

Input format RACP/max-cal

| | | | | | | | | | | | |
|---------------------|------------------------|---------------------|-------------|-------------|-------------|--------------------|-----|------------------------|--------------------------|-----|------------------------------|
| n | K | \hat{d} | | | | | | | | | |
| $\mathbf{Cal}_1(0)$ | \mathbf{Cal}_1^{Set} | | | | | | | | | | |
| $\mathbf{Cal}_2(0)$ | \mathbf{Cal}_2^{Set} | | | | | | | | | | |
| ... | | | | | | | | | | | |
| $\mathbf{Cal}_K(0)$ | \mathbf{Cal}_K^{Set} | | | | | | | | | | |
| 0 | V_0^{bi} | s_0 | j_1^0 | ... | $j_{s_0}^0$ | δ_{0,j_1^0} | ... | $\delta_{0,j_{s_0}^0}$ | \mathcal{R}'_{0,j_1^0} | ... | $\mathcal{R}'_{0,j_{s_0}^0}$ |
| 1 | V_1^{bi} | s_1 | j_1^1 | ... | $j_{s_1}^1$ | δ_{1,j_1^1} | ... | $\delta_{1,j_{s_1}^1}$ | \mathcal{R}'_{1,j_1^1} | ... | $\mathcal{R}'_{1,j_{s_1}^1}$ |
| ... | | | | | | | | | | | |
| n | V_n^{bi} | s_n | j_1^n | ... | $j_{s_n}^n$ | δ_{n,j_1^n} | ... | $\delta_{n,j_{s_n}^n}$ | \mathcal{R}'_{n,j_1^n} | ... | $\mathcal{R}'_{n,j_{s_n}^n}$ |
| $n+1$ | V_{n+1}^{bi} | 0 | | | | | | | | | |
| 0 | p_0 | ε_0 | r_{01} | r_{02} | ... | r_{0K} | | | | | |
| 1 | p_1 | ε_1 | r_{11} | r_{12} | ... | r_{1K} | | | | | |
| ... | | | | | | | | | | | |
| n | p_n | ε_n | r_{n1} | r_{n2} | ... | r_{nK} | | | | | |
| $n+1$ | p_{n+1} | ε_{n+1} | $r_{n+1,1}$ | $r_{n+1,2}$ | ... | $r_{n+1,K}$ | | | | | |
| ρ_1 | ρ_2 | ... | ρ_K | | | | | | | | |
| c_1 | c_2 | ... | c_K | | | | | | | | |
| Y_1 | Y_2 | ... | Y_K | | | | | | | | |

Symbols

| symbol | meaning |
|--------------------------|---|
| n | number of real activities |
| K | number of renewable resources |
| \hat{d} | maximal planning horizon (due to calendars) |
| $\mathbf{Cal}_k(0)$ | $= \begin{cases} 1, & \text{if the first period of the resource calendar } \mathbf{Cal}_k \text{ is a working period} \\ 0, & \text{if the first period of the resource calendar } \mathbf{Cal}_k \text{ is a break period} \end{cases}$ |
| \mathbf{Cal}_k^{Set} | Set of numbers that describe work periods and break periods alternately, starting with work periods if $\mathbf{Cal}_k(0) = 1$ and with break periods otherwise |
| V_i^{bi} | $= \begin{cases} 1, & \text{if activity } i \text{ is interruptible, i.e., } i \in V^{bi} \\ 0, & \text{activity } i \text{ is non-interruptible, i.e., } i \in V^{ni} \end{cases}$ |
| s_i | number of direct successors of node i in project network |
| j_s^i | s -th successor of node i in project network |
| δ_{i,j_s^i} | weight of arc $\langle i, j_s^i \rangle$ |
| \mathcal{R}'_{i,j_s^i} | $= \begin{cases} 0, & \text{if } \mathcal{R}_{ij} = \emptyset \\ 1, & \text{if } \mathcal{R}_{ij} = \mathcal{R}_i \\ 2, & \text{if } \mathcal{R}_{ij} = \mathcal{R}_j \\ 3, & \text{if } \mathcal{R}_{ij} = \mathcal{R}_i \cup \mathcal{R}_j \end{cases}$ |
| p_i | processing time of activity i |
| ε_i | start-up phase of activity i |
| r_{ik} | resource requirement of activity i on resource k |
| ρ_k | equals 1 if resource k stays engaged during an interruption and 0 otherwise |
| c_k | cost for providing one unit of resource k |
| Y_k | Utilization threshold of resource k (not relevant for RACP/max-cal) |