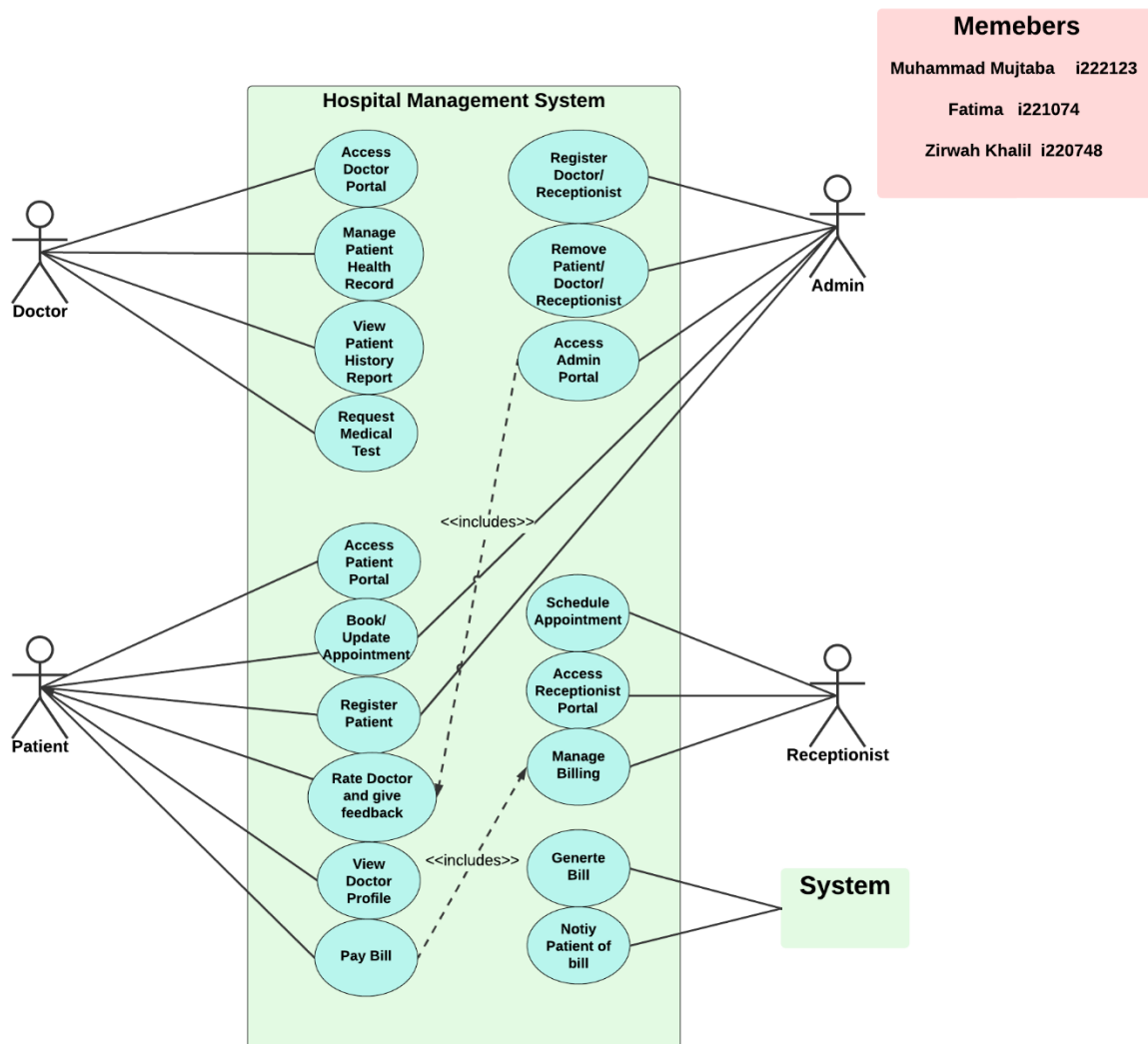# Deliverable # 03

**Members:**                                        **Section: BSCS-K**

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- Zirwah Khalil                   i220748

