Design Specification

The Emergency Room Simulation software will allow the user to enter the average hourly patient arrival rate, the number of doctors working in the emergency room, and the number of nurses working in the operating room. As a patient arrives in the emergency room, they are assigned a priority value from one to twenty. Doctors can treat any priority value and require one to twenty minutes, while nurses can treat any priority less than eleven and require one to ten minutes. When a healthcare professional finishes with a patient, they take the highest priority eligible patient in the emergency room and begin treatment. The ER maintains records for each patient. Each patient record has a list of visits, documenting arrival time, departure time, and priority.

Use Cases

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| --- | --- | --- | --- |
| Case Number | Use Case | Input | Response |
| 1. | User runs simulation |  | Prompt User for Patient Hourly Arrival Rate |
|  |  | User enters Patient Hourly Arrival Rate | If response is invalid, reprompt. Otherwise, prompt for number of doctors |
|  |  | User enters number of doctors | If response is invalid, reprompt. Otherwise, prompt for number of nurses. |
|  |  | User enters number of nurses | If response is invalid, reprompt. Otherwise, run simulation. Output summary of 24 hour simulation run. Display post-run menu. |
| 2. | User requests patient data. | User selects Single Patient Data from post-run menu. | Prompt User for patient name |
|  |  | User inputs patient name. | If name is found, output record of patient visits. Otherwise, ask whether the user would like to try another name. |
|  |  | User inputs yes or no. | If user inputs yes, reprompt for patient name. Otherwise display post-run menu. |
| 3. | User requests list of patient names. | User selects Get All Patient Names | Output the names of all patients discharged during this simulation |
|  |  |  | Output post-run menu |

UML

Pseudocode