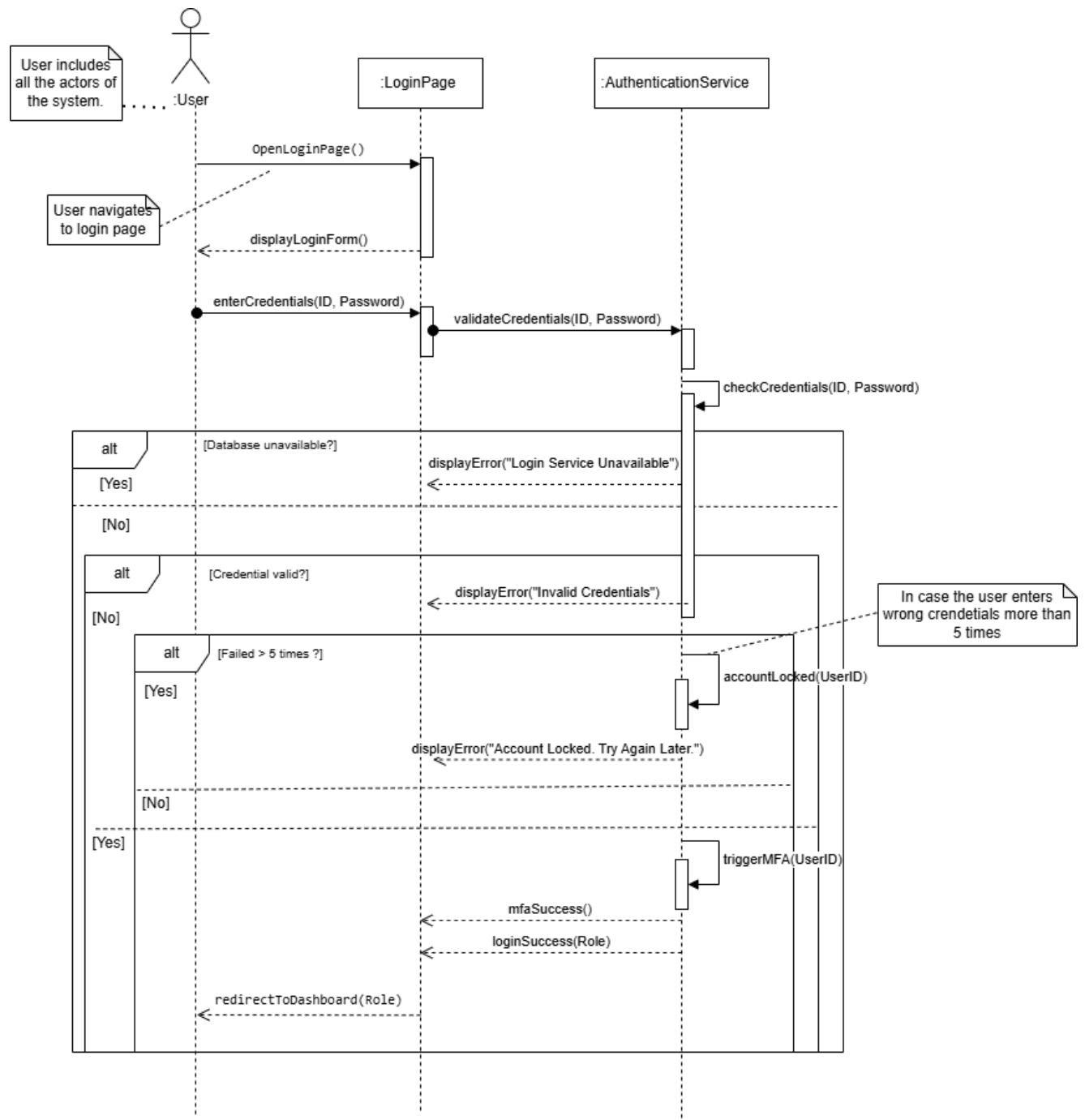# Sequence Diagrams

(Hospital Management System)
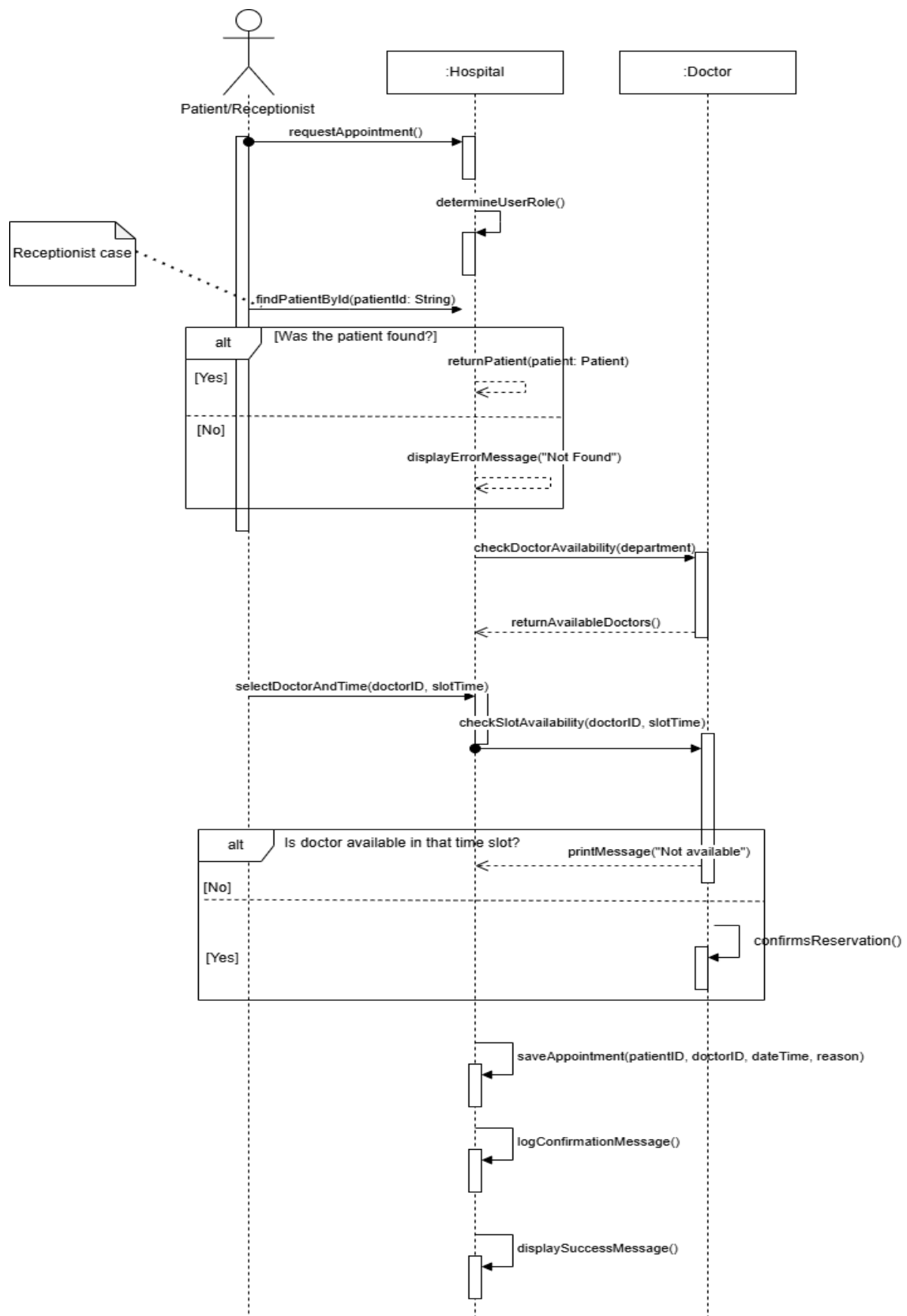
SD-01 User Login (Artjol Zaimi)
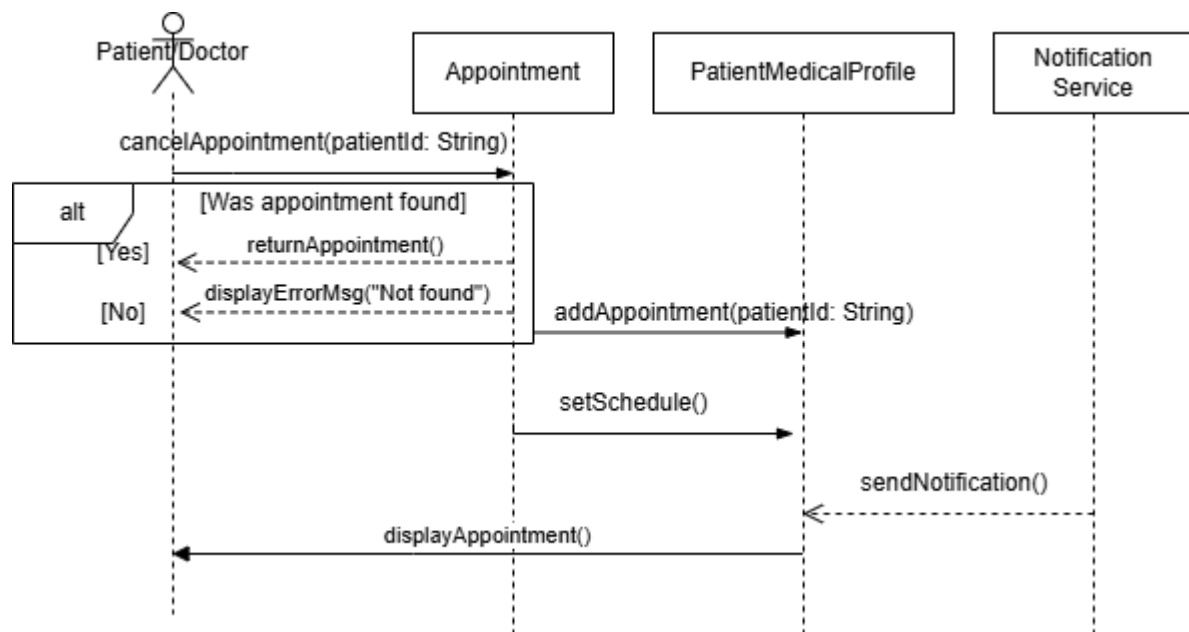

User includes all the actors of the system.

:User

:LoginPage

:AuthenticationService

OpenLoginPage()

User navigates to login page

displayLoginForm()

enterCredentials(ID, Password)

validateCredentials(ID, Password)

checkCredentials(ID, Password)

alt [Database unavailable?]

[Yes]

displayError("Login Service Unavailable")

[No]

alt [Credential valid?]

[No]

displayError("Invalid Credentials")

In case the user enters wrong crendetials more than 5 times

alt [Failed > 5 times ?]

[Yes]

accountLocked(UserID)

displayError("Account Locked. Try Again Later.")

[No]

[Yes]

triggerMFA(UserID)

mfaSuccess()

loginSuccess(Role)

redirectToDashboard(Role)

SD-02 Registration (Marin Tartaraj)
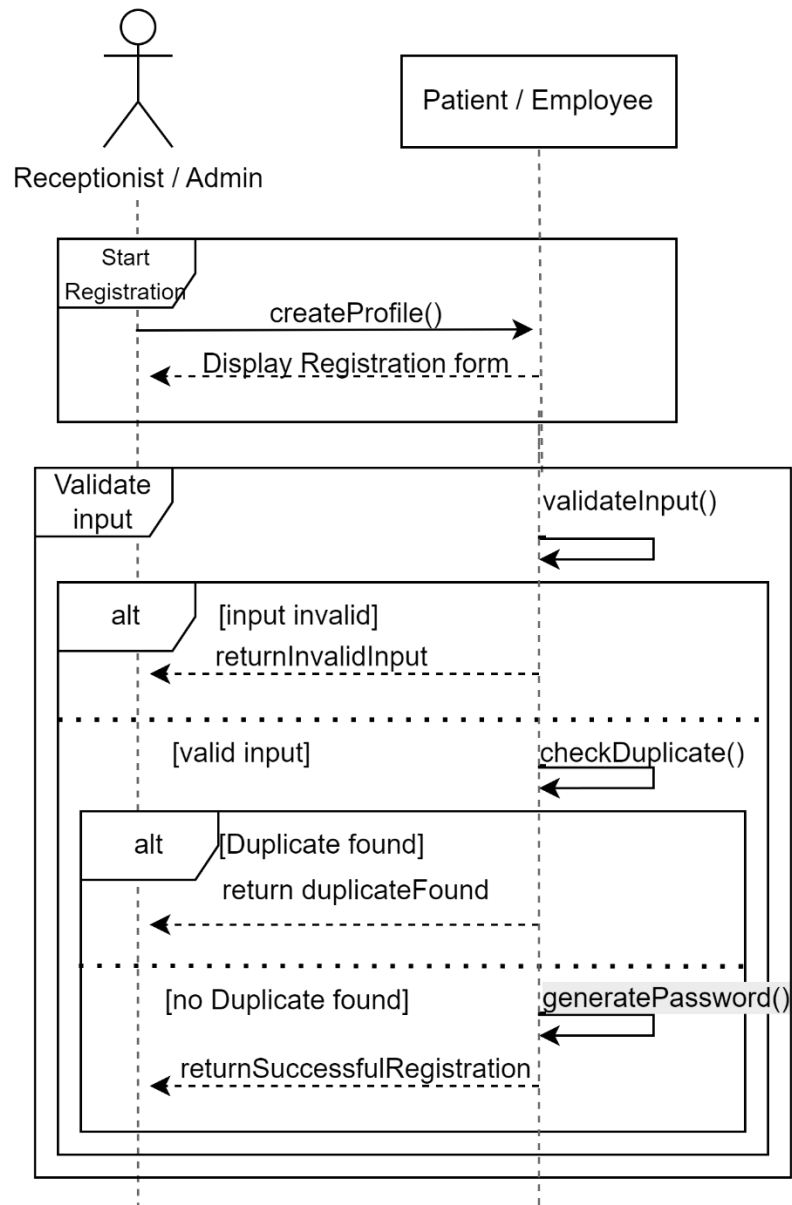
SD-03 Appointment Scheduling (Artjol Zaimi)

