IT 314 SOFTWARE ENGINEERING

LAB 3 : SPECIFYING FUNCTIONAL AND NON-FUNCTIONAL REQUIREMENTS

HEALTH CENTRE MANAGEMENT

GROUP: 12

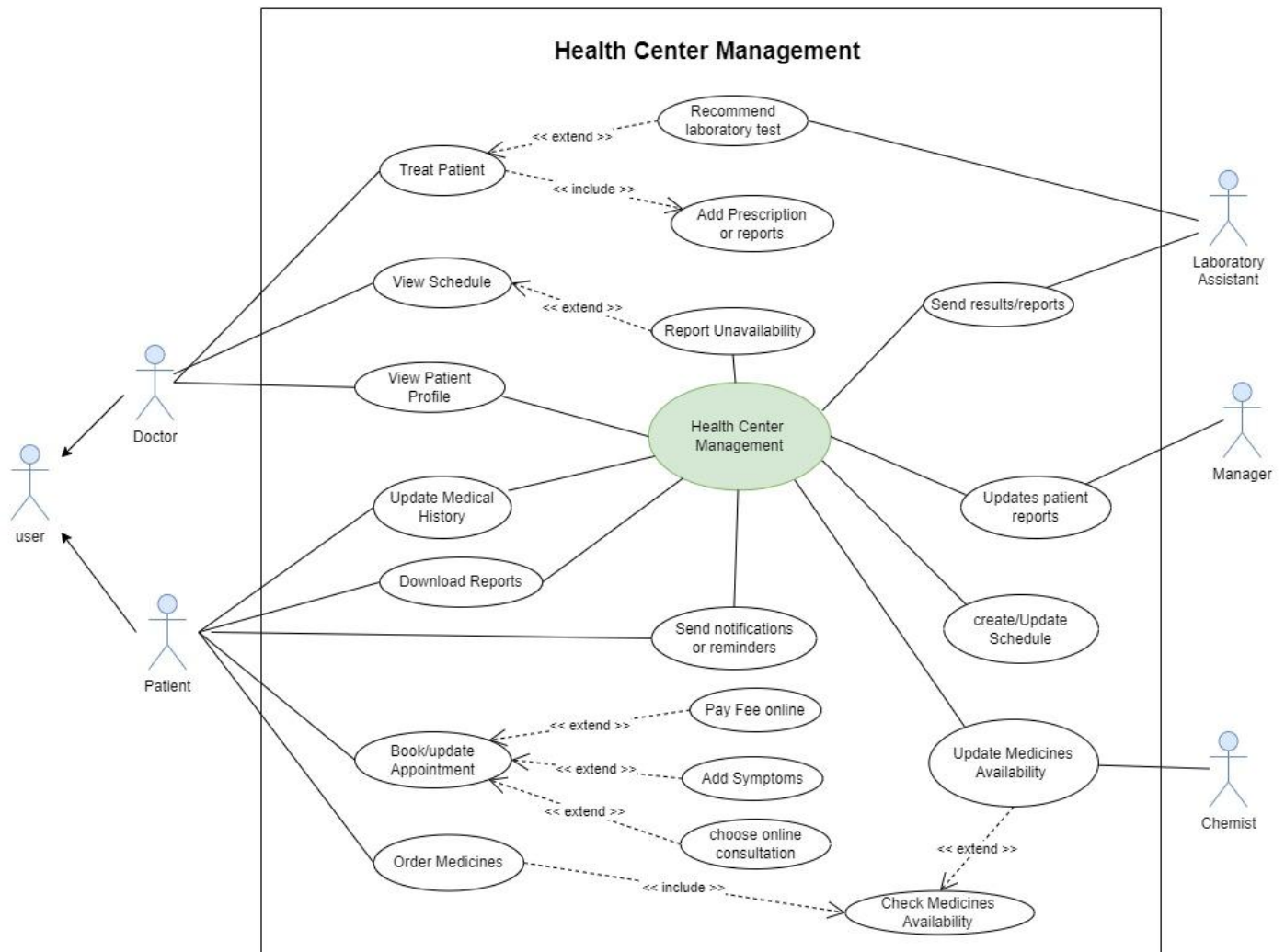# Healthcare Management System

Use Case Diagram

Actors

➢ Doctor
➢ Patient
➢ Laboratory Assistant
➢ Chemist
➢ Manager

Use cases

- Fee Payment
- Book/update appointments
- Update Medical History
- Update Patient reports
- Online consultation
- Check patient's record
- Sending reminders

- Recommend lab tests along with lab
- Order Medicines
- View schedule
- Download reports

Use case diagram of Health centre Management

Use Case Descriptions

1) Name: Fee payment
- Actors: User, manager
- Goal: To make payment for booking an appointment/ lab test/ ordering medicine.
- References to requirements: Features of the project - 7
- Pre-conditions:
    - Users must be logged in.

