Final Project Specifications

**Requirement Specification:**

The simulation must represent 2000 people living in a town. Each person will be equally likely to require a trip to the hospital but no more than one person per minute will arrive. When a person arrives at the hospital they are assigned a number based on the extent of their injuries/sickness. Doctors can heal any triage value which will take from 1 to 20 minutes while nurses can only treat patients with triage value less than 11 but it only takes 1 to 10 minutes. The simulation will allow the user to input how many patients on average arrive per hour, how many nurses are working, and how many doctors are working. The simulation will run for one week or 10080 minutes. The simulation will also keep a record of all the patients that have visited the hospital and provide a method for a user to search for specific patients.

**Use Cases:**

Information gathering:

1. System prompts user for average patient per hour rate.
   1. User inputs acceptable int value (1 – 60).
   2. User doesn’t input acceptable int value and user is prompted again.
2. System prompts user for number of doctors in hospital.
   1. User inputs acceptable int value (input > 0).
   2. User doesn’t input acceptable int value and user is prompted again.
3. System prompts user for number of nurses in hospital.
   1. User inputs acceptable int value (input > 0).
   2. User doesn’t input acceptable int value and user is prompted again.

Clock tick:

1. Check if new patient arrives with random number and average patient arrival.
   1. New patient is triaged with a weighted random number (1 – 10, 70% 11-15, 20% 16 – 20, 10%)
   2. No new patient arrives
2. Check if doctor is free to treat patient.
   1. If available assign doctor to highest triage number patient.
   2. If not available treat current patient.
   3. If no patients waiting do nothing.
3. Check if nurses is free to treat patient.
   1. If available assign nurses to highest triage number under 11 patients.
   2. If not available treat current patient.
   3. If no patients waiting do nothing.
4. Check if patients are done being treated.
   1. If done and visit information to record and remove from hospital.
   2. If not done do nothing.
5. Check if simulation is over.
   1. If done calculate and display average visit time and allow access to patient records.
   2. If not over move to next clock tick.