Patient/Receptionist

:Hospital

:Doctor

requestAppointment()

determineUserRole()

Receptionist case

findPatientById(patientId: String)

alt [Was the patient found?]

returnPatient(patient: Patient)

[Yes]

[No]

displayErrorMessage("Not Found")

checkDoctorAvailability(department)

returnAvailableDoctors()

selectDoctorAndTime(doctorID, slotTime)

checkSlotAvailability(doctorID, slotTime)

alt Is doctor available in that time slot?

printMessage("Not available")

[No]

[Yes]

confirmsReservation()

saveAppointment(patientID, doctorID, dateTime, reason)

logConfirmationMessage()

displaySuccessMessage()
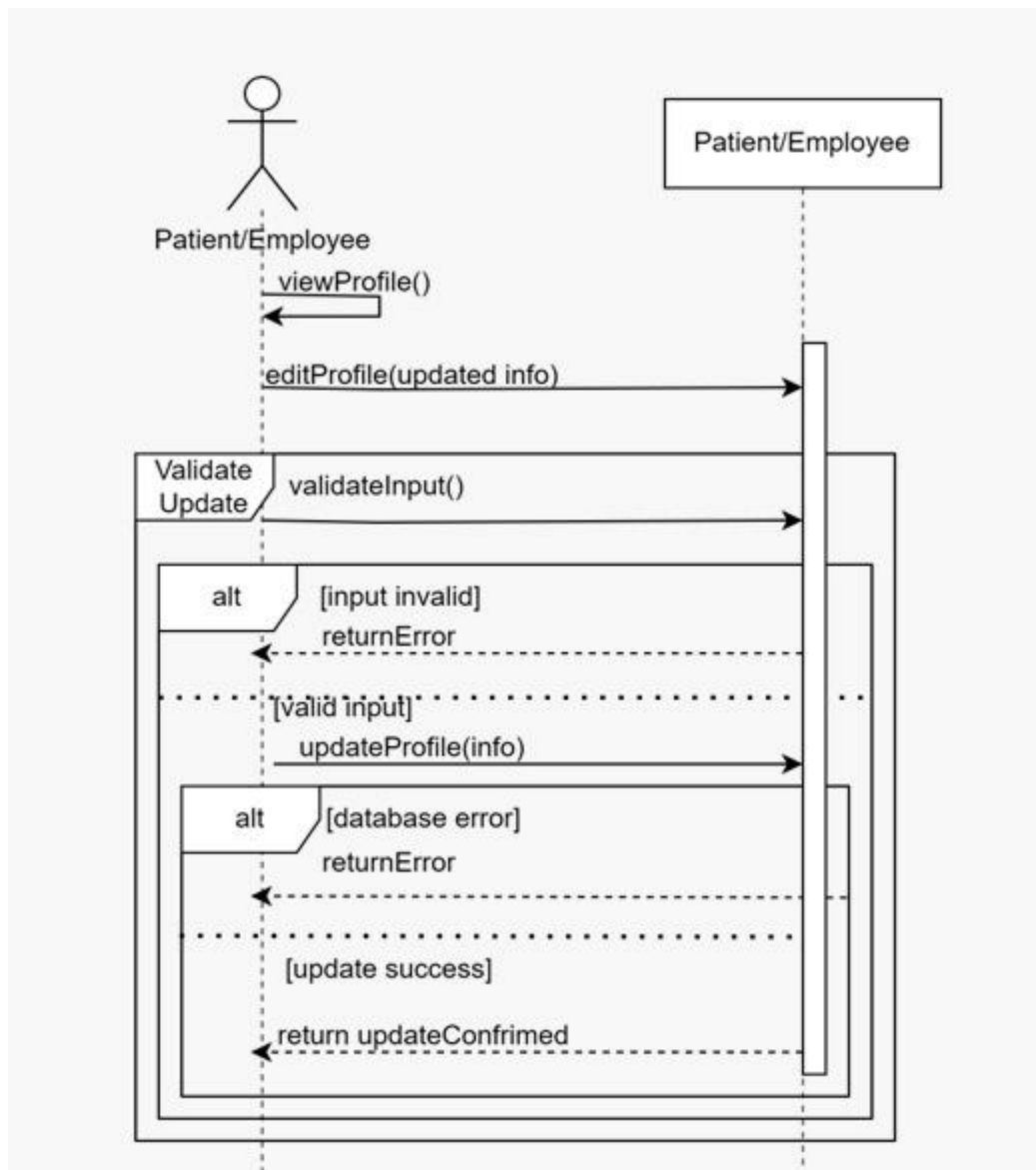
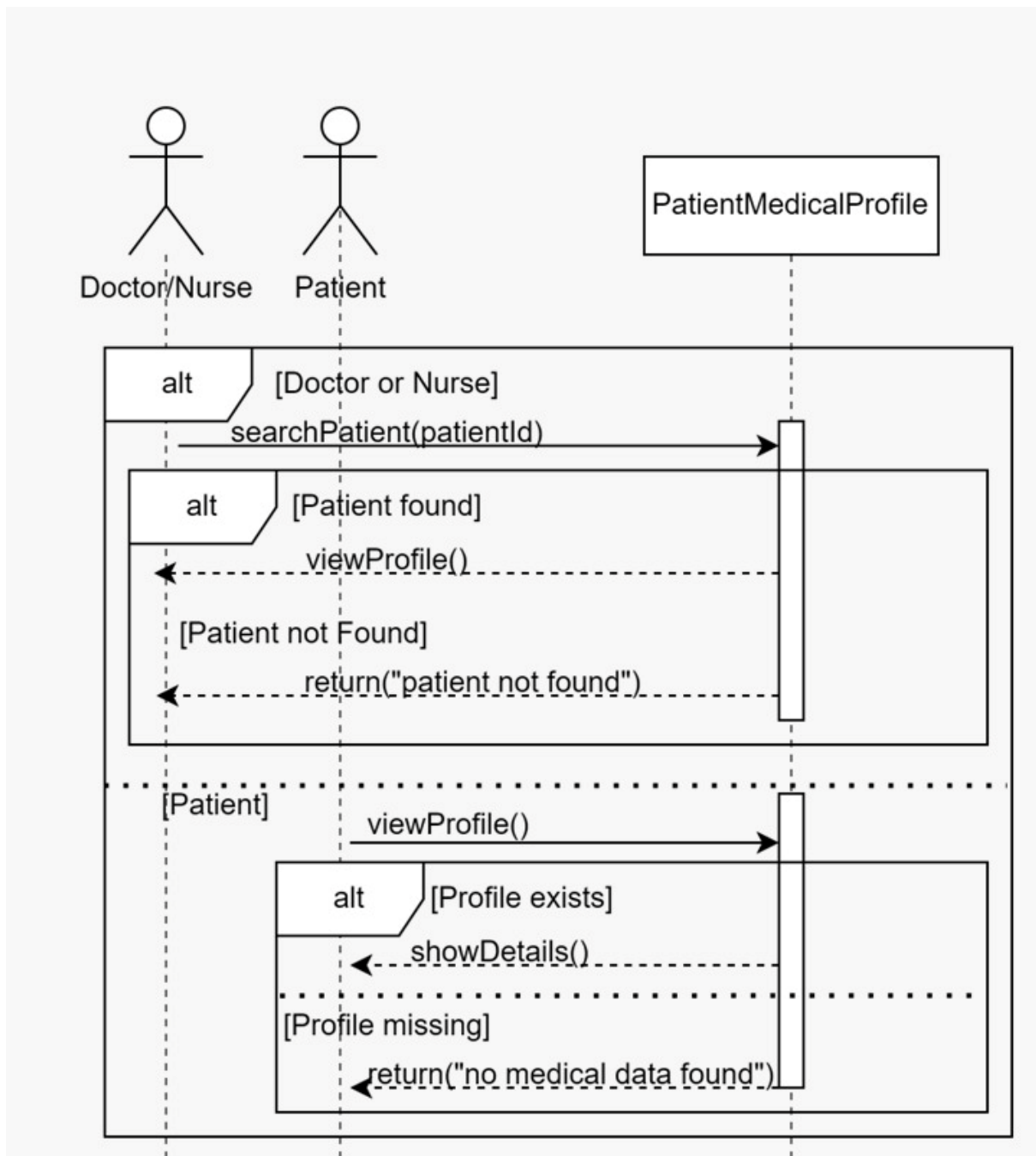# SD-04 Appointment Cancellation (Arlin Bashllari)

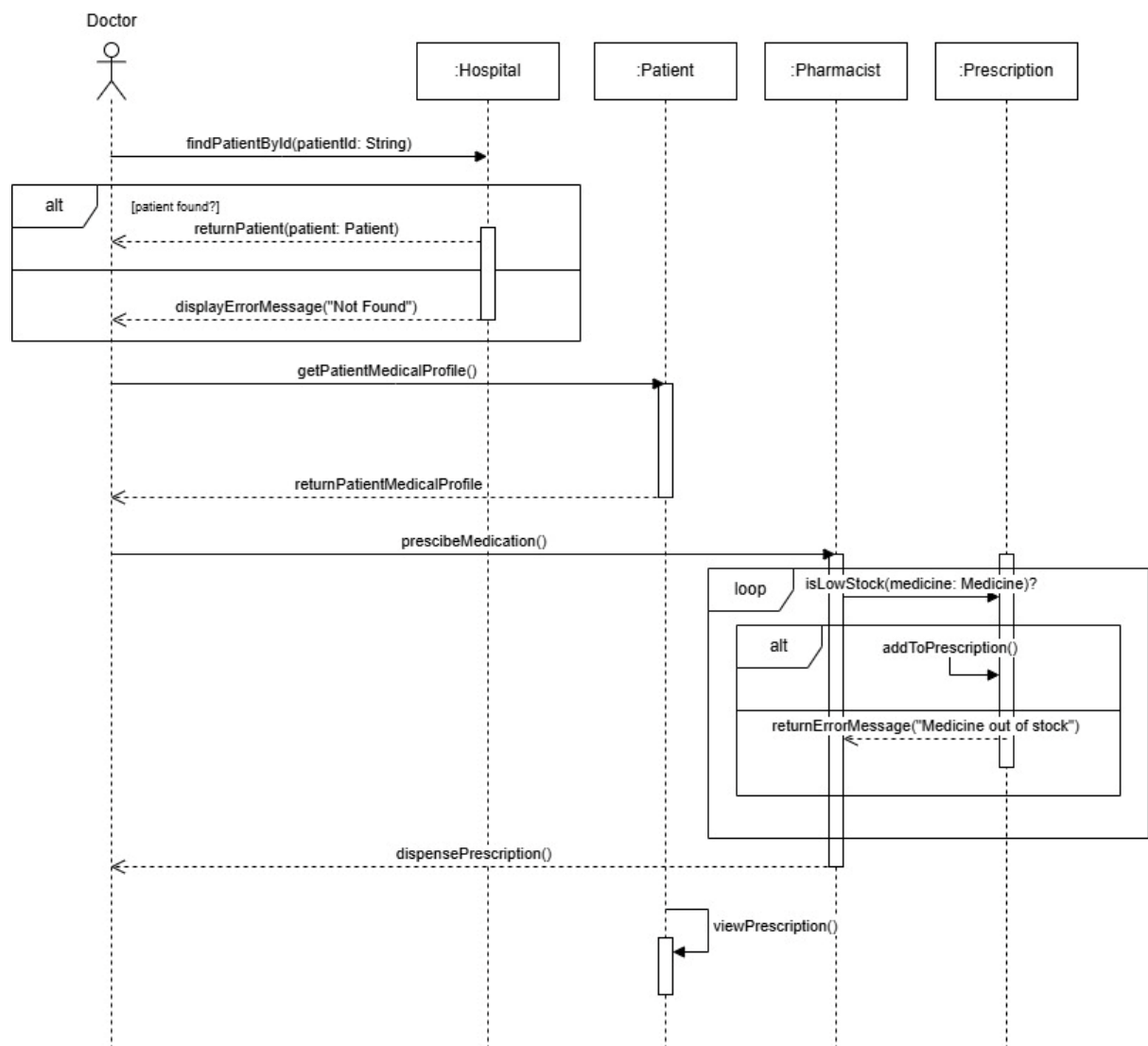# SD-05 Billing Component & Payment Processing (Shpetim Shabanaj)

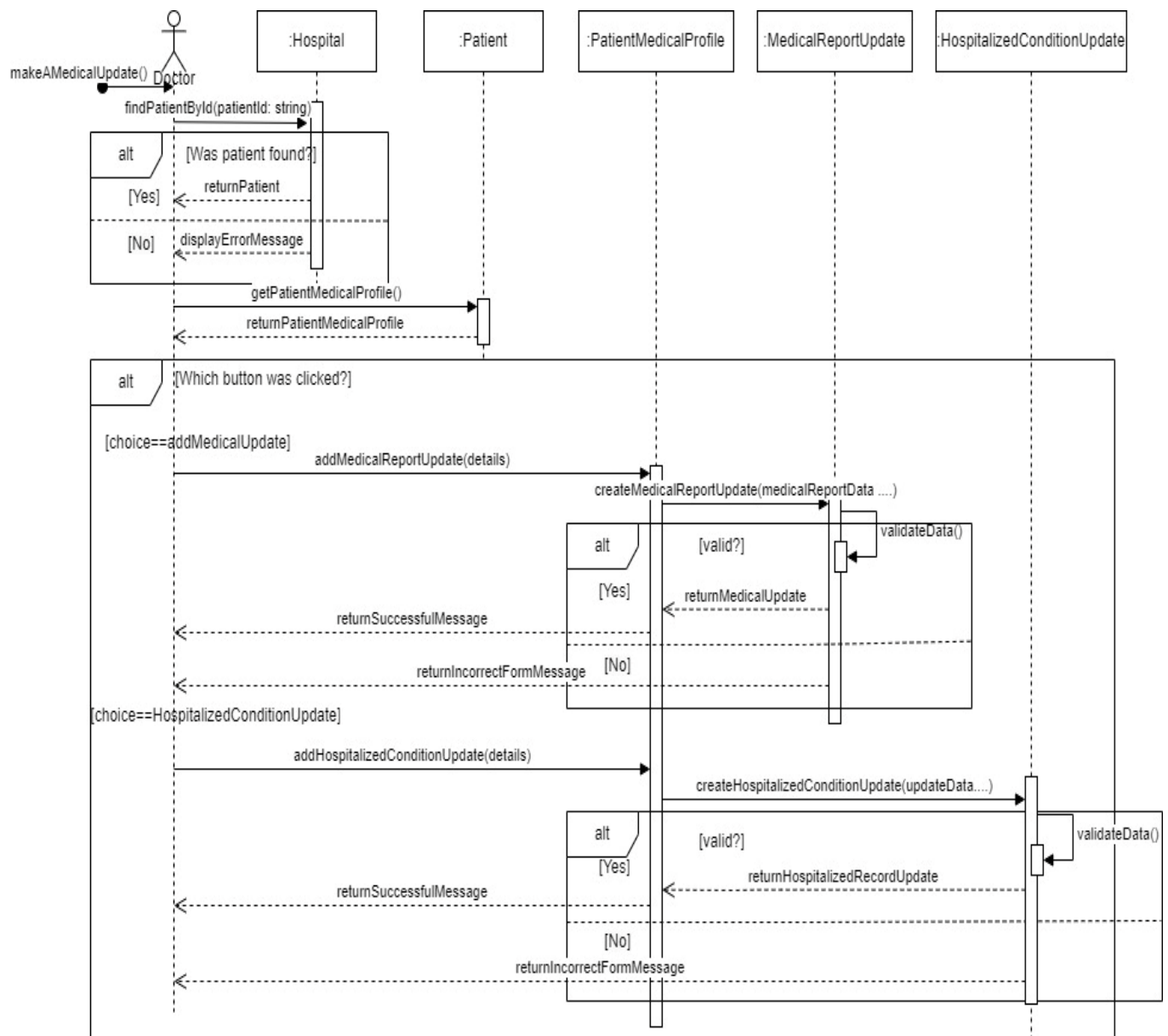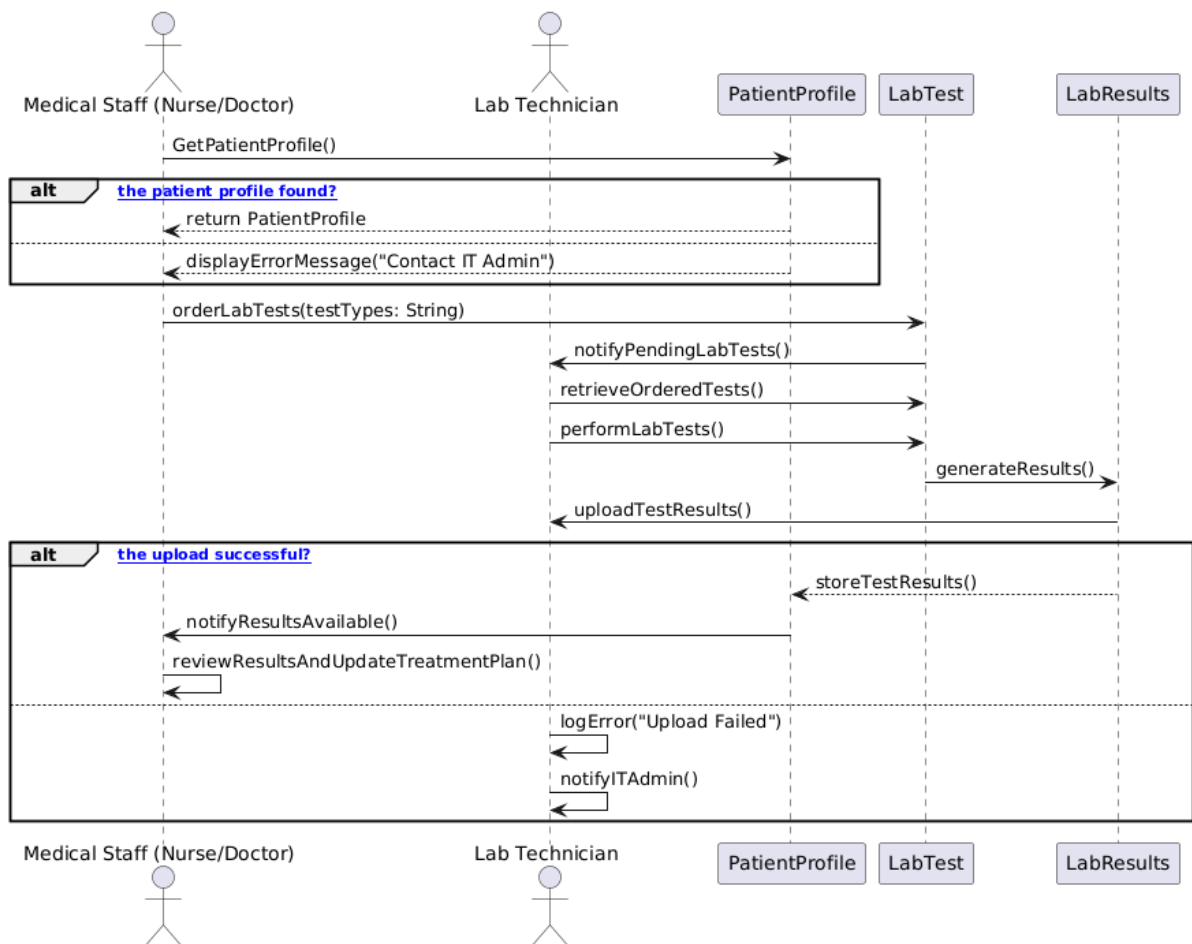SD-06 Profile Management (Marin Tartaraj)

SD-07 Patient Medical Profile()

SD-08 Medication Prescription & Viewing(Nikola Rigo)

Doctor

:Hospital   :Patient   :Pharmacist   :Prescription

findPatientById(patientId: String)

alt   [patient found?]
returnPatient(patient: Patient)

displayErrorMessage("Not Found")

getPatientMedicalProfile()

returnPatientMedicalProfile

prescibeMedication()

loop   isLowStock(medicine: Medicine)?

alt   addToPrescription()

returnErrorMessage("Medicine out of stock")

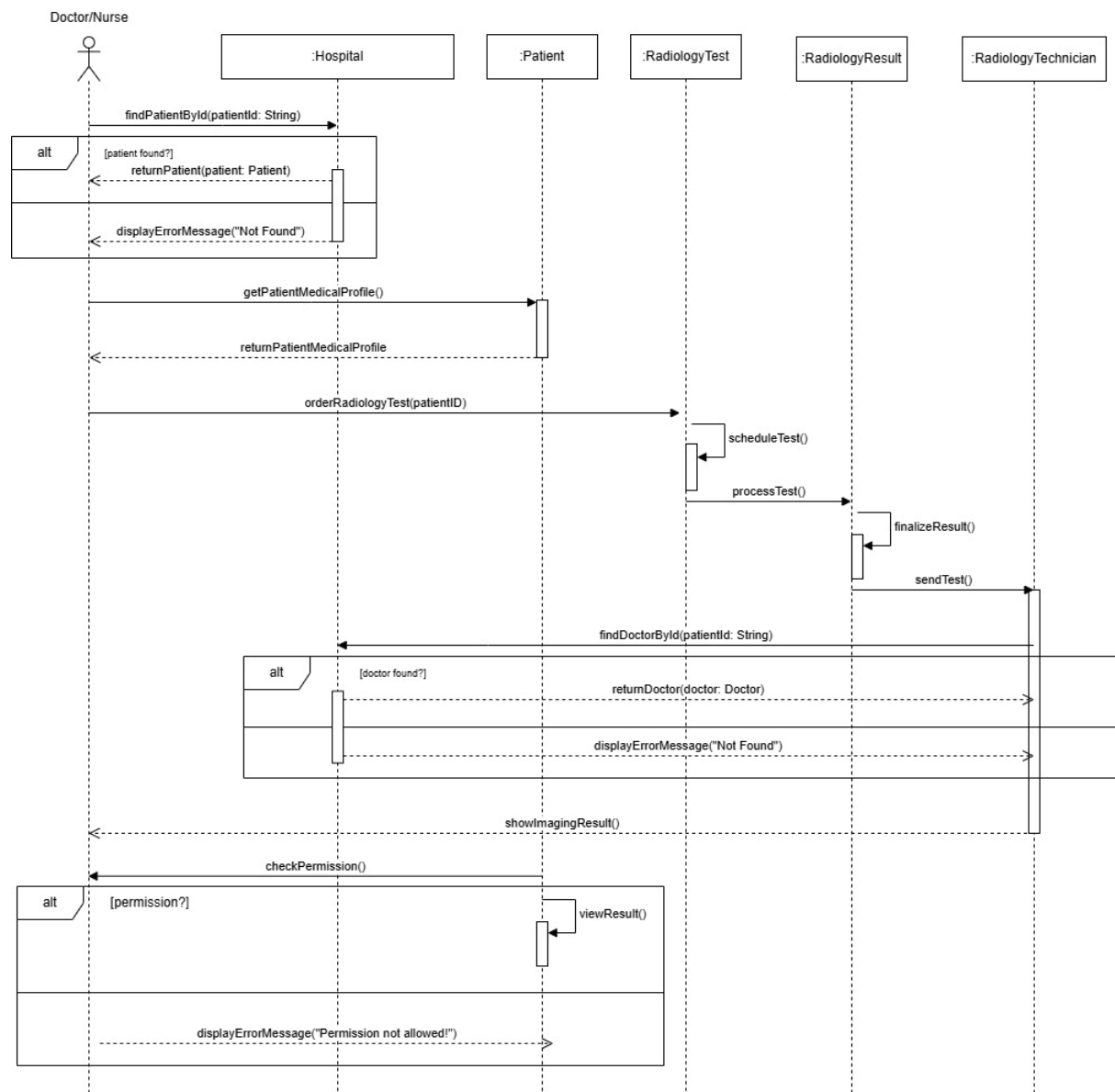dispensePrescription()

