

C-SW312 Introduction to Software Engineering

Fall 2024-2025

Project 5: Health Information Network

The online Health Information Network (HIN) is a representative of a web application used by patients, health providers, and government regulators as a national system for managing and exchanging health records in accordance with HIPAA standards. HIN needs self-adaptation capabilities to balance a number of goals. The system maintains a high authentication system for each type of stakeholders to keep the confidentiality of health records, and provides each stakeholder with the appropriate view.

Using the HIN system, a patient can access his/her country-wide health records. The process allows for search by date, type of illness, and so on. Patients can make appointment requests with health providers. Appointment requests defer based on type of illness requested and patient's record of treatments. For instance, HIN gives priority to placing a patient to the health provider, with whom the patient had received treatment earlier. However, if the illness is of an emergency nature, the system places the patient with the health provider that has the closest availability. The patients can be notified by email and/or SMS for approaching appointments. Appointments may be cancelled or changed. If an appointment is cancelled by the patient, further appointments will be treated as a new appointment following the same criteria described above. Change of appointment depends on the availability of the health provider and the type and emergency nature of the illness.

Periodically, an appointment allocation component fetches patients' appointment requests and matches them with a HIN health provider. HIN health providers can then retrieve appointments that have been placed to them using a dedicated Portal. Based on the type of illness, a subset of the patients' information is forwarded to the health provider. To privacy purposes, a pairwise evidence of the forwarded information is tracked so that regulators can govern and monitor HIPAA compliance in case legal disputes arise.

The regulators may also run other intelligent reports using report generator and report builder to monitor other nation-wide trends.

The system keeps track of the care givers' providers of patients, e.g., their family, friends, etc. and they get notified automatically by the system in case an emergency condition is detected and as instructed by the patient. The patients can include, remove or update the list of associated care givers at anytime.

Patients who have a health insurance coverage by a registered health insurance company will be charged through their health insurance company based on their health insurance package.

Patients who are not insured need to pay themselves using credit cards or bank transfers.