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CS273

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Final Project Design Documents

**Requirements specifications**

The software for the Emergency Room Simulator should be able to simulate an emergency room in a small town as accurately as possible. This means it should be able to simulate different injuries and illness as well as treat each of these based on there severness. It needs to be able to calcul….. Because the simulation is an emergency room all the data from the patients must be stored for future treatments ie what surjies they have had or illnesses…….

**Use Case:**

Running program

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| **Step** | **User’s Actions** | **System’s Response** |
| 1. | User issues command to start the program to simulate an emergency room for the town of 273ville. |  |
| 2. |  | The Emergency room simulator is started, and the town of 273ville’s emergency room is initialized. In addition, the system prompts the user for the patient arrival rate. |
| 3. | User inputs patient arrival rate. | If user enters a zero or negative arrival rate system re-prompts. |
| 4. |  | System prompts for number of doctors. |
| 5. | User inputs number of doctors. | If user enters below one doctor system re-prompts. |
| 6. |  | System Prompts for number of nurses. |
| 7. | User inputs number of nurses. | If user inputs below zero nurse’s system re-prompts. |
| 8. |  | Simulation runs calculating the average visit time of all patients as well as displaying a menu with options to list all names of residents that were treated and retrieve a record of the resident by their name. |

List all names of residents that were treated

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| **Step** | **User’s Actions** | **System’s Response** |
| 1. | User issues command to list all names of residents that were treated. |  |
| 2. |  | System searches through records of patients treated and displays each patients name. Program exits |

Retrieve record of resident by name

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| **Step** | **User’s Actions** | **System’s Response** |
| 1. | User issues command to retrieve record of resident of 273ville by their name. |  |
| 2. |  | System prompts for name of resident. |
| 3. | User enters name of resident. | If resident does not exist, system re-prompts for name. If no record state, there was no record found. |
| 4. |  | System searches through residents and displays record if there is one. Prompts user for name of resident. If exit command entered exit program. |

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| **Current\_Visit** |
| **-** int illness\_severity  - int visit\_time  - int arrival\_time  - int discharge\_time |
| + Current\_Visit()  + Current\_Visit(int illness\_severity, int clock)  - int calculate\_illness\_severity()  - void calculate\_visit\_time()  + int get\_severity() |

**UML Diagram**

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| **Person** |
| **-** string name  - int age  - Current\_Visit visit |
| + Person(int age, string name)  + int get\_age()  + string get\_name()  + void update\_visit() |

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| **Hospital** |
| - vector<Medical\_Record \*> patient\_records  - priority\_queue<Person \*> current\_patients  - int number\_doctors  - int number\_nurses  - int arrival\_rate |
| + Hospital()  + void store\_current\_visit()  + void update(int clock)  + void menu() |

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| **Medical\_RecordS** |
| - int number\_visits  - Person patient  - string patient\_id  - vector<Current\_Visit \*> visit\_record |
| + Medical\_Record(sint number\_visits)  + void print\_med\_record()  + void update\_visits() |

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| **Simulation** |
| **-** int clock |
| + Simulation()  + void get\_data()  + void run\_sim()  + virtual void menu() |

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| **Caretaker** |
| **-** |
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| **Doctor** |
| **-** int treatment\_time  - string name |
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| **Nurse** |
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Pseudo -code