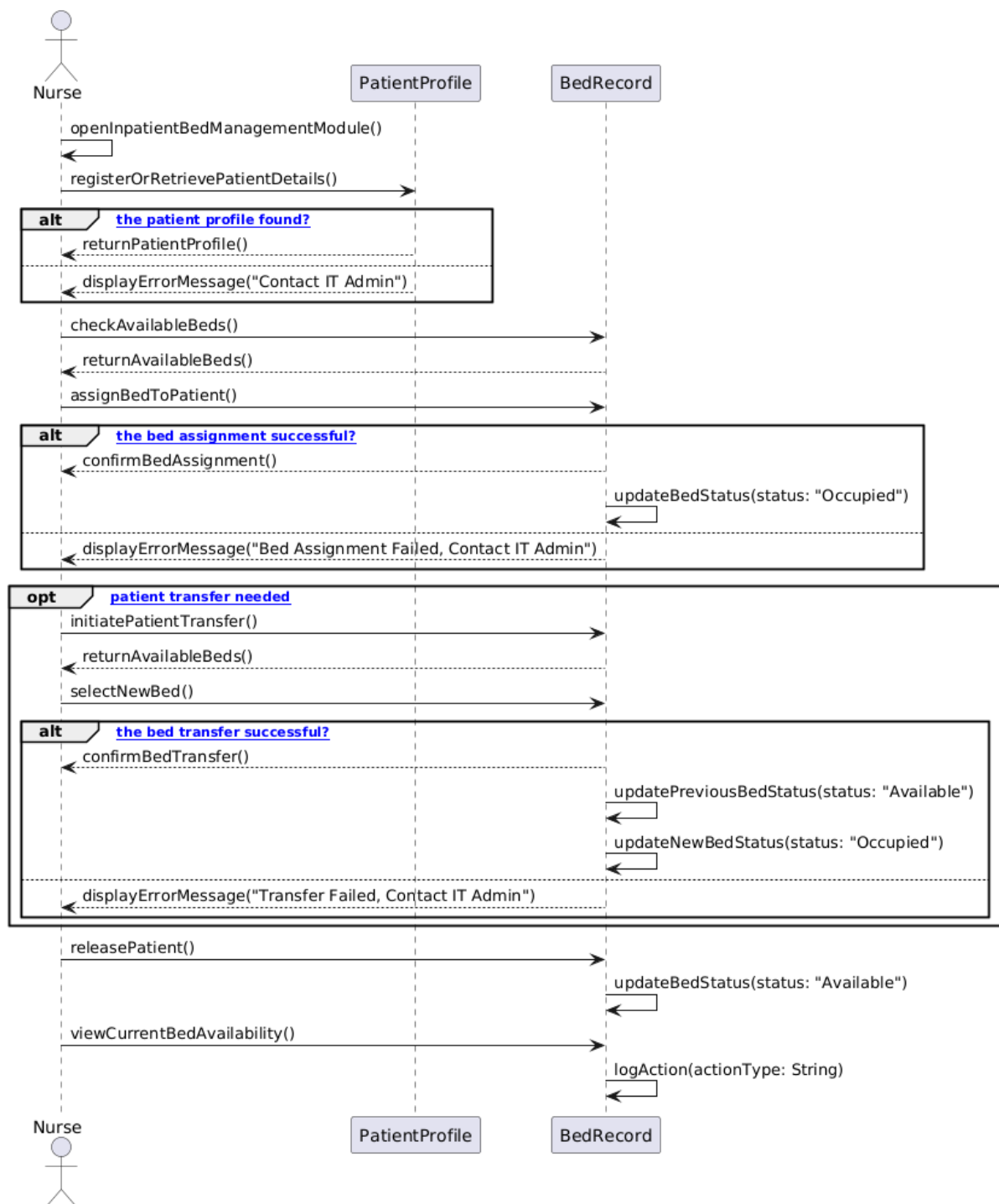viewPrescription()

SD-09 Electronic Health Records Update (Shpetim Shabanaj)
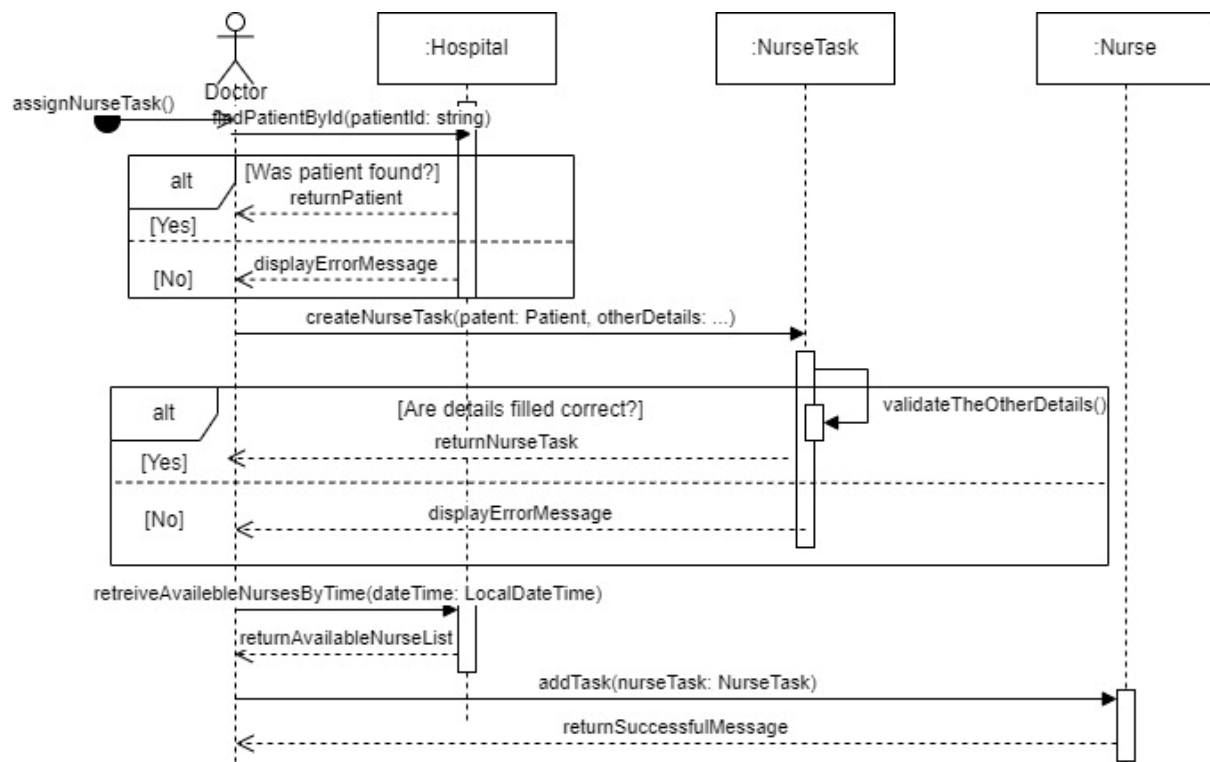
SD-10 Lab Test Ordering and Result Upload (Arjan Muka)

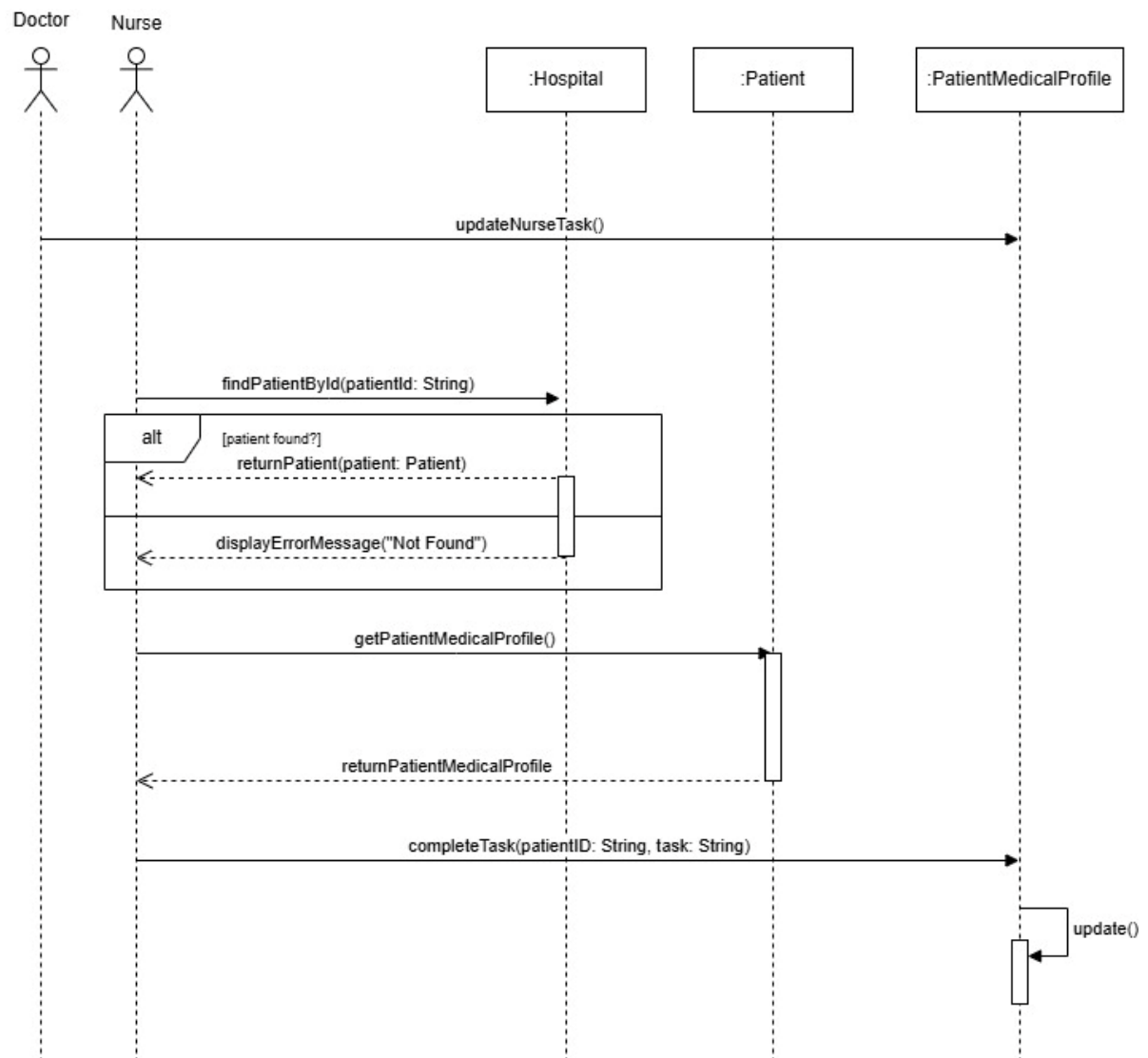# SD-11 Radiology & Imaging Ordering and Result Upload(Nikola Rigo)

Doctor/Nurse

| :Hospital | :Patient | :RadiologyTest | :RadiologyResult | :RadiologyTechnician |

findPatientById(patientId: String)

alt [patient found?]

returnPatient(patient: Patient)

displayErrorMessage("Not Found")

getPatientMedicalProfile()

returnPatientMedicalProfile

orderRadiologyTest(patientID)

scheduleTest()

processTest()

finalizeResult()

sendTest()

findDoctorById(patientId: String)

alt [doctor found?]

returnDoctor(doctor: Doctor)

displayErrorMessage("Not Found")

showImagingResult()

checkPermission()

alt [permission?]

viewResult()

displayErrorMessage("Permission not allowed!")

SD-12 Inpatient & Bed Management (Arjan Muka)

Nurse, PatientProfile, BedRecord

- Nurse → Nurse: openInpatientBedManagementModule()
- Nurse → PatientProfile: registerOrRetrievePatientDetails()

alt the patient profile found?
- PatientProfile → Nurse: returnPatientProfile()

- PatientProfile → Nurse: displayErrorMessage("Contact IT Admin")

- Nurse → BedRecord: checkAvailableBeds()
- BedRecord → Nurse: returnAvailableBeds()
- Nurse → BedRecord: assignBedToPatient()

alt the bed assignment successful?
- BedRecord → Nurse: confirmBedAssignment()
- BedRecord → BedRecord: updateBedStatus(status: "Occupied")

- BedRecord → Nurse: displayErrorMessage("Bed Assignment Failed, Contact IT Admin")

opt patient transfer needed
- Nurse → BedRecord: initiatePatientTransfer()
- BedRecord → Nurse: returnAvailableBeds()
- Nurse → BedRecord: selectNewBed()

alt the bed transfer successful?
- BedRecord → Nurse: confirmBedTransfer()
- BedRecord → BedRecord: updatePreviousBedStatus(status: "Available")
- BedRecord → BedRecord: updateNewBedStatus(status: "Occupied")

- BedRecord → Nurse: displayErrorMessage("Transfer Failed, Contact IT Admin")

