**Emergency Room Simulator**

Requirement Specification:

Use Cases (moments/clock ticks):

Choose how many doctors/nurses

Choose hourly patient arrival rate

Create Multiple Doctor Queues and Nurse Queues depending on how many were added

Add Patient to the emergency Queue

Put Patient in Doctor or Nurse Queue depending on priority

Remove from the Queue and send home

Record how long they waited in the Queue they were in

UML Diagram:

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| **Simulator/Hospital** |
| - num\_of\_doctors : int  - num\_of\_nurses : int  - total\_time : int  - average\_visit\_time : double  - average\_wait\_time: double  - total\_patients\_served : int  - clock : int  - read\_int () |
| + enter\_data ()  + run\_simulation ()  + end\_data ()  + end\_menu ()  + search (name)  + show\_list () |

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| **Nurse** |
| - treatment\_time : int  - service\_time : int  - visit\_time : double  - nurse\_wait\_time : double  - patients served : int |
| + set\_emergency\_queue ()  + get\_num\_of\_patients\_served ()  + get\_treatment\_time ()  + get\_visit\_time ()  + get\_nurse\_wait\_time ()  + update () |

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| **Doctor** |
| - treatment\_time : int  - service\_time : int  - visit\_time : double  - doctor\_wait\_time : double  - patients served : int |
| + set\_emergency\_queue ()  + get\_num\_of\_patients\_served ()  + get\_treatment\_time ()  + get\_visit\_time ()  + get\_doctor\_wait\_time ()  + update () |

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| **Emergency Room** |
| - arrival\_rate : double  - num\_of\_doctors : int  - num\_of\_nurses : int  - num\_of\_patients : int |
| + set\_patient ()  + set\_arrival\_rate ()  + get\_num\_of\_patients ()  + set\_num\_of\_doctors ()  + set\_num\_of\_nurses ()  + illness\_level ()  + update () |

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| **Patient** |
| - arrival\_time : int  - illness\_level : int  - start\_treatment\_time : int  - first\_name : string  - last\_name : string |
| + add\_patients ()  + get\_first\_name ()  + get\_last\_name () |

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| **Random** |
| + next\_double ()  + next\_int () |

Pseudo – Code: