Doctor When's Recruiting Test

Congratulations! You've all been selected as candidates to be Doctor When's assistants in preparation for his unveiling of his time machine, scheduled to happen this fall, six months from now, on September 17th and 24th.

A Puzzle written for the Spring 2010 Equinox Party and "Doctor When" by Wei-Hwa Huang

Unfortunately, Doctor When is a bit reclusive and is still very busy getting things ready, so he's not here. Instead, we're going to have to run this little recruiting test.

The goal of this test is see how well you can build a proper circuitboard for Doctor When's chronomentometer. Now, Doctor When is an electronics genius, so he doesn't go for the standard electronic parts. Instead, you'll have to learn to use parts that he has designed himself!

To the right is an example of a completed circuit board.

There are 52 different parts in thirteen different types; the types are seen in the diagram. Each type comes in four brands: Spartan (♠), Hartley (♡), Dimension (◊), or Cluster (♣). There are five designated slots for each type; one slot will be a blank "empty node." The five slots of the same type are always in the same row or column as indicated.

Note that in addition to figuring out where each part goes, you will have to wire the proper parts together. Wires always cross between touching parts, but only along an edge -- a connection between two nodes is called a "hop." All the parts have to be



. connected, and there CANNOT be any loops (that causes what Doctor When calls a "short circuit" -- I know, that's a technical term, you probably haven't heard it before).

Now, although the example is a COMPLETED circuit board, it is not the CORRECT circuit board. The good Doctor is busily trying to give us a list of necessary constraints for the correct circuit board. Note that there is a compass rose in the upper-left of the diagram. Some constraints may make use of that.

You should have two more sheets of paper; one is a worksheet for you to build your circuit board, the other is the first batch of constraints. In a few minutes, we'll be sending out some more tests from Doctor When; submit the correct answer for those tests and you'll get more constraints. Finish building the board and we'll definitely consider you for the assistant position!

By the way, don't worry if you can't pass the tests, we have plenty of positions available! Check our website out at http://doctorwhen.com/ for more information.