- Nurse → BedRecord: releasePatient()
- BedRecord → BedRecord: updateBedStatus(status: "Available")
- Nurse → BedRecord: viewCurrentBedAvailability()
- BedRecord → BedRecord: logAction(actionType: String)
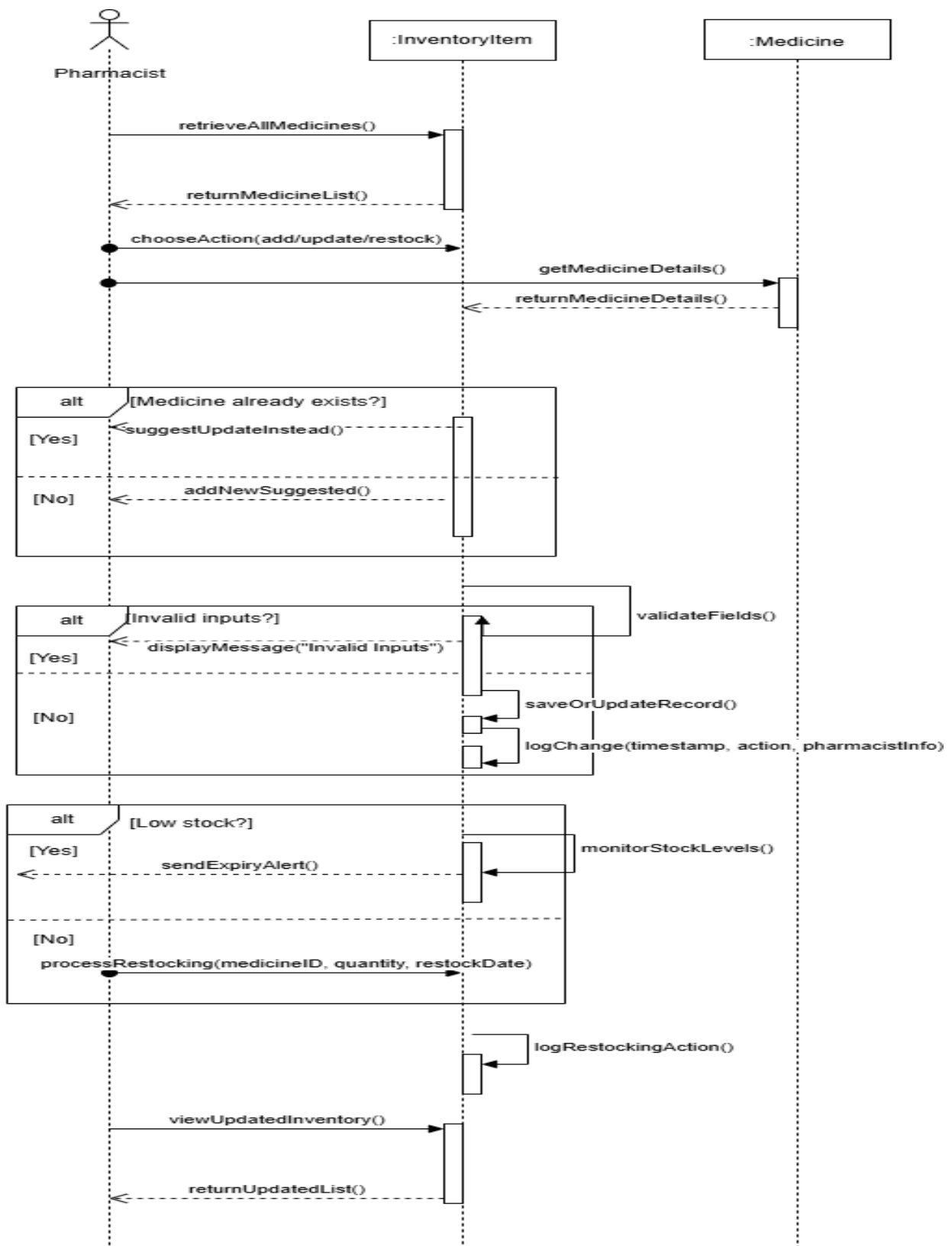
Nurse, PatientProfile, BedRecord

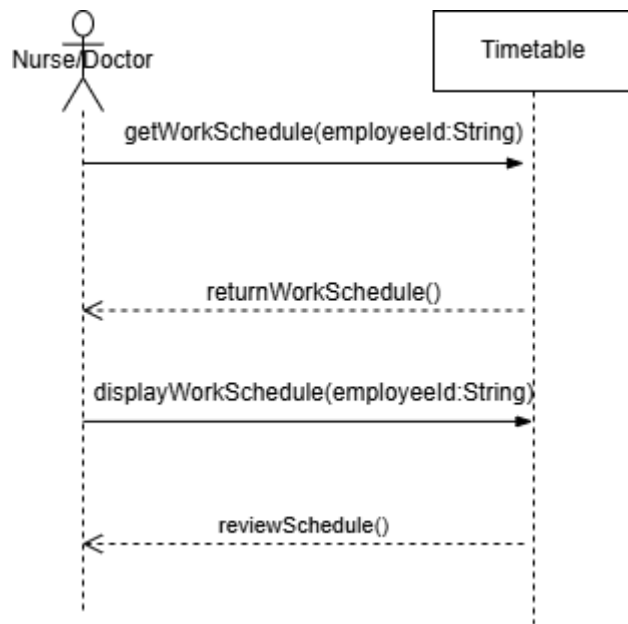# SD-13 Nurse Task Assignment (Shpetim Shabanaj)

SD-14 Medication Processing for patients (Nikola Rigo)

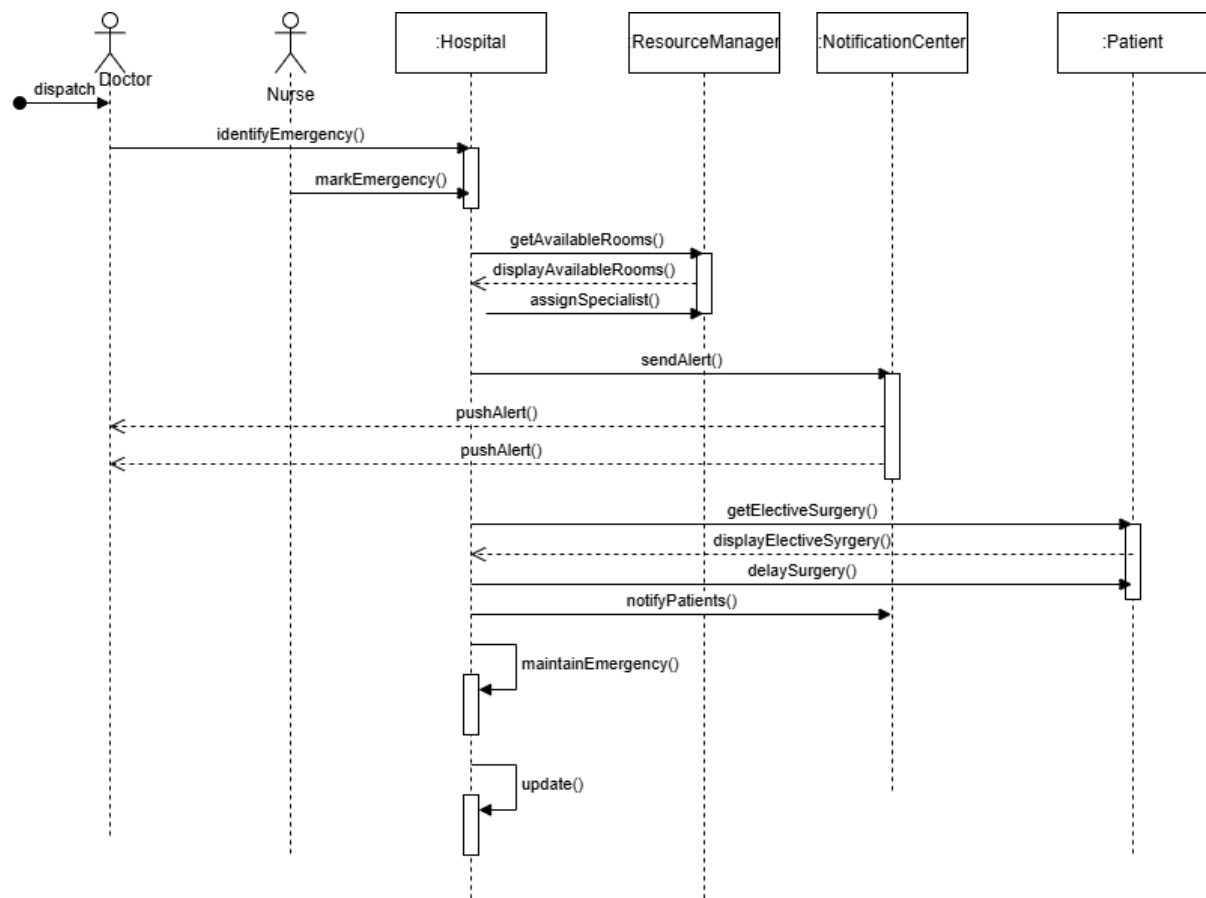# SD-15 Pharmacy & Stock Management (Artjol Zaimi)

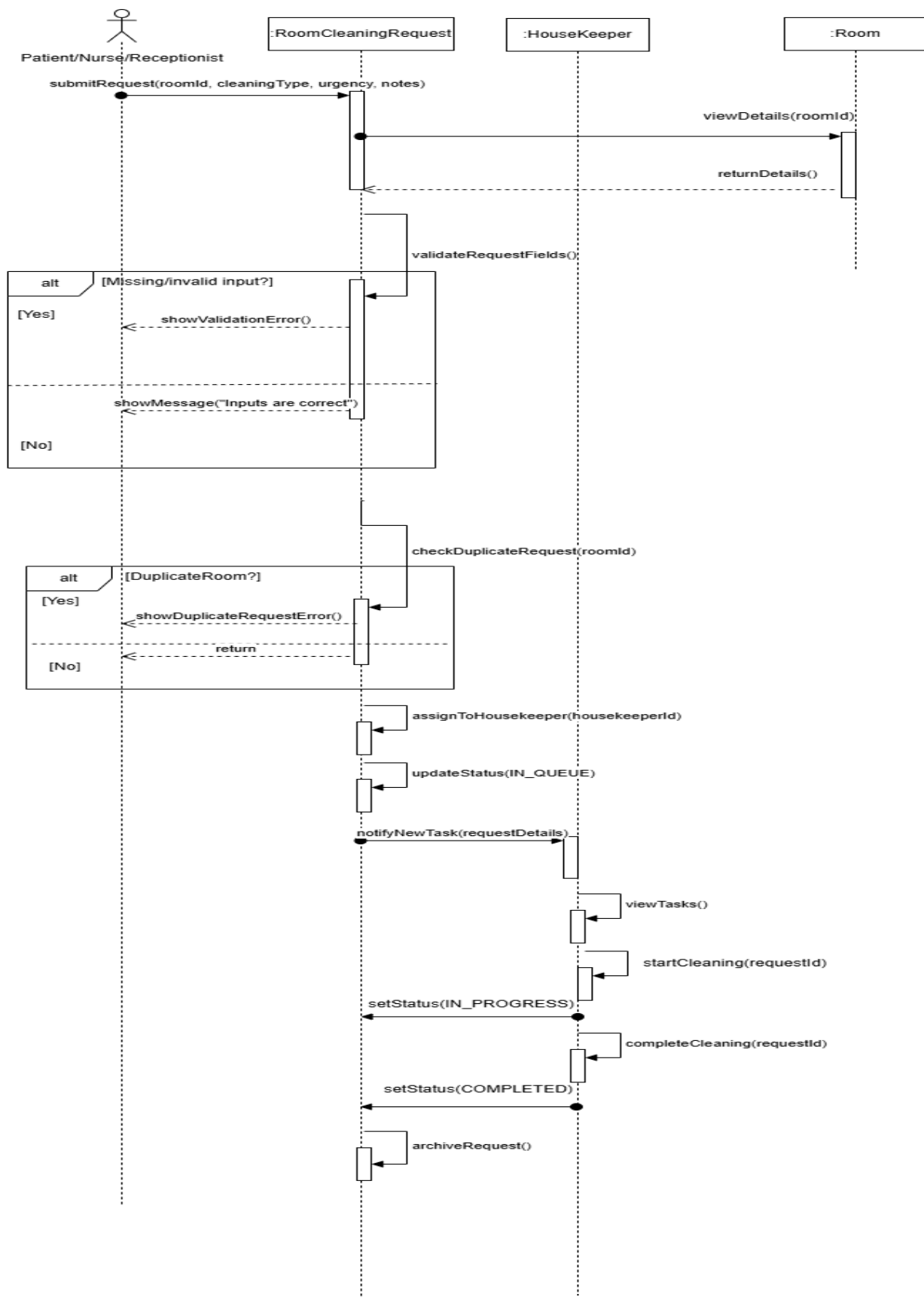## SD-16 Medical Staff Timetable (Arlin Bashllari)

Nurse/Doctor   Timetable

getWorkSchedule(employeeId:String)

returnWorkSchedule()

displayWorkSchedule(employeeId:String)

reviewSchedule()

SD-17 Surgery Planning (Shpetim Shabanaj)

planSurgery()

Doctor

:Hospital

:Patient

:PatientMedicalProfile

:Surgery

:Inventory

findPatientById(patientId: string)

alt [Was patient found?]

[Yes] returnPatient

[No] displayErrorMessage

getPatientMedicalProfile()

returnPatientMedicalProfile

surgeryDetails are the form data that the doctor fills

planASurgery(surgeryDetails: ...)

createSurgery(surgeryDetails)

We add the surgery to the list first, then set staff and items

alt [IsFormValid?]

