Name: _____

CS 444 HW 0

1. **Performance Measure**[1]

   You are given the following performance/utility function for the vacuum cleaner world:

   > Volume of total dirt picked up.

   (a) What problems might be caused by this performance measure?

   (b) What is a better strategy in general for specifying performance measures and state one for the vacuum cleaner world.

2. State true or false and support your claim for each of the following.

   (a) An agent that senses only partial information about the state cannot be perfectly rational.

   (b) The input to an agent program is the same as the input to the agent function.

   (c) A perfectly rational poker playing agent never loses.

[1] Question from Russell and Norvig.

3. In your own words describe a reflex-based agent and a model-based agent. Then, compare and contrast these agents and provide a scenario where a model-based agent would work and a reflex-based agent would fail.

4. Given a computer with n bits of storage, can you determine the maximum number of agent programs that can be constructed? If so, how many.

5. List the properties (detailed in section 2.3.2 and Figure 2.6) for an agent you are designing to bid on items via an Internet auction site (think Ebay). You can skip the known/unknown property.