Quiz 9

1. Name one advantage of high-speed serial lines over wide busses.
   1. No need to synchronize multiple signals with a single clock
   2. More compact cables
   3. Higher speeds

2. Give two reasons why programming multiprocessors is hard.
   1. Locks are difficult to use properly
   2. Finding independent threads is hard.

3. Briefly describe simultaneous multithreading.
   1. Run several programs/threads simultaneously in the same out of order pipeline.

4. Why do out of order processors perform register renaming?
   1. To remove false dependences, i.e. WAR and WAW dependences

5. Which performance-enhancing technique is more power-efficient: Doubling the number of processors or doubling the clock frequency? Why?
   1. Doubling the number of processors is more power efficient because doubling the clock rate increases power by 8 while doubling the number of cores will only increase power by 2 -- $P = CvF^2$