[Yes] returnSurgery

returnSurgery

[No] returnErrorMessage

displayErrorMessage

getAvailableStaff(timeDate: LocalDateTime)

returnAvailableStaffList

setStaff(staff : List<Employee>)

returnSurgery

getAvailableItemList(dateTime: LocalDateTime)

returnAvailableItemList

setItems(items : List<InventoryItems>)

returnSurgery

SD-18 Emergency Handling and Alerts (Eglis Braho)

SD-19 Room Cleaning Management (Artjol Zaimi)

SD-20 Staff Scheduling (Marin Tartaraj)

Manager

Employee

inputSchedule(details)

Validate
schedule

isFree()

alt   [conflict detected]

returnConflictError

[no conflict detected]

updateSchedule()

retrun newSchdule

check
Appointment

verifyAppointment()

alt   [Appointment conflict]

return conflictAlert()
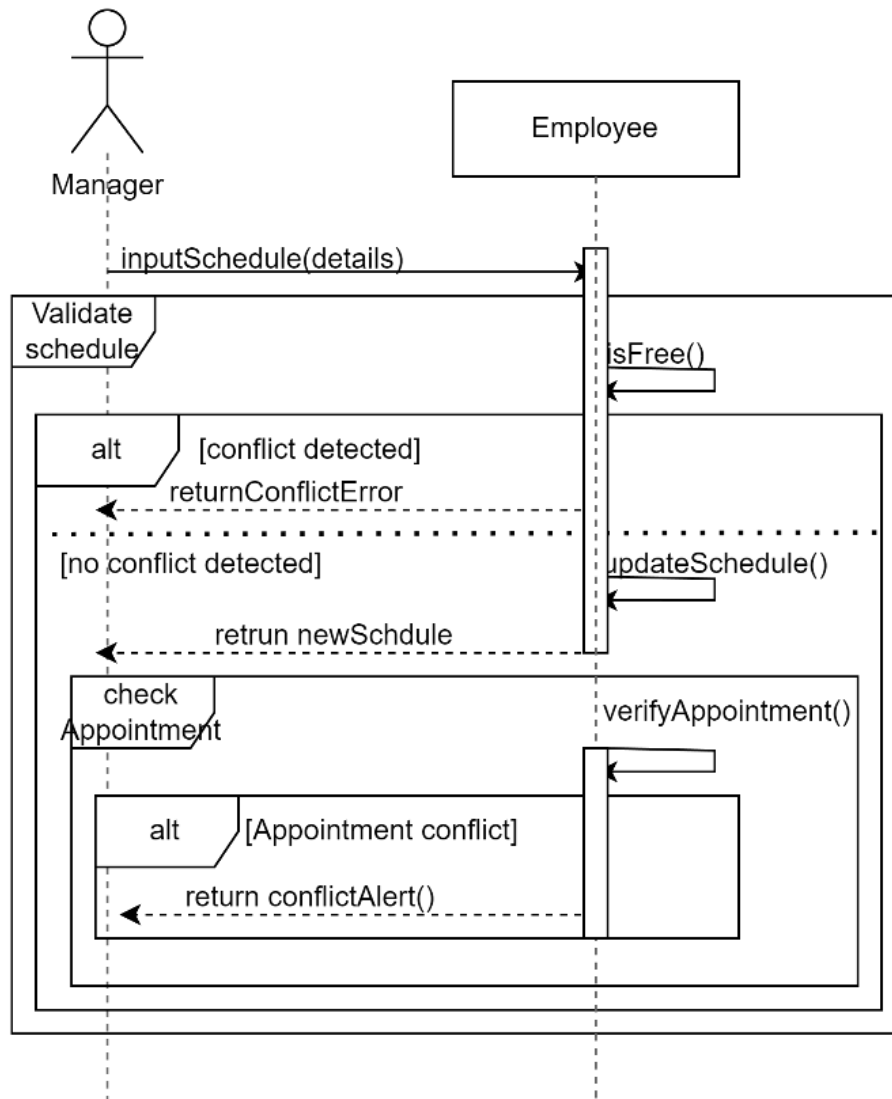
