

CS440: Introduction to Artificial Intelligence
Fall, 2008
Writing Assignment #2 (part 1) : Clue Kibbitzer
Due Tuesday, Oct. 7th

Introduction

The goal of the writing assignments is to exercise and improve your scientific writing. You should be able to express ideas *clearly, precisely, and succinctly*. Your essay should be easy to read, in the sense that it should flow logically and express your idea in the simplest manner possible. It should not contain any distractions, such as grammatical or spelling mistakes. It should be formal and should avoid using the first person. Your essay should describe your idea completely and without ambiguity. It should also be short.

Instructions

In the game of Clue, players try to solve a murder mystery. Someone has been killed, and there are lists of possible suspects (Col. Mustard, Miss Scarlett, Prof. Plum, Mr. Green Mrs. White and Mrs. Peacock), murder weapons (revolver, lead pipe, rope, knife, wrench and candlestick) and locations (hall, lounge, dining room, kitchen, library, ballroom, conservatory, billiard room, study). The goal is to determine who, what, and where: which suspect used which weapon in which room to kill the victim.

During the game, every player has evidence that some suspects are innocent, some weapons were not used, or some rooms were not the location. Players take turns suggesting a trio of person/weapon/location to other players, who must disprove the suggestion if they can by showing a piece of evidence. When a player has sufficient evidence to determine the true culprit, weapon and location they make an accusation: the player who makes the first correct accusation wins, any player who makes a false accusation is eliminated.

Your task is to describe the propositional logic behind a “Clue Kibbitzer” in two pages or less. The clue kibitzer isn’t a player, doesn’t have any cards, and doesn’t get to look at any cards when a suggestion is refuted. Instead, the kibitzer just hears suggestions (“I suggest Prof. Plum in the kitchen with the lead pipe” – apparently there weren’t any knives in the kitchen) and whether the suggestions are true or false (but not why or who supplied the evidence; you may assume no player makes a suggestion that they know to be false.). After every turn, the kibitzer should be able to determine whether any players have lied in responding to suggestions. (Note: the kibitzer should complain as soon as an inconsistency is manifest, even though the lie might have occurred earlier.) In particular, I want you to describe the logic behind the kibitzer: what are the propositions and the initial axioms, and what axioms are added with a player’s suggestion is refuted. Also describe how your program would determine whether cheating has occurred.

Follow-on

As before, be aware that the anonymous version of your essay will be given to a classmate to critique, and that you will be asked to critique the work of a classmate. For a complete list of game rules, follow the Clue link of the external links page of the class web site.