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Requirement Specification:

The hospital simulator program will stimulate an emergency room. The program is dependent on the user input, and it runs different scenarios due to the users input. The user is expected to input the parameters for the simulation in order for the simulation to do what it is meant to do. When a patient arrives they will be served according to their level of illness. The priority ranges between if it is an illness that occurs frequently or if it is a severe illness. The number of caregivers that will be available to treat the patients and the patients that will arrive on average is based on those inputs. This also ask the simulator to possess an external file in order to import the patient’s names. There are 2 types of caregivers either Doctors or Nurses, and they are assigned to treat the patients with the priority matching the level of illness while considering the time. The hospital keeps a record of every patient that has visited the emergency room, how many times they visited with the severity of illness linked to each visit. The use is asked to input the average rate of patients coming in, the number of doctors and nurses working in the ER. At the end of the simulation the program will calculate the average patient arrival at the ER, and it will have a display menu with options to list the names of the residents treated, and retrieve the record of a resident by name.

Use cases:

Program: prompts the user for the number of patients per hour

User: inputs number of patients

If the user inputs out of range the program throws exception

Program: prompts the user input number of doctors

User: inputs number of doctor

If out of range the program throws exception

Program: prompts the user to input numbers of nurses

User: inputs number of doctors

If out of range the program throws the exception

Program: process the text documents of patients and begins simulation

As it processes generates a random decimal from 0-1

It checks if the decimal is less than or equal to .5 which set the probability of patient of being ill, giving them equal chance of them going to the hospital for sickness.

Program generates random number from0-60

If number is less than avg rate of the hourly arrivals, residents in sick queue goes to hospital, transfer resident from entry queue to ER queue

Program: generates a random decimal from 0-1

If decimal is less than or equal to 0.7

Generates a random number integer from1-10 and assigns to patient as severity of sickness

If decimal is greater than 0.7 and less than or equal to .9

Program generates integer from 11-15 and assigns to patient as severity of sickness

Or else if the decimal is greater than 0.9

Program generates integer from 16-20 and assigns to patient as severity of sickness

Programs runs through vector of the caregivers

If cargivers are not occupied and are empty

Caregiver treats a patient

Patients exit the ER

Patients time spent is calculated and added to the totalTreatment()

Patients is incremented by 1

Patients information is updated at historyRecordsMap()

Program runs this simulation again

When sim ends, it calculated the print average time

Program: displays the menu and prompts the user to choose from the menu

User: selects what it wants from the menu

Case2 (view list of patients)

Prints list of patients with their record of level of sickness

Case3 (look up a patient)

Prompts the user to search for a patient they are looking for

Case4() quit/ good bye

Or exits Program ends