

SOFTWARE DESIGN AND IMPLEMENTATION OF HOSPITAL AUTOMATION INFORMATION SYSTEM

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Summary. *This paper introduces the design and implementation of a general hospital automated information system at the software level, including the business processes, technical architecture, and application scenarios required for the entire project, with the goal of maximizing patients and doctors to enjoy fast and efficient hospital information technology services, enhancing hospital efficiency, and improving the patient experience.*

Hospital Information System (HIS) is an information system that uses computer hardware and software technology and network communication technology, etc., to achieve comprehensive automated management of various modules in a hospital. This paper presents the design and implementation of a general hospital automated information system at the software level, including the business processes, technical architecture, and application scenarios required for the entire project, with the goal of maximizing the ability of patients and doctors to enjoy fast and efficient hospital information technology services, enhancing hospital efficiency, and improving the patient experience.

For business process aspect. The hospital information system contains more business processes, fig. 1 shows the Use Case diagram of the system, from the patient consultation perspective, it includes patient offline consultation appointment registration, online communication consultation, payment, hospitalization processing, etc.; from the doctor's perspective, it includes offline call over number, online diagnosis, patient hospitalization information management, patient medical record management, etc.; for the hospital administrator, it includes doctor Scheduling management, hospital data statistics and other operations.

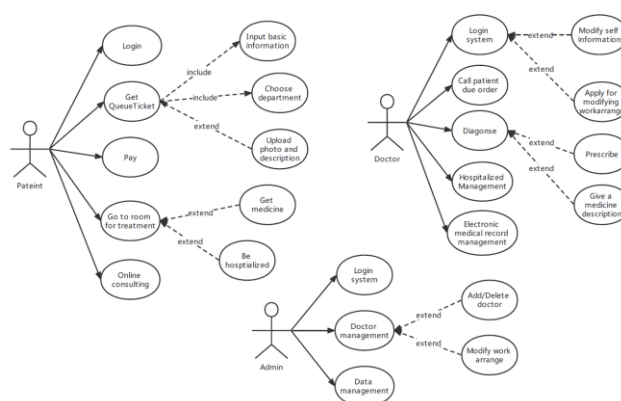


Figure 1 – Use Case Diagram for Hospital Information System

For technical architecture. The overall information system of this hospital mainly uses the MVC three-tier architecture, including the presentation layer, the data layer, and the business logic layer. As far as the presentation layer is concerned, both desktop application (C/S architecture) and client application (B/S architecture) are used, with the desktop application serving patients in the form of an app and the client application serving doctors and administrators in the form of a browser. The data layer mainly includes SQL statements, stored procedures, triggers, etc., and is developed using MYSQL. The business logic layer mainly includes relevant business logic modules, data persistence operation modules. The development of APP adopts Hybrid App, which is developed in both web and programming languages (HTML5, CSS3, JavaScript), with the advantages of cross-platform, multi-device compatibility, fast upgrade, and easy maintenance. s development was carried out using

the typical SSM (Spring, Spring Boot, Mybatis) framework to save development time. Fig. 2 shows the current class diagram designed for the system, with content to be improved.

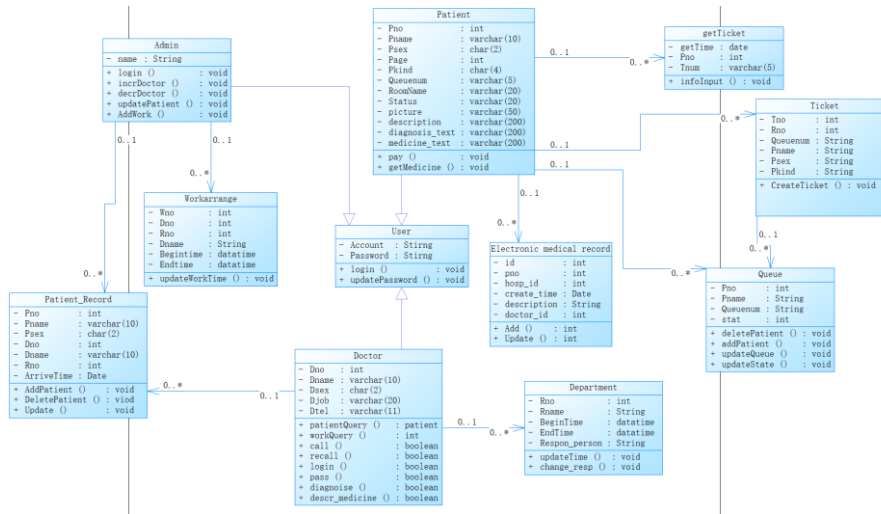


Figure 2 – Class Diagram (OOM) for Hospital Information System

For application scenario. Patients can log in to their accounts through the mobile hospital app and make appointments directly without having to fill in basic information multiple times. Not only that, when they encounter minor illnesses such as mild flu that do not require a hospital visit, they can communicate with doctors online to ask for advice, get doctor's advice through text descriptions, upload pictures and videos, and make online payments; patients can also access their own electronic medical record information through identity verification to provide it to doctors for consultation. Doctors can prescribe medication and manage hospitalization for patients through the hospital Web server, without the need for handwritten credentials.

Compared with most of the existing hospital information systems, this system aims to make the whole consultation process and the whole hospital management more “paperless” and more intelligent through the design of online and offline consultation and electronic medical records, and to replace paper data by mobile phones and computers for cloud data processing, which is faster, safer, and more convenient.