CSE 4392 Name _____
Summer 2002
Test 2

Short Answer - 10 Points Each

1. What is the bisection width of a 6 x 8 mesh?

2. What is the diameter of a 1024-node hypercube?

3. What is the purpose of the GCD test?

4. What is the diameter of a 8 x 9 torus?

5. How many automorphisms does a 4 x 5 torus have?

6. What is the difference between `forall` and `doall` parallelism? What situations cause difficulties in converting a loop to these forms?

7. Suppose that a permutation is to be routed dynamically in a n x n mesh. How may this be performed to ensure that the messages are routed in 2n - 2 steps?

Long Answer

1. Show how to achieve the following mesh permutation using perfect matching and linear array sorting. 15 points

2,1	4,2	2,2	2,4
2,3	4,1	1,3	1,4
1,2	1,1	4,3	3,1
3,2	4,4	3,4	3,3

2. Show how to route the provided permutation. 15 points

$$\begin{pmatrix} 0\ 1\ 2\ 3\ 4\ 5\ 6\ 7 \\ 2\ 1\ 6\ 4\ 0\ 7\ 3\ 5 \end{pmatrix}$$