- Description:
    1. The user will be displayed the total payment amount according to the charges of his appointments/orders.
    2. The user will be asked to choose a payment method from the various options available.
    3. On successful completion of the payment, the user will be sent the receipt of the payment and the manager will be notified about the payment.

- Exceptions:
    - 3a. On payment failure due to any reason, the user is   notified about the failure and is asked to perform the payment again.

- Post-conditions:
    - The transaction is shown to the user in the payment history section.

2) Name: Book/update/cancel appointments
- Actors: User, manager, doctor
- Goal: To schedule/update/cancel appointments of users with their respective doctors.
- References to requirements: Features of the project - 2
- Pre-conditions:
  - The user must be logged in.
  - The doctor must be registered in the system.
  - For updating/cancelling, the user must have an appointment booked with the doctor previously.

- Description:
  1. The user selects the doctor to book/cancel/update an appointment with.
  2. The user will be asked to enter the time period when he wants to book an appointment.
  3. The user is then displayed the available slots of that doctor within that period.
  4. The user selects a slot and confirms the appointment.
  5. For updating/cancelling appointments, the user needs to select the appointment slot.
  6. For updating, steps 2-4 are performed.
  7. The doctor and the manager will be notified about the appointment.

- Exceptions:
  - 4a. If no slot is available in the time period or if the patient is not available when the slot is free, then the user can re-select the time period.

- Post-conditions:
  - The appointment will be displayed to the user in the upcoming appointments section in case of booking/updating.
  - The appointment will be removed from the upcoming appointments section in case of cancellation.

3) Name: Update medical history and medical insurance details
- Actors: User
- Goal: To allow the user to update his past medical history and/or current medical insurance details
- References to requirements: Features of the project - 9
- Pre-conditions:
  - The user must be logged in.

- Description:
  1. The user is asked about his previous medical history and is required to enter details of his medical condition.
  2. The user is also asked to enter about the medication he is currently taking if any.
  3. The user is asked to enter the details of his medical insurance policy if he has any.

4) Name: Download reports
- Actors: User, doctor
- Goal: To enable the user and doctor to download lab reports
- References to requirements: Features of the project - 3
- Pre-conditions:
  - The user must have performed a lab test earlier.
  - The doctor must be assigned to the user if he wants to download the user's report.

- Description:
    1. The user can go to the notifications section and view the lab test reports.
    2. The user can download the report on his device.
    3. The doctor can open his user's profile and can download the lab test reports of the user.

- Post-conditions:
    ● The downloaded reports must be available for the user in the downloaded reports section.

 5) Name: Sending reminders
- Actors: User, doctor, laboratory assistant
- Goal: To remind the user/doctor/lab assistant about their upcoming actions through notifications.
- References to requirements: Features of the project - 10
- Pre-conditions:
    ● The user/doctor/lab assistant must be having upcoming actions.

- Description:
    1. The users are notified about their appointments a day earlier.
    2. Doctors are reminded about their entire set of appointments on the next day.
    3. Lab assistants would be reminded about all the tests to be performed on the next day.
    4. The default notification period will be a day before but can be changed as well.

- Post-conditions:
  - The reminders will be shown to the user/doctor/lab assistant in the notifications section.

6) Name: Recommend laboratory test along with lab
- Actors: Doctor, user
- Goal: The doctor recommends the user to perform some test(s) if required and also recommends the lab where the user could get the test performed
- Pre-conditions:
  - A doctor can recommend a test to a user only if he is assigned to the user.

- Description:
  1. On checking the user, the doctor can recommend a few tests to the user if necessary.
  2. The doctor can also recommend the lab where the user could get the tests performed.

- Post-conditions:
  - The user can book lab tests if necessary.

