

OOAD Project Phase 1: Hospital

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1 Methodologies for Information Gathering

In order to best understand the internal processes of a hospital and the needs they serve, I utilized two different initial information gathering methods to gain a foundational understanding. I first interviewed my sister, Jo Treat a former hospital nurse. Through this interview, I was able to get a good grasp of how nurses and patients interact as well as the types of situations that are required to be tracked for hospital records. Jo also notified me of a software utilized by many different hospitals: Epic System. With this information, I went to the Epic System website and probed it for information, with these two sources, I was able to come up with my problem statement which best describes how a hospital processes information and how entities in said hospital interact.

2 Problem Statement

In a hospital, there is an ever present need for an automated system that tracks multiple parts of both patient information as well as administrative data. Patient information, both personal and medical, the procedures they undergo as well as the the treatment they receive must be tracked. Treatment and procedures also coalesce into the overall cost of the patient's visit.

When a patient checks into the hospital, their personal information, such as name, age, health insurance, and medical information, such as previous treatment, allergies, and treatment needed, are required to be tracked for the hospitals records to ensure treatment is properly administered. Based on the patients medical needs/injury, they will be assigned to an appropriate wing of the hospital with adequate capacity and available staffing. Their placement is also dependent on the intensity their care requires and the specific kind of care they need.

While a patient is staying at the hospital, they will be assigned nurses to attend to their specific needs such as administering medicine, tracking their recovery, and monitoring symptoms. Patients are assessed regularly by nurses who will take diligent notes on the patients ongoing status as need requires. Nurses can then notify doctors when a new prescription may need to be placed for a patient or conduct medical procedures. Nurses will be reassigned from wings with lower levels of patients to wings of hospitals where more patients are present or to floating status. Additionally, the nurses will be organized into shifts, day and night.

When a patient is ready to leave the hospital, their status is assessed to ensure their immediate medical needs are met by a nurse and doctor. They are then given the required prescriptions or other medical supplements needed to continue recovery outside the hospital and their bill is totaled based on the

amount of care received(i.e. prescriptions, procedures) and the amount of time spent in the hospital.
This amount must then be paid to the hospital.

3 Use Cases

- Check Patient in
- Check Patient out
- Charting
- Order Medication
- Medical procedures
- Nurse/Doctor Assesment
- Billing

