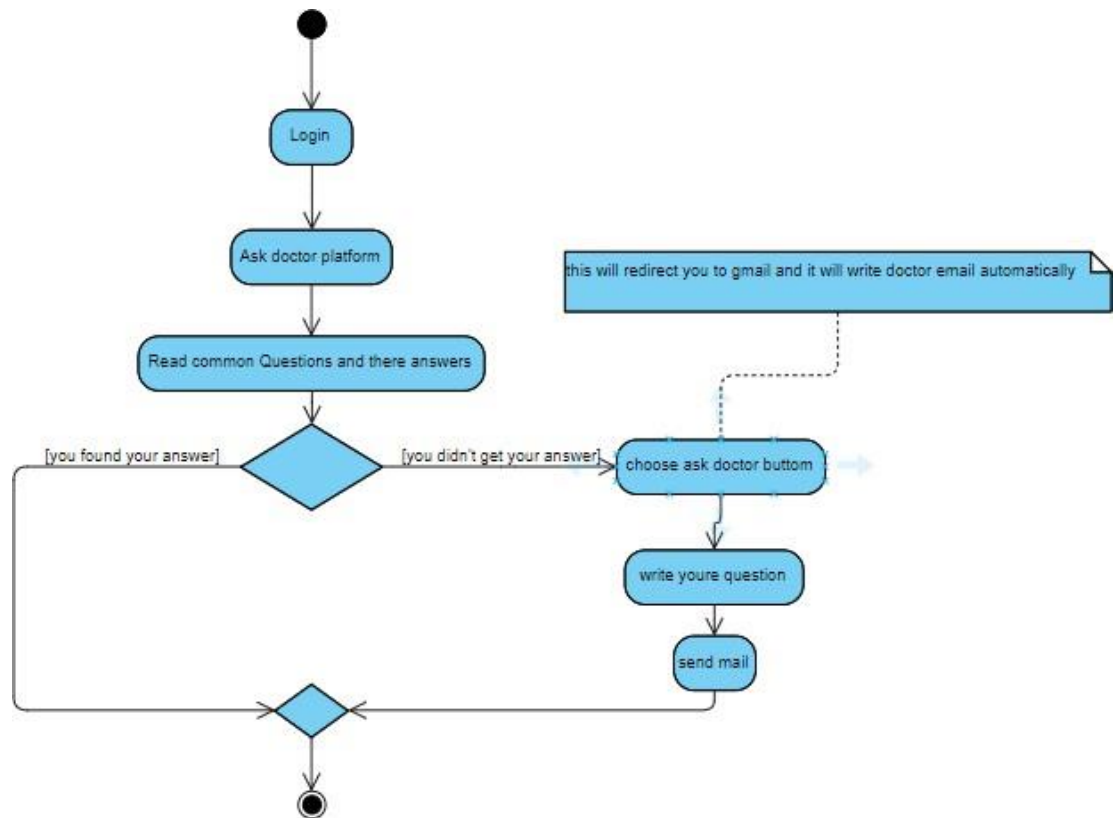


Login:

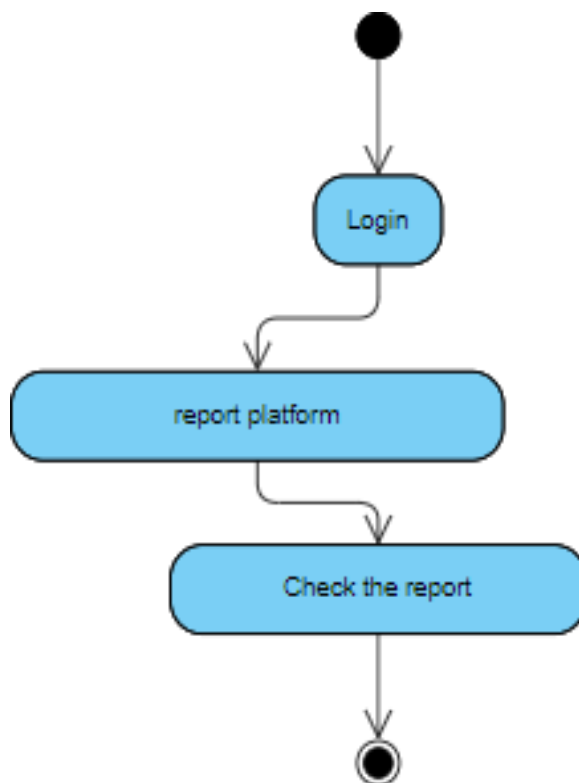




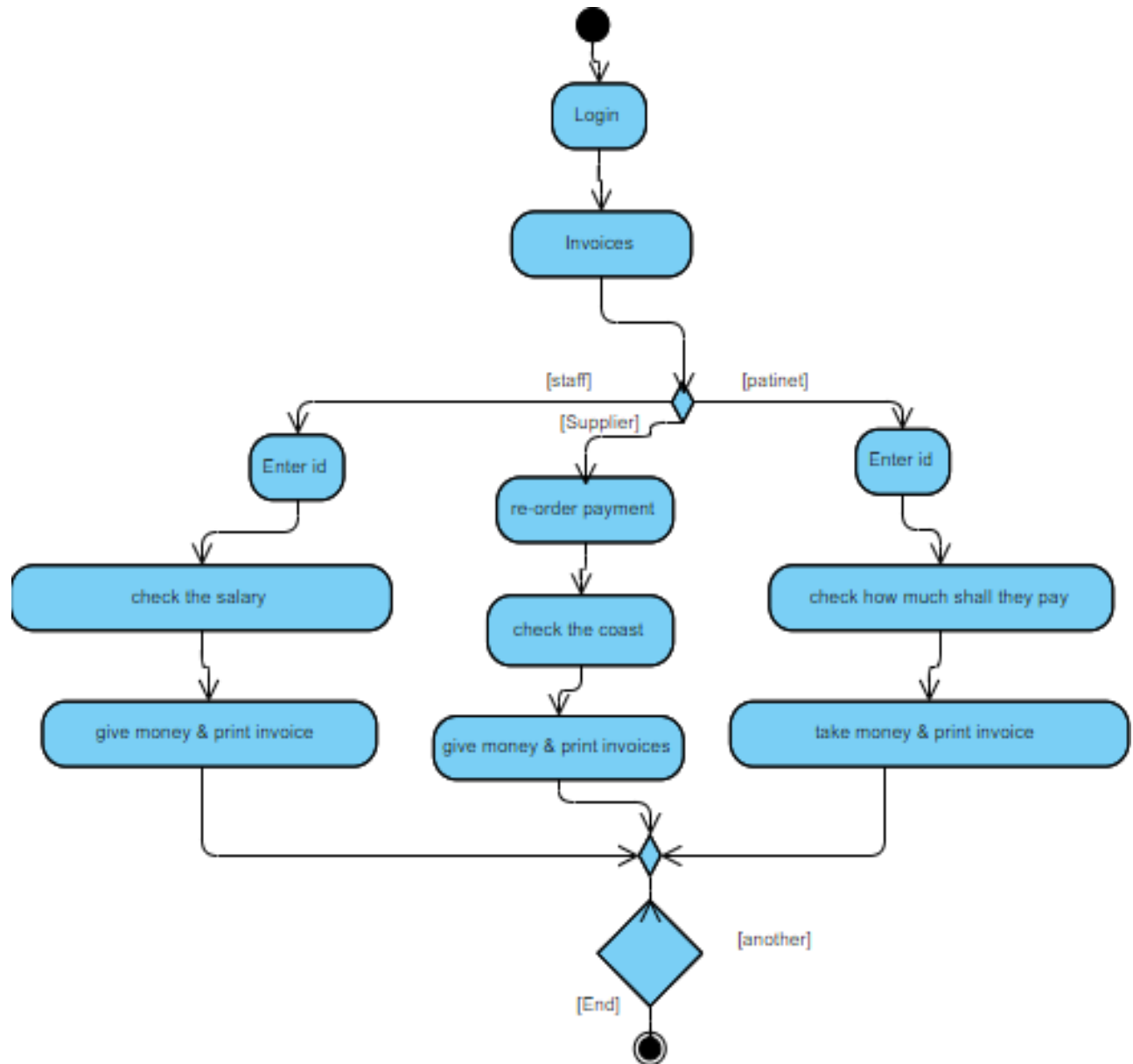
## Ask Doctor:



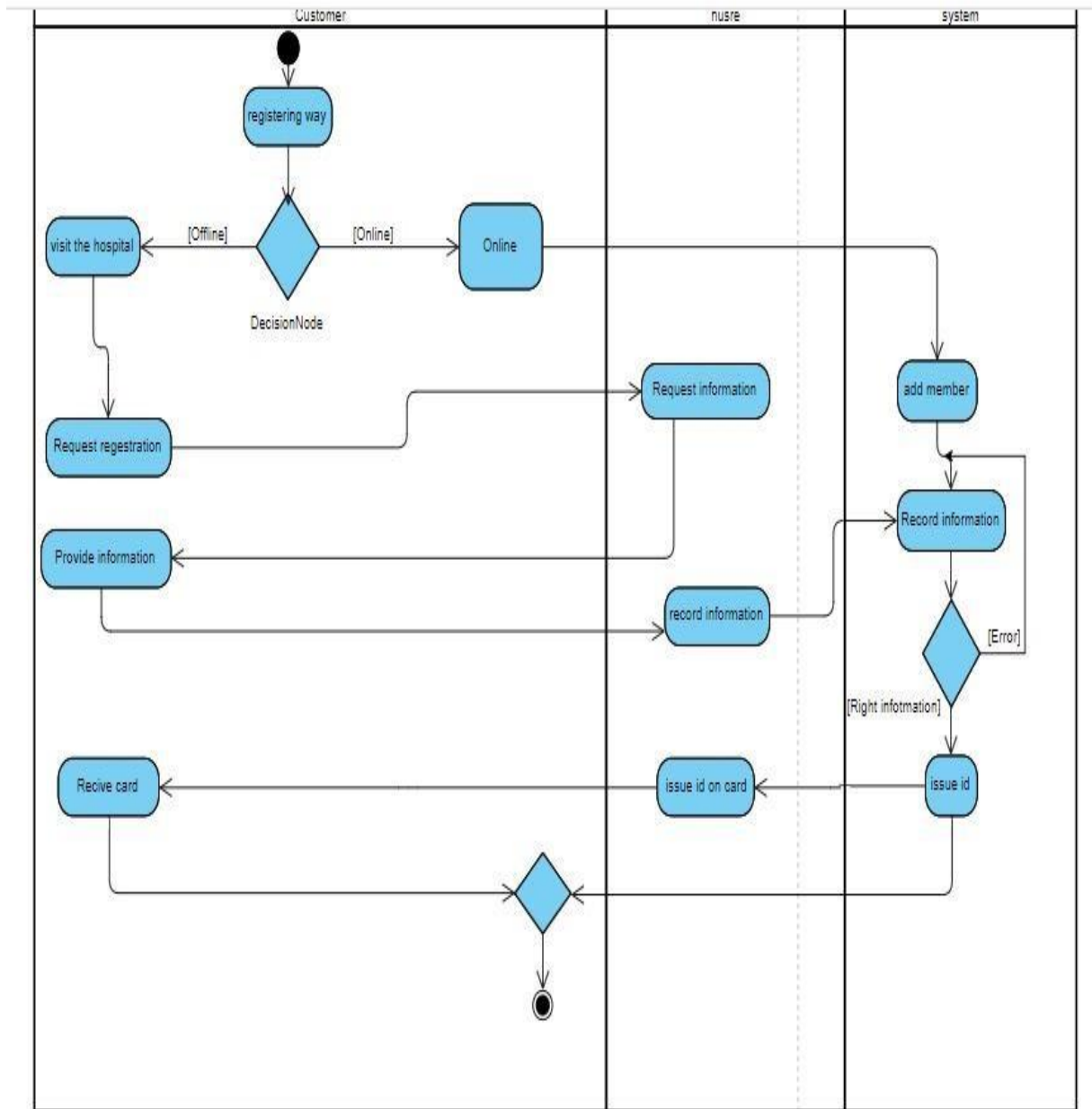
Reports :



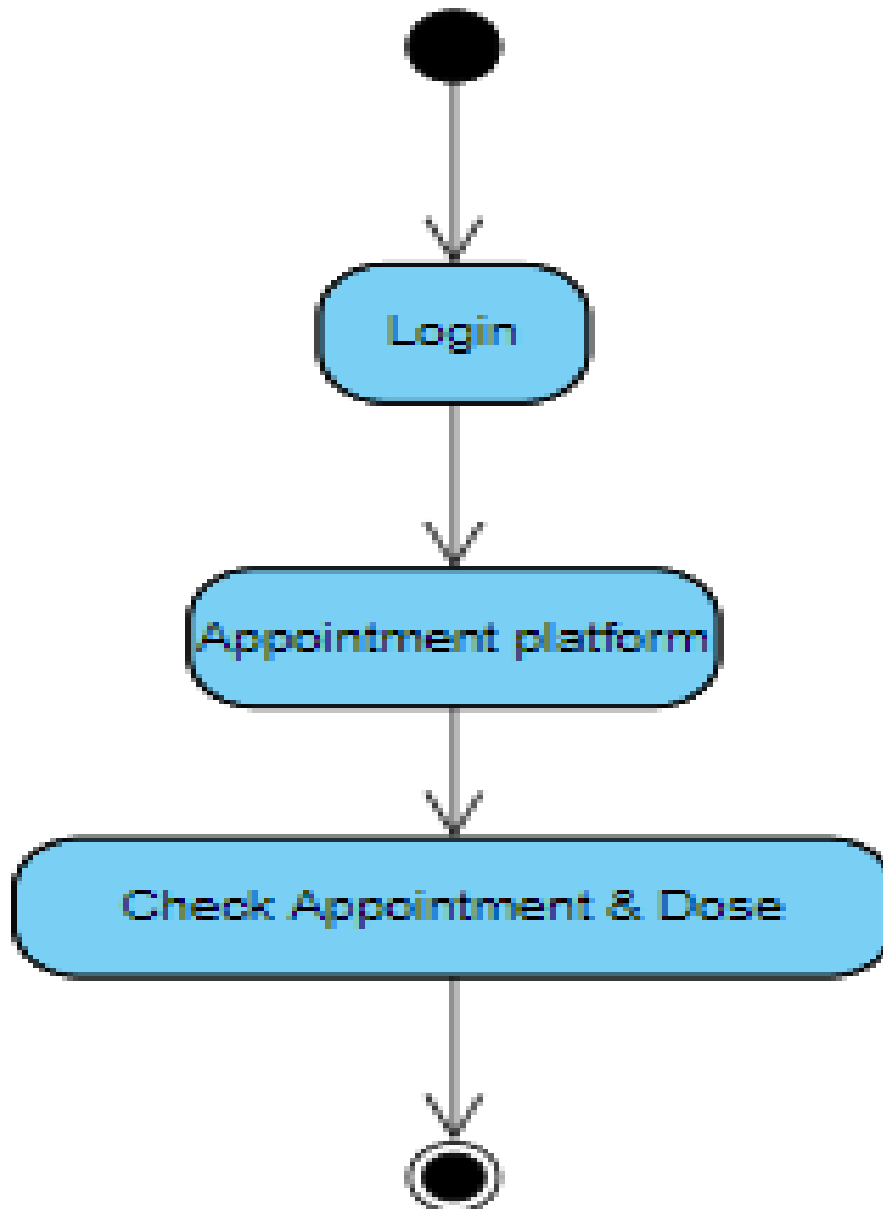
Invoices:



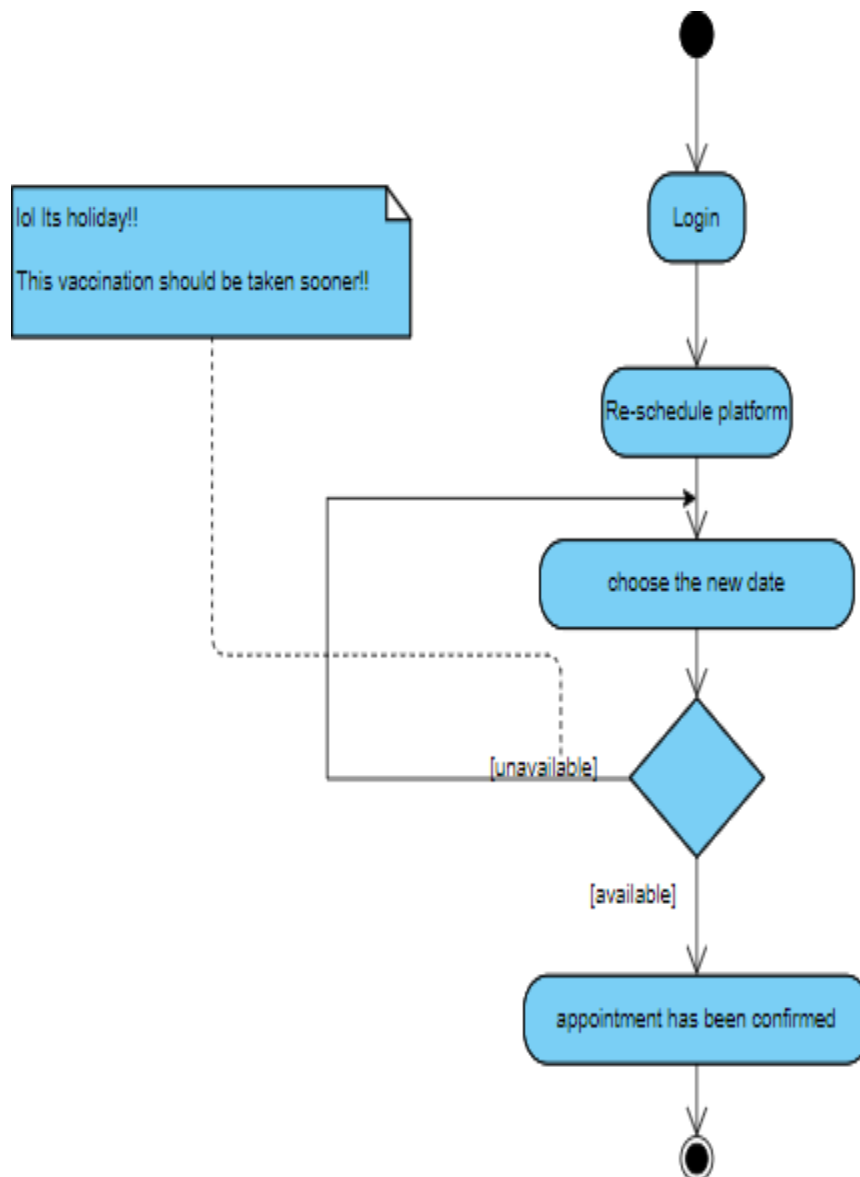
## Registration:



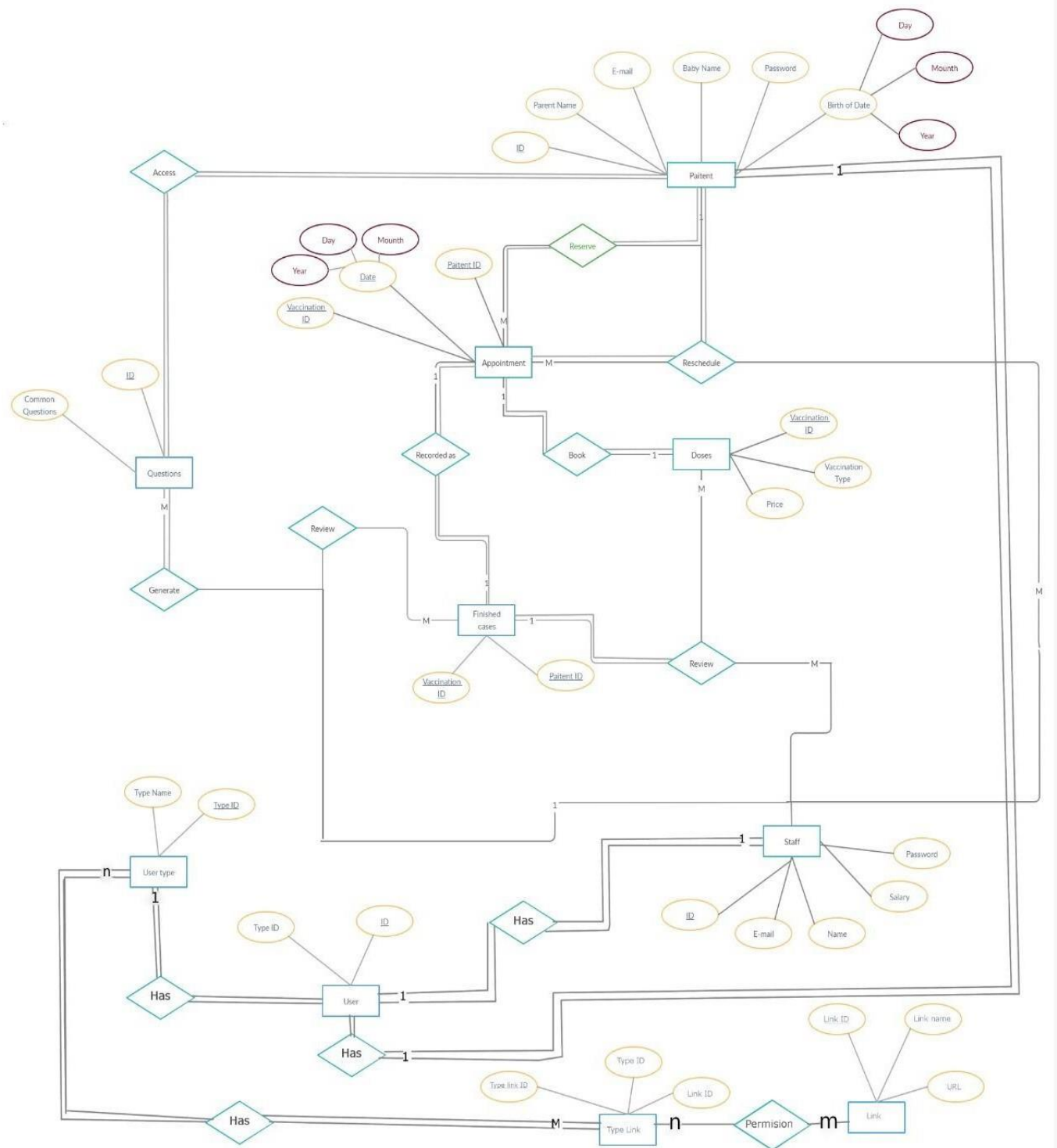
View Appointment:



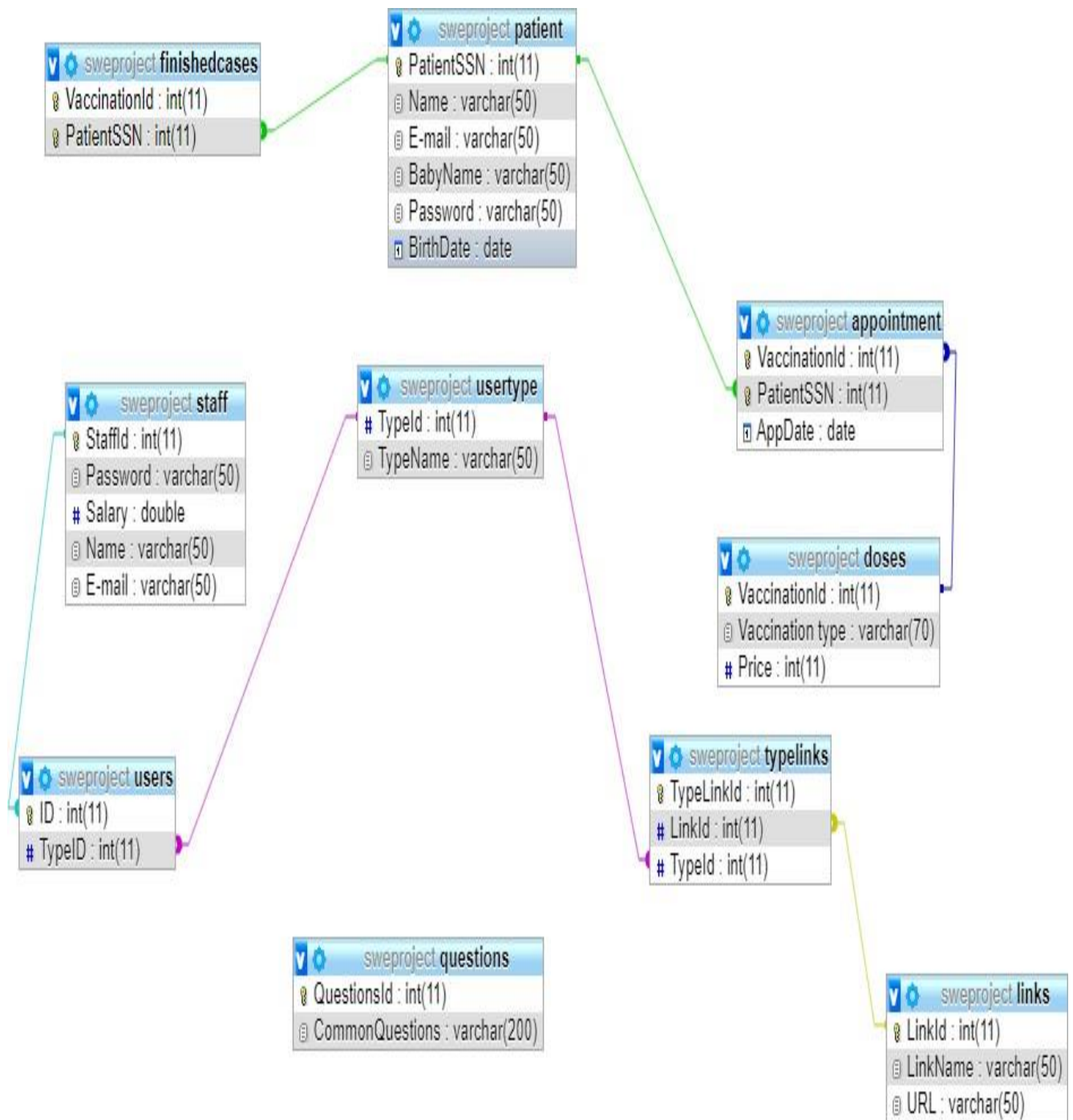
## Re-Schedule:



ERD:

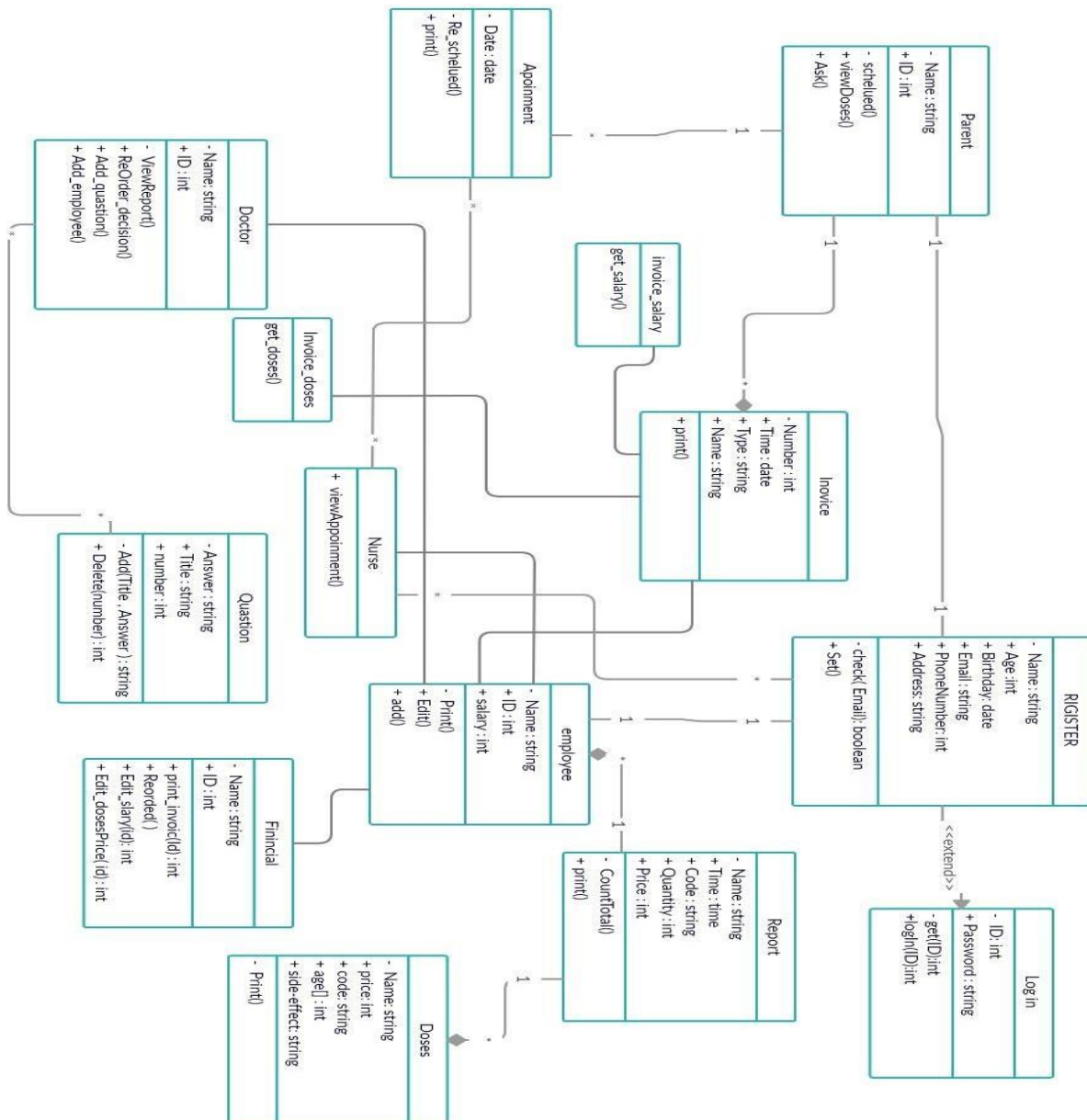


## Schema:

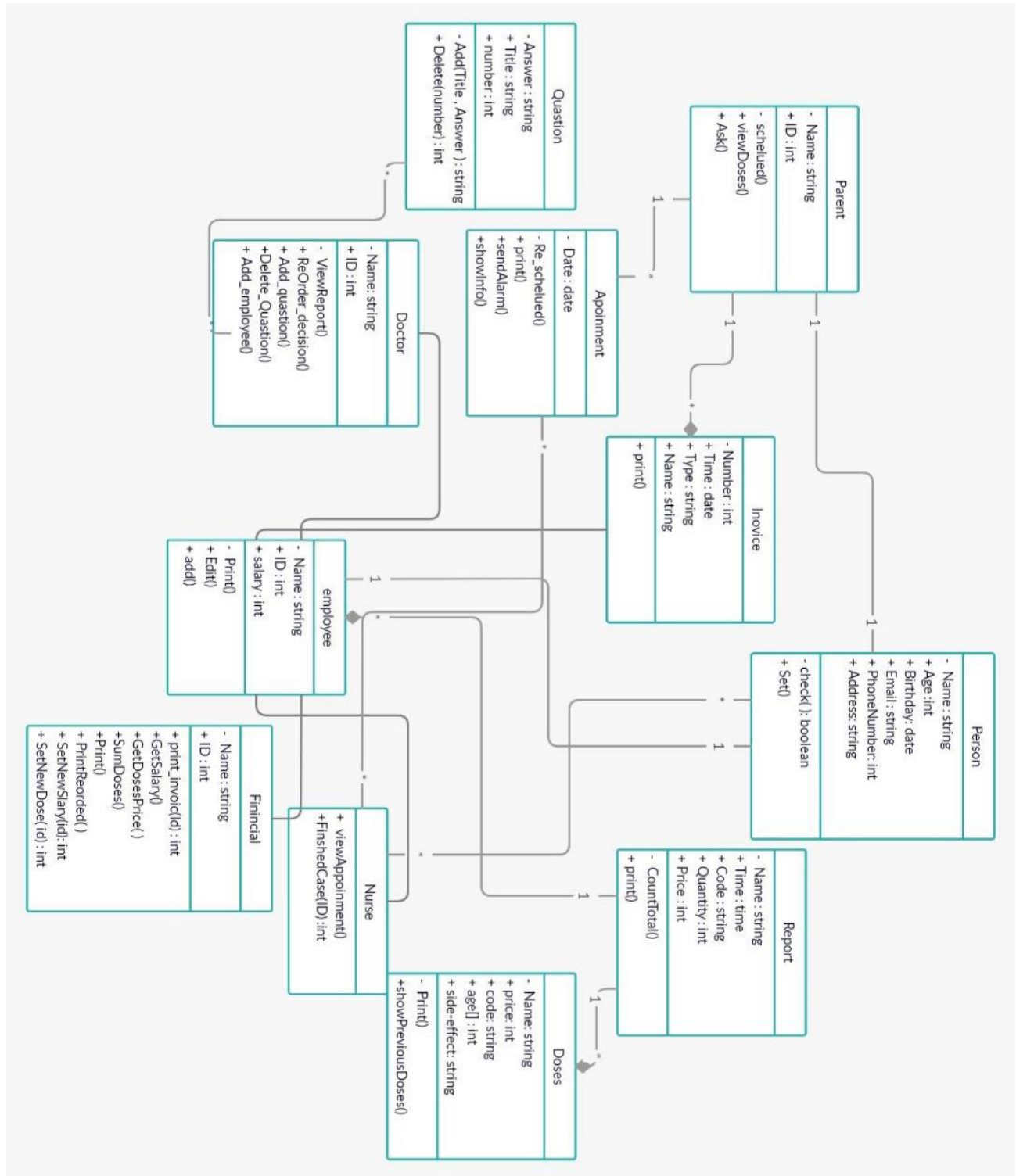




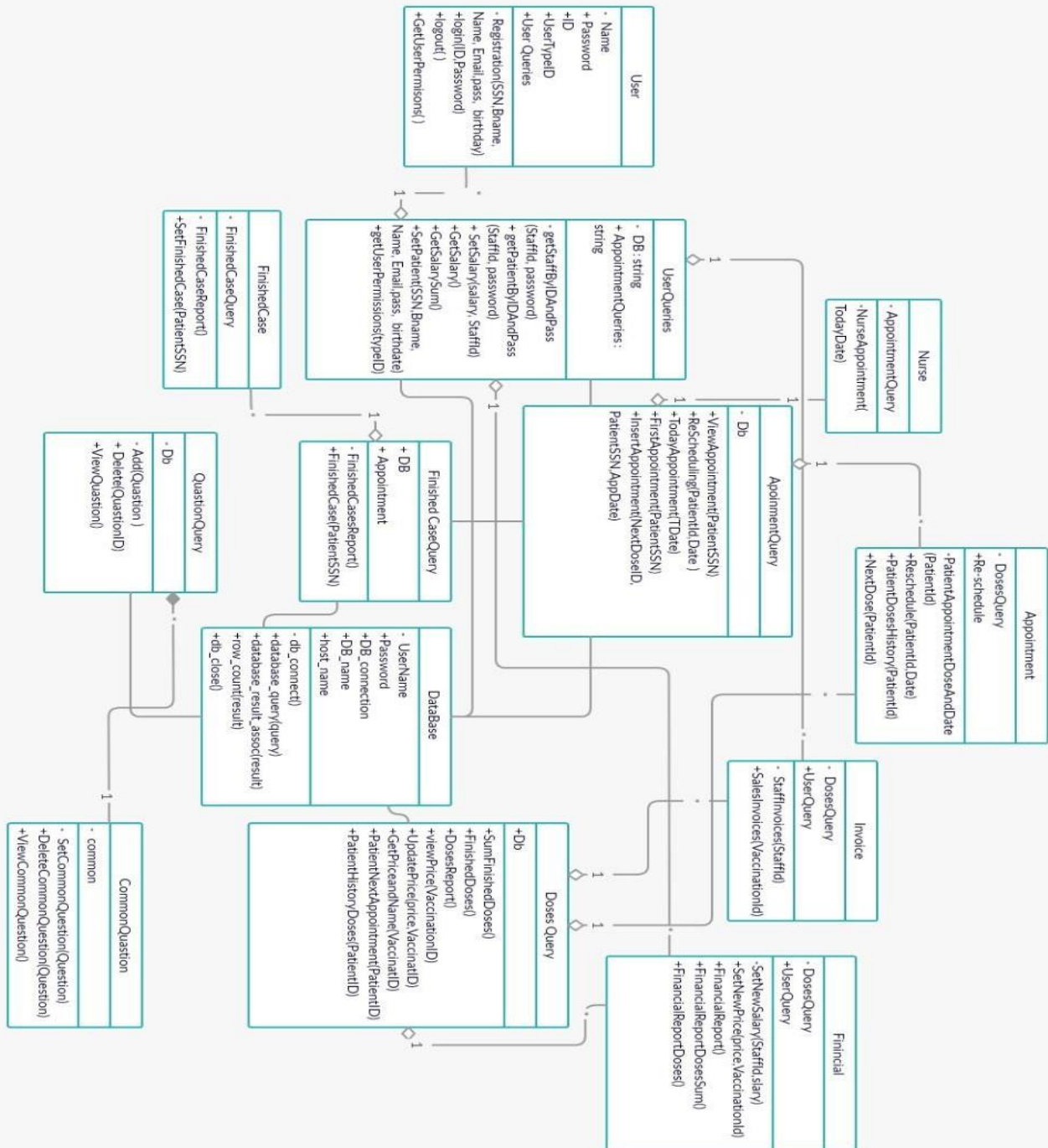
# Class Diagram(1):



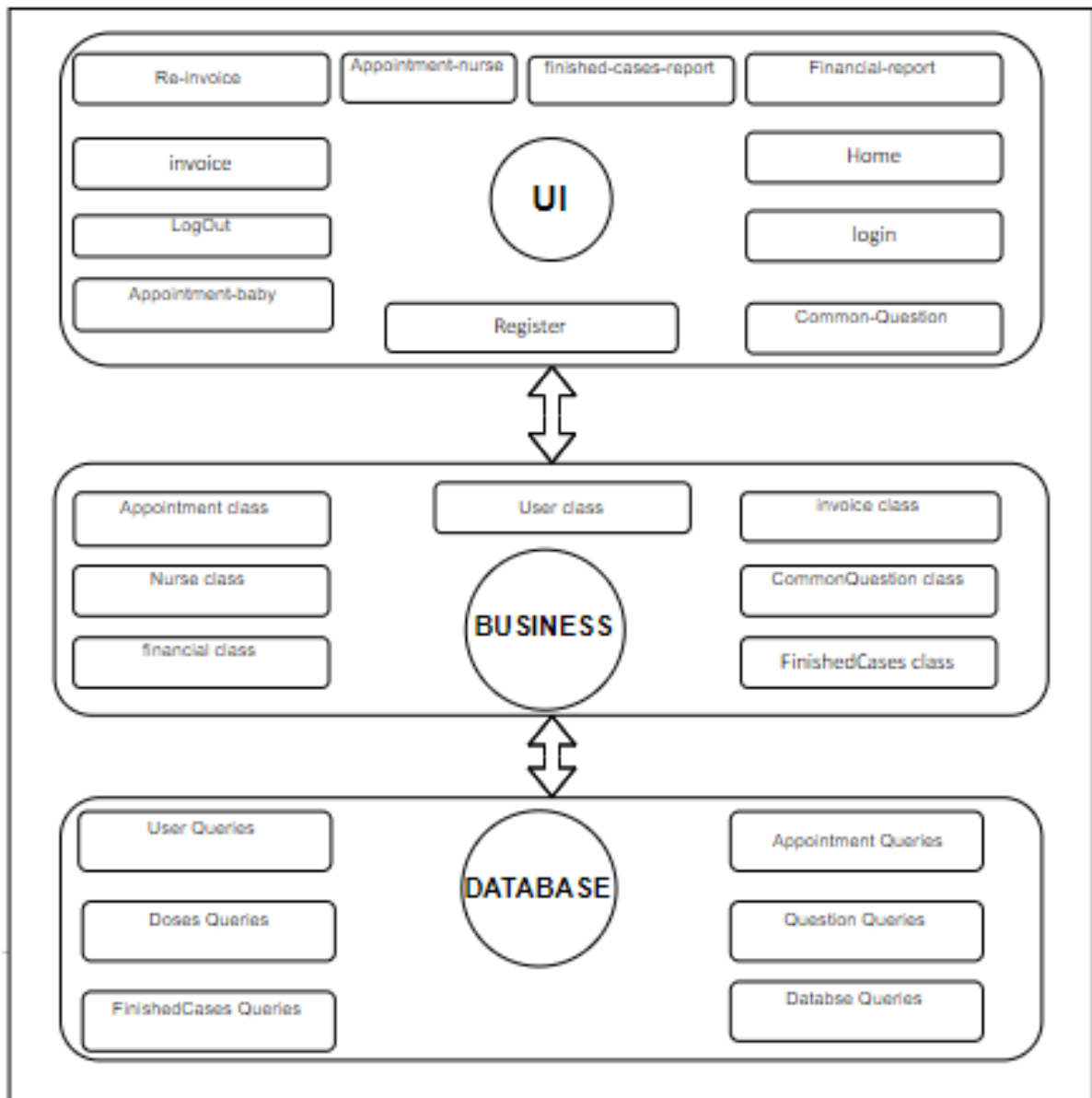
# Class Diagram(2):



