

CMPE 248 Winter 2007
Homework 2, due Thursday February 1, 2007

1. Consider a finite set S , and for $\sigma \in S^\omega$ (so that σ is an infinite sequence of elements of S), define $\text{infi}(\sigma)$ as the set of all elements of S that occur infinitely many times in σ . Prove that $\sigma \in \diamond\Box \text{infi}(\sigma)$, that is, prove that there is $k \in \mathbb{N}$ such that, for all $j \geq k$, we have $\sigma_j \in \text{infi}(\sigma)$.
2. Run the divide-and-conquer algorithm on the following game, showing each step of the algorithm. Square states are player-1 states, and circle states are player-2 states. The “color” of a state is written in the state itself. The goal for player 1 is to ensure that the highest color which is repeated infinitely often is even. Determine the set of winning states for players 1 and 2, and give the winning strategy for each player.