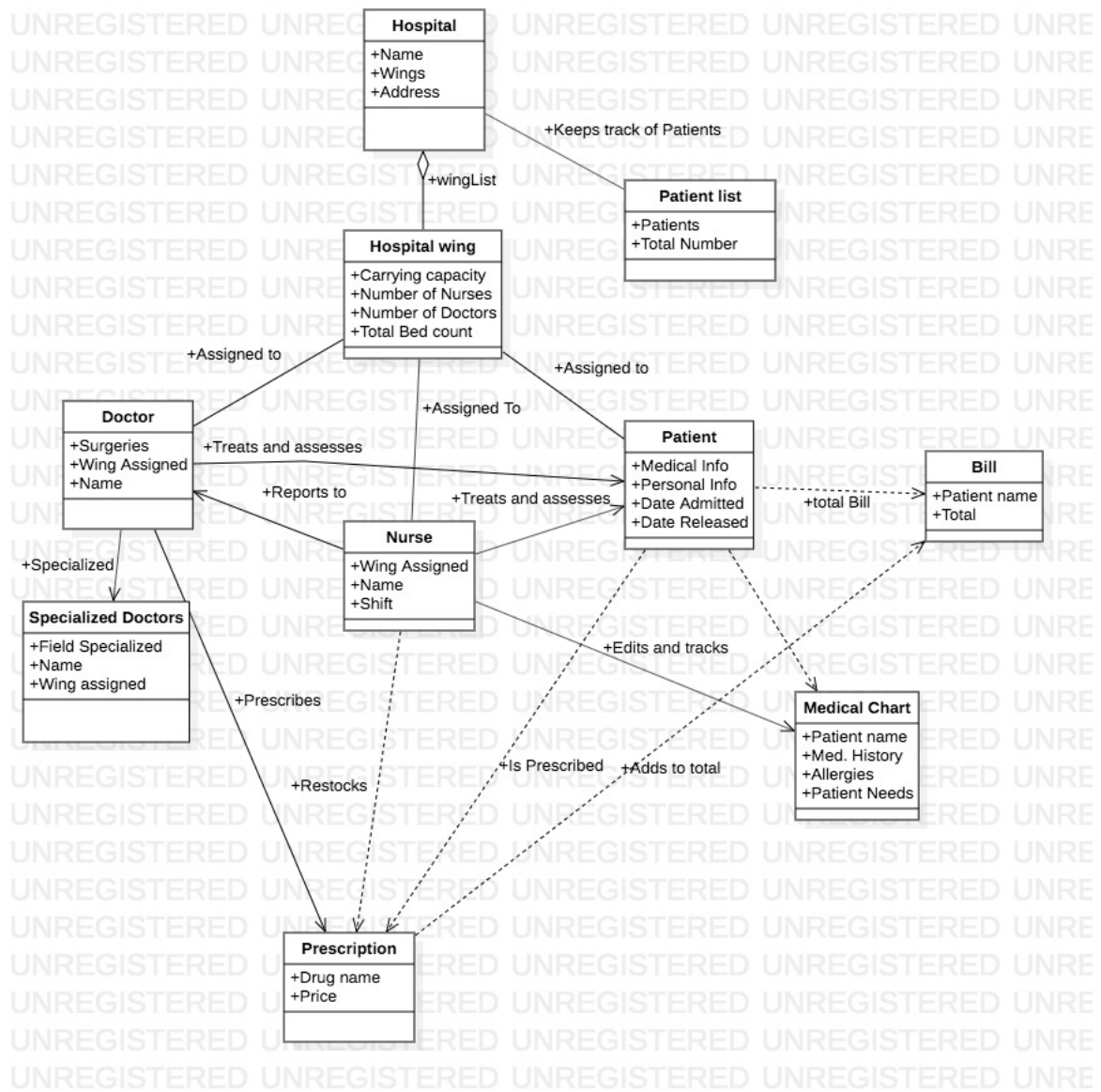
4 List of potential classes

- Doctor
- Patient
- Patient Medical information
- Patient Personal information
- Nurse
- Chart
- Patient List
- Prescription
- Hospital wing
- Bill
- Medical procedure/treatment
- Prescription Order
- Patient Needs
- Medical assesments
- Carrying Capacity
- Hospital
- Care intensity
- Medical therapy
- Specialized Doctors

5 Domain Classes

- Patient
- Doctor
- Nurse
- Hospital wing
- Hospital
- Prescription
- Bill
- Patient List
- Medical Chart

6 Class Diagrams



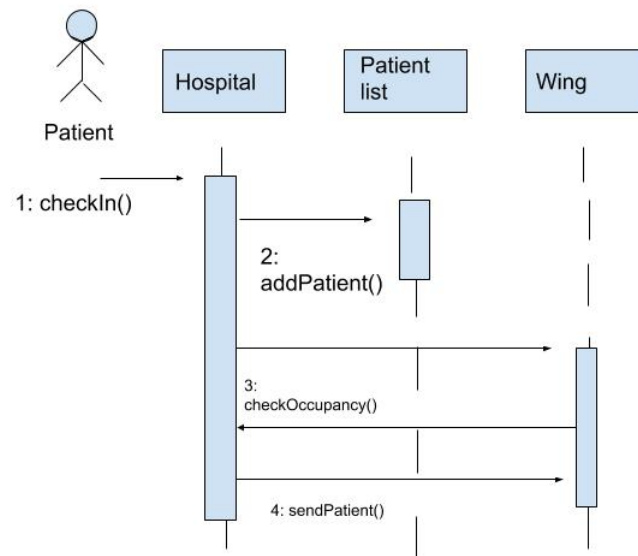


Figure 2: This sequence diagram illustrates the most basic level of the check-in process which simply finds a suitable wing of the hospital for the patient given carrying capacity and care needs.

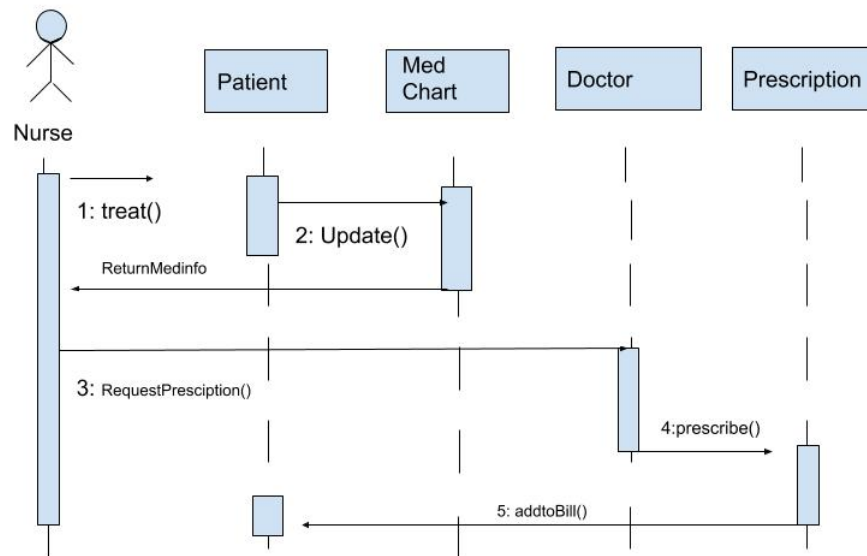


Figure 3: Our sequence control diagram illustrates the centralized nature of the work being done by a nurse in the hospital who assesses a patient's need for pain management or for other symptoms and gives correction prescription.