## Use Case Diagram



**Extended Use Cases**

| Use Case Name | Register Patient |
|---|---|
| Scope | Hospital Management System |
| Level | User Goal |
| Primary Actor | Patient, Admin |
| Stakeholders and Interests | • Patient: Wants to register in the system to access hospital services like appointments and billing.<br><br>• Administrator: Needs accurate patient data for records, billing, and care. |
| Preconditions | • The system is online and accessible.<br><br>• The patient has personal and contact details available for registration. |
| Postconditions | • The patient is registered in the system.<br><br>• The patient can log into their portal and access available services. |

**Main Success Scenario**

| Actor Action | System Response |
|---|---|
| **1.** The patient navigates to the hospital registration page.<br><br>**3.** The patient submits the form. | **2.** The system prompts the patient to enter personal information (e.g., name, age, contact details, etc.). |

| | |
|---|---|
| | **4.** The system validates the entered data and creates a unique patient ID.<br><br>**5.** Notify the patient of successful registration and provide login credentials. |
| **Extension** | **3a.** If the data entered is invalid (e.g., missing mandatory fields), the system prompts the patient to correct the errors before submitting again.<br><br>**5a.** If the patient is already registered, the system informs them and offers login options. |

## 2. Book/Update Appointment                                           i220748

| | |
|---|---|
| **Use Case Name** | Book/Update Appointment |
| **Scope** | Hospital Management System |
| **Level** | User Goal |
| **Primary Actor** | Patient |
| **Stakeholders and Interests** | • Patient: Wants to book, reschedule or cancel an appointment with a doctor.<br><br>• Receptionist: May need to reschedule or cancel appointments due to changes in availability of doctors. |
| **Preconditions** | • The patient and receptionist are registered and logged in.<br><br>• The receptionist checks for availability in the doctor's schedule. |

| | • An appointment is present in the system for cancellation or rescheduling. |
|---|---|
| **Postconditions** | • The appointment is successfully scheduled, rescheduled or canceled, and reflected in the system. <br><br> • Both patient and doctor are notified of the changes. |

**Main Success Scenario**

| Actor Action | System Response |
|---|---|
| **1.** The patient logs into the system. <br><br> **2.** The patient selects the "Book/Update Appointment" option. <br><br> **4.** Selects either: <br><br> • A doctor and time slot to book. <br><br> • An existing appointment to reschedule or cancel. <br><br> **5.** The patient/receptionist chooses to either reschedule or cancel the appointment. <br><br> **6(i).** If rescheduled: The patient/receptionist selects a new date and time. | **3.** The system displays the patient's booked appointments and available doctors with time slots. <br><br><br><br> **6(ii).** If cancel: The system confirms cancellation and removes the appointment. <br><br> **7.** The system checks availability and updates the appointment accordingly. <br><br> **8.** The system sends a confirmation to all parties involved and updates the doctor's schedule. |

| Extension | 4a. If no time slots are available, the system offers alternative dates or doctors. |
| --- | --- |
| | 5a. If the patient cancels the process, the system returns them to the homepage. |
| | 5b. If a receptionist reschedules, the patient is notified and prompted to confirm or reschedule. |
| | 7a. System fails to cancel or reschedule the appointment, prompts retry. |

## 3. Manage Patient Health Records                                          i221074

| Use Case Name | Manage Patient Health Records |
| --- | --- |
| Scope | Hospital Management System |
| Level | User Goal |
| Primary Actor | Doctor |
| Stakeholders and Interests | • Doctor: Needs to access and update patient health records to provide accurate treatment.<br><br>• Patient: Wants to view and track their health records.<br><br>• Administrator: Ensures that patient records are maintained securely. |
| Preconditions | • The patient is registered in the system.<br><br>• The doctor is authenticated and authorized to access the patient's health record. |

| Postconditions | • The patient's health record is updated and accessible for future reference. |
|---|---|
| **Main Success Scenario** | |

