SOFTWARE ARCHITECTURE AND DESIGN

HEALTH-CARE SYSTEM DEVELOPMENT (FINAL PROJECT)

VERSION 1: 2 WEEKS (15/04 CLC) (17/04 CHINH QUY)

VERSION 2: (TRƯỚC 30/04)

//updated regularly at class

Sinh viên viết thành tài liệu như Assignment 4

1. **Write requirements and analyze requirements (See Guide)**
2. **Design system in Microservice Approach and Django**
3. **Applying AI in the system. Build chat**
4. **Code for the whole system**

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GUIDE

Requirements and Analysis of a Health Care System

1. Actors

- **Patient**: Registers, books appointments, views medical records, and receives prescriptions.

- **Doctor**: Manages appointments, diagnoses, prescribes treatments, and updates medical records.

- **Nurse**: Assists doctors, updates patient vitals, and manages patient care.

- **Administrator**: Manages users, schedules, and system access.

- **Pharmacist**: Reviews prescriptions, dispenses medicines, and updates pharmacy stock.

- **Insurance Provider**: Verifies patient insurance details and processes claims.

- **Laboratory Technician**: Conducts tests, uploads results, and communicates with doctors.

2. Use Cases

- **Patient Management**

  - Register/Login

- View medical records

- Book/cancel appointments

- View prescriptions

- Pay medical bills

- **Doctor Functions**

  - Schedule appointments

  - Access patient history

  - Diagnose and prescribe treatments

  - Order lab tests

  - Write medical reports

- **Pharmacy Management**

  - Verify and dispense prescriptions

  - Manage stock

  - Process payments

- **Hospital Administration**

  - User and role management

  - Schedule doctors and nurses

  - Manage billing and insurance processing

- **Laboratory Management**

  - Perform medical tests

  - Upload test reports

  - Notify doctors and patients

3. System Functions

- **User Authentication & Authorization**

- **Electronic Health Records (EHR) Management**

- **Appointment Scheduling**

- **Billing & Insurance Processing**

- **Prescription & Pharmacy Management**

- **Medical Test & Report Management**

- **Notification & Communication (email, SMS alerts)**

Use Case Diagram for the Health Care System, showing the main actors and their interactions with the system.

Use Case Diagram for the Health Care System.

Functions with Respect to Actors in a Health Care System

Actor	Functions
Patient	- Register/Login - Book/Cancel Appointments - View Medical Records - Receive Prescriptions - Pay Medical Bills - View Lab Test Reports - Update Personal Information
Doctor	- Schedule/Manage Appointments - Access Patient History - Diagnose & Prescribe Treatments - Order Lab Tests - Write Medical Reports - View Lab Test Results - Communicate with Patients & Staff
Nurse	- Assist in Patient Care - Record & Update Patient Vitals - Administer Medications - Assist Doctors in Diagnosis & Treatment - Update Patient Records
Administrator	- Manage Users & Access Rights - Maintain System Security & Compliance - Schedule Doctors & Nurses - Manage Billing & Insurance Processing - Generate Reports & Analytics - Maintain Hospital Inventory & Resources
Pharmacist	- Verify & Dispense Medications - Manage Pharmacy Inventory - Process Prescriptions - Communicate with Doctors & Patients

Actor	Functions
Insurance Provider	- Verify Patient Insurance Details - Process Insurance Claims - Communicate with Patients & Administrators - Approve/Reject Insurance Requests
Laboratory Technician	- Conduct Medical Tests - Upload Test Results - Notify Doctors & Patients of Test Reports - Maintain Lab Equipment & Data

Build activity diagram for

1. **Patient Booking an Appointment**

2. **Doctor Diagnosing and Prescribing Treatment**

3. **Laboratory Technician Conducting and Uploading Test Results**

4. **Pharmacist Dispensing Medication**

5. **Administrator Managing User Roles**

6. **Insurance Provider Processing a Claim**