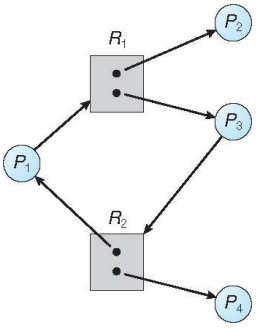
BIRZEIT UNIVERSITY
Electrical Engineering Department
ENCS339 Operating Systems

Second Semester, 2018-2019 Instructor: Dr. Adnan H. Yahya,
Quiz3 Wednesday, 13/3/2019 Time 10 minutes

1- Given P1 and P2, each needs **3 R1 (resource R1)** and we have only **4 R1.**
- It is possible for P1 and P2 to enter a deadlocked: X True False
- It is possible for P1 and P2 to finish without deadlock: X True False
- If the resources become 5R1 then deadlock possible between R1 and R2. True X False
- If the resources become 3R1 then deadlock is possible between R1 and R2. X True False

2- Given the following graph: Is there a deadlock? Yes **No**
If yes, say why. If not list the order in which the processes can finish: P2➔P4 ➔ P3➔ P1
P2➔P1 ➔ P3➔ P4, P4➔P3 ➔ P1➔ P2 (some others: just don't start with P2 or P3)



3- Given : 5 processes P_0 through P_4; 3 resource types:
A (10 instances), *B* (5 instances), and *C* (7 instances): ABC: [10, 5, 7]
Snapshot at time T_0. What are the values for: X, Y, Z and W.

	Allocation	*Max*	*Available*	*Need*
	A B C	*A B C*	*A B C*	*A B C*
P_0	0 1 0	7 **X** 3	**Y** 3 2	7 4 3
P_1	2 0 0	3 2 2		1 2 2
P_2	3 0 2	9 0 2		**Z** 0 0
P_3	2 1 1	2 2 2		0 1 1
P_4	0 0W	4 3 3		4 3 1

X = 5 **Y= 3** **Z= 6** **W= 2** **Check if True (it is true)**

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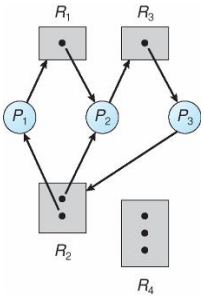
1- Assigning resources in INCREASING order is a: XDeadlock Prevention ☐Deadlock avoidance

2- No cycles in the process/resources assignment graph means ☐Deadlock possible ☐Deadlock is certain: **None**

3- Deadlock means the system is not progressing while in starvation the system is working: X True ☐False

4- Given the following graph: Is there a deadlock? X Yes ☐No

If yes, say why. If not list the order in which the processes can finish: P ➔ Cycle AND No process can finish,



5- Given : 5 processes P_0 through P_4; 3 resource types:

A (9 instances), *B* (5 instances), and *C* (6 instances): ABC: [9, 5, 6]

Snapshot at time T_0. What are the values for: X, Y, Z.

	Allocation	*Max*	*Available*	*Need*
	A B C	*A B C*	*A B C*	*A B C*
P_0	0 1 0	7 **5** 3	**X Y Z**	~~7 4 3~~ 632
P_1	2 0 0	3 2 2	1 2 0	1 2 2
P_2	3 0 2	9 0 2		**6** 0 0
P_3	2 1 1	2 2 2		0 1 1
P_4	0 0 2	4 3 3		4 3 1

- **XYZ= 231 (Check if correct)**
- **If process P_3 request 101: this request can be granted:** . ☐ True XFalse
- **If process P_2 request 232: this request can be granted:** . ☐ True XFalse
- **If process P_0 request 111: this request can be granted:** . ☐ True ☐False 120 not enough for any to finish