| Actor Action | System Response |
|---|---|
| **1.** The doctor logs into the system.<br><br>**3.** The doctor navigates to the "Patient Health Records" section.<br><br>**5.** The doctor updates the patient's health records with new data (e.g., diagnosis, prescriptions). | **2.** The system authenticates the doctor and grants access to the dashboard.<br><br>**4.** The system displays the health records of assigned patients.<br><br>**6.** The system saves the updated records and makes them available for patient and doctor viewing. |
| **Extension** | **4a.** If the doctor does not have authorization to access the patient's records, the system displays an error message and denies access.<br><br>**5a.** If there is a network error, the system displays a message and allows the doctor to retry after the connection is restored. |

**4. Access Patient Portal**                                      **i220748**

| Use Case Name | Access Patient Portal |
|---|---|
| **Scope** | Hospital Management System |

| Level | User Goal |
|---|---|
| **Primary Actor** | Patient |
| **Stakeholders and Interests** | <ul><li>Patient: Wants to view their medical history, appointments, and bills.</li><li>Administrator: Ensures data accuracy and security in the portal.</li></ul> |
| **Preconditions** | <ul><li>The patient is registered and has valid login credentials.</li></ul> |
| **Postconditions** | <ul><li>The patient successfully logs into their portal and can access relevant data.</li></ul> |

| **Main Success Scenario** | |
|---|---|
| **Actor Action** | **System Response** |
| **1.** The patient navigates to the login page. <br><br> **3.** The patient provides valid credentials. <br><br> **5.** The patient can now view appointments, medical history, and billing details. | **2.** The system prompts the patient for a username and password. <br><br> **4.** The system authenticates the patient and displays their dashboard. |
| **Extension** | **3a.** If the credentials are invalid, the system denies access and prompts the patient to retry. <br> **5a.** If the patient forgets their password, the system provides an option to reset it. |

| Use Case Name | Access Doctor Portal |
|---|---|
| Scope | Hospital Management System |
| Level | User Goal |
| Primary Actor | Doctor |
| Stakeholders and Interests | <ul><li>Doctor: Needs access to their schedule, patient records, and treatment plans.</li><li>Patient: Wants their health records to be securely managed and available to the doctor.</li><li>Administrator: Manages doctor profiles and access control.</li></ul> |
| Preconditions | <ul><li>The doctor is registered and has valid login credentials.</li><li>The system is online and accessible.</li></ul> |
| Postconditions | <ul><li>The doctor is successfully logged into their portal with access to patient records and schedules.</li></ul> |
| Main Success Scenario | |
| Actor Action | System Response |
| **1.** The doctor navigates to the login page. | |

| | |
|---|---|
| **3.** The doctor enters valid credentials | **2.** The system prompts for username and password. |
| | **4.** The system authenticates the doctor and opens their personalized portal. |
| **5.** The doctor can now view their appointments, patient records, and update treatment plans. | |
| **Extension** | **3a.** If login credentials are invalid, the system denies access and prompts the doctor to retry. |
| | **5a.** If the doctor's account is locked, the system provides instructions for unlocking it. |

## 6. View Doctor Profiles                                             i220748

| Use Case Name | View Doctor Profiles |
|---|---|
| Scope | Hospital Management System |
| Level | User Goal |
| Primary Actor | Patient |
| Stakeholders and Interests | • Patient: Wants to choose the most suitable doctor based on experience, specialization, and availability.<br><br>• Doctor: Wants their profile to reflect accurate and up-to-date information for patients.<br><br>• Administrator: Manages doctor profiles and ensures information is accurate. |

| Preconditions | • Doctors' profiles are stored in the system and available for viewing. |
|---|---|
| Postconditions | • The patient is able to view and choose a doctor for appointments. |

| Main Success Scenario | |
|---|---|

| Actor Action | System Response |
|---|---|
| **1.** The patient logs into the system.<br><br>**2.** The patient navigates to the "Doctor Profiles" section.<br><br>**4.** The patient views individual doctor profiles and selects one for an appointment. | **3.** The system displays a list of doctors with profiles including their expertise, availability, and contact information. |
| **Extension** | **4a.** If a doctor's profile is unavailable (due to system error), the patient is notified and can select another doctor. |