SD-21 Report Generation (Arlin Bashllari)
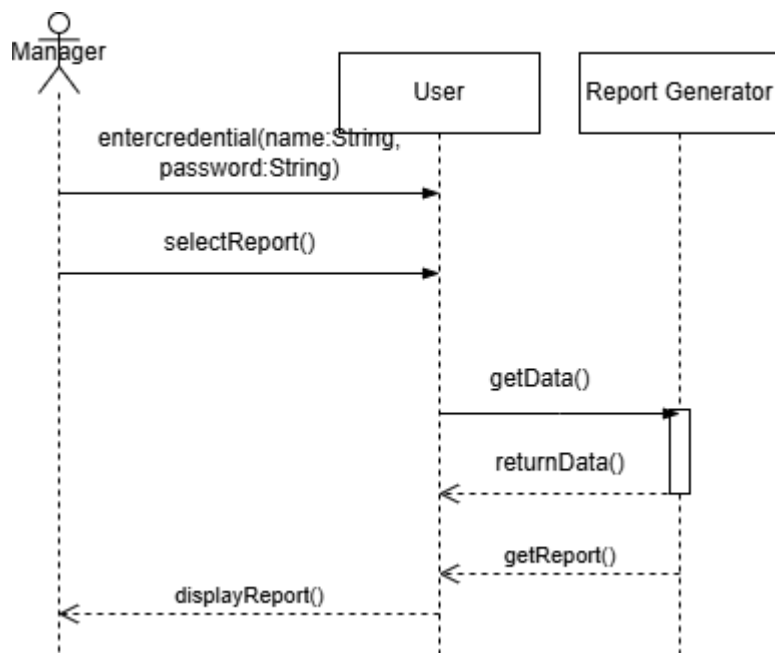
SD-22 Library and Literature Search (Arlin Bashllari)
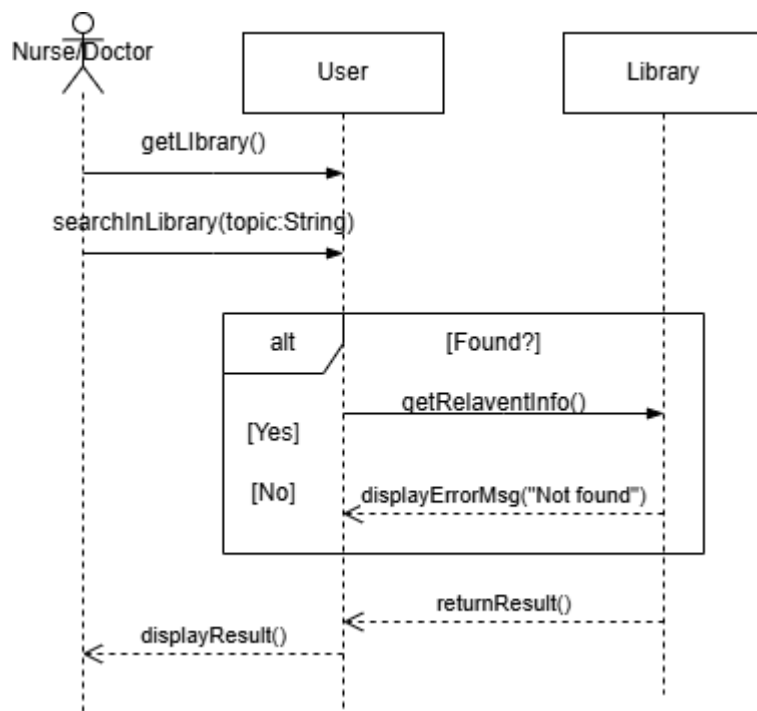
SD-23 Library and Literature Management (Eglis Braho)
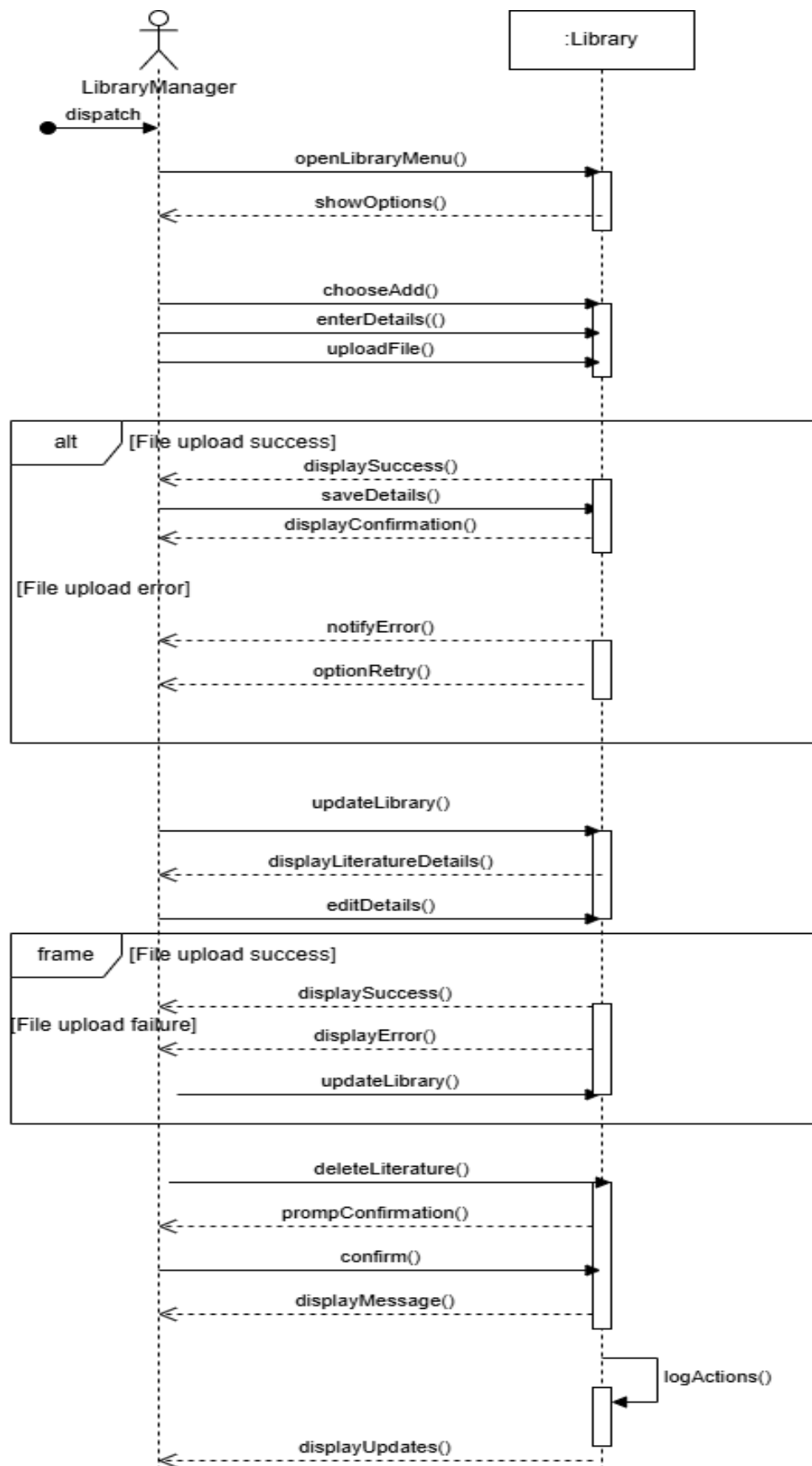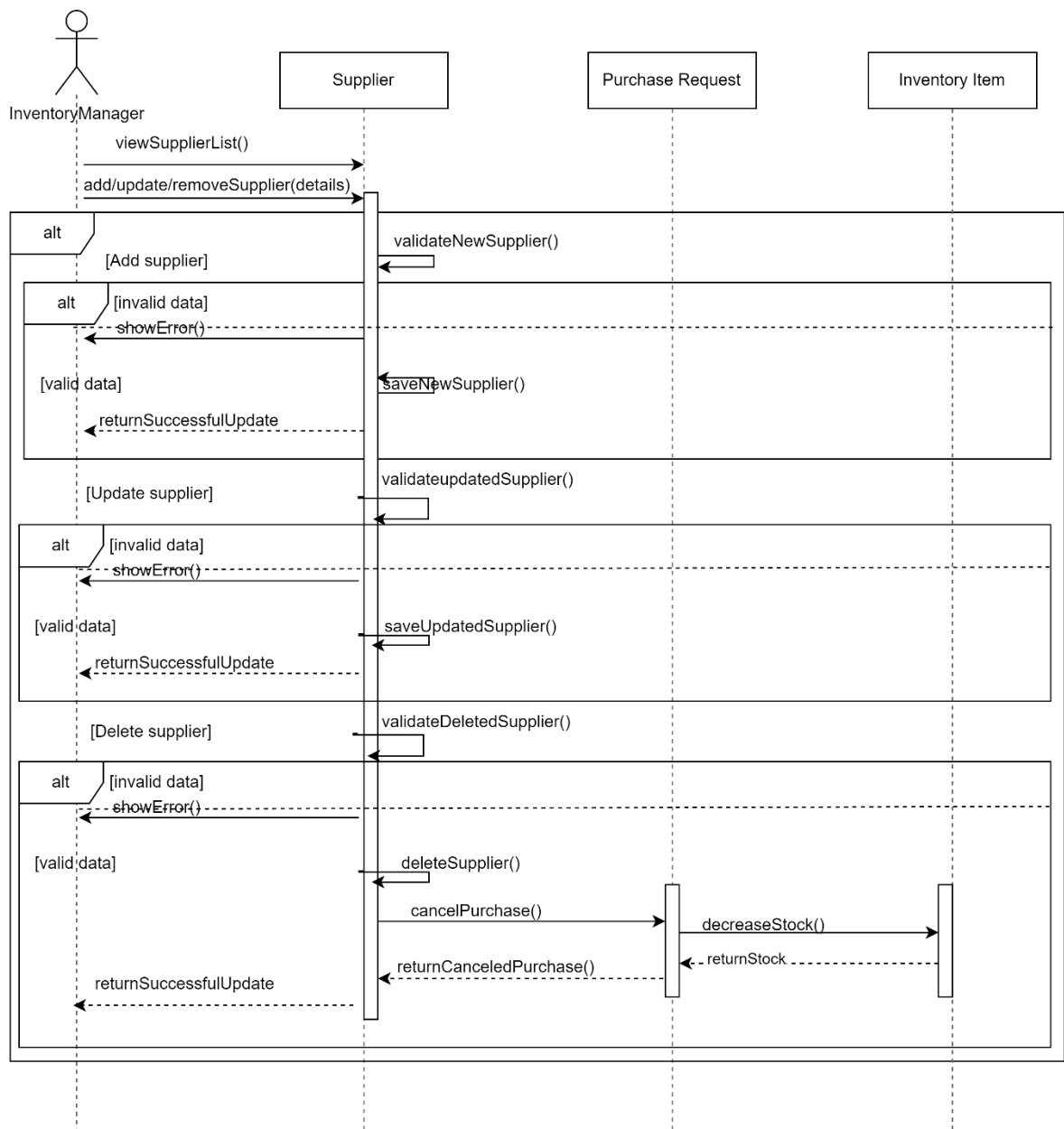
SD-24 Vaccination Management (Arjan Muka)
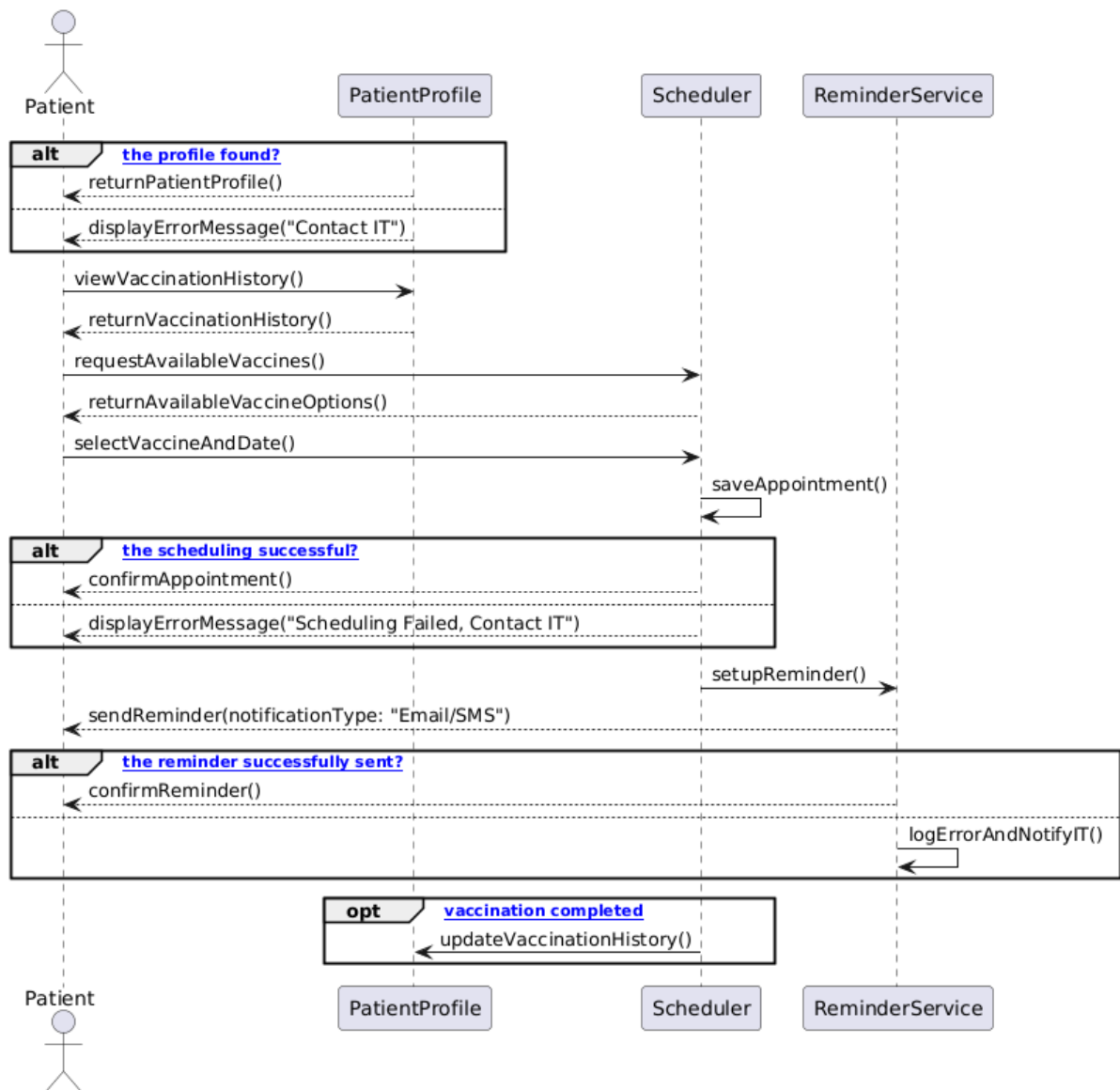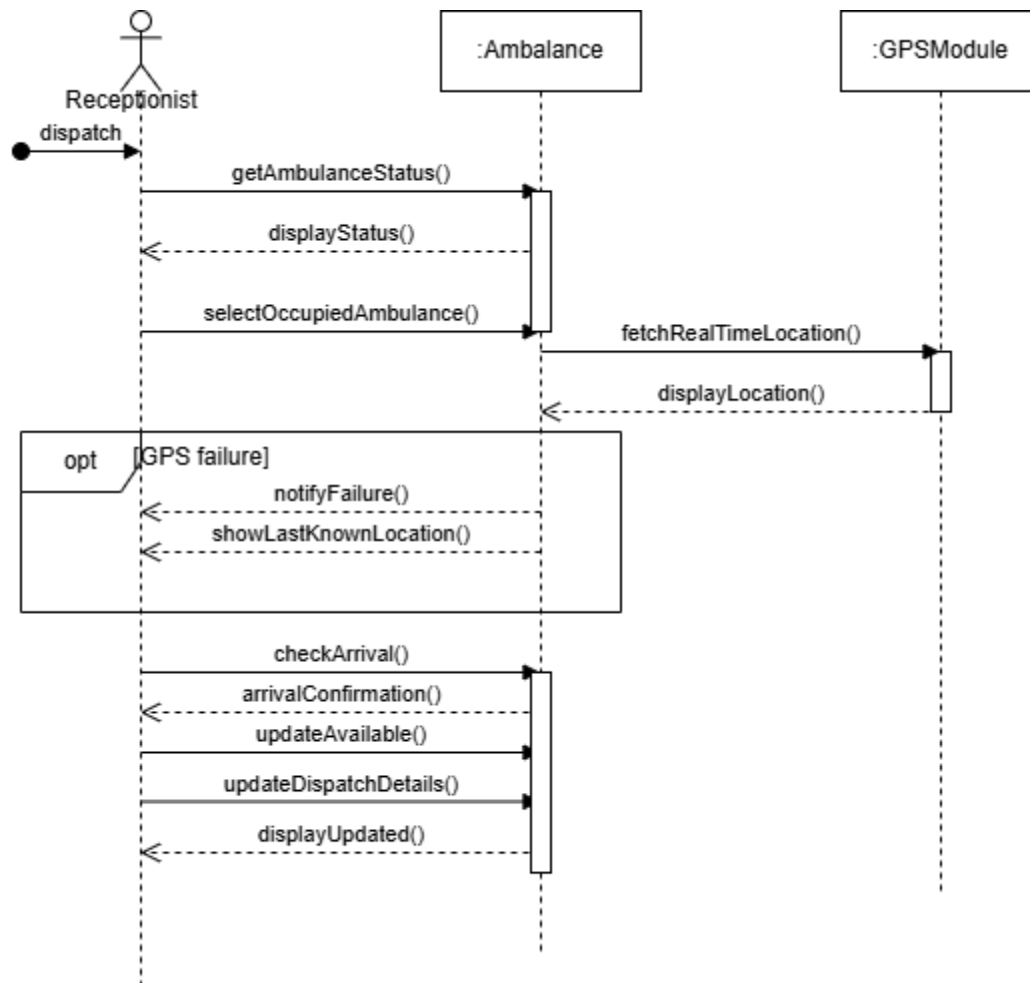
SD-25 Resource Allocation (Eglis Braho)
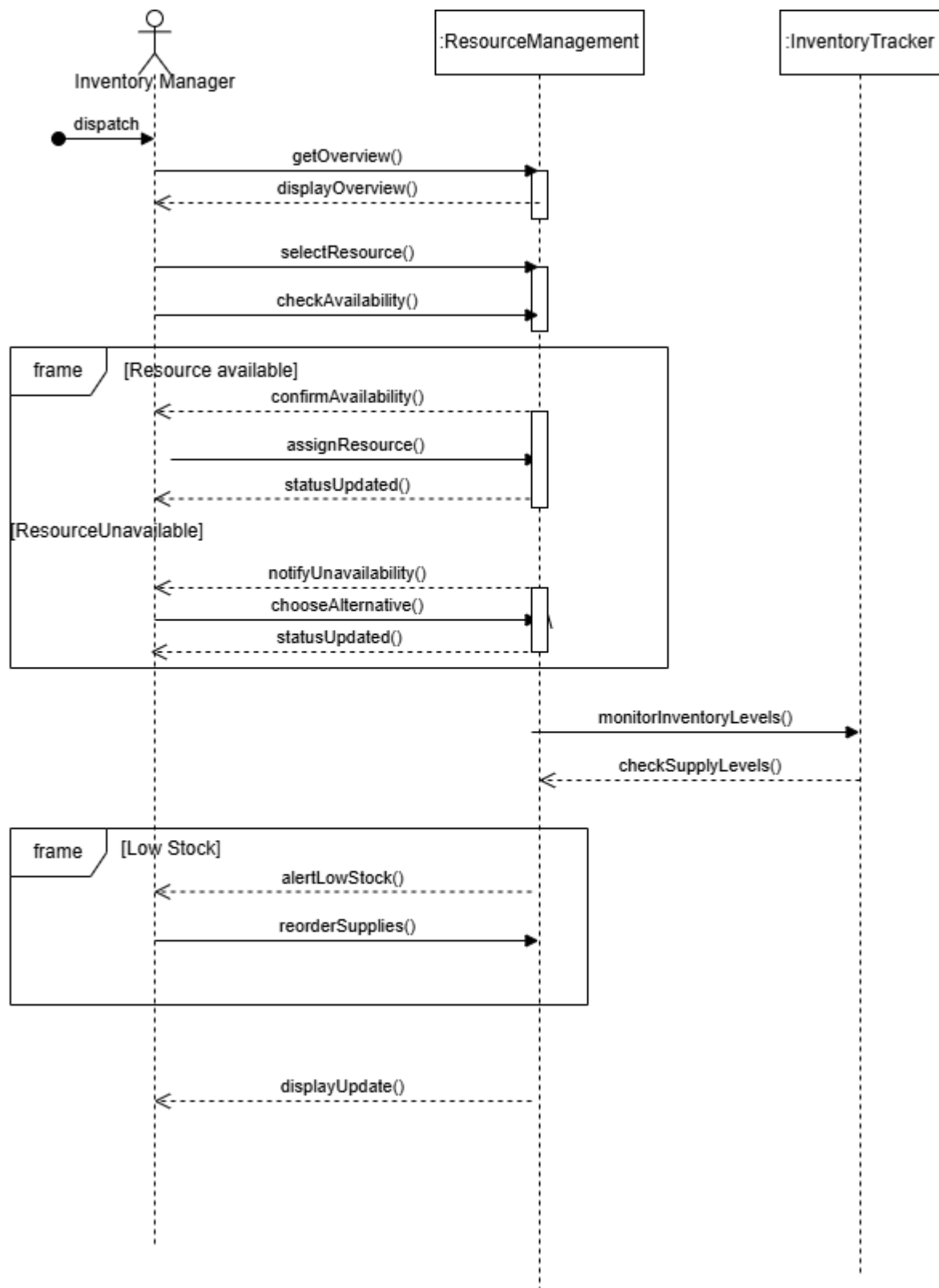
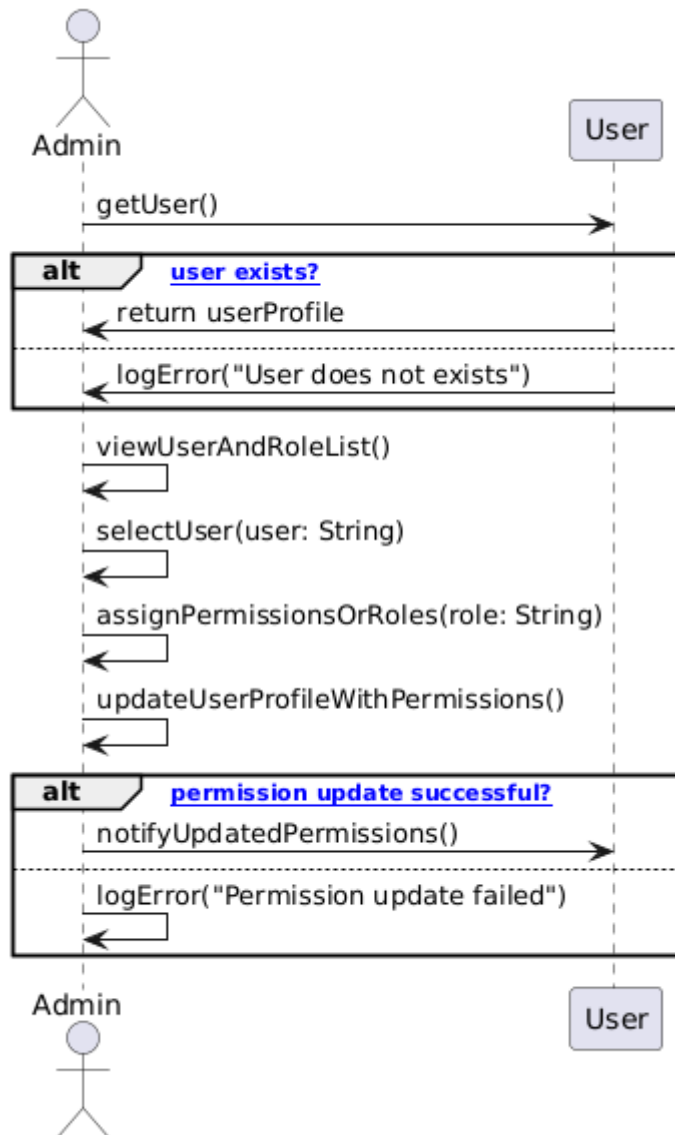# SD-26 Inventory Item & Procurement Management (Arjan Muka)
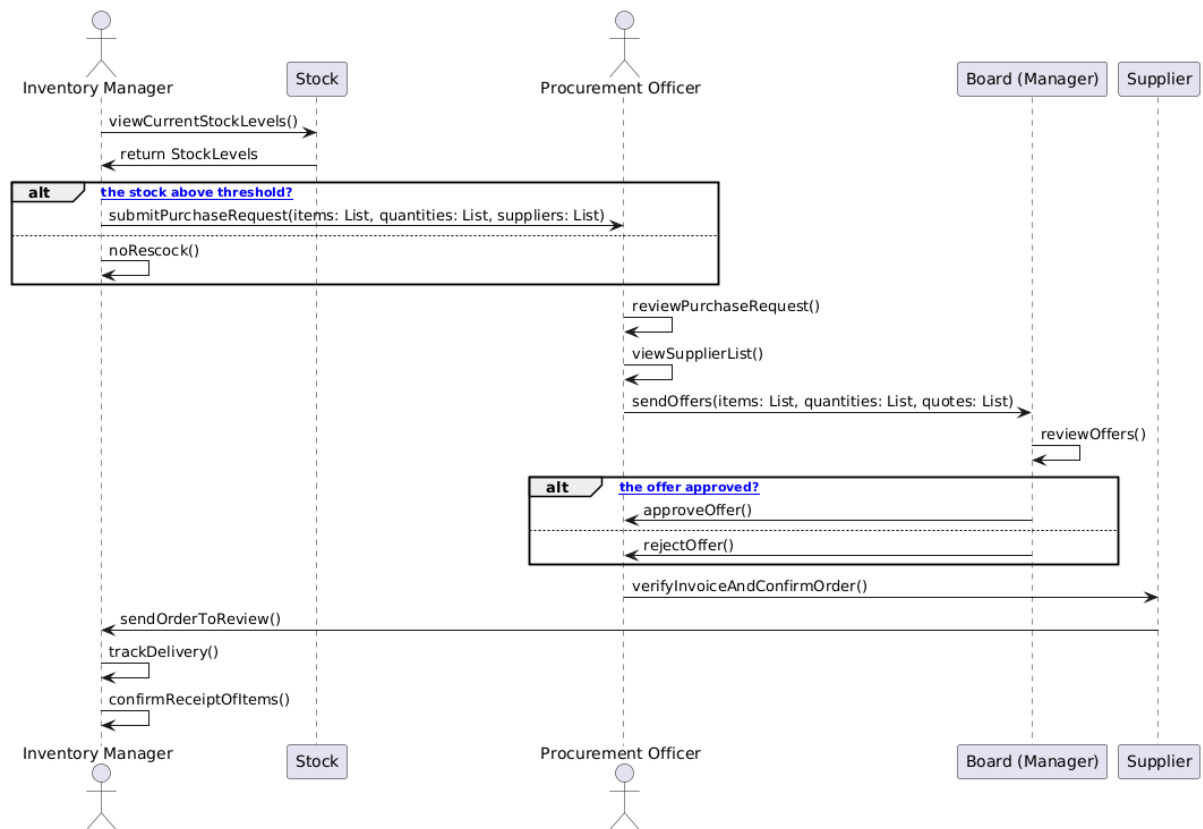
SD-27 Supplier Management (Marin Tartaraj)
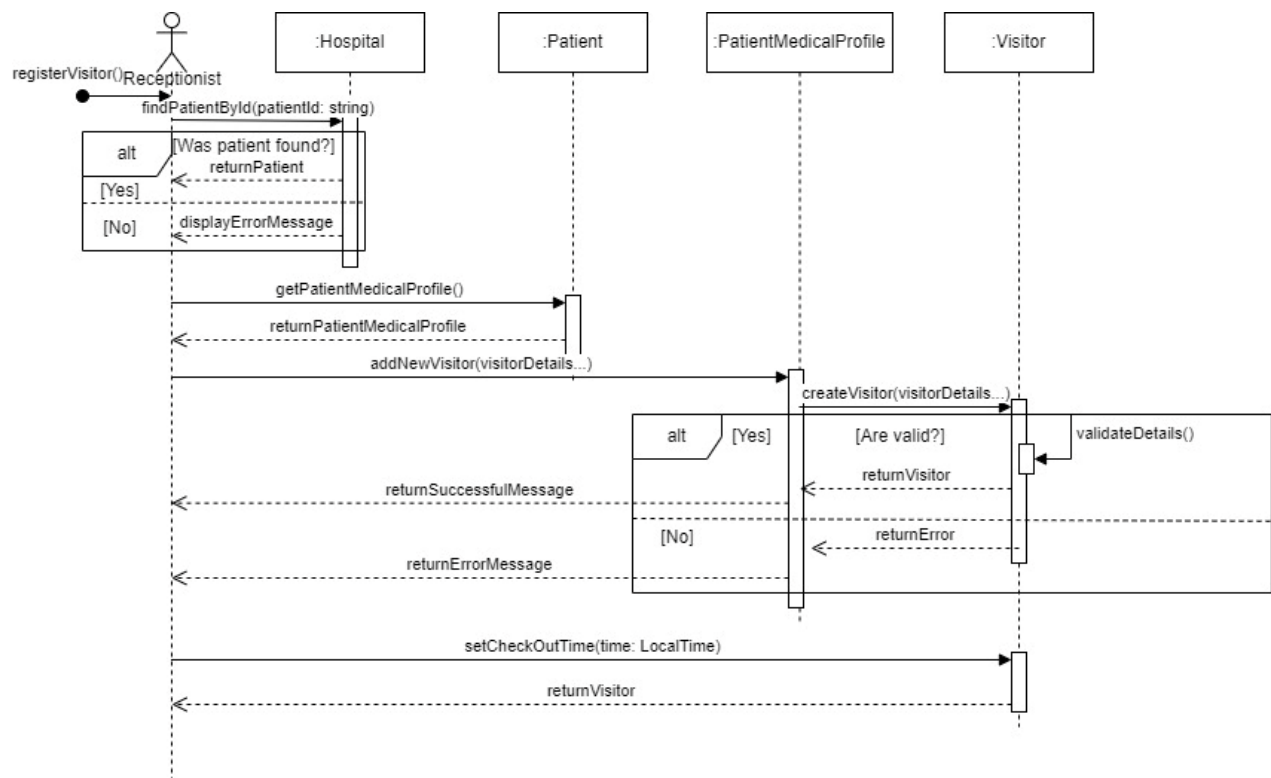
SD-28 Ambulance Management (Eglis Braho)

