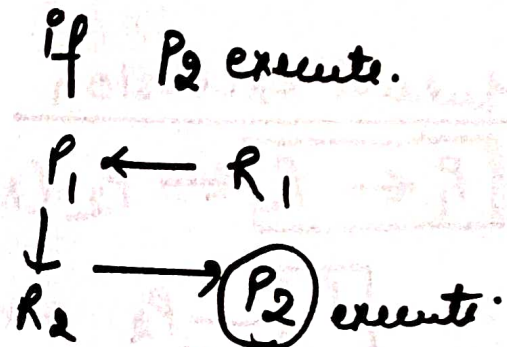
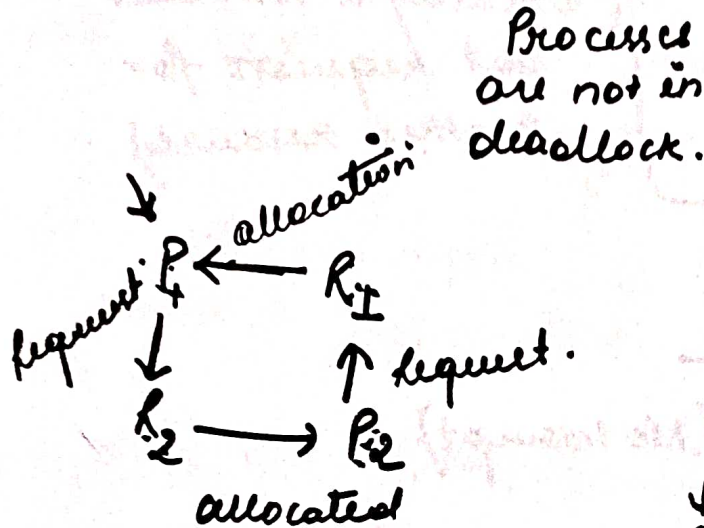
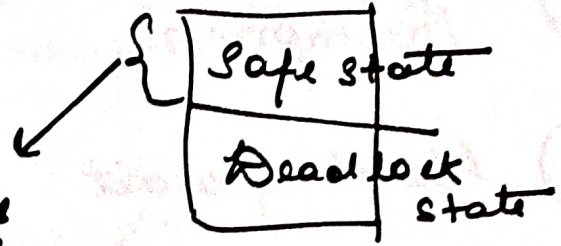


17/05/21

Deadlock

(1)

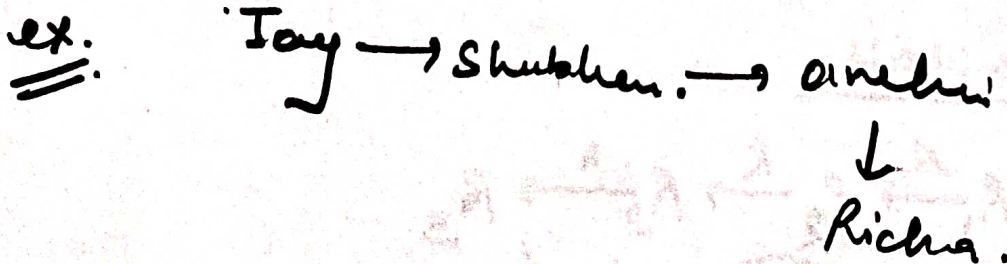
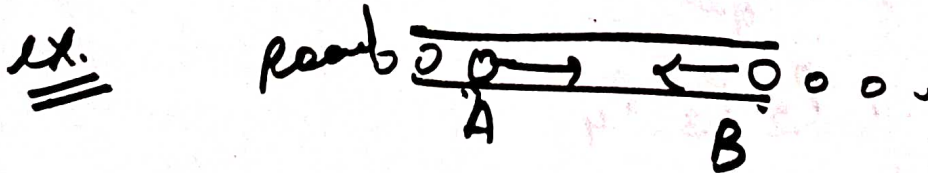
If 2 or more processes are waiting on happening of other event, which never happens. Then system is in deadlock state.



① Allocation of Resources

② Deallocation of Resource.

③ if Resource get free, allocate to another resource



## # Conditions of deadlock.

(2)

① Mutual Exclusion

② No Preemption

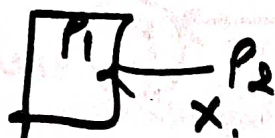
③ Hold & wait

④ circular wait

(holding a resource but requests for another resource)

### I Mutual exclusion

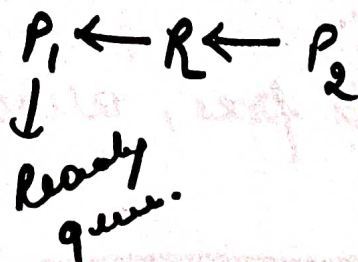
$\boxed{P_1 \leftarrow R} \leftarrow P_2$  (No interrupt)



~~Preemption~~

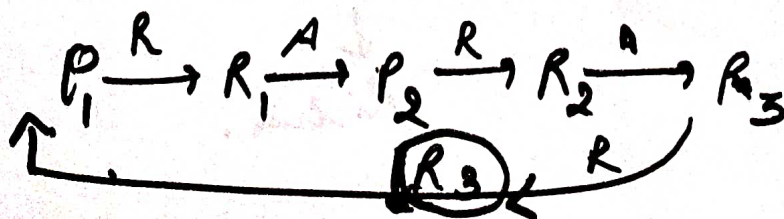
### II No preemption

Preemption



Ex.  $P_1 \leftarrow \text{CPU}$  (1000 BT),  $P_2, P_3, P_4$

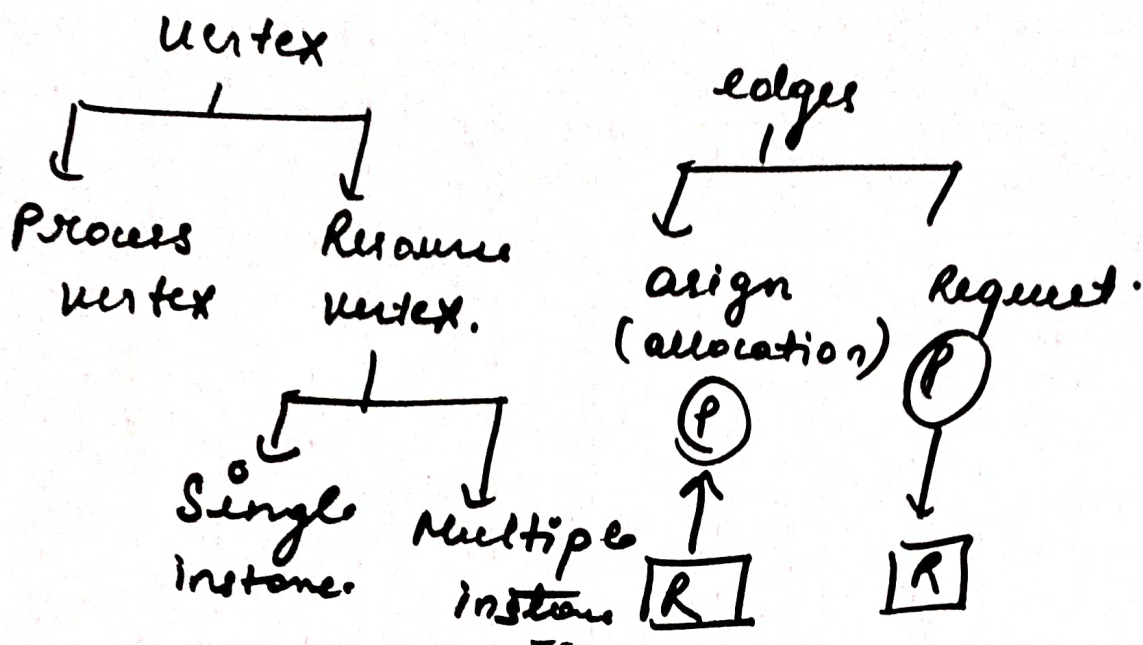
### IV Circular wait





# # Resource allocation Graphs. (RAG).

(3).



Resource is denoted with Square.  
Process is denoted with circle.