### 7. Manage Billing                                                i222123

| Use Case Name | Manage Billing |
|---|---|
| Scope | Hospital Management System |
| Level | User Goal |
| Primary Actor | Receptionist |

| Stakeholders and Interests | • Patient: Wants accurate bills and the ability to track payments.<br>• Receptionist: Needs to ensure timely and correct billing for services. |
|---|---|
| Preconditions | • Patient's service details (appointments, treatments) are available in the system.<br>• Receptionist is logged in and has the necessary access rights. |
| Postconditions | • The patient's bill is generated and updated in the system. |

**Main Success Scenario**

| Actor Action | System Response |
|---|---|
| **1.** The Receptionist logs into the system.<br><br>**2.** In the manage billing option, the Receptionist selects the patient's record and reviews the provided services.<br><br>**4.** The receptionist reviews and confirms the bill. | **3.** The system generates the bill based on the services.<br><br>**5.** The system sends the bill to the patient's portal for review and payment. |
| **Extension** | **3a.** If there's a dispute about the bill, the system flags the case for review. |

| Use Case Name | Generate Patient Medical History Report |
|---|---|
| Scope | Hospital Management System |
| Level | User Goal |
| Primary Actor | Doctor |
| Stakeholders and Interests | <ul><li>Doctor: Needs to review a patient's medical history to provide better treatment and diagnosis.</li><li>Patient: Wants accurate records of past treatments and diagnosis.</li><li>Administrator: Ensures that the system maintains comprehensive medical records for legal and operational purposes.</li></ul> |
| Preconditions | <ul><li>The patient's medical history is stored in the system.</li><li>The doctor is logged into the system and authorized to view the patient's records.</li></ul> |
| Postconditions | <ul><li>The patient's medical history report is generated and available for review by the doctor.</li></ul> |
| **Main Success Scenario** | |
| **Actor Action** | **System Response** |
| **1.** The doctor logs into the system. | |

| | |
|---|---|
| **2.** The doctor selects a patient from the list or searches for the patient by ID.<br><br><br>**4.** The doctor reviews the medical history record for the selected patient. | **3.** The system retrieves the patient's medical history (past appointments, diagnoses, treatments, test results).<br><br><br>**5.** The system allows the doctor to download or print the report for further reference. |
| **Extension** | **4a.** If any part of the patient's medical history is incomplete or missing, the system alerts the doctor and flags the record for administrative follow-up.<br><br>**5a.** If the report cannot be generated due to a system error, the doctor is notified and the system logs the issue for IT support. |

## 9. Request Medical Test Report                              i221074

| | |
|---|---|
| **Use Case Name** | Request Medical Test Report |
| **Scope** | Hospital Management System |
| **Level** | User Goal |
| **Primary Actor** | Doctor |
| **Stakeholders and Interests** | • Doctor: Needs to request and review medical tests to diagnose patients effectively.<br><br>• Patient: Wants accurate tests for proper diagnosis and treatment. |

|  | • Laboratory Staff: Wants to receive clear test orders for processing. |
|---|---|
| **Preconditions** | • The patient is registered in the system and has an open case.<br><br>• The doctor is logged into the system. |
| **Postconditions** | • The test request is submitted and assigned to the lab for processing.<br><br>• The doctor and patient are notified that the test has been requested. |

| **Main Success Scenario** | |
|---|---|

| **Actor Action** | **System Response** |
|---|---|
| **1.** The doctor logs into the system.<br><br>**3.** The doctor selects the patient's record.<br><br><br>**5.** Doctor selects the required tests (e.g., blood work, imaging).<br><br><br>**7.** Doctor submits the test request. | **2.** System verifies the doctor's credentials and grants access.<br><br>**4.** System displays the patient's medical history and available test options.<br><br><br>**6.** System displays the "Request Medical Test" option.<br><br><br>**8.** System sends the test request to the lab and notifies the patient.<br><br>**9.** System confirms that the request has been sent to the lab for processing. |

| Extension | **5a.** If the test is unavailable, the system prompts the doctor to choose an alternative test or escalate the issue to the lab. |
| --- | --- |
| | **7a**. If there are test costs involved, the system notifies the patient about the cost and waits for approval before proceeding. |

