SOFTWARE REQUIREMENTS

Painkiller Injection System

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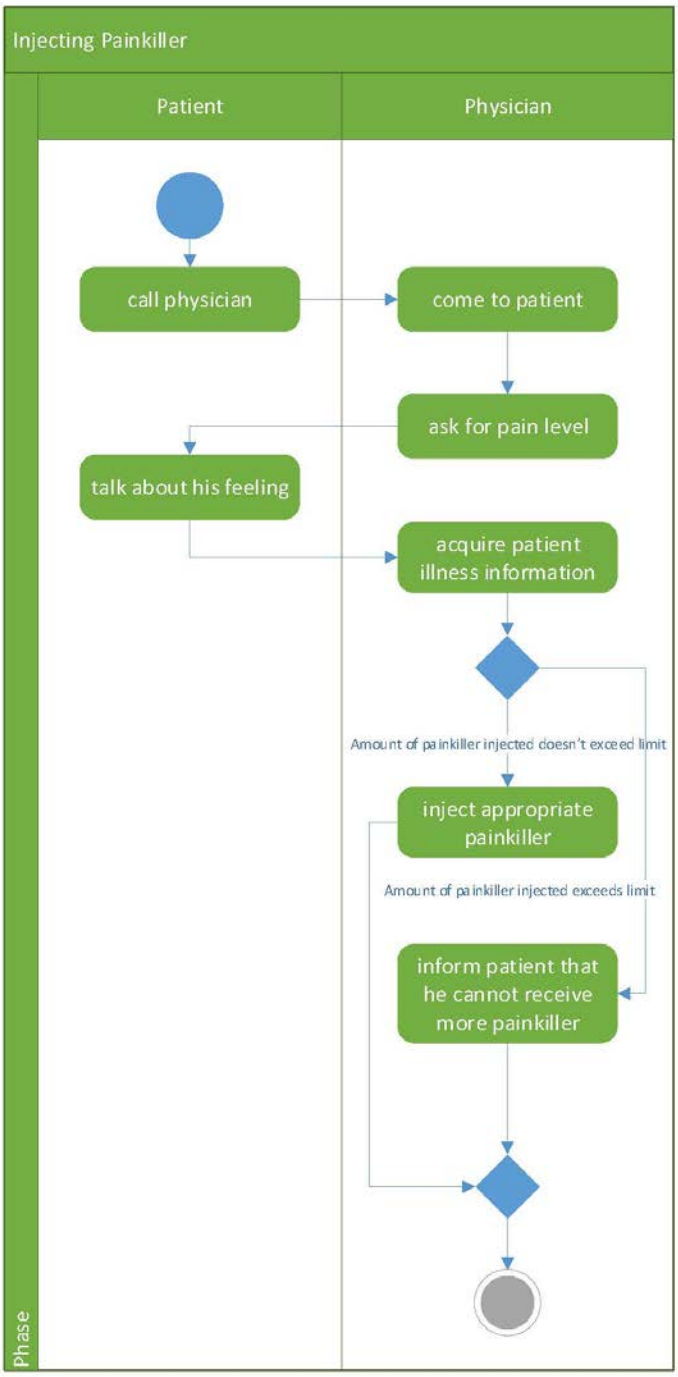
System Objective

In this project, we are developing a software that simulates the painkiller injection system which is used in medical field to inject painkiller automatically to decrease patients' pain level. The system would provide a functional interface for physicians and patients and take care of painkiller injection automatically based on predetermined parameters.

Domain Analysis

The participants of activities of the game can be categorized into the patients and the physicians. And the relationship of them are shown as follows:

