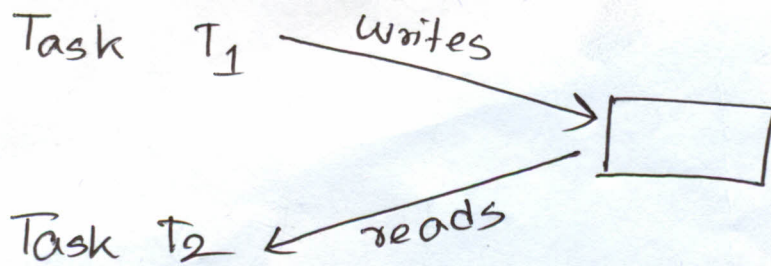


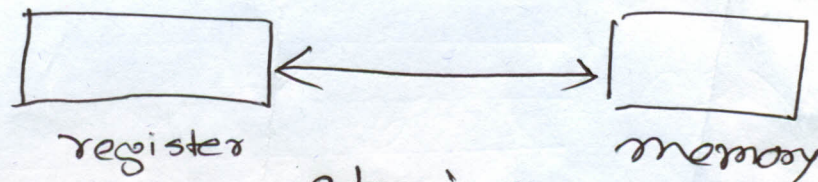
*Synchronization in Parallelism

Co-operative parallel execution
of tasks



so we need synchronization

- typically in user-level/system software
 - however, hardware support required
- ↓
atomic read/write memory operation



by a pair of instructions

ll $rt, offset(rs)$ → load linked
sc $rt, offset(rs)$ → store conditional

→ $rt \leftarrow 1$, if memory not changed
← 0, otherwise

test:

add	$\$l0, \$zero, \$s4$	→ copy locked value
ll	$\$l1, 0(\$s1)$	→ load linked
sc	$\$l0, 0(\$s1)$	→ store conditional
beq	$\$l0, \$zero, dest$	→ busy waiting
add	$\$s4, \$zero, \$l1$	→ put lock value