

CSE 473: Artificial Intelligence  
Assignment #  
May 27, 2005  
Due: Friday, June 3

**Reading Assignment:** Read Chapters 17.1-2, 18.1-3, and 20.3 carefully.

**Problems:**

1. **MDPs:** Consider the example environment shown in Figure 17.1 in the AIMA book.
  - (a) Show how the values of (1,1) and (3,3) are computed in the first iteration of the value iteration algorithm given in Figure 17.4. For this purpose, assume that the utilities of the terminal states are initialized to +1 and -1.
  - (b) Take a look at Figure 17.6 and describe why policy loss can be zero even before the value function converges to the true one.
2. **Decision trees:** Compute the gain when using the feature “Temperature” to split the training examples in the table on slide 14 of the lecture slides on machine learning. When using this feature as the root of a decision tree, what is the gain of the remaining features (Outlook, Humidity, Wind)? Based on this gain, which of these features would you choose to grow your decision tree?