

**Software Engineering**  
**Sino-British Collaborative Education**  
**CDUT & OBU**

**Software Engineering Coursework**  
**- Doctor -**

**Student number: 202018010209**

**Date: 20th Dec 2023**

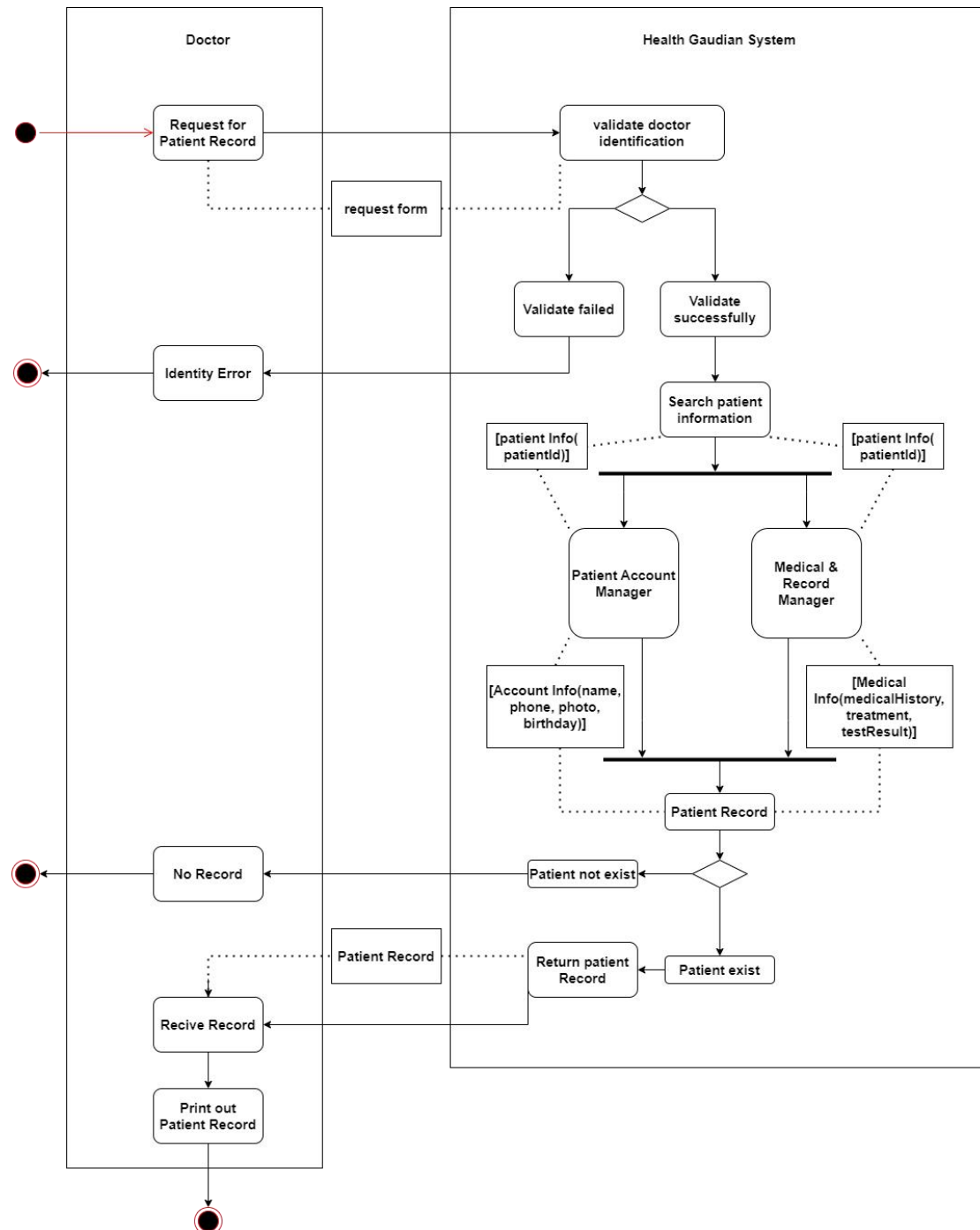
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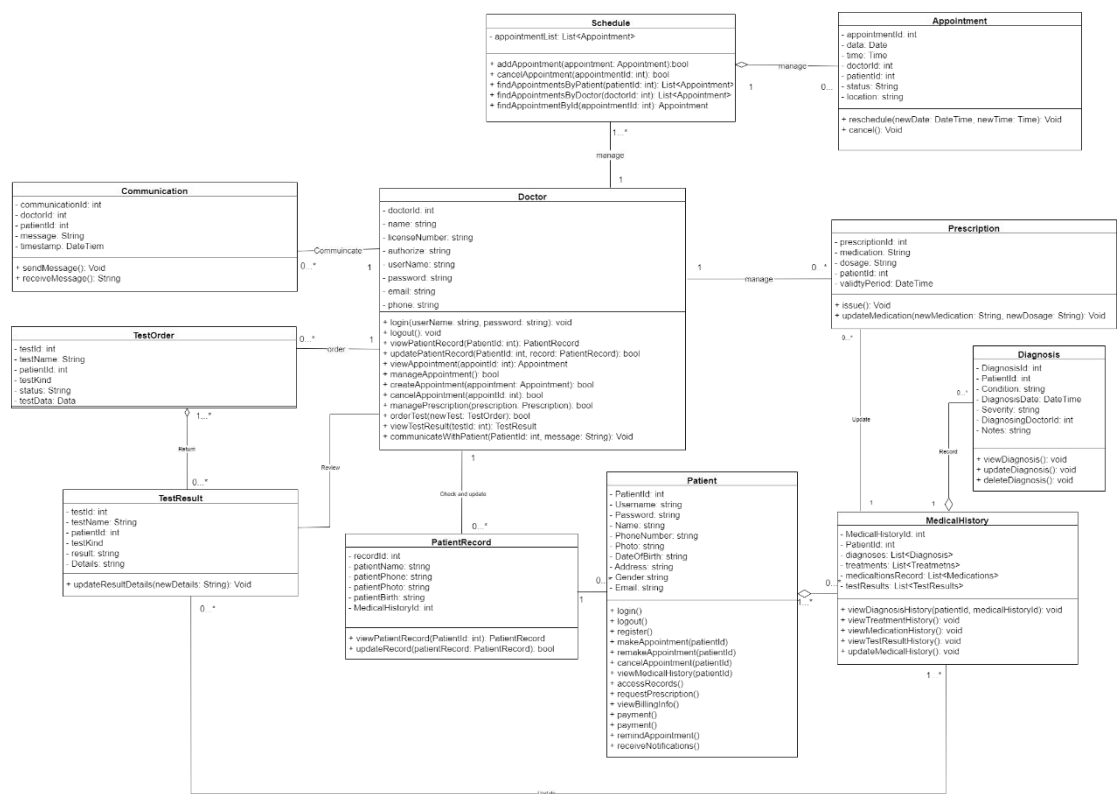
**Class: L6C1**

