Suppose a banking system has two methods: deposit() and withdraw(), used by clients to deposit and withdraw a certain amount passed as a parameter from their account, respectively. Suppose the algorithms for withdraw() and deposit() are as shown below. A Boolean flag is used for synchronization initialized to false.

deposit (amount)	withdraw(amount)
<pre>while (flag); flag = true; balance+= amount; flag = false;</pre>	<pre>while (flag); flag = true; balance -=amount; flag = false;</pre>

What is (are) the name(s) of the shared variables in this example.

Mark only one oval.

	5. Q1.2 *
	Suppose a banking system has two methods: deposit() and withdraw(), used by clients to deposit and withdraw a certain amount passed as a parameter from their account, respectively Suppose the algorithms for withdraw() and deposit() are as shown below. A Boolear (flag is used for synchronization initialized to fairs.
	deposit(amount) withdraw(amount)
amount	while (flag); flag = true; balance = amount; balance = amount;
balance	flag = false; flag = false;
flag	
balance and appount	Does the proposed solution satisfy the mutual exclusion requirement? Mark only one oval.
balance and flag	Solution satisfies mutual exclusion requirement
balance, amount and flag	Solution violates mutual exclusion requirement

deposit and withdraw a certain amou	nethods: deposit() and withdraw(), used by contraction their account, responser () and deposit() are as shown below. A lialized to false.
deposit(amount)	withdraw(amount)
({
while (flag) ;	while (flag);
flag = true; balance+= amount;	flag = true; balance -=amount;
flag = false;	flag = false;
1	I Luig - Luibe,
1	
500. Concurrently, the husband calls would be the value of balance after lark only one oval.	
500. Concurrently, the husband calls would be the value of balance after	deposit (100) and wife calls withdraw (50)
500. Concurrently, the husband calls would be the value of balance after that only one oval.	oring an account. The initial balance in the accoundeposit (100) and wife calls withdraw (50) r both operations complete concurrently.
500. Concurrently, the husband calls would be the value of balance after dark only one oval. 450	deposit (100) and wife calls withdraw (50)
500. Concurrently, the husband calls would be the value of balance after stark only one oval. 450 600	deposit (100) and wife calls withdraw (50)

Q1.4 *

Suppose a different solution is used instead, that utilizes two flags initialized to false instead as follows. Does the proposed solution satisfy the progress requirement?

deposit (amount)	withdraw(amount)
<pre>{ while (flag[1]); flag[0] = true; balance+= amount; flag[0] = false; }</pre>	<pre>while (flag[0]); flag[1] = true; balance -=amount; flag[1] = false; }</pre>

Mark only one oval.

- Solution satisfies the progress requirement
- Solution violates the progress requirement

