

ECE 565, Fall 2008, Instructor: Prof. Shantanu Dutt**Homework 2 : Due Wed, Oct. 29**

1. Give an example DFG with different operations with different delays and some constraint for which the ML-RCS list scheduling algorithm is not optimal. **100**
2. Give an example DFG with different operations with different delays and an attainable latency constraint for which the MR-LCS list scheduling algorithm is not optimal. **100**
3. For the ML-RCS problem, in the “earliest sibling” heuristic discussed in class, the tie of equal-slack nodes is broken in favor of nodes whose sibling data items have been available for the longest time. The rationale is that the register occupancy by data items will be minimized leading to more register sharing and lower register costs.
 - (a) Explain why for the 2nd example shown in the “Register Organization” lecture notes, this heuristic does not produce any decrease in the # of registers. **50**
 - (b) Give an example DFG, scheduling and register allocation for which the above heuristic helps in reducing the # of registers compared to not having this heuristic and breaking equal-slack ties randomly. **150**
4. Determine an appropriate weight/cost of nets such that in a placement obtained using recursive bipartitioning, dynamic net power is minimized. **50**