Team Names: Finn, Spencer, and James

Team Name: TBD

* Avg time for patients is: (.7) × (55 ÷ 10) + (.2) × (65 ÷ 5) + (.1) × (90 ÷ 5) = **8.25 min**

**Emergency Room Simulator**

Maps:

* map<int, vector<HospitalVisit\*>> hospitalRecords
* map<string, int> people
* map<int, string> IDNumber

Vectors:

* <Worker\*> workers
* <string> treatedPatients

Queues:

* priority\_queue<HospitalVisit\*> waitingRoom
* priority\_queue<HospitalVisit\*> highSeverity
* priority\_queue<HospitalVisit\*> lowSeverity
* queue<Nurse\*> availableNurse
* queue<Doctor\*> availableDoctor

**-------------------------------------------------------------------------------------------------------------------------------**

**Pseudo Code**

Before loop:

1. Run through .txt to get SimVille names
2. Ask for number of doctors
3. Ask for number of nurses
4. Ask for average patients per hour

Loop (for(int i = 0; i < 60\*24\*7(one week); i++)):

1. Grab finished workers and place in respective queues
2. Randomly generate patient
   1. Place in queue
3. Divide up patients to workers
   1. Use PATIENT.getSeverity() in WORKER.heal()
   2. PATIENT.healed()
4. If workers remain
   1. Pop them from queue

After loop:

1. Move through all of patients and find average time
   1. If the patient was served
      1. Add to total time
      2. Increase number of patients
   2. Else (patient wasn’t served)
      1. Increase number of missed patients
   3. Divide by number of patients
2. Output ending
   1. Output Avg time
   2. Output number of missed patients
   3. Output all patients that were treated
   4. Ask user if they want anyone’s record

**-------------------------------------------------------------------------------------------------------------------------------**

**UML**

|  |
| --- |
| **Worker** |
| -int AvailableTime |
| +virtual int available(int currentTime) = 0  +void heal(int currentTime, int severity) |

|  |
| --- |
| **Nurse** |
|  |
| +Nurse()  +int available(int currentTime) |

|  |
| --- |
| **Doctor** |
|  |
| +Doctor()  +int available(int currentTime) |

|  |
| --- |
| **HospitalVisit** |
| -int severity  -int entranceTime  -int timeHealed |
| +HosptialVisit(int currentTime)  +void healed(int currentTime)  +int getSeverity()  +int getTime()  +void print() |

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**Use Cases**

User runs program:

|  |  |
| --- | --- |
| **User** | **Computer** |
| Runs Program |  |
|  | Builds and outputs request for number of doctors |
| Inputs number of doctors |  |
|  | Stores number of doctors and requests number of nurses |
| Inputs number of nurses |  |
|  | Stores number of nurses and requests number of patients per hour |
| Inputs number of patients per hour |  |
|  | Runs simulation |

Ending sequence (Post simulation run):

|  |  |
| --- | --- |
| **User** | **Computer** |
|  | Outputs avg time per patient |
|  | Outputs option to request specific patient record |
| Input patient name (id number) |  |
|  | Output record of all hospital visits |
| Input 0 |  |
|  | Program closes |