# Task 1: Software Modelling and Specification

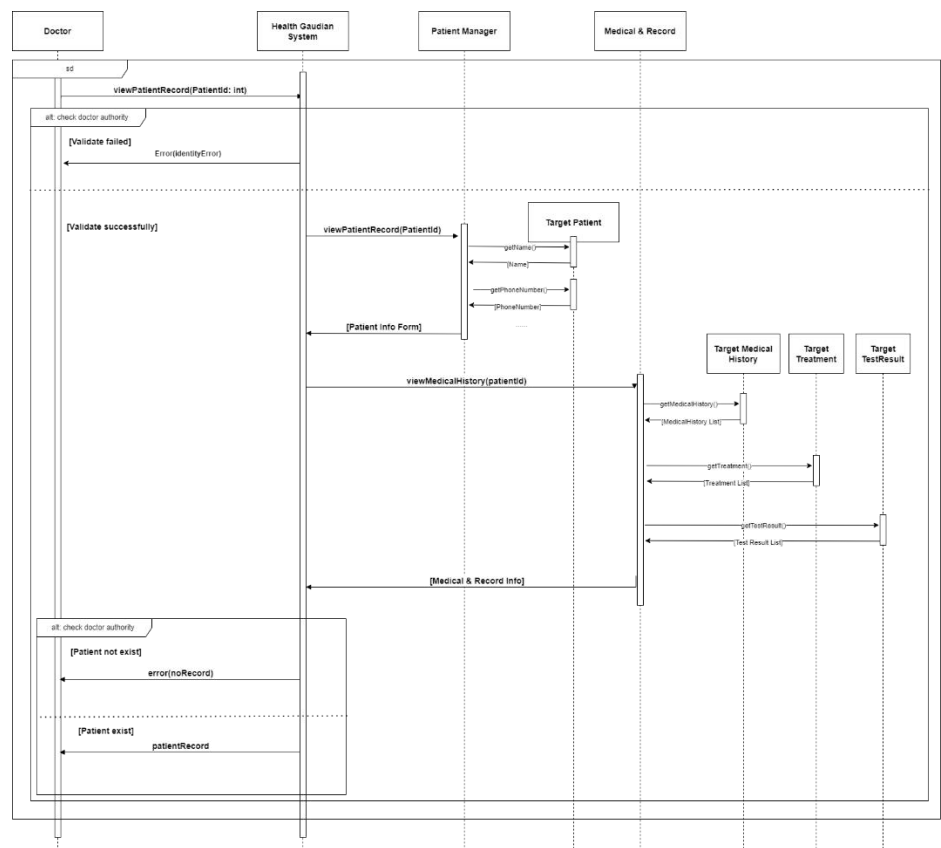
## (a) Activity Model



(b) Structure Model

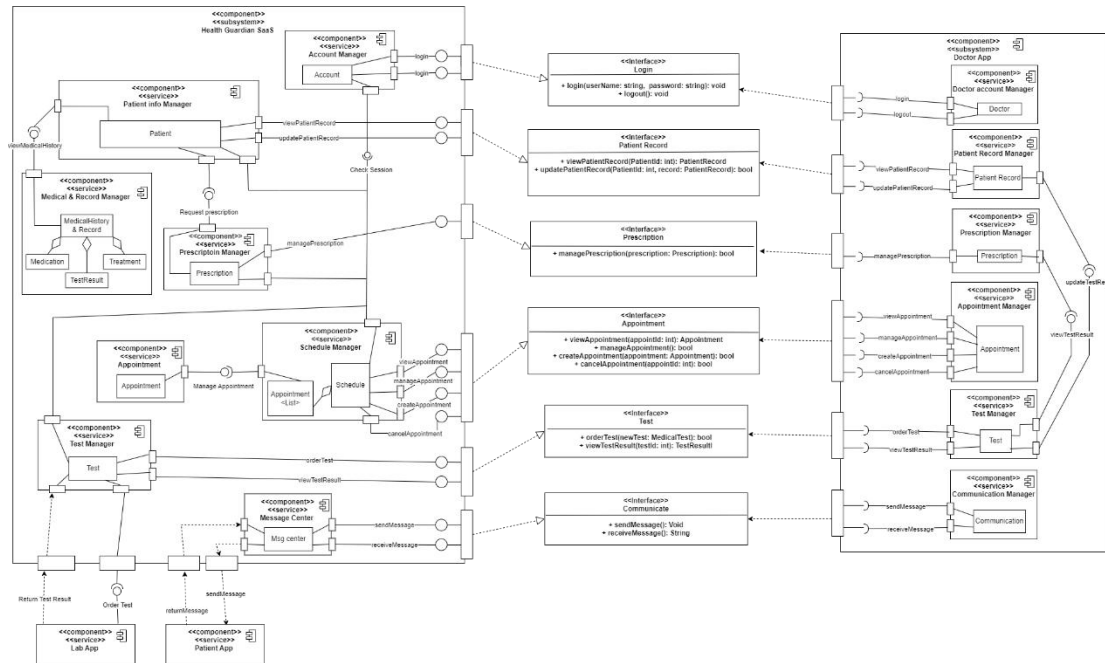


(c) Behavior Model



## Task 2: Software Architectural Design

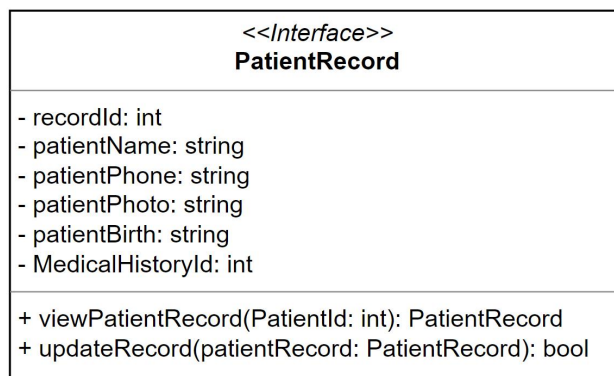
### (a) Architecture of the subsystem



## Task 3: Software Testing

### (a) Unit test plan

Test case interface:



<b>viewPatientRecord(PatientId: int): PatientRecord</b>		
<b>Test Case</b>	<b>Method and Parameters</b>	<b>Expected Output</b>
View existing patient record	<b>viewPatientRecord(100)</b>	PatientRecord object with ID 100's details
View non-existing patient record	<b>viewPatientRecord(9999)</b>	null object
View patient record with negative ID	<b>viewPatientRecord(-1)</b>	Error message
View patient record with zero ID	<b>viewPatientRecord(0)</b>	null object
View patient record with invalid type input	<b>viewPatientRecord("invalid")</b>	type exception
View patient record with SQL injection	<b>viewPatientRecord(1 OR 1=1)</b>	security exception

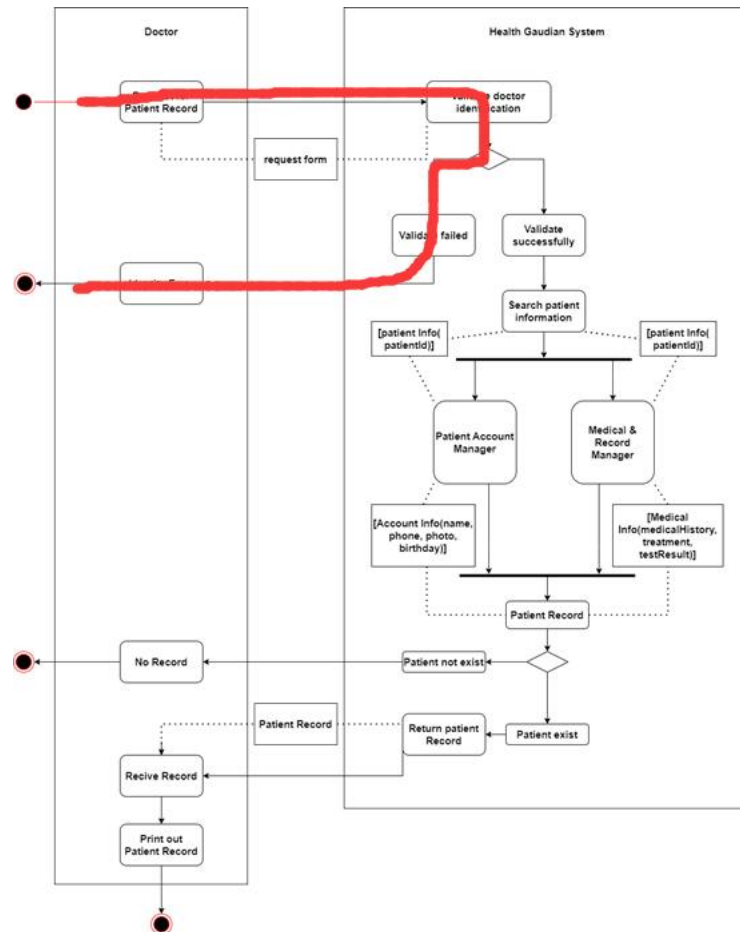
<b>updatePatientRecord(PatientId: int, record: PatientRecord): bool</b>		
<b>Test Case</b>	<b>Method and Parameters</b>	<b>Expected Output</b>
Update existing patient record successfully	<b>updatePatientRecord(100, updatedRecord)</b>	True (indicating success)
Update non-existing patient record	<b>updatePatientRecord(9999, updatedRecord)</b>	Error Message: "Patient not exist"
Update patient record with negative ID	<b>updatePatientRecord(-1, updatedRecord)</b>	Error message
Update patient record with zero ID	<b>updatePatientRecord(0, updatedRecord)</b>	Error message
Update patient record with null record object	<b>updatePatientRecord(100, null)</b>	Error message: "Record can't be empty"
Update patient record with incomplete record	<b>updatePatientRecord(100, incompleteRecord)</b>	Error message: "Not a valid Record"
Update patient record without passing ID	<b>updatePatientRecord(updatedRecord)</b>	Missing parameter
Update with invalid type for ID	<b>updatePatientRecord("invalid", updatedRecord)</b>	type exception
Update during database maintenance	<b>updatePatientRecord(100, updatedRecord)</b> with database in maintenance mode	Error message

Update with invalid record data (e.g., wrong data types in fields)	<b>updatePatientRecord(100, invalidDataTypeRecord)</b>	Error message: "Not a valid Record"
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## (b) System test plan

Use case: View Patient Record

Scenario: Validate failed



Doctor	Health Gaudian System
1, Request the record of specific patient	2, Valid the doctor identity (include license and authorize)
4, display the 'validation failed' message	3, Return the 'validation failed' information

Test data:

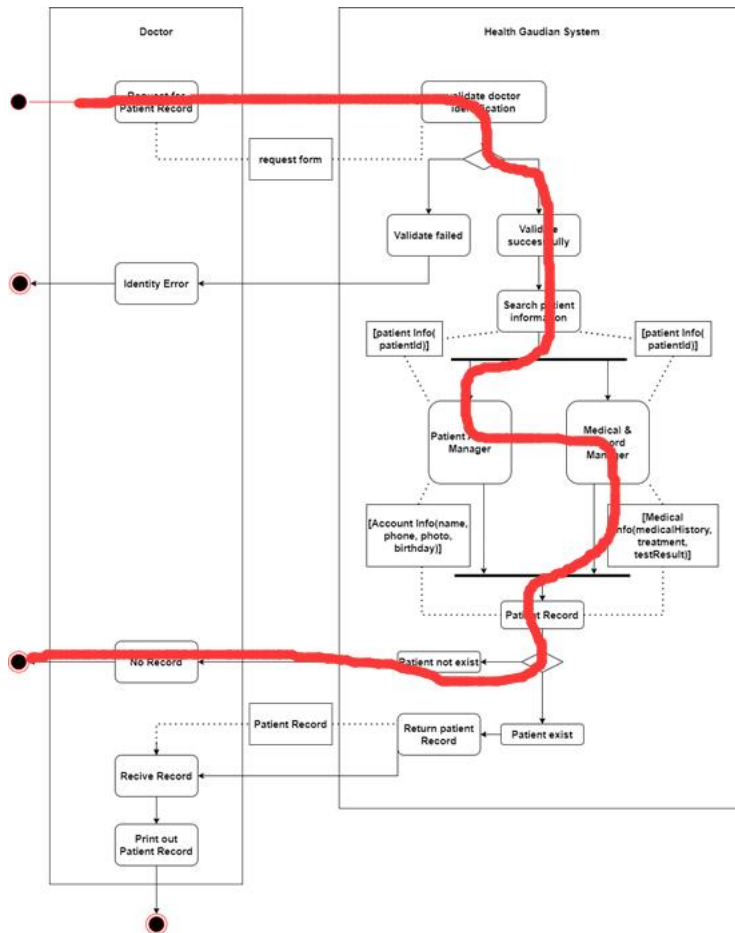
Input: patientId

Stored data: none

Output: identity error information

Use case: View Patient Record

Scenario: Research a patient which is not exist.