# Finall Class Diagram:

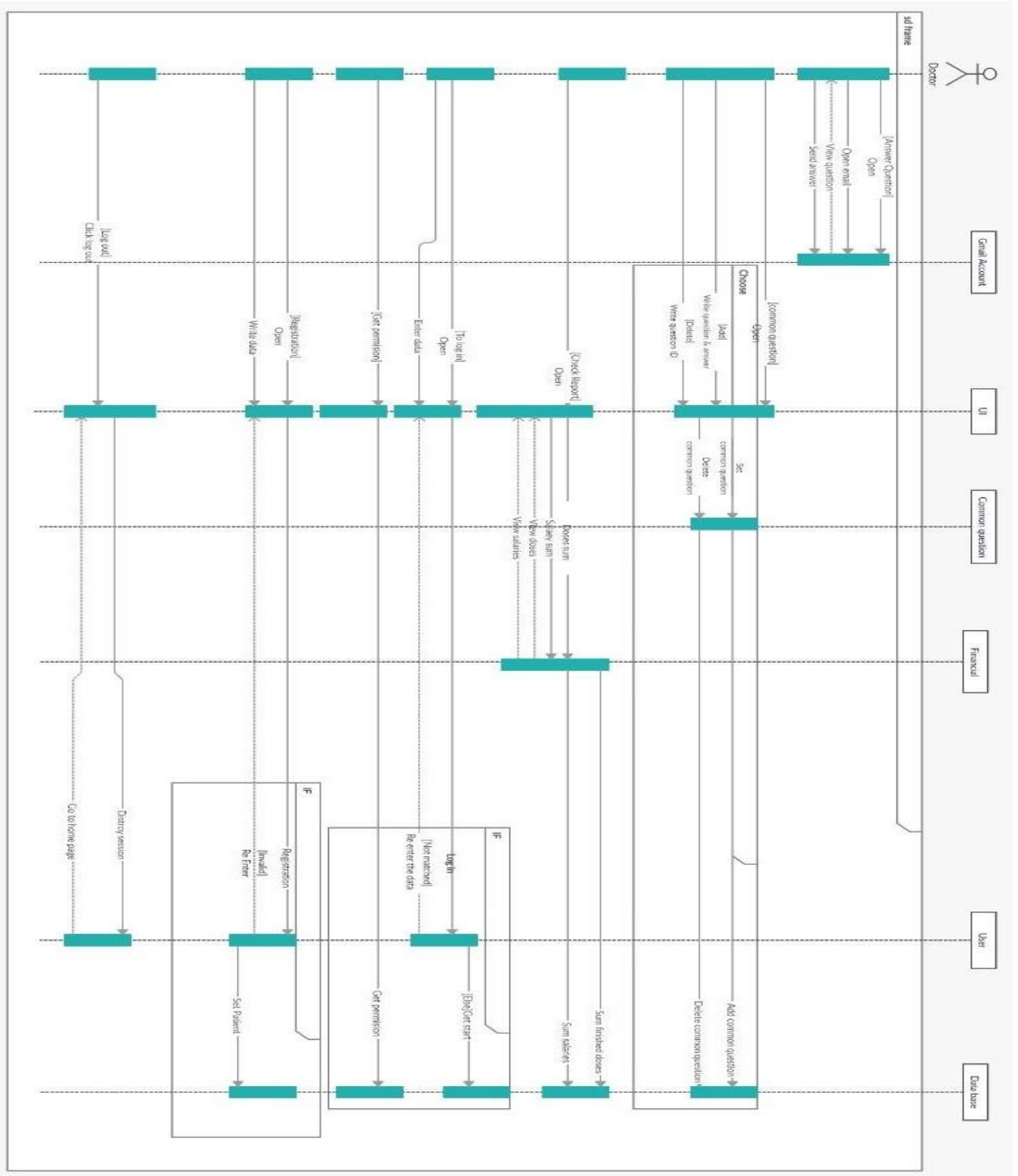


# System Architecture

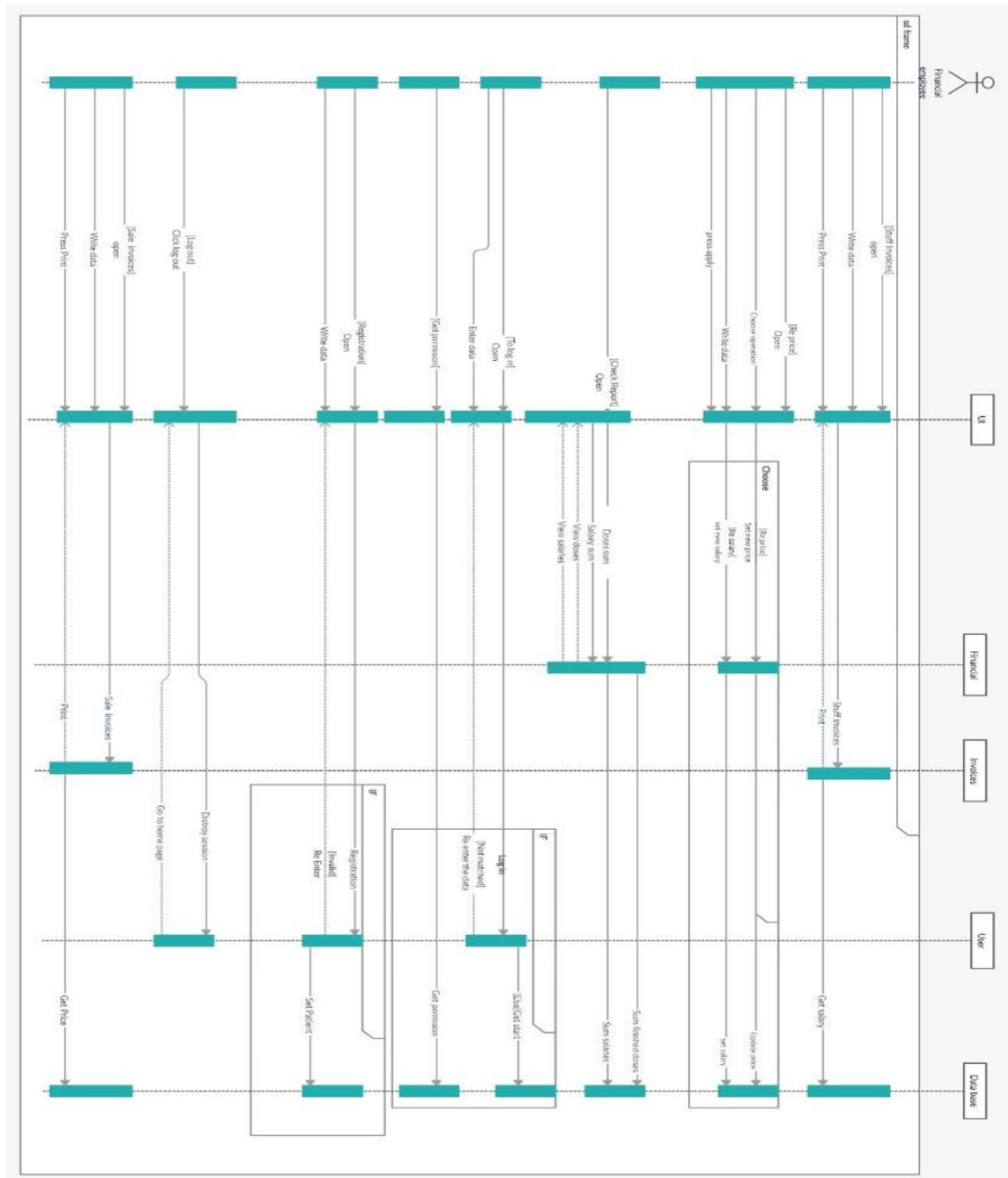






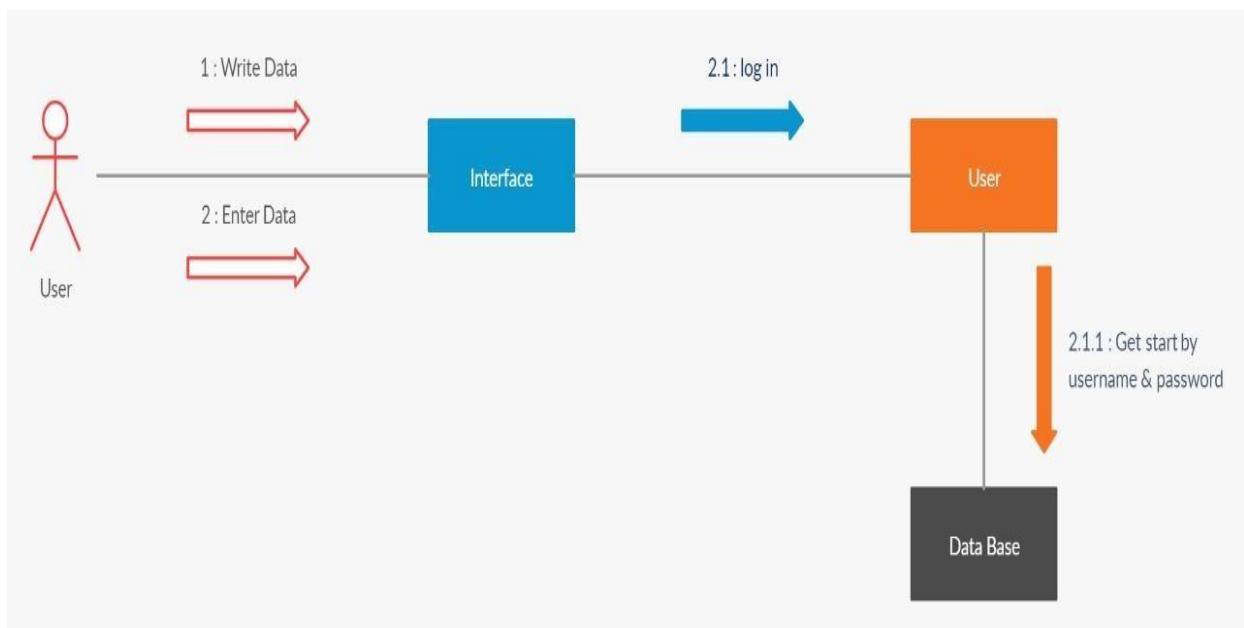
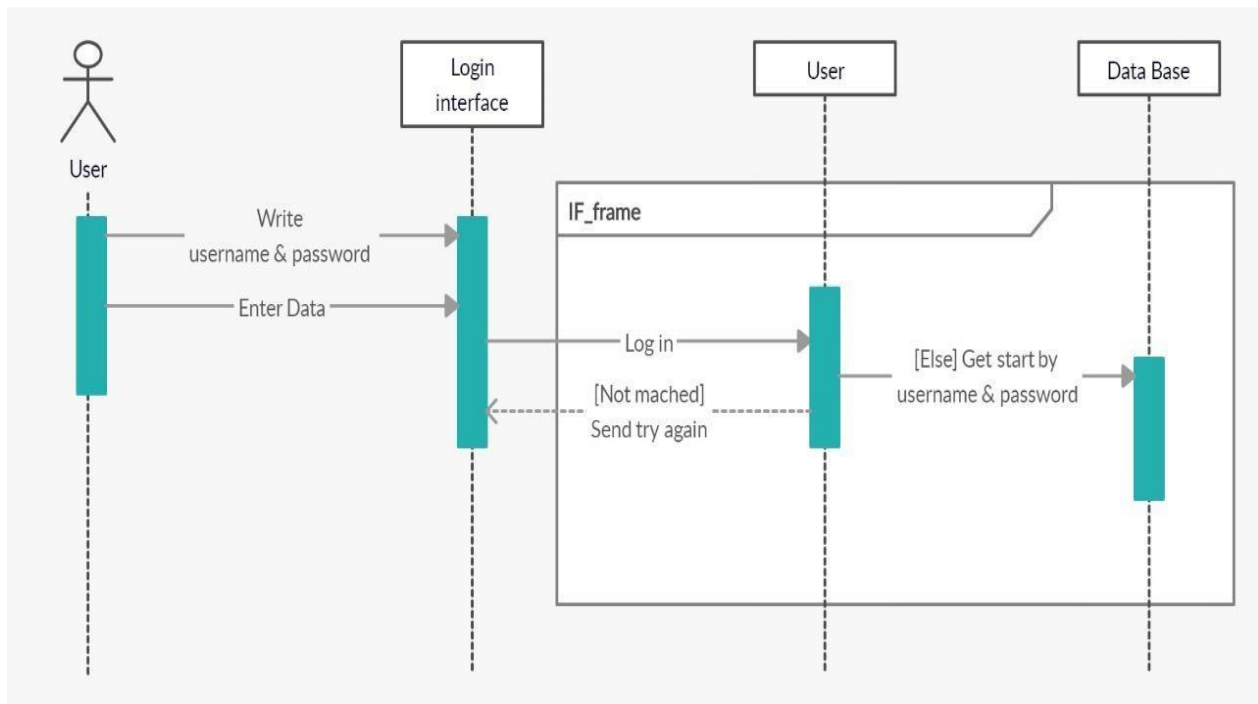




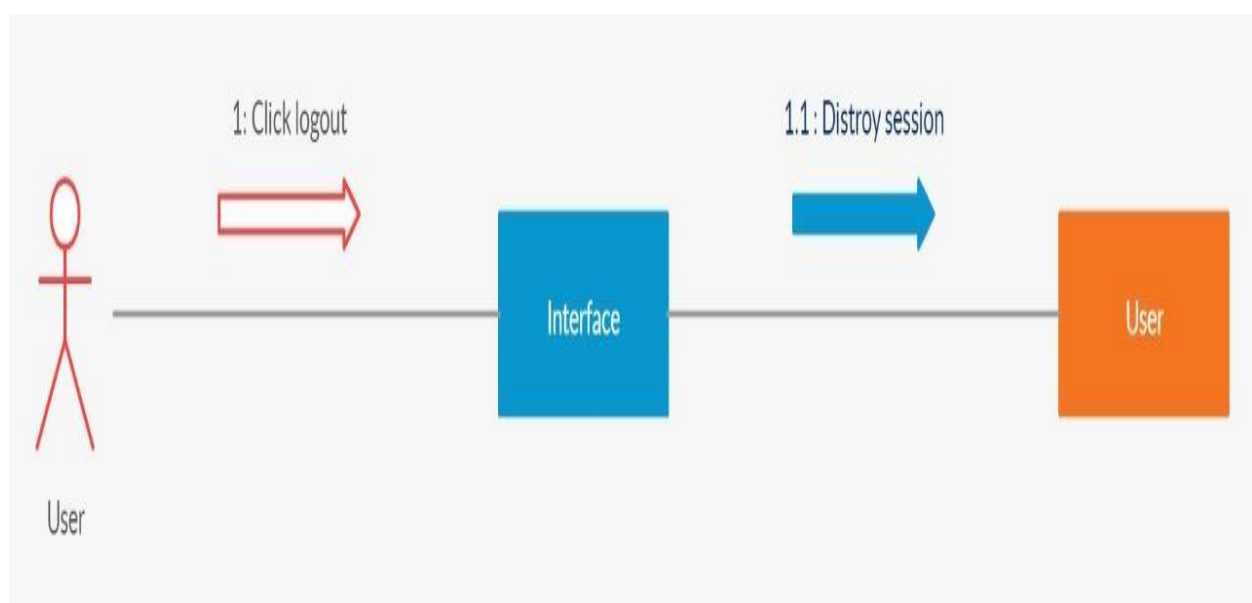
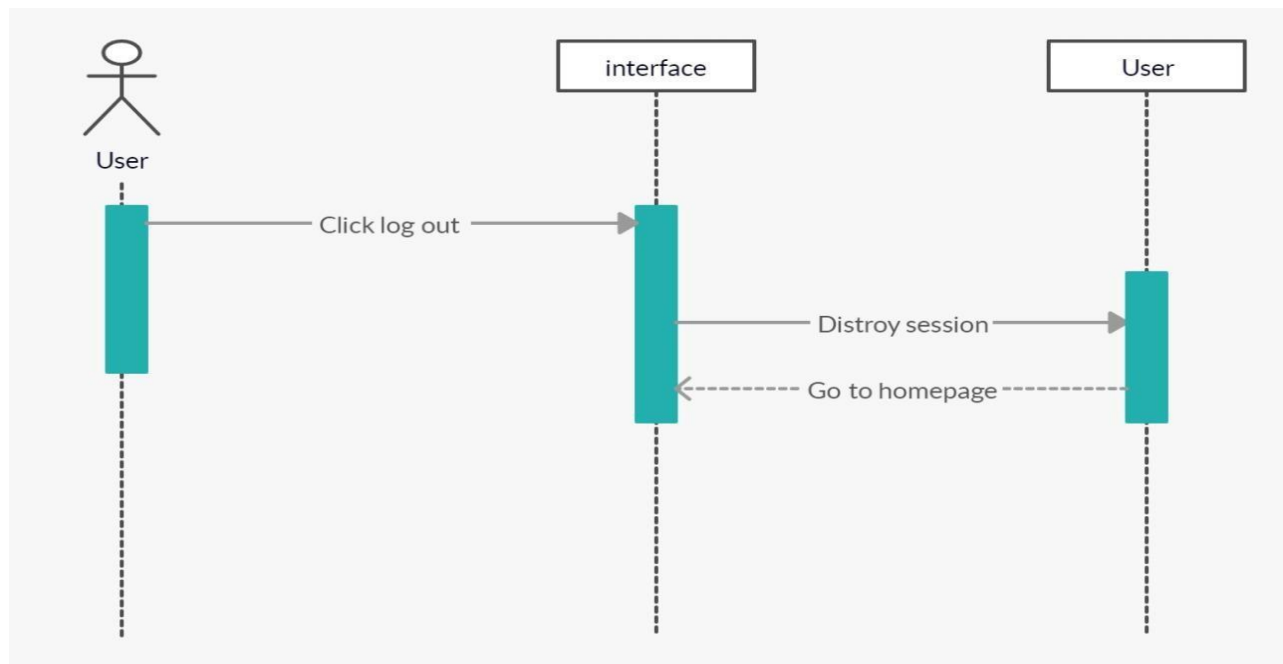




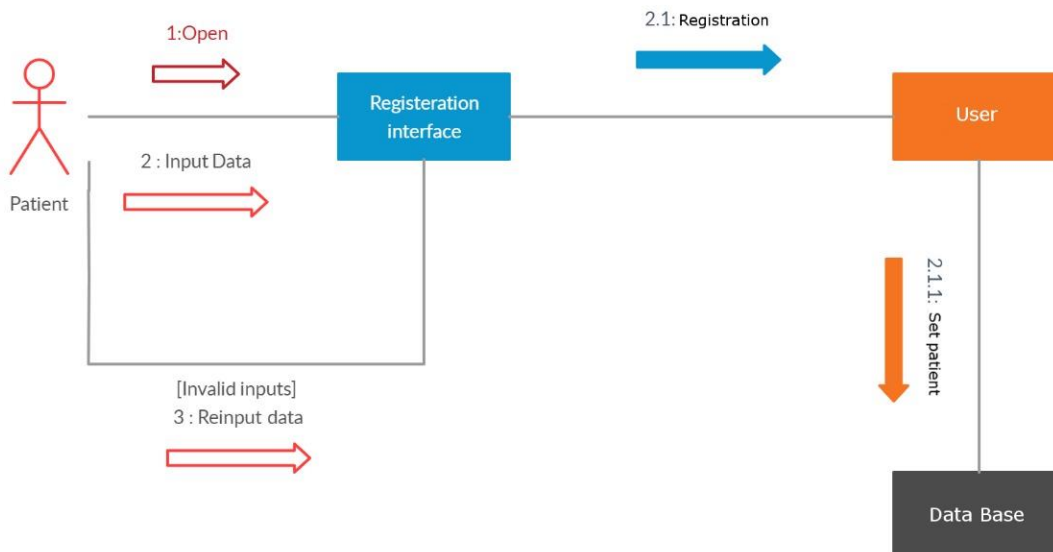
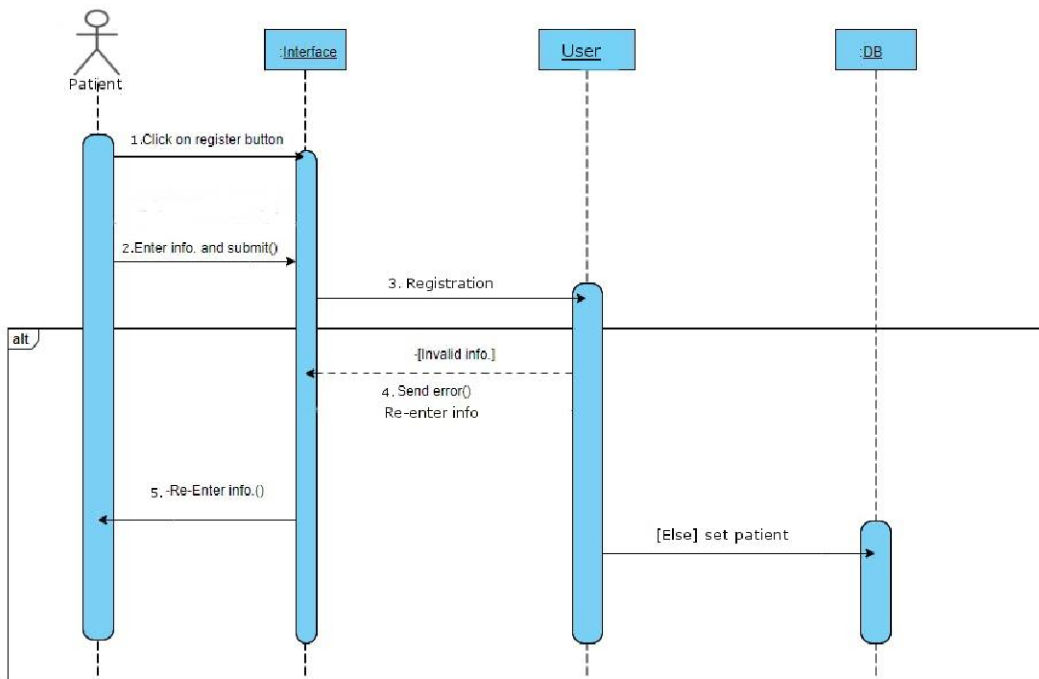
## Login:



