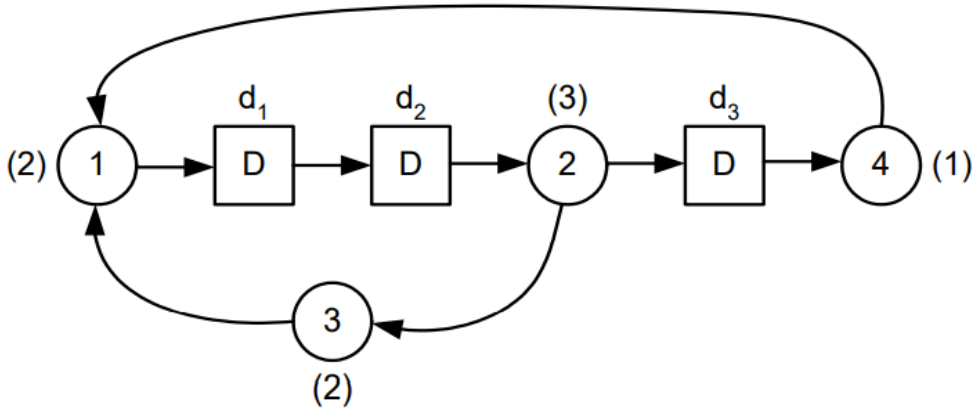
DSP in VLSI Design
Homework (II)

Iteration Bound
Reference Answer

1. For the DFG shown in the following figure, where the computation times of the nodes are shown in parentheses, compute the iteration bound of this DFG using LPM algorithm.



$$T_\infty = \max_{i,m\in\{1,\ldots,d\}} \{\frac{l_{i,j}^{(m)}}{m}\}$$

$$l_{i,j}^{(m+1)} = \max_{k\in K}(-1, l_{i,k}^{(1)} + l_{k,j}^{(m)})$$

$$L^{(1)} = \begin{bmatrix} -1 & 0 & -1 \\ 7 & -1 & 3 \\ 3 & -1 & -1 \end{bmatrix}$$

$$L^{(2)} = \begin{bmatrix} 7 & -1 & 3 \\ 6 & 7 & -1 \\ -1 & 3 & -1 \end{bmatrix}$$

$$L^{(3)} = \begin{bmatrix} 6 & 7 & -1 \\ 14 & 6 & 10 \\ 10 & -1 & 6 \end{bmatrix}$$

$$T_\infty = \max\{\frac{7}{2}, \frac{7}{2}, \frac{6}{3}, \frac{6}{3}, \frac{6}{3}\} = \frac{7}{2}$$