Suppose that a semaphore sync is used instead to coordinate the two methods deposit () to the statement wait (sync); ? What would be a proper line(s) to place the statement wait (sync); ? What would be a proper line(s) to place the statement wait (sync); ? What would be a proper line(s) to place the statement wait (sync); ? Suppose a buffer of 10 slots is shared between 2 producers and 3 consumer processes. A semaphore #11? What would be the initial value of semaphore #11? Assume the following produced synchronize the exocution of threads 11, 12 and 13 by using "no beautiful processes and a line order to print the other to print the statement wait (sync); ? Mark only one oval. 1		Q1.6 *	
and withdraw (amount) What would be a proper fine(s) to place the statement wait (sync); ? What would be a proper fine(s) to place the statement wait (sync); ? What would be the initial value of the semaphore and 3 consumer processes. A semaphore #ull; willing to track the number of full slots. Assume the following producedes syndromics the execution of threath TI, T2 and T3 by using "no buy Whatef" independence of threath TI, T2 and T3 by using "no buy Wh	Suppose that a semaphore sync is used instead to coordinate the two m	methods deposit()	
What would be a proper line(s) to place the statement wait (ayno);? What would be a proper line(s) to place the statement wait (ayno);? What would be a proper line(s) to place the statement wait (ayno);? What would be the initial value of the semaphore ayno? Mark only one oval. (W3) What would be the initial value of the semaphore ayno? Mark only one oval. (W3) What would be the initial value of semaphore £ul1; Assume the following produceds synchronize the execution of threads 11, 12 and 13 by using "no buy What would be the initial value of semaphore £ul1; Assume the following produceds synchronize the execution of threads 11, 12 and 13 by using "no buy What would be the initial value of semaphore £ul1; Assume the following produced synchronize the execution of threads 11, 12 and 13 by using "no buy What would be the initial value of semaphore £ul1; Assume the following produced synchronize the execution of threads 11, 12 and 13 by using "no buy What would be the initial value of semaphore £ul1; Assume the following produced synchronize the execution of threads 11, 12 and 13 by using "no buy What would be the initial value of semaphore £ul1; Assume the following produced synchronize the execution of threads 11, 12 and 13 by using "no buy What would be the initial value of semaphore £ul1; Assume the following produced synchronize the execution of threads 11, 12 and 13 by using "no buy What would be the initial value of semaphore £ul1; Assume the following produced synchronize the execution of threads 11, 12 and 13 by using "no buy What would be the initial value of semaphore £ul1; Assume the following produced synchronize the execution of threads 11, 12 and 13 by using "no buy What would be the initial value of semaphore £ul1; Assume the following produced synchronize the execution of threads 11, 12 and 13 by using "no buy What would be the initial value of semaphore £ul1; Assume the following produced synchronize the execution of threads 11, 12 and 13 by using "no buy What would be the ini	and withdraw().	and withdraw().	sed instead to coordinate the two methods deposit ()
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What would be the initial value of the semaphore syne? Mark only one oval. 1 2 CSC227 Oute 2 Second Bernester 1442 Q2.2 ** Suppose a buffer of 10 slots is shared between 2 producers and 3 consumer processes. A semaphore full slots. Assume the producers have produced two items]into the buffer. What would be the value semaphore full? Mark only one oval. 0 1 2 Mark only one oval. 1 2 Mark only one oval. 1 2 Mark only one oval. 1 3 Semaphore sized in order to price the output in the following pseudocodes synchronics the execution of threads 11, 17 and 13 by uning 'ne buy Wishing' implementation utilities the output in the following manufacture is and in order to price the output in the following manufacture is and in order to price the output in the following manufacture is sample to semaphore size of the sample to semaphore size of	balance += amount; (D2) balance -= amount (D3)	(W3) Dalance += amount; (D2)	balance -= amount; (W2)
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Mark only one oval. 1	Mark only one oval.		2
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red between 2 producers and 3 consumer processes. A ck the number of full slots. Suppose a buffer of 10 slots is shared between 2 producers and 3 consumer processes. A semaphore £ull? Suppose a buffer of 10 slots is shared between 2 producers and 3 consumer processes. A semaphore £ull? Is utilized to track the number of full slots. Assume the producers have produced two items into the buffer. What would be the value semaphore £ull? Mark only one oval. 1. Q31* Assume the following pseudocodes synchronize the execution of threads 11, 12 and 13 by using no Busy Waiting implementation silling two semaphores: \$and \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order to print the output in the following marks of \$\overline{g}\$ in order			
Suppose a buffer of 10 slots is shared between 2 producers and 3 consumer processes. A semaphore £u1.2 is utilized to track the number of full slots. Assume the producers have produced two items into the buffer. What would be the value semaphore £u1.2? Mark only one oval. 2. Q3.1* Assume the following pseudocodes synchronize the execution of threads TI, T2 and T3 by using "no Bury Waiting" implementation utilizing two semaphores: \$and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the following many forms and 0, in order to print the output in the output	Q2.1*		CSC227 Quiz 2 Second Semester 1442
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Assume the following pseudocodes synchronize the execution of threads T1, T2 and T3 by using "no Beauty Walning" implementation utilizing two semaphores: \$\mathcal{S}\$ and \$\overline{Q}\$ in order to print the output in the following management of threads T1, T2 and T3 by using "no Beauty Walning" implementation utilizing two semaphores: \$\mathcal{S}\$ and \$\overline{Q}\$ in order to print the output in the following management of threads T1, T2 and T3 by using "no Print the output in the following management of threads T1, T2 and T3 by using "no Print the output in the following management of threads T1, T2 and T3 by using "no Print the output in the following management of threads T1, T2 and T3 by using "no Print the output in the output in the following management of threads T1, T2 and T3 by using "no Print the output in the outpu	mark only one oval.		
2. O3.1* Assume the following pseudocodes synchronize the execution of threads TJ, T2 and T3 by using "no Busy Waiting" implementation utilizing two semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$ in order to print the output in the following manners of the following manner	o		
Assume the following pseudocodes synchronize the execution of threads T1, T2 and T3 by using "no Busy Waiting" implementation utilizing two semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the following manner of threads T1, T2 and T3 by semaphores: \$\mathcal{S}\$ and \$\mathcal{Q}\$. In order to print the output in the output in the following manner of the output in the output in	_ 1	0	_
Assume the following pseudocodes synchronize the execution of threads T1, T2 and T3 by using "no Busy Waiting" implementation utilizing two semaphores: \$\int \text{y} = 0 \text{ semaphores: \$\int \text{y} = 0 semaph	_ 2	- Z	
Assume the following pseudocodes synchronize the execution of threads T1, T2 and T3 by using "no Busy Waiting" implementation utilizing two semaphores: S and Q in order to print the output in the following mannor to be semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the following mannor of threads T1, T2 and T3 by semaphores: S and Q in order to print the output in the outp	10		
signal (Q); S = 1, Q = 1 $S = 0, Q = 1$ What would be the initial values of semaphore S and Q: S = 1, Q = 1 $S = 0, Q = 1$	me the following pseudocodes synchronize the execution of threads T1, T2 and T3 by	int x = 0;	Mark only one oval.
S = 0, Q = 1 What would be the initial values of semaphore S and Q: S = 1, Q = 0	Int y = 0; semaphore Q;	signal(Q)	S = 0, Q = 0
What would be the initial values of semaphore s and Q : $S = 1 , O = 0$	Int y = 0; semaphore Q; II	signal(S) print (x) signal(Q)	
	Int y = 0; memaphore Q; Ti	signal(S) print (x) signal(Q)	S = 1, Q = 1
	int y = 0; semaphore Q; 11 12 13 While (x<2) { x++; signal(8); print (x); signal(9); signal(9);		S = 1, Q = 1 S = 0, Q = 1
	using "no Busy Waiting" implementation utilizing two semaphores: S and Q in order to print the output in the following manner: 2 1.	int y = 0; semaphore Q; 11	Mark only one oval.
	int y = 0; semaphore Q; 11	right (s) print (s) print (y); what would be the initial values of semaphore S and Q:	S = 1, Q = 1 S = 0, Q = 1
	Int y = 0; semaphore Q? T1	right (s) print (s) print (y); what would be the initial values of semaphore S and Q:	S = 1, Q = 1 S = 0, Q = 1
S;	Int y = 0; semaphore Q? T1 T2 T3 While (x<2) { x++; } signal (8) ?	right (s) print (s) print (y); what would be the initial values of semaphore S and Q:	S = 1, Q = 1 S = 0, Q = 1
0t 8t	Int y = 0; memaphore Q? Ti	right (s) print (s) print (y); what would be the initial values of semaphore S and Q:	S = 1, Q = 1 S = 0, Q = 1
0; T3 y++;	Int y = 0; memaphore Q? T1 T2 T3 While (x<2) {	right (s) print (s) print (y); what would be the initial values of semaphore S and Q:	S = 1, Q = 1 S = 0, Q = 1
S; O; T3 Y**; nignal (0);	Int y = 0; memaphore Q? T1	What would be the initial values of semaphore S and Q: Mark only one oval	S = 1, Q = 1 S = 0, Q = 1
B; O; T3 Y**!	Int y = 0; memaphore Q? Ti T2 T3 While (xC2) { x+1 } signal (S) i print (x); print (y); Print (y); Assume the following pseudocodes synchronize the execution of threads T1, T2 and T3 by using "no Bury Walling" implementation utilizing two semaphores: 3 and Q in order to prin the output in the following manner: 2 1. Int x = 0; memaphore 0; int y = 0; memaphore 0;	What would be the appropriate operation and utilized semaphore in line 11:	S = 1, Q = 1 S = 0, Q = 1