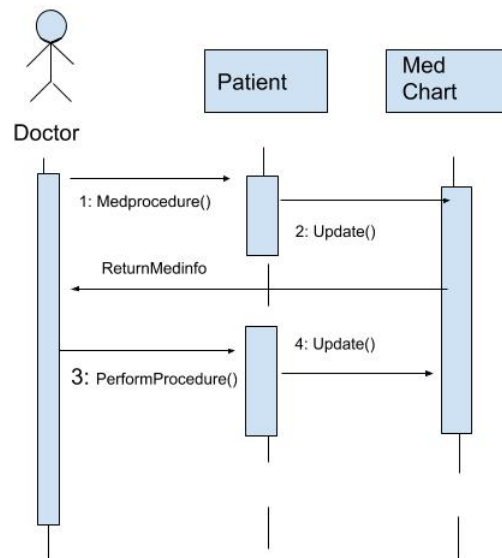


Figure 4: Sequence diagram highlights how a doctor's procedure on a patient is tracked at administrative level. Keeps track of patient care needs and reactions to the operation. Operation is centralized in nature

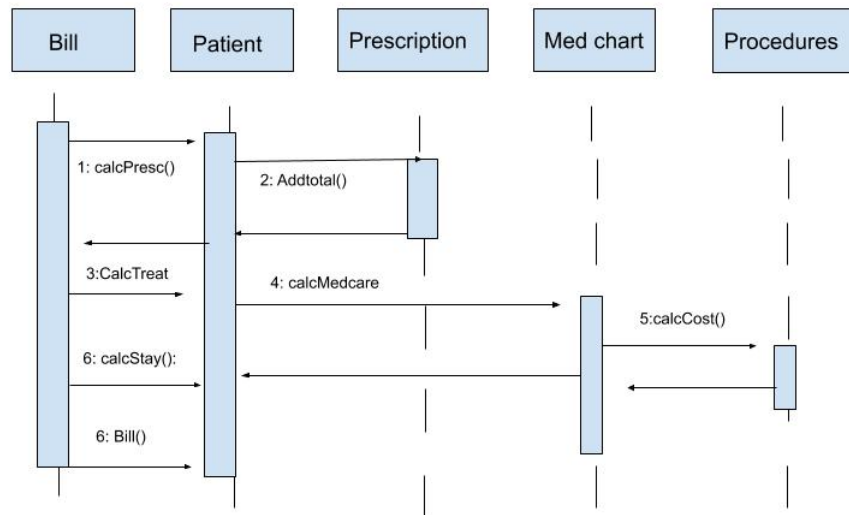


Figure 5; Sequence diagram illustrates the many different factors that go into calculating the bill and reveals the importance of the med chart in keeping track of important information for the patient.

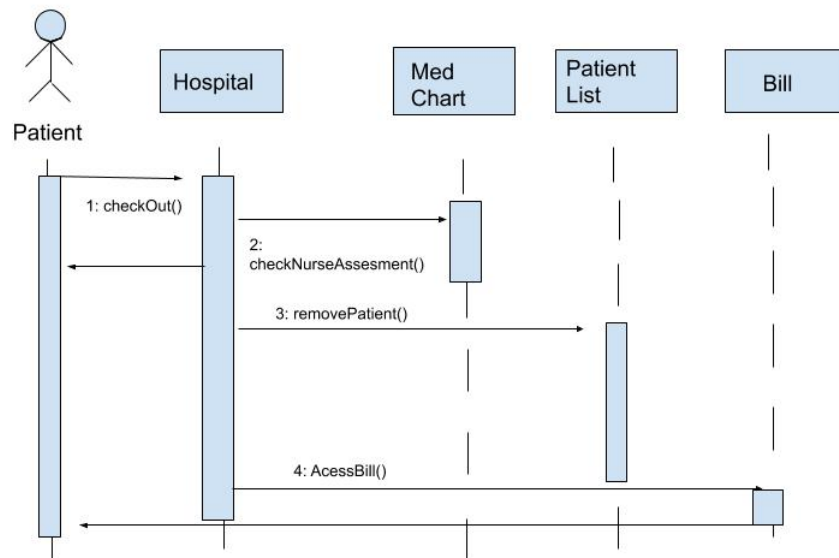


Figure 6: Reveals the nature of the checkout process which requires the hospital to both assess further needs of the patient outside of medical care and calculates totals based on treatment provided.