MIDTERM

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- Firstly takes input from user by using getopt().According to those inputs child processes creates and clinic vaccine program starts.

- Nurse processes read the input file until the end of file one byte by one and decides current byte belongs to which vaccine.If it belongs to vaccine1 posts the vaccine1's semaphore otherwise posts the vaccine2's semaphore.

- Nurses will read the file untill buffer gets full and they will sleep until buffer gets a empty slot by vaccinator processes.

- While Nurses are providing the vaccines,vaccinator processes are waiting(semwait()) for vaccines(vaccine1 and vaccine2).If clinic has both vaccine at the same time,vaccinator invites a citizen to clinic.

- While all this operations citizen processes are waiting for(citizenmutex) Vaccinator processes.If a vaccinator calls a citizen,citizen will wake up and gets vaccines(vaccine1 and vaccine2 at the same time.).Then waits for another call for other doses(t parameter).

- 8 POSIX Semaphores used on this clinic vaccine program.

  - nurse_vac1:This semaphore used for counter of the vaccine1.

  - nurse_vac2:This semaphore used for counter of the vaccine2.

  - empty:This semaphore used for buffer synchronization.If buffer is still empty,it means nurse can read the file.

  - full:This semaphore used for buffer synchronization.If buffer is full,it means vaccinator needs to invite a citizen and vaccinate that citizen.So buffer drains off and nurse can read the file.

  - mutex:This semaphore used for entering and leaving the critical regions.Used on nurses and vaccinator synchronization.

  - counter:This semaphore used for terminating the vaccinating operation.If it equals to t*c ,it means all vaccines are vaccinated to citizens so clinic can close.

  - citizenmutex:This semaphore used for calling citizens to clinic.So it used for synchronization for pipe reading and writing.

- We have also 2 pipes.These pipes used for IPC.

  - pip[2]:This pipe used between vaccinators and citizens.By using this pipe vaccinators can call citizens to clinic(Writes and reads the citizens pid).

  - pipeforvac[2]:This pipe used for vaccinators vaccinate how many times.

- Input file format needs to contain just 1 and 2's.Because Nurse reads them like vaccine1 and vaccine2.If it is not construct like in figure,probably program will crush.

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161044049.c    ×    alp.txt    ×
1   12122112122112122112122212
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