THE UNIVERSITY OF LAHORE

Assignment No. 4

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SUBJECT: SOFTWARE DESIGN AND ARCHITECTURE

PROGRAM: BS SOFTWARE ENGINEERING

Submitted To:

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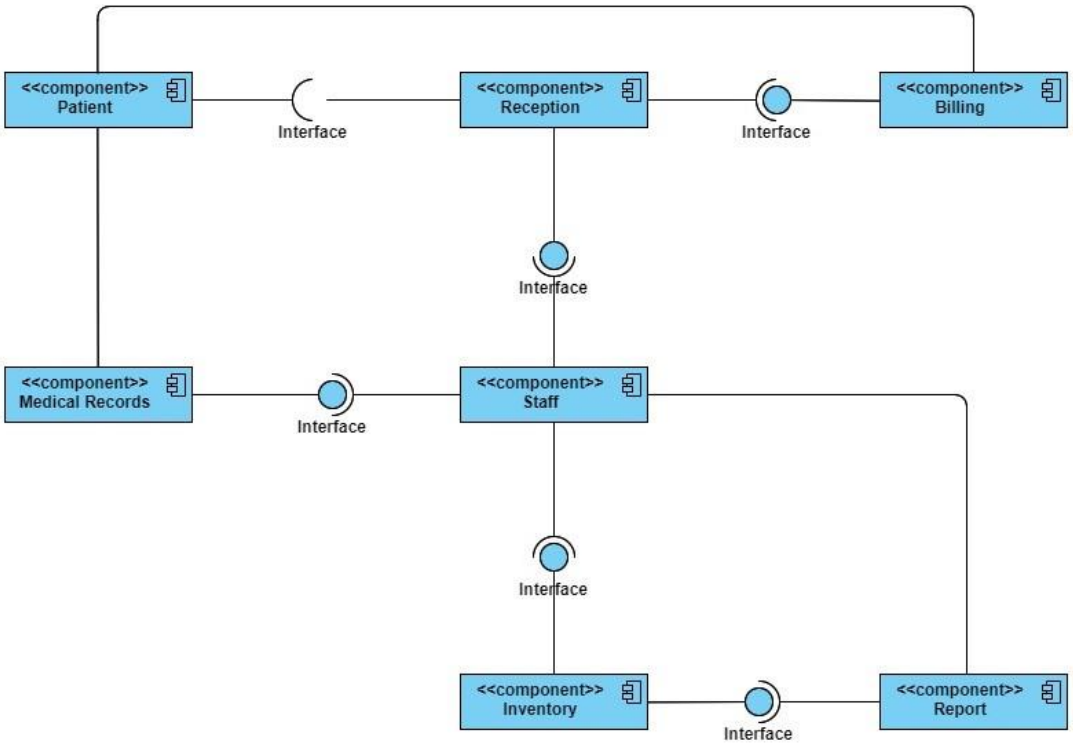
SOFTWARE DESIGN AND ARCHITECTURE

ASSIGNMENT NO.4

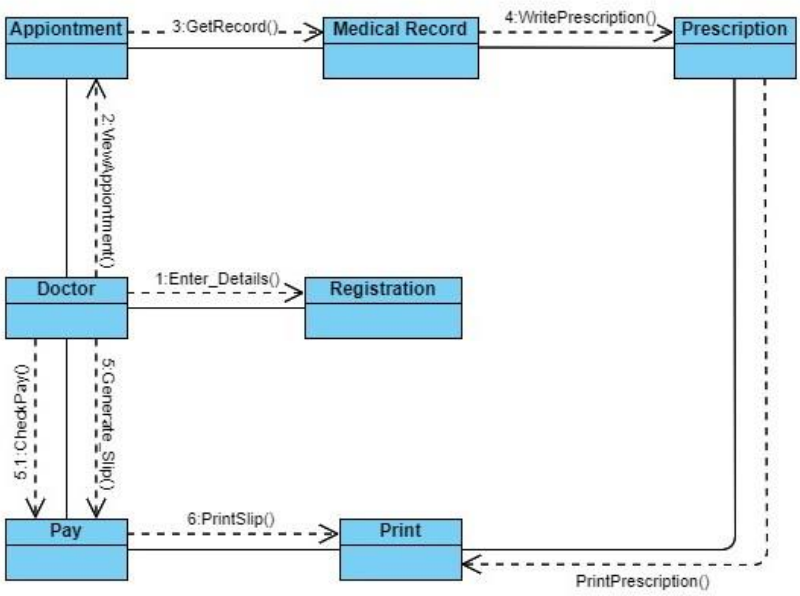
Title: Healthcare Application

Component Diagram:

