Assignment #2 Semaphores completed by Huimin Chen(24017423)

<https://github.com/Hmmsien/CISC3320.git>

Problem statement:

write a program that uses semaphores to simulate mediated access to three computer resources:

1. 5 printers
2. 6 plotters
3. 4 scanners

Requirement:

1. Declare and initialize the semaphores with the appropriate values.

2. Create a routine that loops through a sequence 4 times. In each iteration the process

a. forks a child process.

i. uses a random number generator (1-3) to determine which resource it will request

ii. uses native semaphore function or one that you create to request the appropriate resource

iii. Print the process’ PID and the requested resource type

iv. Print the process’ PID and the success/failure of the request

v. if the resource is available - sleep for a random time between 1-3 seconds and then release the resource using appropriate the semaphore function

vi. if the resource is not available – sleep for a random between 2-4 seconds and repeat the request (go to step ii).

vii. Terminate

b. Sleeps for a random time between 1-3 seconds

Assumptions:

Done by JAVA

Semaphore sem = new Semaphore(); to declare and initialize the semaphore

Sem.start(); to create a child process

ThreadLocalRandom.current().nextInt(start , end + 1) for random number

Use switch statement to echo requested semaphore

tryAcquire() to determine if the request is success

Thread.sleep() to set sleep time