# Lecture Summaries

## l8

system consists of resources Resource types R1, R2, . Rm CPU cycles, memory space, I/O devices Each resource type Ri has Wi instances . each process uses a resource as follows: request use release Deadlock Characterization Deadlock can arise if the following four conditions hold simultaneously .

resource-allocation Graph A set of vertices V and a set of edges E. V is partitioned into two types: p = P1, P2, ..., Pn, the set consisting of all the active processes in the system . request edge Pi Rj assignment edge – directed edge Rj is holding an instance of Rj Pi Rj Resource-Allocation graph RAG without a deadlock Deadlock detection in RAG

'Deadlock prevention' is done by ensuring that at least one of the necessary 4 conditions for deadlock is not met . must hold for non-sharable resources . 'Require process to request and be allocated all its resources before it begins execution,' must guarantee .

the system is in safe state if there exists a sequence P1, P2, ..., Pn> of ALL the processes in the systems such that for each Pi, the resources that Pi can still request can be satisfied by currently available resources + resources held by all .