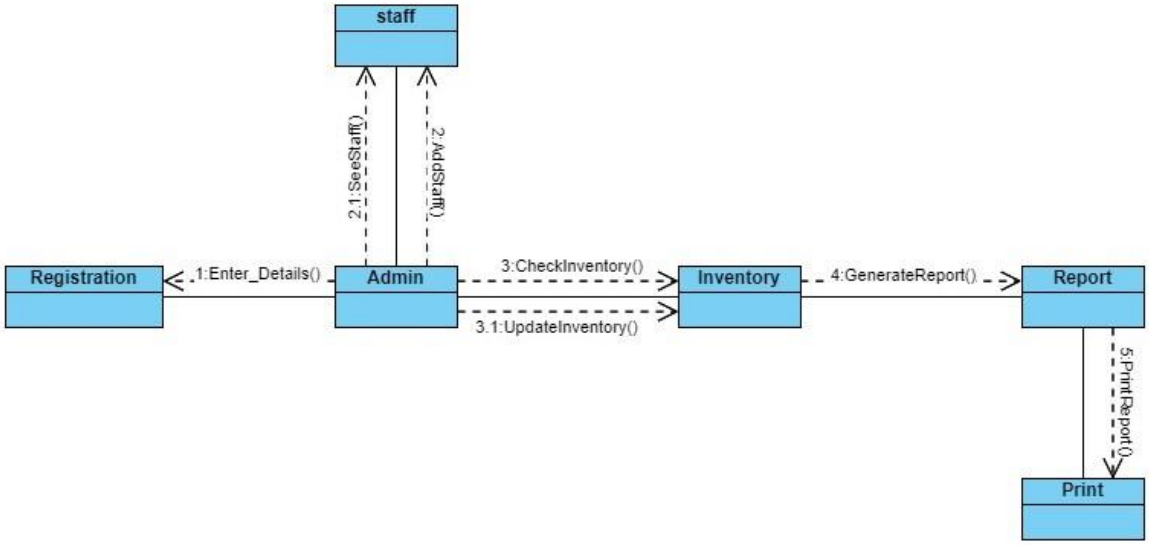


Collaboration Diagram:

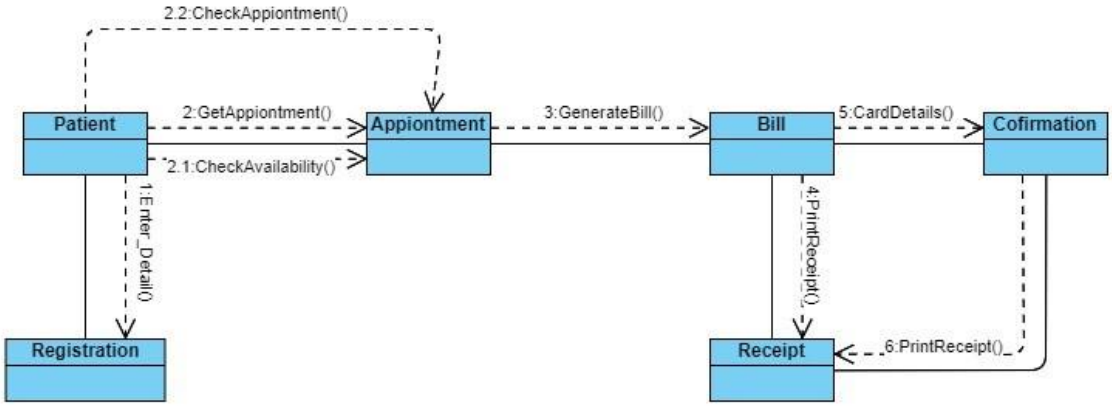
Doctor's Collaboration Diagram:



Admin's Collaboration Diagram:



Patient's Collaboration Diagram:



Software Design Document:

Introduction:

Healthcare is a crucial aspect of our lives, and with the advancements in technology, the healthcare industry has also seen significant improvements in the way services are delivered. Healthcare applications have emerged as an efficient tool for patients and healthcare professionals alike, providing convenient access to health information, medical records, and healthcare services. This application will transform the way people manage their health, enabling them to take control of their wellbeing and make informed decisions about their healthcare. The healthcare application industry has witnessed exponential growth in recent years, and with the ongoing pandemic, the demand for healthcare applications has surged.