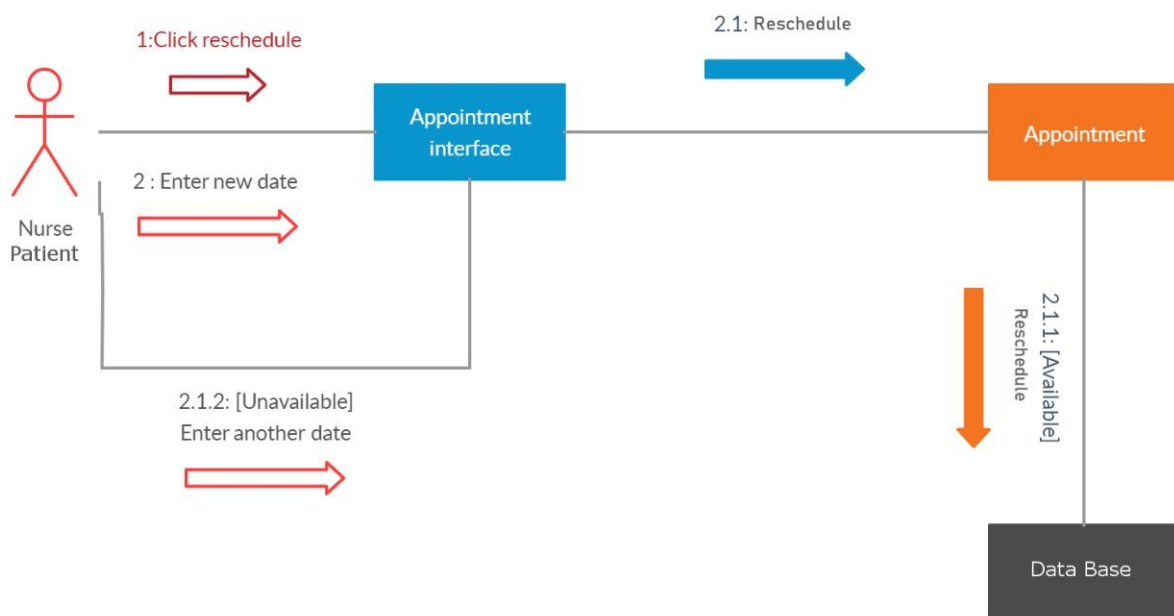
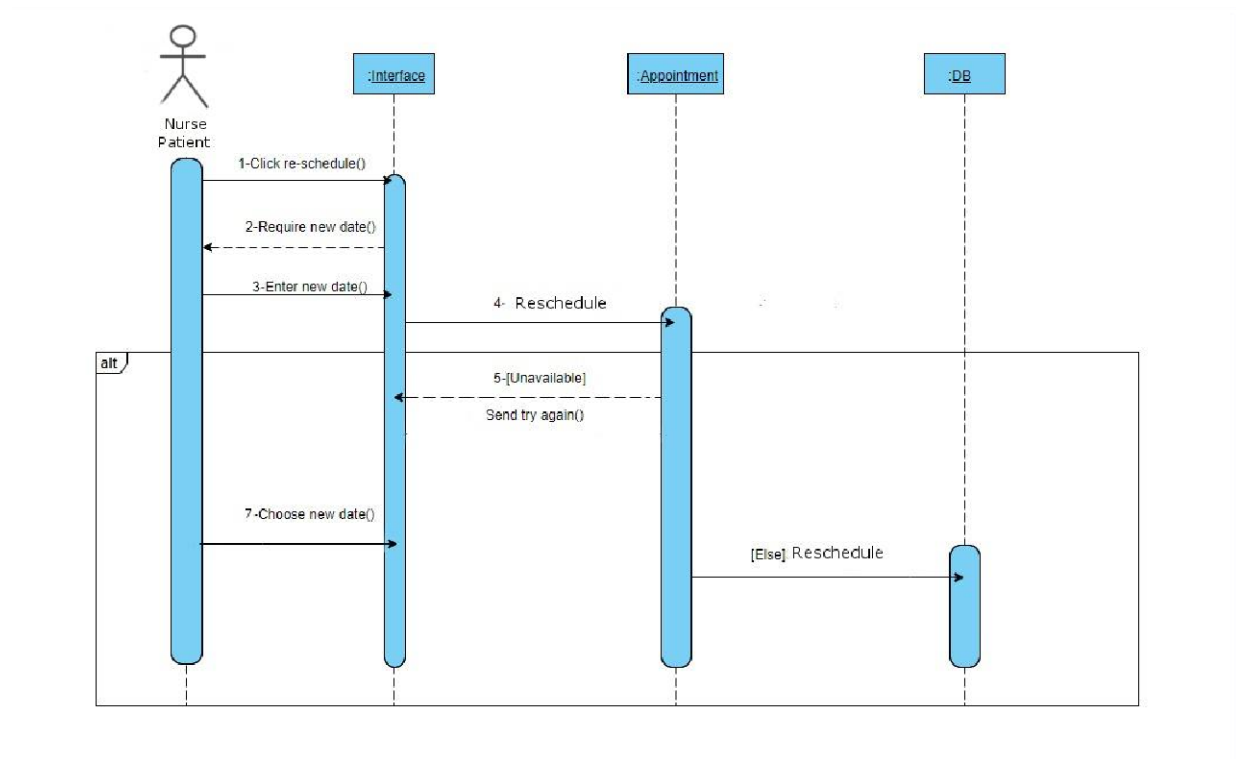
## LogOut:



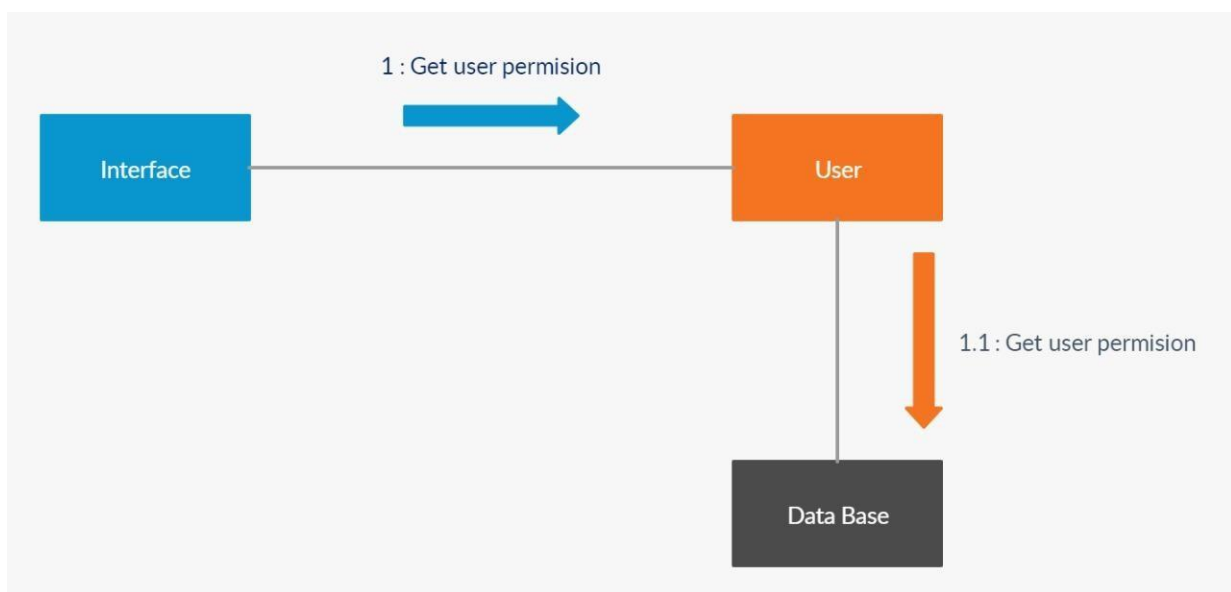
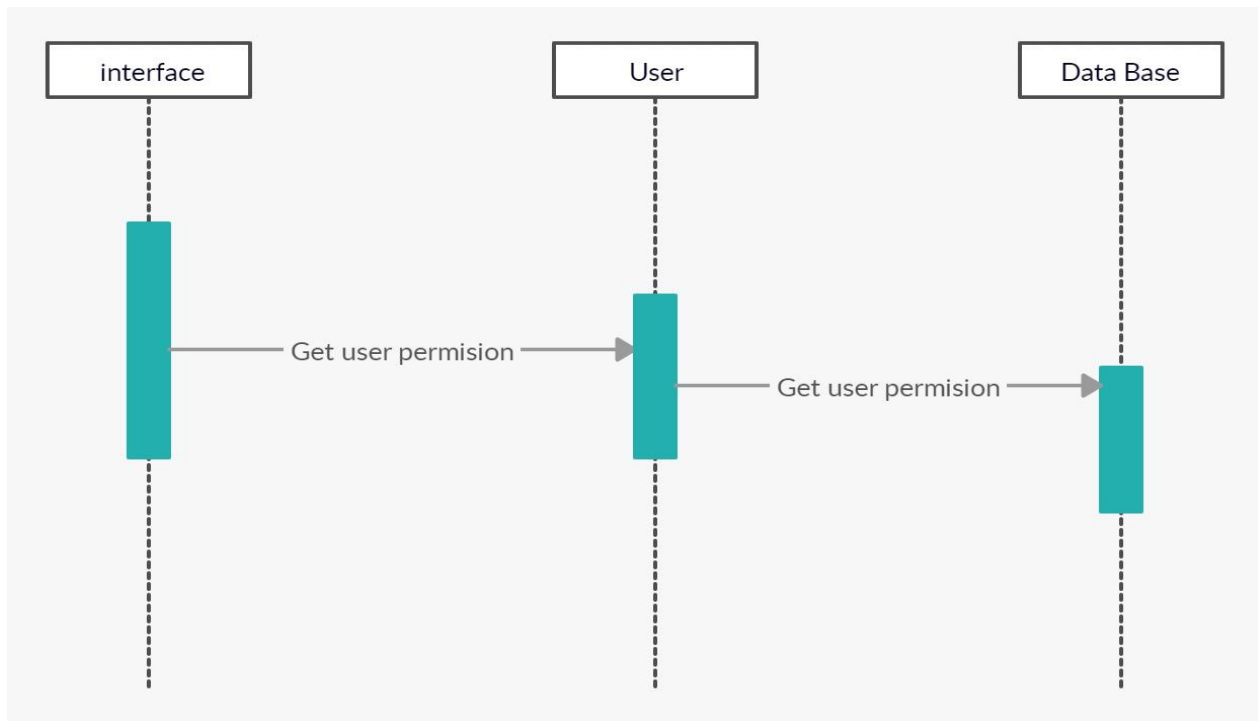
## Registration:



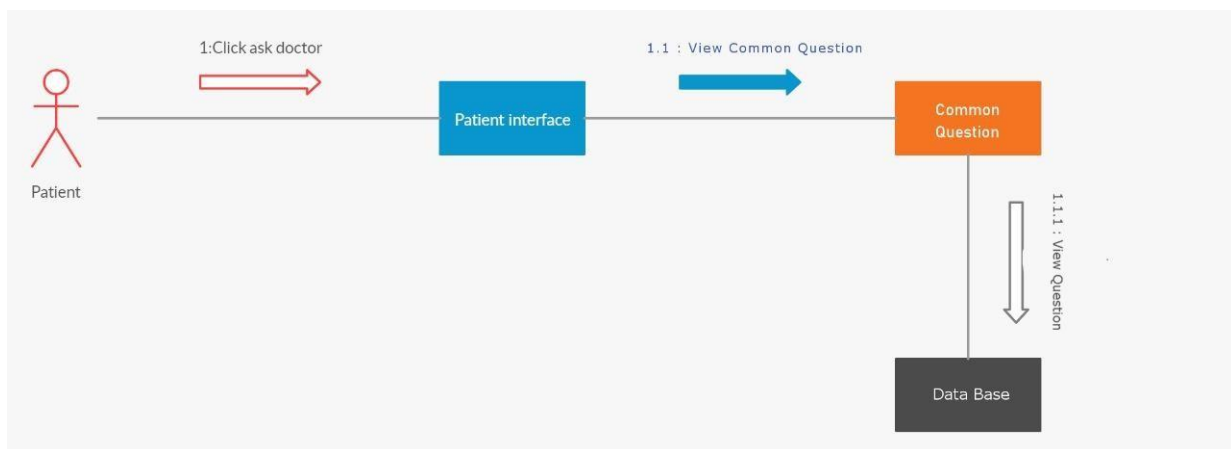
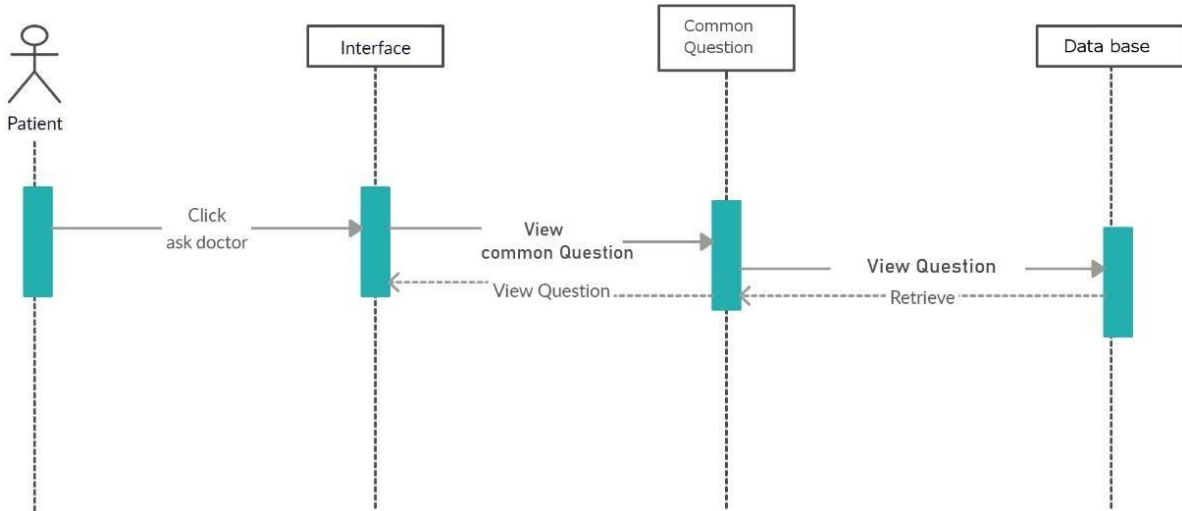
## Re-schedule:



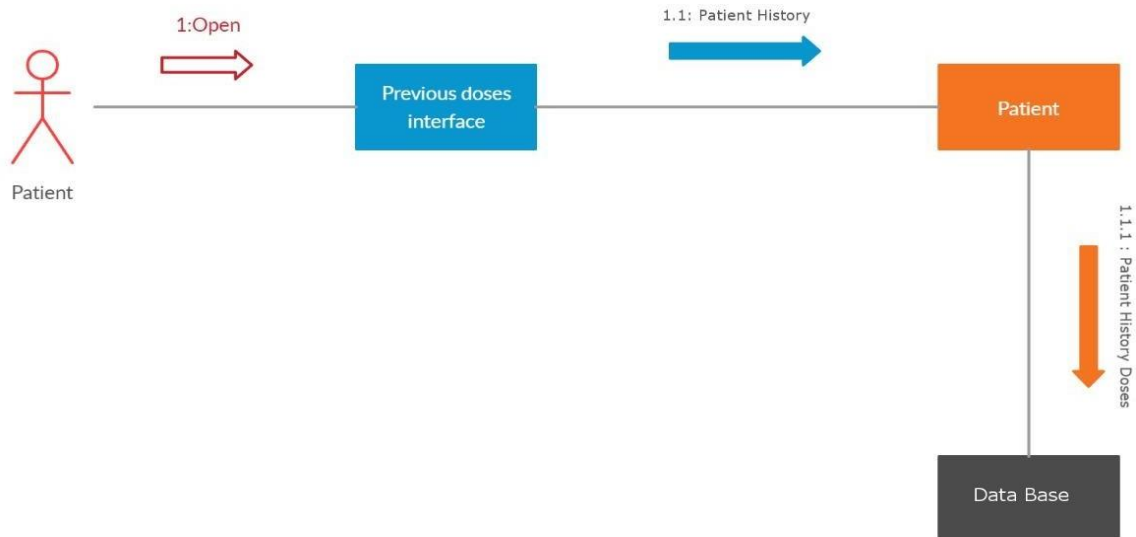
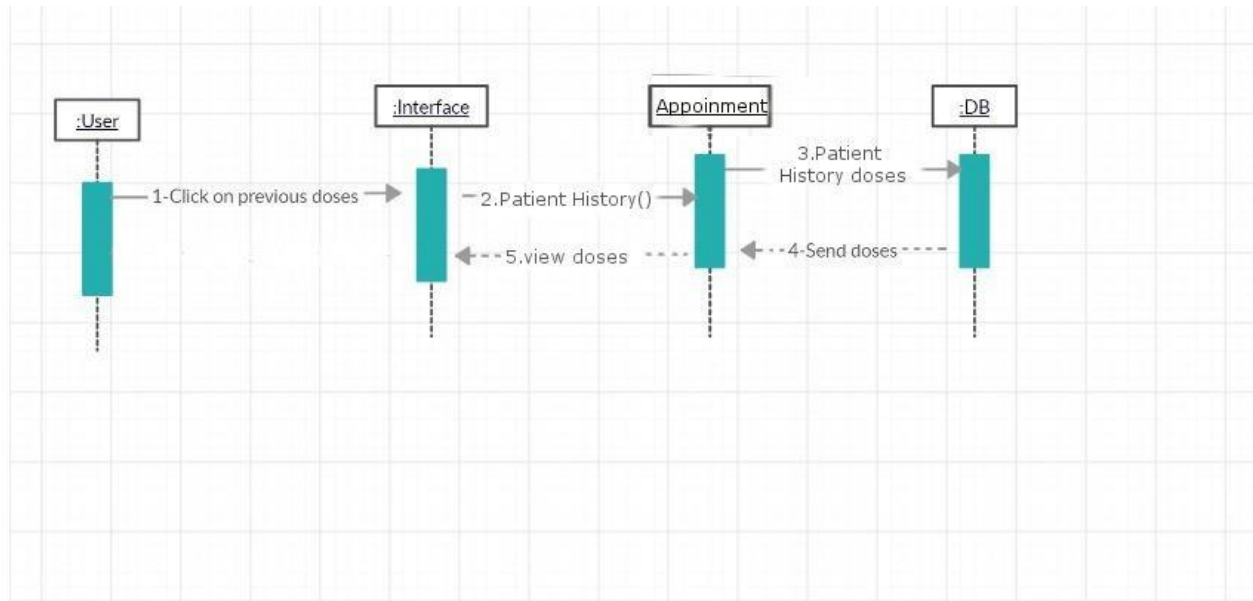
## User Permission:



