15-889 Fall 2001 – Homework 2 – Part II
Planning, Execution, and Learning

Due: Monday, November 5, 2001

Problem 1

Consider a world with a single system agent and a single environment agent where the set of states are given by two Boolean variables and all actions are deterministic. Given this world:

1. Write an NADL domain for which an optimistic but not a strong cyclic and strong plan exist.

2. Write an NADL domain for which an optimistic and a strong cyclic but not a strong plan exist.

3. Write an NADL domain for which an optimistic, a strong cyclic and a strong plan exist.

Hint: You can use UMOP and the UMOP-executor to verify which plans exist and how they execute.

Problem 2

One problem with strong cyclic plans is that they might cycle forever during execution. Given the world described above:

1. Write an NADL domain for which a strong cyclic plan exist that will cycle forever given a particular strategy of the environment agent.

2. Write the strategy of the environment agent as a universal plan.

Problem 3

Go to the domains/soccer directory of the UMOP installation and look at the file soccer5.nadl. In Figure 17 of the JAIR paper (Jensen & Veloso 2000) two transitions in this domain is shown leading from the left most to the right most state. Given the definition of the domain in the file soccer5.nadl, show an alternative intermediate state.