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ACPC Simulation

Algorithm:

The program defines a class for each computer that have:

* the computer life
* method to check if the task given can be added to the computer, then added it

it also defines an exponential random number generator that calculate random time based having exponential behavior

1. it gets a random number from uniform distribution
2. then get inverse of the CDF equation of the exponential distribution
3. then substitute with the random number in that equation to get random exponential number

Main Program:

The simulation is processed using multi threads for each computer and to add tasks.

1. Queue of 10 computers is created
2. Queue of tasks is created
3. The task thread start with 5 hours life
   1. It wait for random exponential time from the function
   2. If the waiting time exceeds the simulation time the thread ends
   3. add task with exponential time to the task queue
4. check if the task queue is not empty and the computers queue is not empty
5. check if the task can be given into the computer on the top of the queue
   1. if yes 🡺 the computer thread is created that take the task and process it with its processing time, then return the computer to the computer queue
   2. if no 🡺 make the computer at the end of the queue
6. finally it wait for all the threads to end its processes and then print the analysis of the simulation