CS 5334   Spring 2016   Name ____________________________
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Introduction to Linda

Linda is a concurrent programming language based on a shared data space called the tuple space. C-Linda is an implementation of Linda using the C programming language for computation. Concurrent processes access the tuple space using a small number of operations that Linda provides.

1. a. Linda provides four basic operations. Refer to the Linda User Guide at http://lindaspaces.com/downloads/lindamanual.pdf to fill in the table below.

Operation	Action
out	
eval	
in	
rd	

b. The eval operation creates a "live tuple", also called a process tuple. Explain what this means and what happens when a function argument is passed to eval. Give an example of an eval operation and explain how its action would be carried out.

c. Is a data race possible in a Linda program? If not, explain why not. If yes, give an example of how a data race could occur.

2. Compile and run the hello_world.cl example.

a. Explain what the program does.

b. Change the program so that each worker inputs, increments, and outputs a counter. Have the master process use this counter to detect when all workers have finished.

4. Now we are ready to finish the implementation of the Sieve of Eratosthenes in C-Linda.

a. First let's understand the algorithm. Explain the logic in words and work through an example of finding all primes less than or equal to 50. (Class exercise: Act out the algorithm using the whiteboard).

b. Add comments to the C-Linda prime.cl code and fill in the missing parts.

c. Compile and run the code. Change the value of LIMIT (or make it an input) to try finding primes up to different limits.