Lecture 7: Problem Set 6 (Due Wednesday April 4th, 7:00PM)
 Reading: (a) Emotion Machine, Chapter 5
          (b) EM-ONE: An architecture for reflective commonsense thinking, 11-26.

 Problem 1

   In order to find meaningful answers you must first be able to formulate good
   questions. List ten questions you would like to answer about Chapter 5.

 Problem 2

   In this chapter, Minsky describes the layers of Model-6. These layers are
   useful for categorizing thought processes--i.e. self-reflective layers focus
   on debugging and building models of the system's own abilities and
   limiations.

     a) List 5 reasons why developing a way to classify thought processes
        can be useful.

 Problem 3

   In class, Marvin has described his experience with learning how to play
   chess where, as a beginner, moving the knight required interpreting rules.
   With more experience, he was able to visualize the appropriate 8 positions
   'immediately'.

     a) In psychology, this phenomenon is known as chunking; and in computer
        science: compiling. Describe another type of learning where this
        takes place and relate it aspects of compiling software.

     b) In Cyc, unlike people its reasoning performance does not improve
        with repetition. What could you add to Cyc to give it this ability?

 Problem 4

   In the section on Learned Reactions, Minsky describes how IF->DO rule
   alone are not enough because there are always exceptions for each rule,
   which would make the assertion false.

     a) What benefits does adding 'THEN' to IF->DO rules provide?

     b) Describe a process that would allow a knowledge base to keep a useful
        rule even though it has many exceptions.

 Problem 5

   A big problem with using rules as a representation is knowing the level
   of descriptions to include within the conditional. If the description is
   to vague/ambiguous, it may match too many cases; however, if it is too
   specific or precise, it may never match another situation!

   Commonsense knowledge consists of generalizations;, there are often
   exceptions for each assertion or rule, and commonsense knowledge is
   densely interconnected. Because of this, it is indirect to talk about
   assertions being 'true' or 'false' without describing context or the
   desired inference. Instead, we can characterize knowledge as 'useful'
   within the context of solving a specific problem.

     a) Take a look at the first 500 entries in the OpenMind project,
        http://web.media.mit.edu/~dustin/6.868/omcs-h500.txt , choose

your favorite 5 assertions and describe problem contexts in which
that knowledge would be useful for solving the problem.
[Answering questions is one type of problem solving]