Doctor	Health Gaudian System
1, Request the record of specific patient	2, Valid the doctor identity (include license and authorize)
	3, Search patient by [patientId]
	4, Get account information from patient account manager. (such as name, birthday, photo, phone number)
	5, Get the Medical information from MedicalHistory & Record database. (include medical history, treatment and test result)
	6, Check if the return patient record is empty.
8, Display error message "patient not exist"	7, Return error message "patient not exist"

Test data:

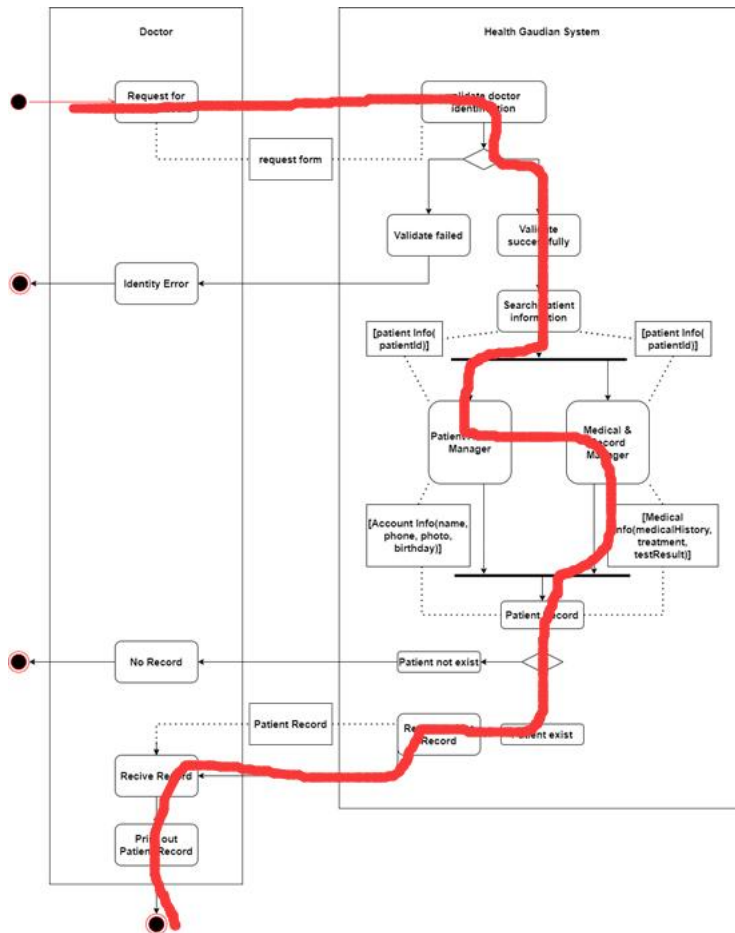
Input: patientId:9999999

Stored data: nothing stored

Output: Error message: "patient not exist"

Use case: View Patient Record

Scenario: Successfully view the patient record



Doctor	Health Gaudian System
1, Request the record of specific patient	2, Valid the doctor identity (include license and authorize)
	3, Search patient by [patientId]
	4, Get account information from patient account manager. (such as name, birthday, photo, phone number)
	5, Get the Medical information from MedicalHistory & Record database. (include medical history, treatment and test result)
	6, Check if the return patient record is empty.
8, Receive Patient Record	7, Return Patient Record to Doctor
9, Display Patient Record	

Test data:

Input: patientId:100

Stored data: The patient record is stored in doctor's mobile device.

Output: Display patient record in screen (include patient's basic info and medical info).