

Deadlock Detection

Several Instances of a Resource Type

Resources in existence
($E_1, E_2, E_3, \dots, E_m$)

Resources available
($A_1, A_2, A_3, \dots, A_m$)

Current allocation matrix

Request matrix

$$\begin{bmatrix} C_{11} & C_{12} & C_{13} & \cdots & C_{1m} \\ C_{21} & C_{22} & C_{23} & \cdots & C_{2m} \\ \vdots & \vdots & \vdots & & \vdots \\ C_{n1} & C_{n2} & C_{n3} & \cdots & C_{nm} \end{bmatrix}$$

$$\begin{bmatrix} R_{11} & R_{12} & R_{13} & \cdots & R_{1m} \\ R_{21} & R_{22} & R_{23} & \cdots & R_{2m} \\ \vdots & \vdots & \vdots & & \vdots \\ R_{n1} & R_{n2} & R_{n3} & \cdots & R_{nm} \end{bmatrix}$$

Row n is current allocation
to process n

Row 2 is what process 2 needs

$$\sum_{i=1}^n C_{ij} + A_j = E_j$$

e.g.

$$(C_{13} + C_{23} + \dots + C_{n3}) + A_3 = E_3$$