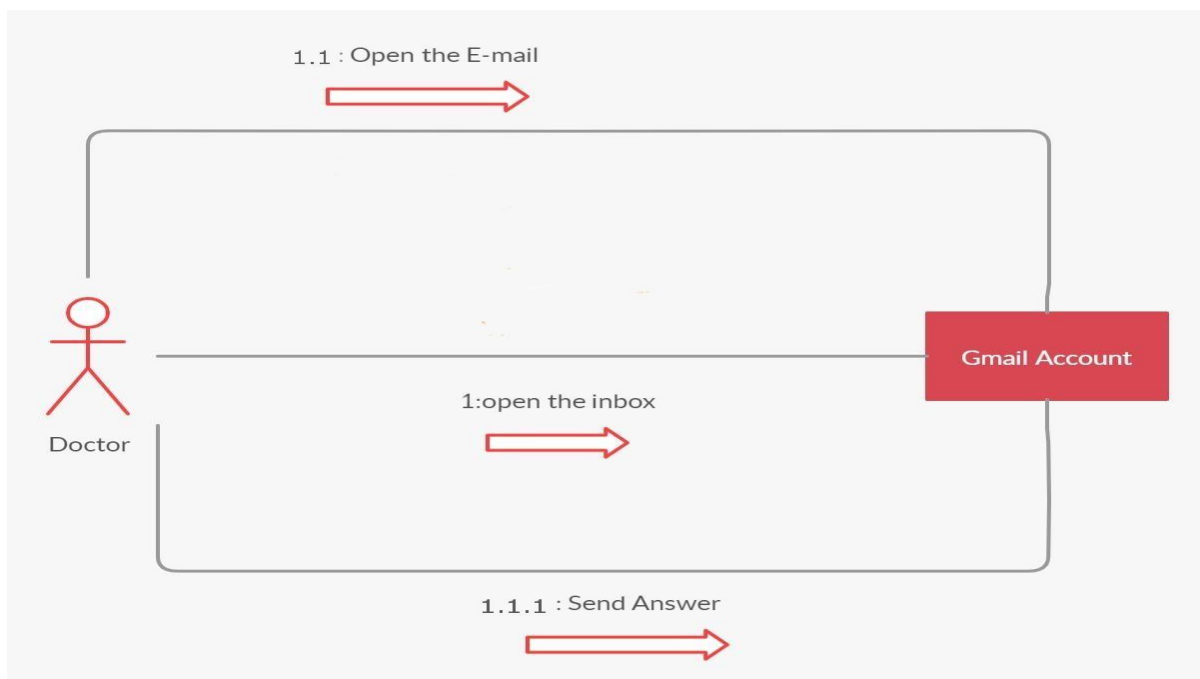
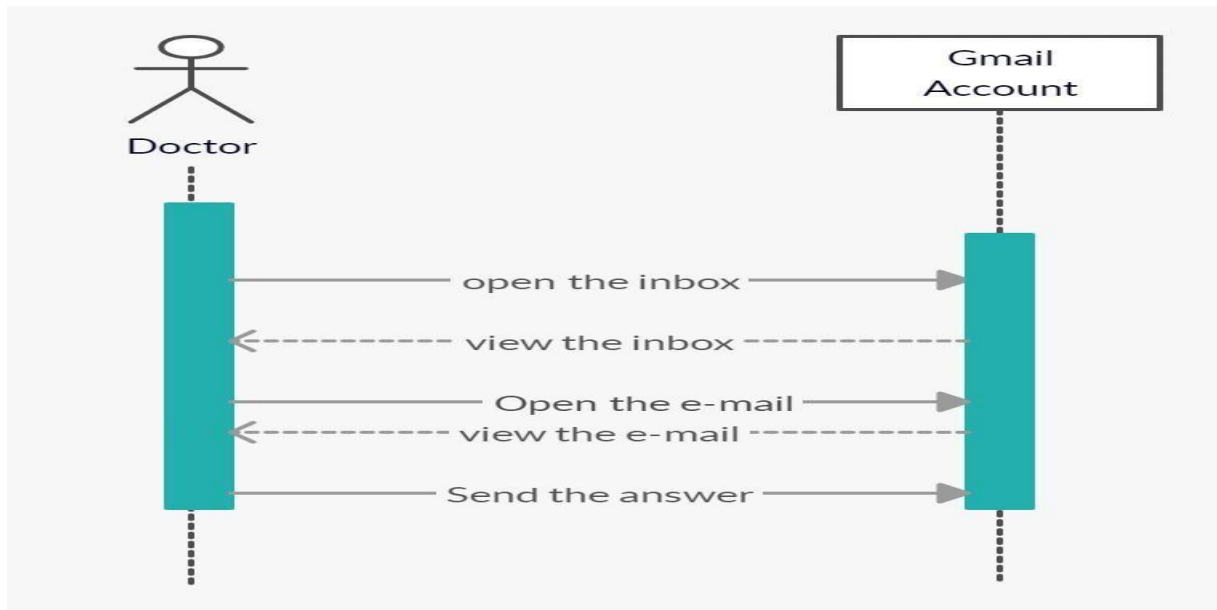
## Common Questions:



## Doses History:

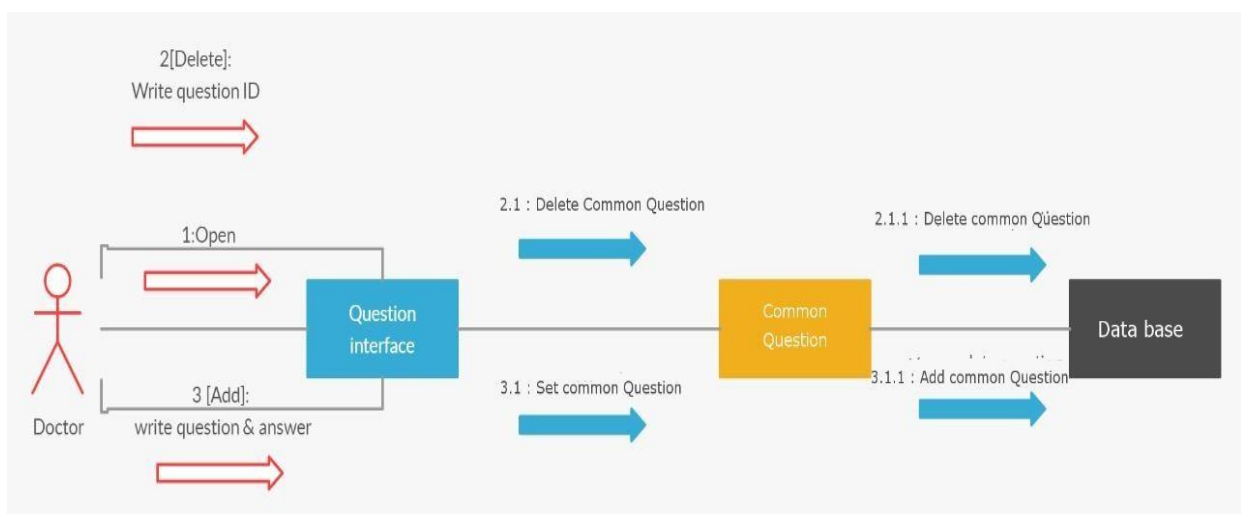
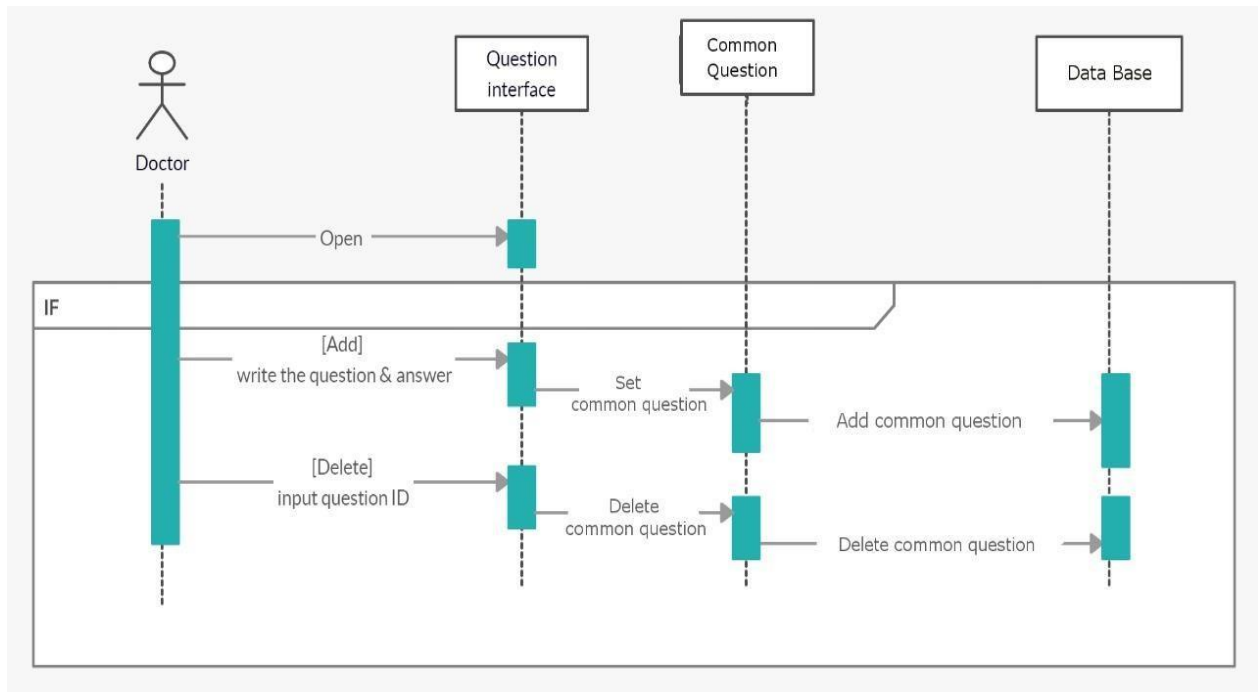


## Doctor Answer:

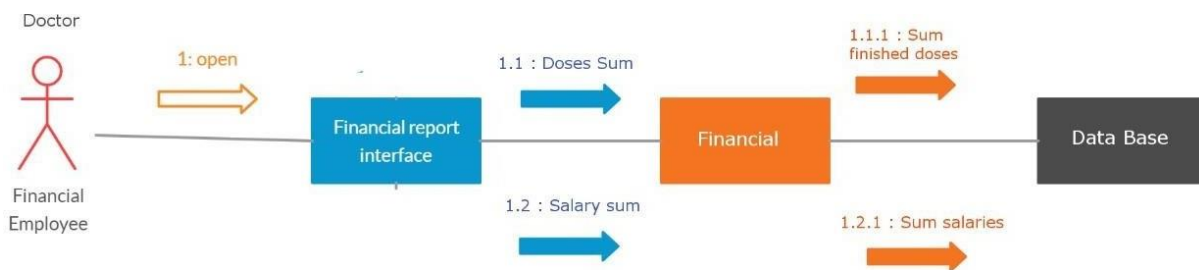
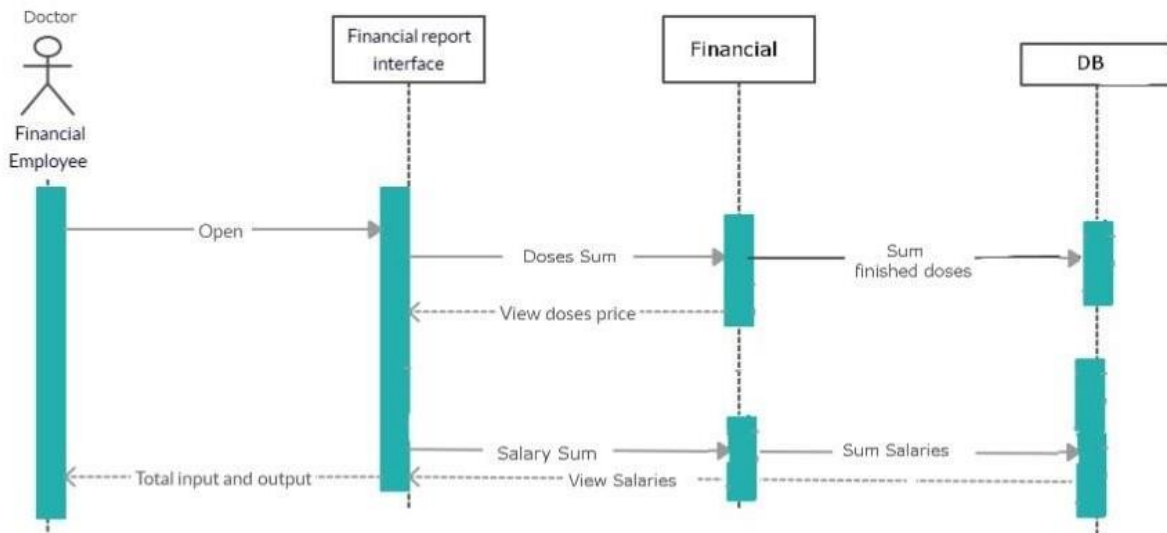