wait(S);
wait(Q);
signal(S);

What would be the appropriate operation and utilized semaphore in line £1: Mark only one oval.

				Mark on	y one oval.
	int x = 0; int y = 0;	semaphore S; semaphore Q;		◯ wa	nt(S):
	T1	T2	T3		it(Q);
	While(x<2)(y++1	sig	nal(S);
	x++;] signal(S);	print (x); // L2 print (y);	signal(Q);	_ sig	nal(Q):
				Question	The dining philosophers' problem is a classical synchronization problem. Answer the following related questions.
What woul	d be the appropriate o	peration and semaphore	in line L2:	4	
More than	oval. n one philosopher atter osopher holds the left	mpts to eat at the same ti chopstick and waits inde flowed to sit on the table	finitely for the right chopstick. at any time.	In the dining philosophers' is at the center of the table us Mark only one oval. the chopstick to his left the chopstick to his rigidity either the chopstick to the right that	only.
An asymn	netric order of picking losophers.	chopsticks is applied am	ong even-positioned and odd-		ns left of the chopstick to his right. is left and the chopstick to his right.
1* ppose a sysader-writer	tem of 10 reader and 5 problem. What is the r fille simultaneously?	5 writer processes are sha	red a file implemented using first er processes that can access to	O5.2 *	a left and the chopatick to his right. O reader and 5 writer processes are shared a file implemented using fir. What is the maximum number of writer processes that can access to
tioned phil * poose a system writer available f	tem of 10 reader and 5 problem. What is the r fille simultaneously?	5 writer processes are sha	red a file implemented using firs	O5.2 * Suppose a system of 1 reader-writer problem the available file simul	a left and the chopatick to his right. O reader and 5 writer processes are shared a file implemented using fil What is the maximum number of writer processes that can access to

4. Q3.3 *