**10. Register Doctor / Receptionist**

| Use Case Name | Register Doctor/ Receptionist |
| --- | --- |
| Scope | Hospital Management System |
| Level | User goal |
| Primary Actor | Administrator |
| Stakeholders and Interests | • Doctor: Wants to access the system for schedule updates, getting a patient's health history record and updating a patient's health report. |
| | • Patient: Wants access to the system for booking appointments, viewing health records, and paying bills. |
| | • Receptionist: Wants to access the system for scheduling appointments and generating bills. |
| | • Admin: As soon as a new doctor is finalized, the admin makes his account and gives credentials to the doctor. |

| Preconditions | The Doctor / Receptionist credentials (e.g., employment verification, personal identification) are valid and verified by the hospital admin. |
|---|---|
| Postconditions | <ul><li>The Doctor / Receptionist can login to his/her account.</li><li>Doctor is registered and visible to patients.</li><li>Receptionist is registered and can manage appointments and billing.</li></ul> |

| Main Success Scenario | |
|---|---|
| **Actor Action** | **System Response** |
| **1.** Admin enters the details of the doctor/receptionist.<br><br>**2.** Admin registers the doctor/patient/receptionist. | **3.** System automatically assigns an ID to the doctor/receptionist.<br><br>**4.** System will send confirmation messages with their login credentials to the doctor/receptionist/patient through their provided contact details (e.g. email, SMS). |
| **Extension** | **1a.** Doctor/receptionist details are Invalid or wrong.<br><br>**4a.** Contact Information for doctor/patient/receptionist is invalid. |

## 11. Schedule Appointment                                        i222123

| Use Case Name | Schedule Appointment |
|---|---|

| Scope | Hospital Management System |
|---|---|
| Level | User goal |
| Primary Actor | Receptionist |
| Stakeholders and Interests | <ul><li>Patient: Needs easy access to available clash-free appointment slots.</li><li>Doctor: Need their schedules to be clash free.</li><li>Receptionist: Ensures appointment slots are available, clash-free, and properly scheduled. Monitors to prevent overbooking.</li></ul> |
| Preconditions | <ul><li>Receptionist has access to Schedule Appointments.</li><li>The system is functioning properly and connected to the patient booking interface.</li><li>Doctors and time slots are available to be scheduled.</li></ul> |
| Postconditions | <ul><li>Appointment timing is set so Patients can select their appointment slot.</li><li>Notifications of the updated schedule may be sent to relevant parties.</li></ul> |

**Main Success Scenario**

| Actor Action | System Response |
|---|---|
| **1.** Logs into the system with appropriate access. | **2.** System verifies the Receptionist's credentials and confirms access to schedule appointments. |

| | |
|---|---|
| **3.** Navigates to the "Schedule Appointments" section. | **4.** Displays available doctors and the current schedule settings. |
| **5.** Selects a doctor and specifies available time slots for appointments. | **6.** Updates the selected doctor's schedule with the newly specified appointment slots. |
| **7.** Save the changes. | **8.** Confirms the time slots and saves them in the system. |
| **9.** Notifies patients about the availability of appointment slots. | **10.** Sends notifications or updates the system for patients to view the available appointment slots. |
| **Extension** | **2a.** Receptionist's credentials are incorrect, and access is denied. |
| | **5a.** Receptionist attempts to schedule overlapping slots, and the system alerts the conflict. |
| | **6a**. A system error occurs, and the Receptionist is prompted to retry or contact support. |
| | **10a.** Receptionist Modifies the schedule, and the system prompts rescheduling for affected patients. |

