Csc 332 Fall 2018.       HW5 (Critical Section Algs)       
  
DUE: Wed Nov 28   
  
Consider the following solutions to the critical section   
problem with two processes i and j. The given code is for process i; the code of process j is symmetrical unless stated otherwise.  
  
  
In each question, for each of the following properties, state whether it is satisfied or not (YES or NO). In case your answer is YES, give an explanation.   
In case the answer is NO, give an appropriate example that proves your answer.   
In either case, your answer should be in 100 words or less.  
(a) mutual exclusion (b) liveness (c) fairness  
  
  
Q1.  
/\*This is a minor modification of Peterson's Solution--- lines L1 and L2 have been reversed\*/  
  
Class Vars:  
---------------  
  
bool flag[i]=false, flag[j]=false;  
        int turn=i;  
  
lock(i)  
---------------------------------------  
{  
L1:  turn= i;  
L2:     flag[i]= true;  
L3:     while (flag[j] and turn== i);  
}  
  
unlock(i)  
---------------------------------------  
{L4:    flag[i]= false;}  
  
  
Q2.   
(This is a minor   
modification of Peterson's Solution--- see line L3).  
  
Class Vars:  
-------------  
  
        boolean flag[i]=false, flag[j]=false;  
        int turn=i;  
lock(i)  
---------------------------------------  
{  
L1:  flag[i]= true;  
L2:     turn= i;  
L3:     while (turn==i OR flag[j]);  
}  
  
unlock(i)  
---------------------------------------  
          
{L4:    flag[i]= false;}  
  
  
Q3.  
Class Vars:  
-------------  
  
        bool flag[i]=false, flag[j]=false;  
          
lock(i)  
---------------------------------------  
{         
L1:   flag[i]= true;  
  
L2:     while !(flag[i] && flag[j]);   
}  
  
unlock(i)  
---------------------------------------  
  
{L3:    flag[i]= false;}  
  
Q4.  
Class Vars:  
-------------  
        int turn;  
        turn = i;  
  
lock(i)  
{  
L1:     turn=i;   
L2:   while (turn==j)  
L3:             turn= i; /\* end of loop \*/  
}  
  
unlock(i)  
  
{return;}