7) Name: Order medicines
- Actors: User, chemist
- Goal: The user can order medicines from the chemist online.
- References to requirements: Features of the project - 14
- Pre-conditions:
  - The doctor may have prescribed medicines to the user.
  - The user must be logged in.

- Description:
    1. The user has to enter the name of the medicines he wants to order or upload a photo of the prescription.
    2. The user has to specify the quantity of each medicine required.
    3. The user is asked to select a previously entered delivery address or add a new delivery address.
    4. The user is then asked to make the payment.
    5. On successful payment, the user is sent the receipt and the chemist is informed about the order.

- Exceptions:
    - 5a. On payment failure due to any reason, the user is notified about the failure and is asked to perform the payment again.

- Post-conditions:
    - The medicines will be delivered on the entered delivery address.

8) Name: Update reports
- Actors: Manager,Laboratory assistant,User
- References to requirements: Features of the Project-3
- Preconditions:
    - Lab assistant and doctors must send the reports to the manager

- Description:
    1. The Manager will receive the reports from the lab assistant and doctors.
    2. The manager will Update the lab reports to the user account
- Exceptions
    - 2a: If the update is unsuccessful the manager will retry to update the documents

- Post-conditions:
    - The manager will be able to see the time of the updated documents made to the user.

9) Name: Online Consultation

- Actor: Doctor,User
- References to requirements: Features of project-8
- Preconditions:
    - User,Doctor must be logged in
    - User must selected the online consultation option
    - Users must have a device that supports video call feature and internet.

- Description:
    1. The user will receive a video call from the doctor.

- Exceptions:
    - 1a:In case the user has not been able to connect, the call doctor will call the user again.

- Post-conditions:
    - Doctor can prescribe medicines and recommend lab tests to the user
    - User will be able to see the prescribed medicines and lab tests

10) Name: Check patients record
- Actor: Doctor,manager
- References to requirements: Features of project-3

- Preconditions:
  - Must patient must have a record
- Description:
  1. Doctor and manager can check patient's medical records
- Post-conditions:
  - Doctor can update patients' records and send them to manager.

11) Name: View Schedule
- Actor: Doctor,User,Laboratory assistant,Manager
- References to requirements: Features of project-5
- Preconditions:
  - Doctors,User,Laboratory assistant,Manager must be logged in.
- Description:
  1. Doctors,laboratory assistants can view schedules which are booked by the user
  2. User can view their booked appointments
  3. Manager can view schedules of Doctors and laboratory assistants
- Post-conditions:
  - Doctor,User,Laboratory assistant can update their schedules

Non-functional requirements

1. Information of the patient like medical history, reports and treatment details, personal information should be secured.

   Justification : There is a need to keep the patient's data safe and secure as many users want their data to be private.Leakage of patient's data might lead to dissatisfaction for the patient.There is also a chance of booking manipulations by attackers.

2. The application should be available around-the- clock to the users.

   Justification : Patient requires the system to be available whenever they try to access it and the system should respond to requests sent at any time by users. As patient health issues might be serious and the unavailability of the system may lead to failure of addressing those patients.

3. The application should manage the schedules of medical staff without any conflicts.

   Justification : As the appointment schedules are automatically created and updated by the system, it should ensure that there are no conflicts occurring in the schedules of medical staff. As medical staff might not check their schedules regularly to report clashes.

4. Notifications about change in appointment timings should be sent to the patient within 5 minutes.

Justification : If there are any change in timings of an already booked appointment due to the unavailability of a doctor or due to some other reasons, then the patient should be notified quickly so that the patients have updated information regarding the appointment. This is critical when the appointment time is changed at the last moment.

5. Reliability , concurrent request handling and high performance, low latency.

   Justification : The system is able handle multiple requests from the users at the same time to ensure that there is no inconsistency in schedules or timings. High latency in responding, low performance might lead to bad experience for the patient.

6. The User Interface should be simple and easy to use.

   Justification : The patients who are using the app might prefer a clear and understandable user interface as many patients might not have a good technical experience in using complex applications.

7. Reports of the treatment should be available within two days.

   Justification : Patients want their results of treatment as soon as possible. Delays in the reports might lead to patients getting tensed about their health conditions.

8. The system should be able to automatically provide backup of the data regularly.

Justification : As there is a chance of system crash or database crash or any such hazards, it might lead to partial or complete loss of patients data, there should be some backup mechanism used by the system to ensure that the data will be available even though there is a system crash.