**12. Pay Bill**                                                                 **i220748**

| Use Case Name | Pay Bill |
|---|---|
| Scope | Hospital Management System |
| Level | User goal |
| Primary Actor | Patient |
| Stakeholders and Interests | <ul><li>Patient: Wants to access the system for paying due bills.</li><li>Receptionist: Wants to access the system for keeping the check if a certain patient has paid the bill.</li></ul> |
| Preconditions | Patient has attended the appointment. |
| Postconditions | <ul><li>Patient's bill record is cleared.</li><li>Patient is removed from the list of patients with due bills.</li></ul> |

**Main Success Scenario**

| Actor Action | System Response |
|---|---|
| **1.** Patient logs into the system. | |
| | **2.** System verifies patient credentials. |
| **3.** Patient navigates to the "Pay Bill" section. | |
| | **4.** System displays the patient's outstanding bills. |
| **5.** Patient selects the bill to pay. | **6.** System shows details of the selected bill. |

| | |
|---|---|
| **7.** Patient enters payment information (e.g., credit card). | **8.** System processes the payment. |
| **9.** Patient confirms the payment. | **10.** System confirms payment success and updates the billing status. |
| **11.** Patient receives a payment confirmation receipt. | **12.** System sends a notification of payment to the receptionist and updates records. |
| **Extension** | **2a.** If the patient enters incorrect credentials, the system denies access and prompts for re-entry. |
| | **4a.** If there are no outstanding bills, the system displays a message indicating no dues. |
| | **8a.** If a payment processing error occurs, the system shows an error message and prompts to retry. |
| | **9a.** If the patient cancels, the system returns to the previous screen without processing payment. |
| | **10a.** If the payment is declined, the system alerts the patient to use a different method. |

**13. Remove User (Patient/Doctor/Receptionist)**         **i221074**

| | |
|---|---|
| **Use Case Name** | Remove user (Patient / Doctor / Receptionist) |
| **Scope** | Hospital Management System |
| **Level** | User goal |

| Primary Actor | Administrator |
|---|---|
| Stakeholders and Interests | • User: Wants to remove their information from the system.<br><br>• Admin: Removes a user as he/she is no longer associated with the system (e.g a Patient dies, a doctor has resigned). |
| Preconditions | The user is registered in the system. |
| Postconditions | The user can no longer access the system. |

**Main Success Scenario**

| Actor Action | System Response |
|---|---|
| **1.** Admin logs into the system.<br><br>**3.** Admin navigates to the "Remove Users" section.<br><br><br>**5.** Admin selects the user to be removed.<br><br><br>**7.** Admin confirms the removal of the user. | **2.** System verifies admin credentials.<br><br><br>**4.** System displays the list of registered users.<br><br><br><br>**6.** System displays the user's details for confirmation.<br><br><br>**8.** System removes the user and their information from the system.<br><br>**9.** Send a Confirmation message to the admin.<br><br>**10.** System confirms the user has been removed and updates access permissions. |

| Extension | **2a.** If Admin enters incorrect credentials, then System denies access and prompts for re-entry. |
| --- | --- |
| | **5a.** If Admin selects a user who is still active (e.g., patient under treatment), then System displays a warning and prevents deletion. |
| | **8a.** If there is a system error during user removal, then System shows an error message and prompts Admin to retry. |
| | **8b.** If the user has pending appointments or tasks, then System alerts Admin and requests resolution before removal. |

## 14. Access Receptionist Portal                                    i220748

| Use Case Name | Access Receptionist Portal |
| --- | --- |
| Scope | Hospital Management System |
| Level | User Goal |
| Primary Actor | Receptionist |
| Stakeholders and Interests | • Receptionist: Needs access to their schedule, patient records, and treatment plans.<br><br>• Administrator: Manages doctor profiles and access control. |
| Preconditions | • The Receptionist is registered and has valid login credentials. |

| Postconditions | • The Receptionist is successfully logged into their portal with access to patient bills and schedules. |
|---|---|