Features of Project:

Healthcare application is designed to provide patients manage their health and wellness goal. The targeted users are doctors and patients. It will ensure patient safety, data privacy, and compliance with healthcare regulations. Secure login, Doctor profile look-up, Electronic health records (EHRs), Prescription management, Appointment scheduling and reminders, Telemedicine

capabilities, Health Education, Integration with medical devices, Billing and payment processing and Analytics and reporting are some highlighting features of Healthcare application.

Background:

Epic is a comprehensive healthcare management system that is used by a wide range of healthcare organizations, including hospitals, clinics, and physician practices. Epic offers a wide range of features and functionality, including:

- **Scheduling:** Epic's scheduling system allows patients to schedule appointments online or by phone. This can help to reduce wait times for patients.
- **Billing:** Epic's billing system helps healthcare organizations to bill insurance companies and patients for services rendered. This can help to improve the accuracy of billing and reduce the amount of time spent on manual paperwork.
- **Reporting:** Epic's reporting system allows healthcare organizations to generate reports on a variety of topics, such as patient demographics, utilization rates, and quality of care. This information can be used to improve decision-making and identify areas for improvement.

Limitation:

Epic is a powerful and comprehensive healthcare management system that can help healthcare organizations to improve efficiency, reduce costs, and improve the quality of care. However, there are also some limitations to Epic, including:

- **Cost:** Epic is a very expensive system to purchase and implement.
- **Complexity:** Epic is a very complex system to learn and use.
- **Integration:** Epic can be difficult to integrate with other healthcare systems.

(J Johnson III, 2016)

Scope:

The scope of the healthcare management system (HMS) encompasses the various functionalities and features that the system will provide. The scope of the HMS can be defined as follows:

- Registration
- Appointment Scheduling
- Medical Records Management
- Inventory Management
- Billing and Payment Processing
- Real-time Communication

Features:

- Functional Requirements:

- **Patient Management:** The system should be able to manage patient information, including personal details, medical history, diagnosis, and treatment plans.
- **Appointment Scheduling:** The system should allow patients to schedule appointments with healthcare professionals, and staff to manage and view schedules for multiple healthcare providers.
- **Medical Records Management:** The system should enable healthcare professionals to access patient medical records, including lab results, medication history, and treatment plans, from anywhere and at any time.
- **Inventory Management:** The system should allow staff to track inventory levels for medical supplies and equipment, ensuring that necessary items are always available.
- **Billing and Payment Processing**: The system should automate billing processes and provide patients with multiple payment options, including online payment and payment through insurance.
- **Integration with other systems:** The system should be designed to integrate with other healthcare systems, such as Electronic Health Records (EHRs), laboratory information systems, and insurance providers.

- **Telemedicine capability:** Telemedicine allows healthcare providers to connect with patients from remote locations, reducing the need for in-person visits and improving access to care, especially for patients who live in rural or underserved areas.

Conclusion:

The healthcare management system (HMS) is designed to provide a user-friendly and intuitive interface for managing various healthcare-related tasks. It includes functionalities such as patient management, appointment scheduling, medical records management, inventory management, billing and payment processing, integration with other systems, and telemedicine capabilities. By incorporating these features, the HMS aims to enhance the efficiency and effectiveness of healthcare administration, improve patient care, and streamline various processes within healthcare organizations.

Future Work:

Some possible areas for future work include:

1. **Enhanced Analytics and Reporting:** Incorporating advanced analytics capabilities can provide insights into patient outcomes, resource utilization, and operational efficiencies. This data-driven approach can help healthcare organizations make informed decisions and identify areas for improvement.
2. **Patient Engagement and Education:** Introducing features that promote patient engagement and education can empower individuals to actively participate in their own healthcare. This may include providing personalized health information, educational resources, and tools for tracking health metrics or medication adherence.
3. **Integration with Wearable Devices and Internet of Things (IoT):** Integrating the HMS with wearable devices and IoT technologies can enable real-time monitoring of patient health data. This integration can enhance remote patient monitoring, disease management, and preventive care.
4. **Artificial Intelligence and Machine Learning:** Incorporating AI and machine learning algorithms can assist healthcare professionals in decision-making, automate repetitive

tasks, and provide predictive insights for personalized care. This includes applications such as automated diagnosis support, treatment recommendations, and risk prediction models.

5. System will be open for modification to increase efficiency and automation to make software work for large system as well as efficient for people to use and handle databases.