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1.

Process Number	Instruction	x-value
P1	x = x-1;	9
P1	x = x+1;	10
P2	x = x-1;	9
P1	if (x != 10)	9
P2	x = x+1;	10
P1	printf("x is %d", x);	(10) → Final Output: "x is 10"

2

Process Number	Instruction	X-value	Register for P1	Register for P2
P1	LD R0, X	10	10	
P1	DECR R0	10	9	
P1	STO R0, X	9	9	
P2	LD R0, X	9	9	9
P2	DECR R0	9	9	8
P2	STO R0, X	8	9	8
P1	LD R0, X	8	8	8
P1	INCR R0	8	9	8
P2	LD R0, X	8	9	8
P2	INCR R0	8	9	9
P2	STO R0, X	9	9	9
P2	if (x != 10) printf("X is %d", X)	9	9	9
P1	LD R0, X	9	9	9
P1	DECR R0	9	8	9
P1	STO R0, X	8	8	
P2	LD R0, X	8	8	8
P2	DECR R0	8	8	7
P2	STO R0, X	7	8	7
P1	LD R0, X	7	7	7
P1	INCR R0	7	8	7
P1	STO R0, X	(8)	8	7
P1	if (x != 10) printf("X is %d, x);	"X is 8"		

3. Binary semaphores can only be 1 if not busy, or 0 if busy. General semaphores can only hold any positive integers.

4. A monitor is a software module consisting of one or more procedures, an initialization sequence, and local data

5. Operations include initializing a positive integer value, semWait (decrements the semaphore value and blocks process that executes semWait when a value becomes negative), and semSignal (increments a semaphore value and blocks the performance of semWait if the output is less than or equal to zero)