SD-29 Permission Granting (Arjan Muka)

Admin → User: getUser()

alt [user exists?]
  User → Admin: return userProfile

  User → Admin: logError("User does not exists")

Admin → Admin: viewUserAndRoleList()

Admin → Admin: selectUser(user: String)

Admin → Admin: assignPermissionsOrRoles(role: String)

Admin → Admin: updateUserProfileWithPermissions()

alt [permission update successful?]
  Admin → User: notifyUpdatedPermissions()

  Admin → Admin: logError("Permission update failed")

SD-30 Visitor Management (Shpetim Shabanaj)

SD-31 Employee Management System(HR management) (Artjol Zaimi)
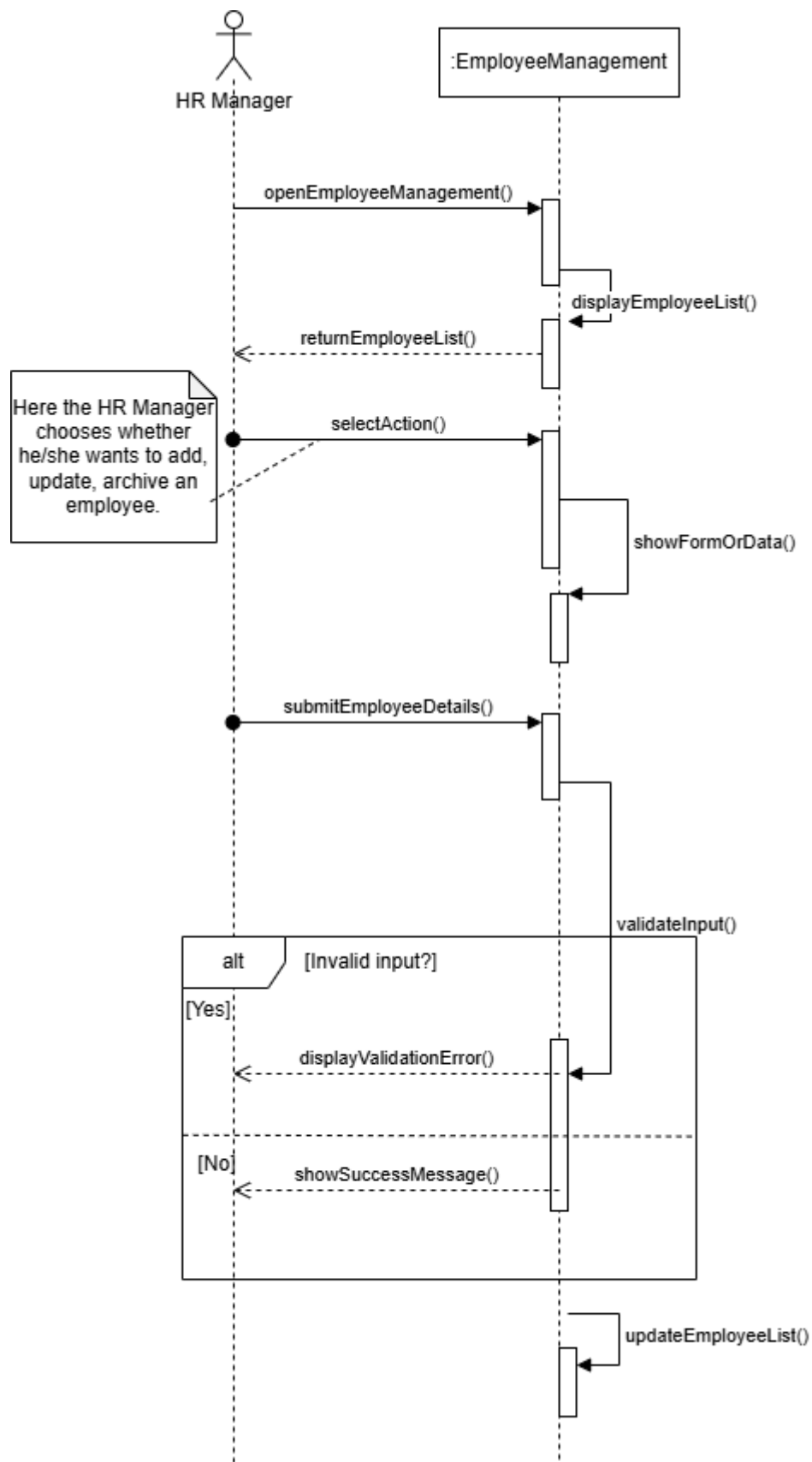
SD Name UC-32 Financial Management (Nikola Rigo)