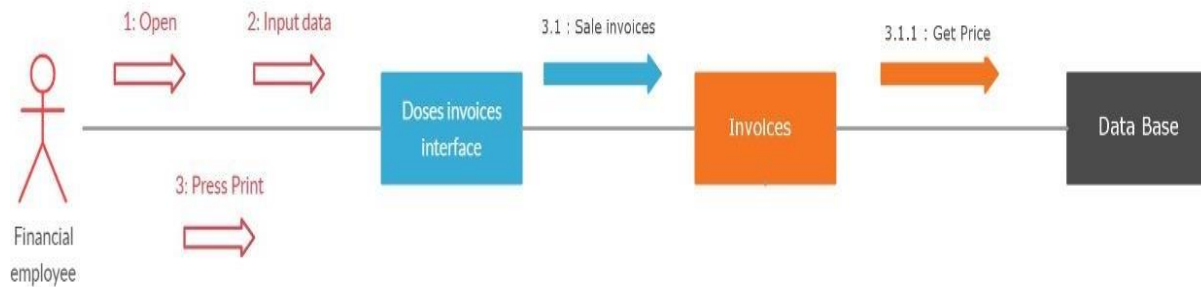
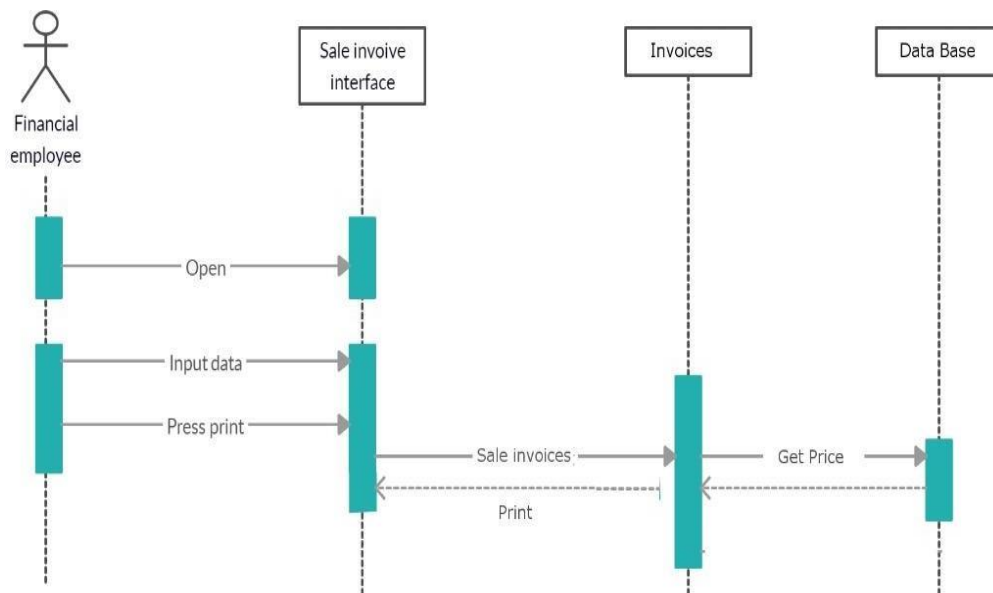
## Edit Question:



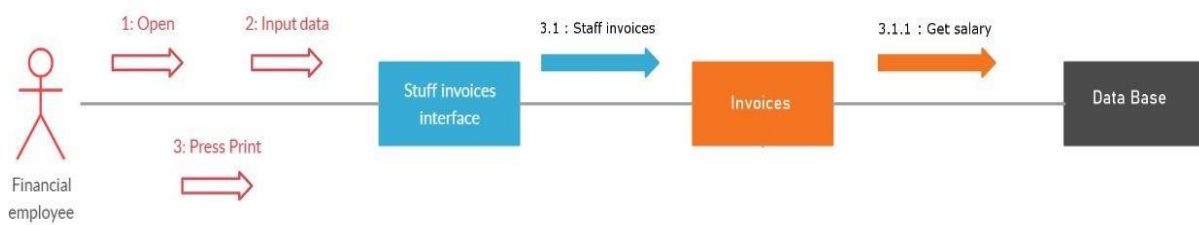
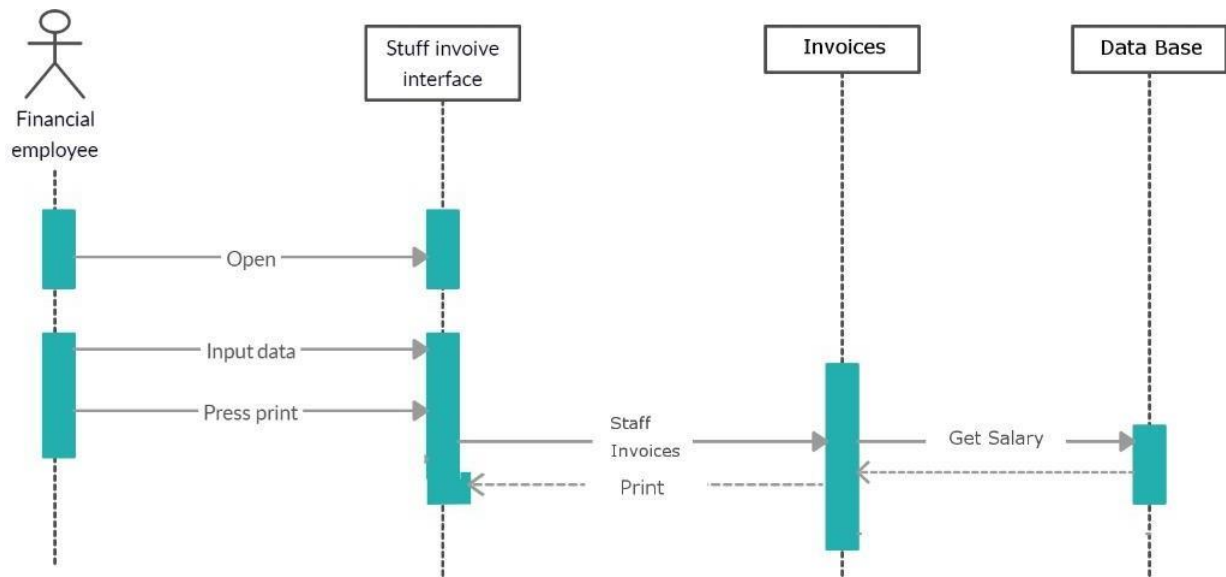
## Financial Report:



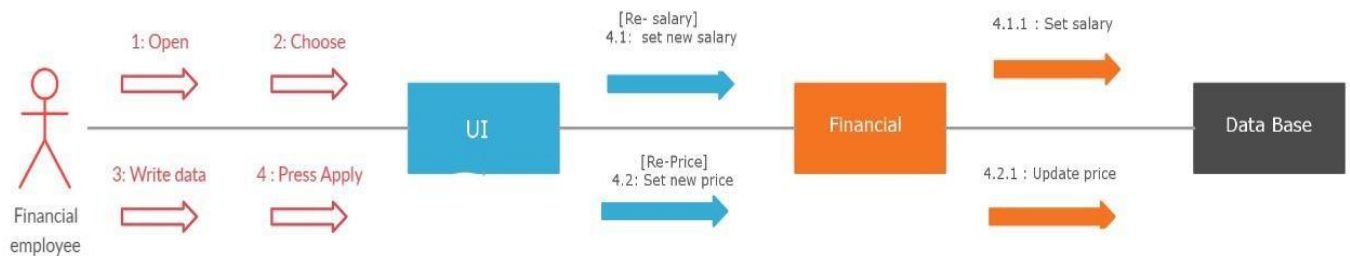
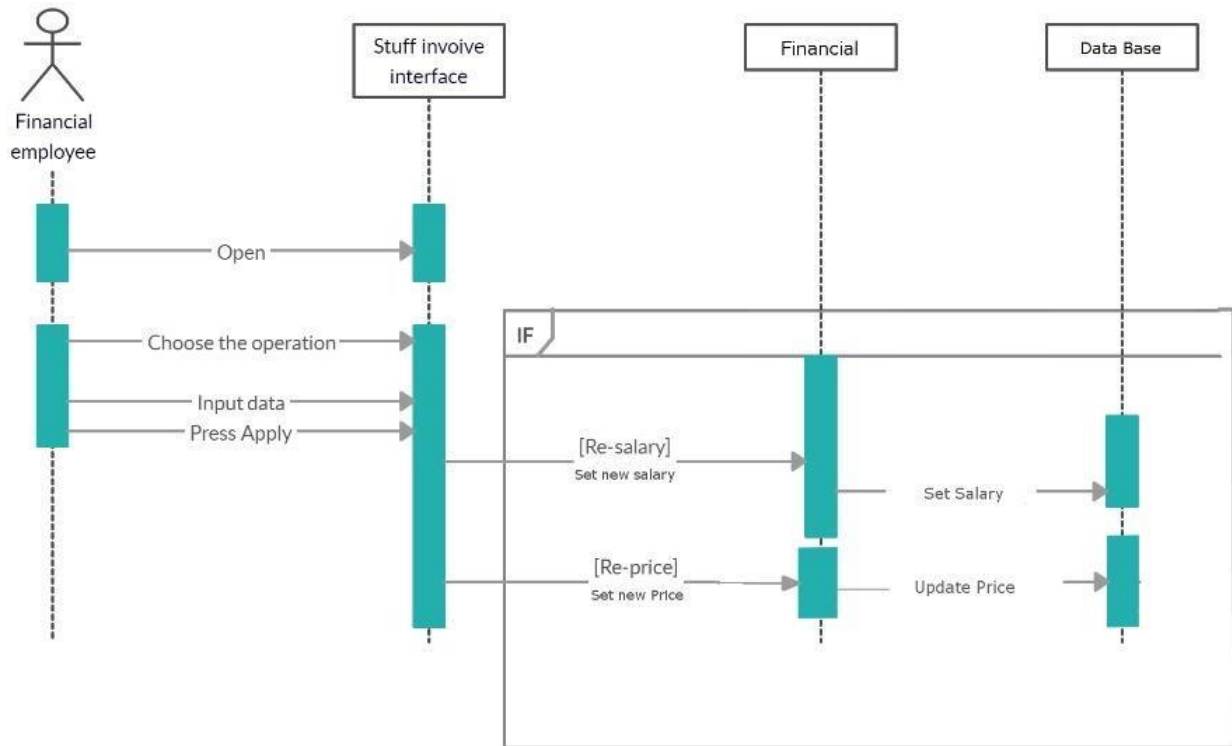
## Sale Invoice:



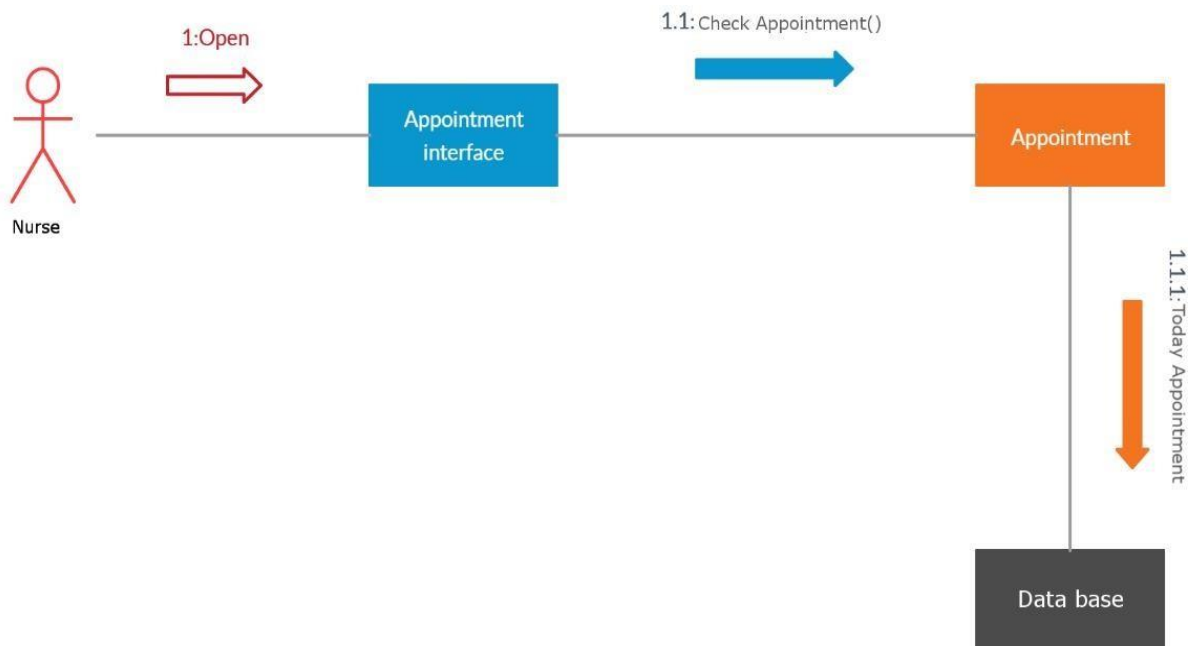
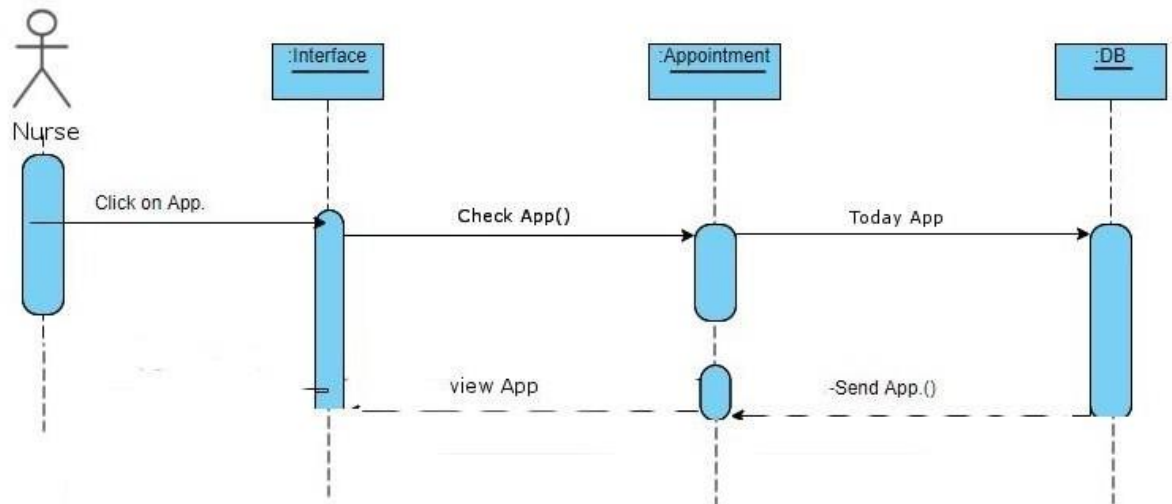
## Stuff Invoice:



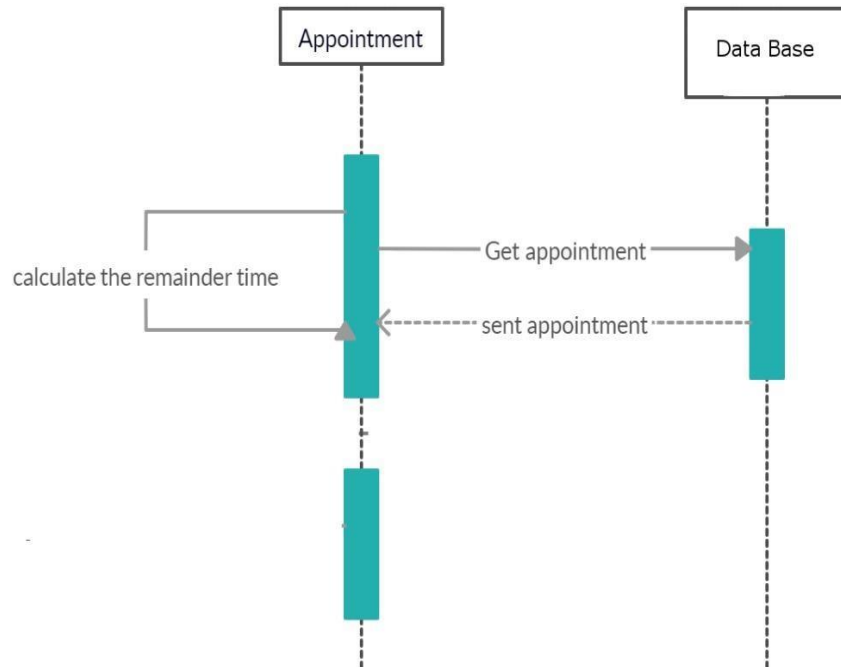
## Re-(Salary or Price)



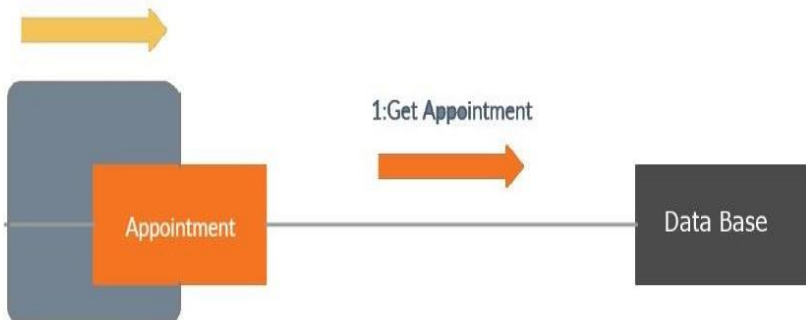
## Nurse View Appointment:



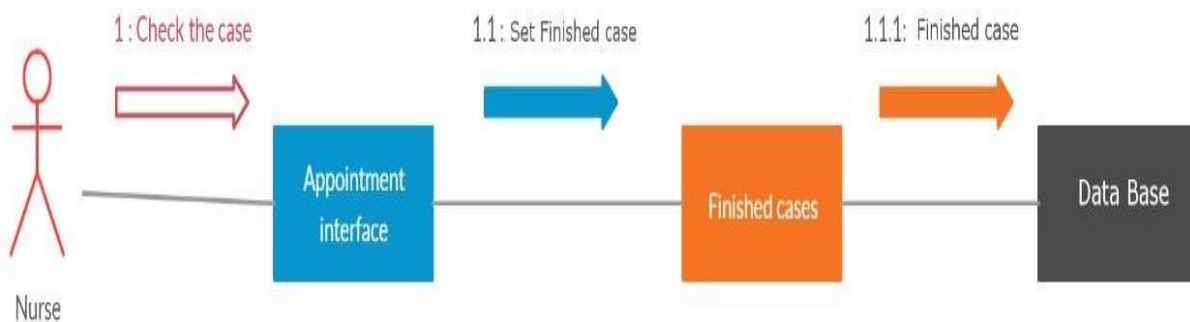
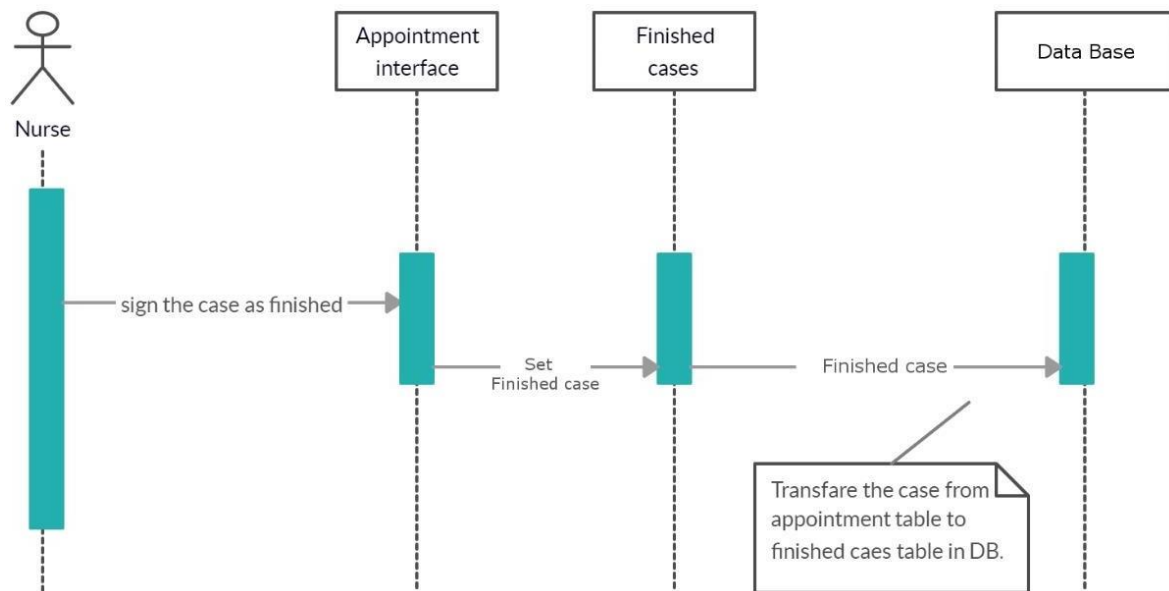
## Nurse View Appointment:



1.2: Calculate Remainder time

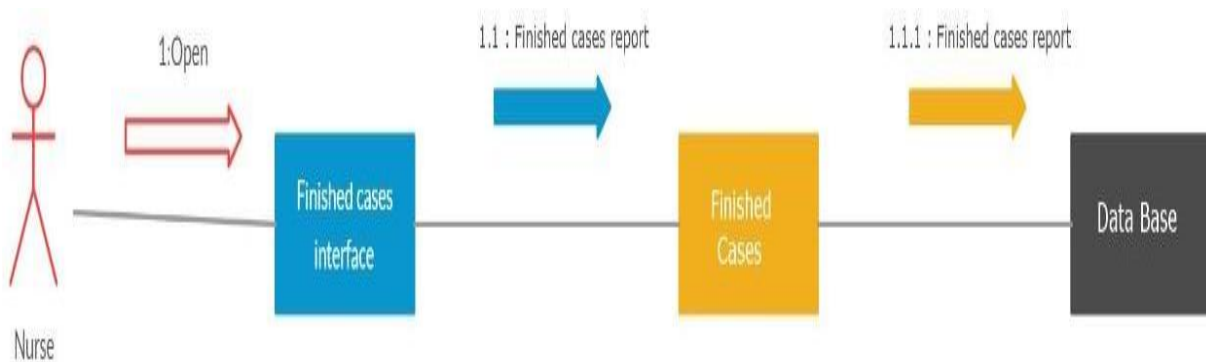
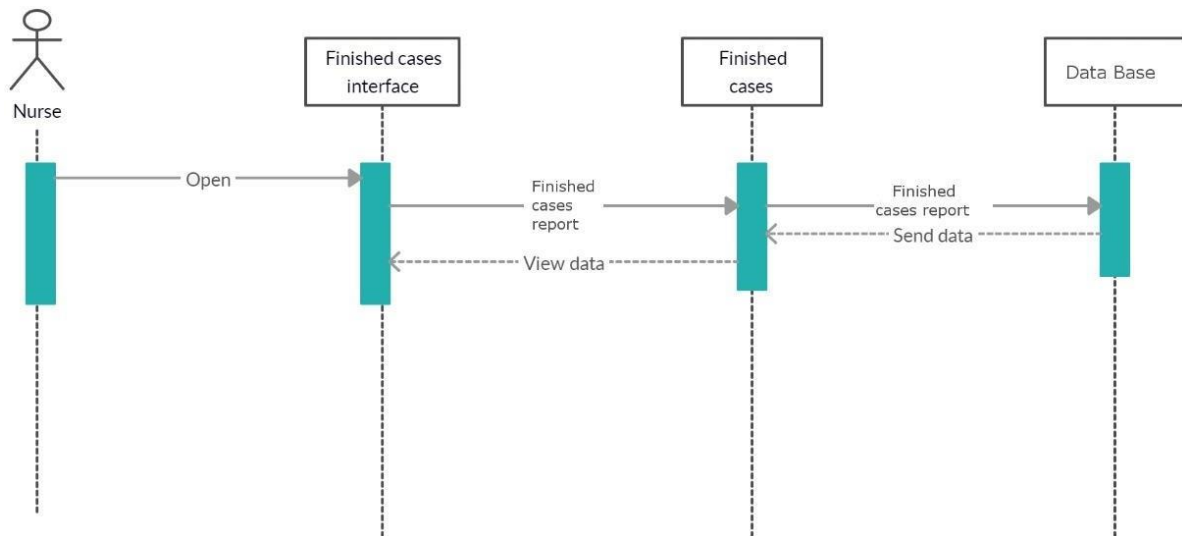


## Finished Cases:

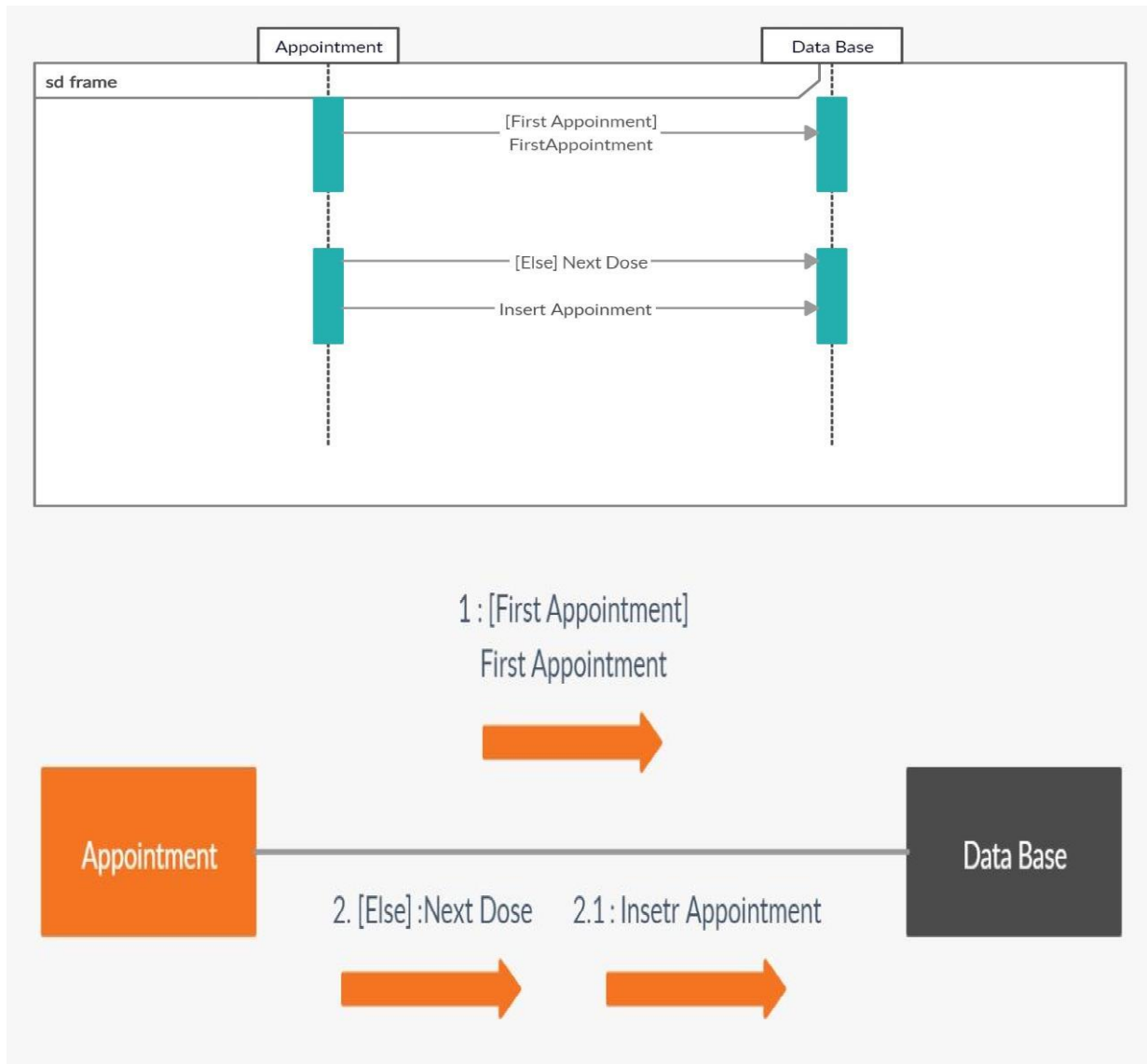




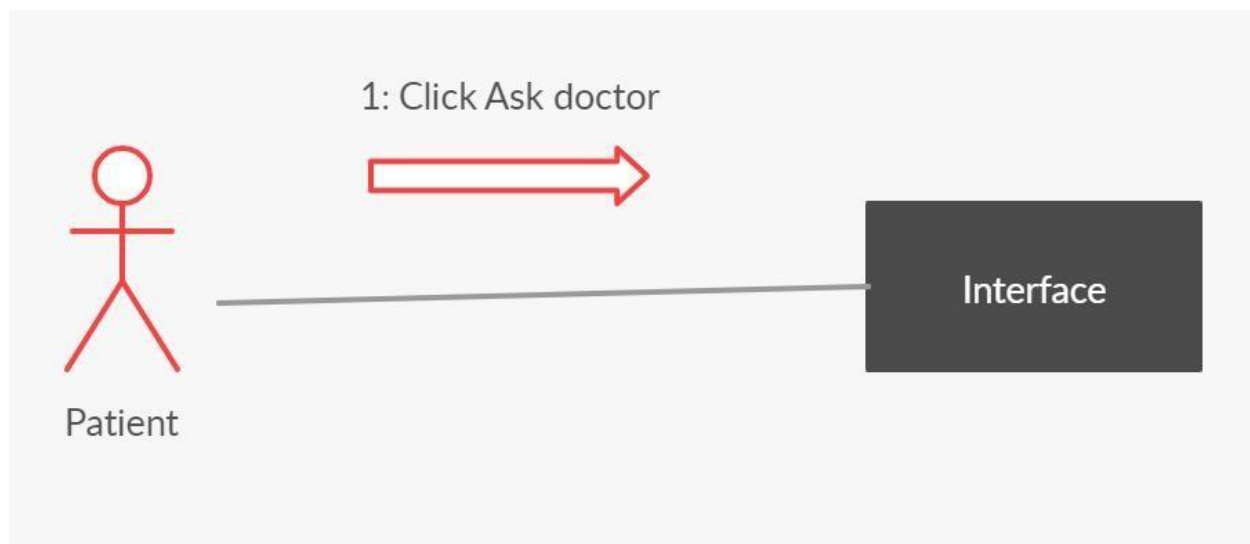
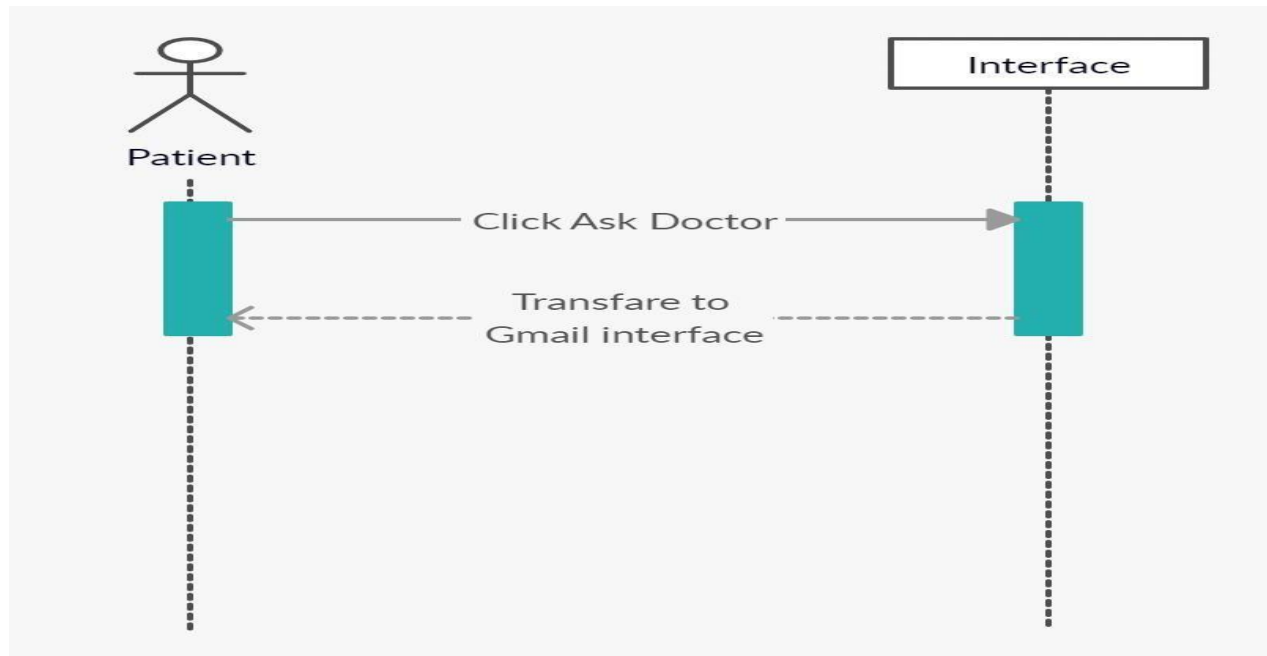
## Finished Cases Report:



## Auto Appointment:



## Patient Ask Doctor:



## Package Diagram:

