Problem: **DLX Processor Version 2 (20 points)**. You are to modify DLX Version 1, to create two new versions, one smaller and the other faster.

1. **DLX Processor Version 2 SMALL: dlx2-small.tg**
   Derive dlx2-small from dlx1 with the objective to reduce the size as much as you can. Present the performance and area numbers as earlier. In particular, consider the following techniques:
   
   (a) sharing of arithmetic operations and sub-expressions, by introducing declared functions (check both assignments and outputs!)
   (b) sharing of control structures, by introducing declared procedures.
   (c) identify multiplexers in the data path, and eliminate them where possible.

   You may also consider any other techniques you may like to.

2. **DLX Processor Version 2 FAST: dlx2-fast.tg**
   Apply and evaluate a number of performance optimization to dlx1 (ignore circuit size for a while!). Call this new program dlx2-fast.tg. In particular, consider the following types of optimizations:
   
   (a) substitute expressions in subsequent sequential actions, and thereby eliminate the use of intermediate variables
   (b) parallelize sequential actions where possible.

   You may also consider any other techniques you may like to, but do not introduce pipelining yet!

   Compare the throughput and area with dlx2-small and dlx1.