

$\begin{array}{l} \text{tasks} \\ \text{makespan} \\ \text{major} \end{array}$   
 HEFTM-BLHEFTM-BLCHEFTM-MM  
 $\begin{array}{l} \\ \\ \\ \\ \end{array}$   
 $\begin{array}{l} \\ \\ \end{array}$   
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 $\begin{array}{l} \\ \\ \end{array}$   
 $G = (V, E) \forall e = (u, v) \in E \ u \in V \ v \in V \ c_{u,v} \ u \in V \ m_u \ \Pi_u \in V \ \text{parents}_u \ \Pi_u = \{v \in V : (v, u) \in E\} \ \text{source}_u \in V \ c_{u,v}$

$\begin{array}{l} w_u m_u \\ Sk_{p_1, \dots, p_k} 1 \leq j \leq k p_j M_j M C_j s_j u \in V p_j \frac{w_u}{s_j} \beta \\ rt_j rt_{j', j}(j, j') 0 \text{avail} M_j \text{avail} C_j P D_j \text{pending data} M_j p_j c_{u,v} \\ \text{MEMDAG?} \end{array}$

$G$ kinvalid

$0$   
 $vp_j ST(v, p_j) p_j rt_j u \notin T(p_j)$

$p_j FT(v, p_j) = st_v + \frac{w_v}{s_j}$   
 $v FT(v, p_j) vp_j$   
*Assignment to processor.*  $rt_j j uv j' rt_{j', j} c(u, v) / \beta$

0

MEMDAG?  
*Tentative assignment of task  $v$  on  $p_j$ .*  
 $uv p_j c_{u,v} p_j c_{u,v} \in P D_j + \infty$   
 $p_j$

$T(p_j) p_j p_j v m_v Res p_j Res < 0 v Res P D_j Res$   
 $P D_j + \infty$   
 $vp_j ST(v, p_j) p_j rt_j u \notin T(p_j)$

$p_j FT(v, p_j) = ST(v, p_j) + \frac{w_v}{s_j}$   
*Assignment of task  $v$ .*  
 $v FT(v, p_j) vp_j$   
 $P D_j$   
 $\text{avail} M_j$   
 $v rt_{j', j} j' uc(u, v) / \beta$   
 $p_j \text{avail} M_j \text{avail} M_j$   
 $\begin{array}{l} \\ \\ \\ \end{array}$   
 $v Res Res m_{v, c_{u,v} uc_{v,w} w} \text{avail} M_j M_j Res Res Res \text{avail} M_j \text{avail} M C_j$   
 $\begin{array}{l} w_p \\ \\ \end{array}$   
 $\begin{array}{l} \\ \\ \end{array}$   
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<https://zenodo.org/records/13919214>  
<https://zenodo.org/records/13919302>  
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