**Main Success Scenario**

| Actor Action | System Response |
|---|---|
| **1.** The Receptionist navigates to the login page.<br><br>**3.** The Receptionist enters valid credentials<br><br><br>**5.** The Receptionist can now schedule appointments and manage billing. | **2.** The system prompts for username and password.<br><br><br>**4.** The system authenticates the Receptionist and opens their personalized portal. |
| **Extension** | **3a.** If login credentials are invalid, the system denies access and prompts the Receptionist to retry.<br><br>**5a.** If the Receptionist's account is locked, the system provides instructions for unlocking it. |

**15. Accessing Admin Portal**                                                 **i222123**

| Use Case Name | Access Admin Portal |
|---|---|
| Scope | Hospital Management System |
| Level | User goal |

| Primary Actor | Administrator |
|---|---|
| **Stakeholders and Interests** | • **Admin:** Wants secure access to manage hospital operations and sensitive data.<br><br>• **Hospital Staff:** Depend on administrator for smooth system functioning.<br><br>• **Patients and Doctors:** Indirectly benefit from a well-managed system. |
| **Preconditions** | • The administrator has valid login credentials.<br><br>• The system is online and accessible. |
| **Postconditions** | • The administrator is granted access to the admin dashboard.<br><br>• The system logs the administrator's access for auditing purposes. |
| **Main Success Scenario** | |

| Actor Action | System Response |
|---|---|
| **1.** The administrator navigates to the login page.<br><br>**3.** The administrator enters username and password.<br><br><br>**5.** The administrator submits the login form | **2.** The system displays the login interface.<br><br><br>**4.** The system processes the login details and verifies credentials. |

| | |
|---|---|
| **8.** The administrator accesses admin functionalities (e.g., user management, reports). | **6.** The system checks for errors in the login credentials (e.g., password match). |
| | **7.** If the credentials are valid, the system grants access to the admin dashboard and logs the access attempt. |
| | **9.** The system displays the admin dashboard and enables access to different management modules. |
| **Extension** | **3a.** If the administrator enters invalid credentials: |
| | The system displays an error message. |
| | The administrator is prompted to retry or reset the password. |
| | **4a.** If the system is undergoing maintenance: |
| | The administrator receives a notification indicating that the portal is temporarily unavailable. |
| | The system allows the administrator to sign up for maintenance notifications. |

## 16. Rate a Doctor and Provide Feedback                           i222123

| | |
|---|---|
| **Use Case Name** | Access Admin Portal |
| **Scope** | Hospital Management System |
| **Level** | User goal |
| **Primary Actor** | Patient |

| Secondary Actor | Admin |
|---|---|
| Stakeholders and Interests | <ul><li>**Patient:** Wants to give feedback about their experience with the doctor and rate the quality of care.</li><li>**Admin:** Needs to monitor doctor performance and handle any concerns or complaints.</li></ul> |
| Preconditions | <ul><li>The patient has completed an appointment with the doctor.</li><li>The patient is logged into their portal.</li><li>The patient has access to rate and provide feedback after the appointment.</li></ul> |
| Postconditions | <ul><li>The patient's rating and feedback are saved in the system.</li><li>Only the Admin can view the feedback description, while the rating is visible to the doctor.</li></ul> |
| Main Success Scenario | |

| Actor Action | System Response |
|---|---|
| **1.** The Patient logs into the system and navigates to the "Rate a Doctor" section.<br><br>**3.** The Patient selects the doctor they want to rate. | **2.** The system displays a list of doctors associated with the patient's history. |

| | |
|---|---|
| **5.** The Patient submits a rating (1-5 stars) and provides detailed feedback in the description box. | **4.** The system presents a rating scale and feedback form.<br><br>**6.** The system saves the rating and feedback. The rating is made visible to the doctor, while the feedback description is stored and marked for Admin viewing only. |
| **Extension** | **5a.** The Patient does not provide feedback.<br><br>**5b.** The Patient cancels the process before submitting the rating.<br><br>**6a.** The system saves only the rating and marks the feedback section as empty.<br><br>**6b.** The system discards the data and returns to the patient's portal. |