Manipal Institute of Technology
Department of Computer Science and Engineering
Second M.Tech. [CSE]
Assignment -4
Advanced System software-CSE 5251

Time: 30 Minutes   **Marks: 05 M**

Date:27/5/2020 [4.00 p.m. to 5.30 p.m.]

Q-a)If a client and a server are placed far apart, we may see network latency dominating overall performance. How can we tackle this problem? Modern cars are stuffed with electronic devices. Give some examples of feed-back control systems in cars.   2M

b) i) Consider Fig. 1, suppose that the coordinator crashes. Does this always bring the system down? If not, under what circumstances does this happen? Is there any way to avoid the problem and make the system able to tolerate coordinator crashes?
ii) In Fig. 2, we have two ELECTION messages circulating simultaneously. While it does no harm to have two of them, it would be more elegant if one could be killed off. Devise an algorithm for doing this without affecting the operation of the basic election algorithm.2M
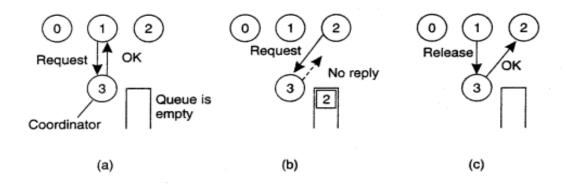
Figure 1 (a) Process 1 asks the coordinator for permission to access a shared resources. Permission is granted. (b) Process 2 then asks permission to access the same resource. The coordinator does not reply. (c) when process 1 releases the resource, it tells the coordinator, which then replies to 2.
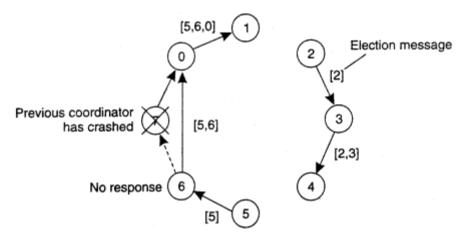

Figure 2 Election algorithm using ring.

c) In Fig. 3, is 001110 a legal output for a sequentially consistent memory? Explain your answer.   1M

x ← 1;	x ← 1;	y ← 1;	y ← 1;
print(y, z);	y ← 1;	z ← 1;	x ← 1;
y ← 1;	print(x, z);	print(x, y);	z ← 1;
print(x, z);	print(y, z);	print(x, z);	print(x, z);
z ← 1;	z ← 1;	x ← 1;	print(y, z);
print(x, y);	print(x, y);	print(y, z);	print(x, y);
Prints: 001011	Prints: 101011	Prints: 010111	Prints: 111111
Signature: 001011	Signature: 101011	Signature: 110101	Signature: 111111
(a)	(b)	(c)	(d)

Figure 3 Four valid execution sequences for the processes and the vertical axis is time.