**Really Overpowered Unicorns Save Everyone (R.O.U.S.E.) Hospital**

**Simulation Proposal**

Proposed by

Ancel Carson, Jacob Kelsey, Spencer Davis

10-05-2018

We will be writing you a simulation that simulates incoming patients assigned with a random priority spanning from priority level 1 through 4. These levels are based upon different percentages. The first case has a 20% chance, the second case has a 30% chance, the third case has a 40% chance, and the fourth case has a 10% chance. The first priority means that minor treatment is needed. The second means that common treatment is needed. The third means that serious treatment is needed and the fourth priority means that it is a life or death situation.

When the program launches the user will be allowed to choose how many rooms they wish to staff. This can range from 1 to 10 rooms. Patients will arriving at a steady rate, but the time between patients will vary between 5 and 10 minutes. After the patient arrives they will be assigned to a room when one opens up. Priority 4 patients will always be assigned the first open room. If there are no priority 4 patients in the waiting room, the other patients will be assigned to open rooms starting with higher priority first, unless a lower priority patient has been waiting for an extended period.

Once patients are in a room they be in there for a specified amount of time based upon what priority they are. Priority 1 will stay in the room for 30 minutes, Priority 2 will stay in the room for 45 minutes, Priority 3 will stay in the room for 60 minutes, and priority 4 will stay in the room for 20 minutes before being moved to surgery. When a patient is assigned a room there is a chance that extra time will be added to the patient’s room time. This is due to unseen events that could happen in the real world. We will be focusing on a 10 hour window, and seeing how many empty rooms are left, and how many of each patient type are waiting in the lobby. The output of the program is attached to the second page of this document. In your reply please note if you desire for the optional output to be included in the program.

After 10 hours:

Average wait time for rating 1: # minutes

Average wait time for rating 2: # minutes

Average wait time for rating 3: # minutes

Average wait time for rating 4: # minutes

# of patients of rating 1 were left.

# of patients of rating 2 were left.

# of patients of rating 3 were left.

# of patients of rating 4 were left.

# rooms are empty.

\*Program continues\*

It took # hours to service the # patients that remained in the lobby.

Simulation has been completed