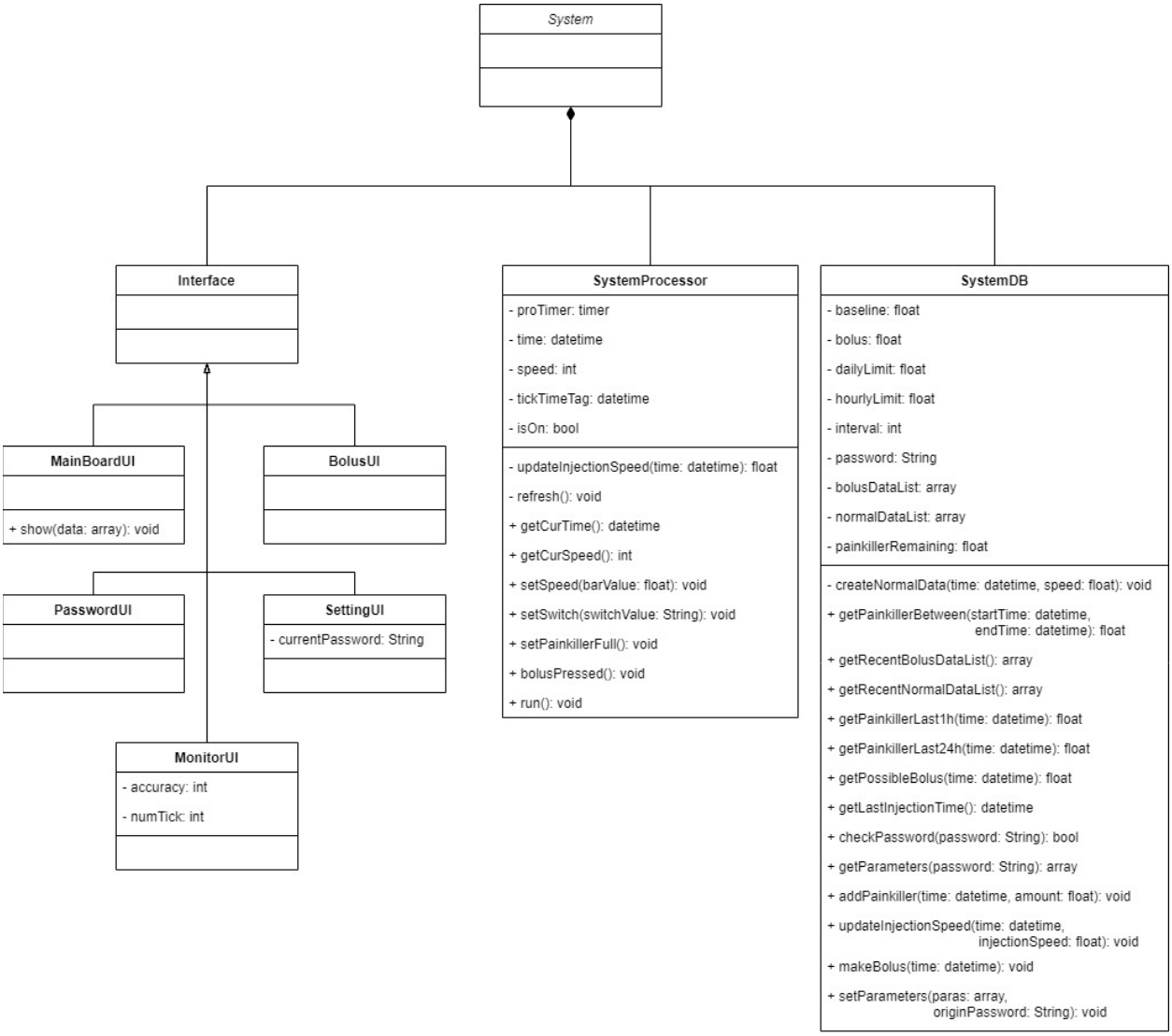
Here is the sequence of events for injecting painkiller:



System Architecture

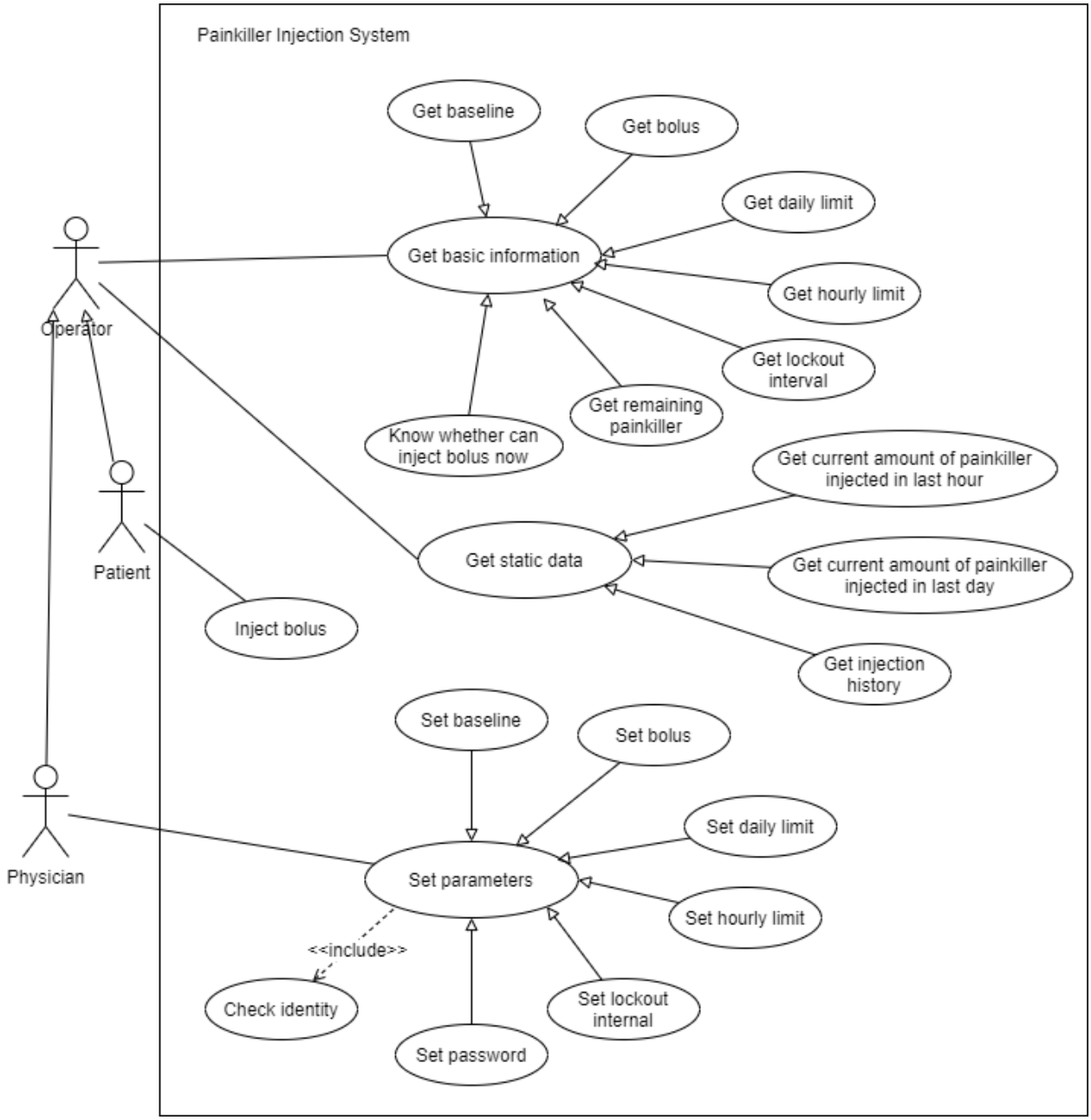
From the information above, we will design a software system that can take care of painkiller injection automatically. The physician only needs to set parameters before using it and the patient can inject a bolus individually to reduce pain level when needed. Additionally, the system can display statistical data of injection for the physician to do analysis.

The system architecture is shown below:



Use Cases

The system can achieve the following use cases from the patients' and physicians' perspectives:



Software Requirements

R1: SystemUI

- R1.1: The physician should be able to set parameters.
    - R1.1.1: The physician should be able to set baseline
    - R1.1.2: The physician should be able to set bolus
    - R1.1.3: The physician should be able to set daily limit
    - R1.1.4: The physician should be able to set hourly limit

    - R1.1.5: The physician should be able to set lockout interval
    - R1.1.6: The physician should be able to set password
- R1.2: The system should be able to show basic information.
    - R1.2.1: The system should be able to show baseline
    - R1.2.2: The system should be able to show bolus
    - R1.2.3: The system should be able to show daily limit
    - R1.2.4: The system should be able to show hourly limit
    - R1.2.5: The system should be able to show lockout interval
    - R1.2.6: The system should be able to show current amount of remaining painkiller
    - R1.2.7: The system should be able to show whether can inject bolus now
- R1.3: The system should be able to display statistic data.
    - R1.3.1: The system should be able to show current amount of painkiller injected in an hour
    - R1.3.2: The system should be able to show current amount of painkiller injected in a day
    - R1.3.3: The system should be able to show injection history.
- R1.4: The system should be able to display low amount of painkiller warning.

R2: BolusUI

- R2.1: The patient should be able to press bolus button.

R3: SystemProcessor

- R3.1: The system should be able to inject painkiller normally.
- R3.2: The system should be able to stop injection when meeting the limit.
    - R3.2.1: The system should be able to stop injection when meeting the hourly limit.
    - R3.2.2: The system should be able to stop injection when meeting the daily limit.
- R3.3: The system should not be able to reject injecting bolus during the lockout interval.
- R3.4: The system should be able to check user's identity.

R4: SystemDataBase

- R4.1: The database should be able to save injection history.
    - R4.1.1: The database should be able to save baseline injection history.
    - R4.1.2: The database should be able to save bolus injection history.
- R4.2: The database should be able to calculate current amount of painkiller injected.
    - R4.2.1: The database should be able to calculate current amount of painkiller injected in an hour.
    - R4.2.2: The database should be able to calculate current amount of painkiller injected in a day.