CS 2750 Assignment 3
Identifying Classes In The Problem Domain

Hour 3 of Teach Yourself UML in 24 Hours, concludes with a section entitled “Classes-What They Do and How to Find Them.” Interviewing a problem domain expert (also known as a subject matter expert or SME), as is done in Hour 3, is one way of doing an analysis. In a second technique, the analyst identifies and captures important features by observing the problem domain as it operates. The analyst may also extracted information from a “requirements document.” A requirements document is a formal specification of the features and capabilities of the final system. Unfortunately, requirements documents are frequently wordy, incomplete, inconsistent, incomprehensible, or incorrect and may include spurious information. Nevertheless, analysis frequently involves studying requirements documents and it is this technique that we will use for assignment 3.

Assignment

Below is the description of a popular family board game named Clue and all of the parts that are included with the game. This description is a small, simple requirements document for the game.

Part A

Analyze the game by reading the description and generating a list of problem domain classes. Whenever possible, use words from the problem domain (i.e., words from the requirements document) as names for your classes. Class names may also be formed by concatenating adjectives and nouns. Document your classes with MS Visio but unless specified in parts B or C you do not need to show attributes, operations, or class relationships.

Part B

In Part A, you undoubtedly identified a class called “Token.” Include in the Token class some appropriate attributes and operations.

Part C

In Part A, you undoubtedly identified a general class called “Card” and perhaps some specialized variations. Show the relationships between these cards.

Submit

Turn in your Visio class diagram for grading.
Clue

A murder was committed in a large mansion. The goal of the game is to determine who committed the murder, in which room the murder took place, and what weapon was used.

The game includes a game board; six tokens, each a different color and representing one character (e.g., Miss Scarlet, Prof. Plum, Col. Mustard, Mr. Green, Mrs. White, and Mrs. Peacock); several miniature weapons, one die, and several cards. Each player also receives a “notebook” in which to keep a record of the clues that they discover during game play. There are three types of cards: rooms, weapons, and suspects. One card from each type is selected at random and set aside where they cannot be seen. Together, these three cards form the game solution (i.e., where the murder was committed, the weapon the murder was committed with, and the suspect or person who committed the murder). The remaining cards are shuffled together and dealt one at a time to the players.

There is a floor plan of the mansion on the game board, including all of the rooms in which the murder may have been committed. The six tokens are initially placed around the outer edge of the game board. Each token corresponds to one of the suspects who may have committed the murder. The miniature weapons are also placed on the game board.

The board is laid out in a grid of spaces. Each player rolls the die and is permitted to move his or her token the number of spaces indicated on the die. When a token enters a room, the play may make a “suspicion” (described below). Each room has at least one door but some rooms have two or more doors. With one exception, tokens may only enter or exit a room through a door. The mansion has two secret passages, which connect the rooms in opposite corners of the playing board and players may move their tokens through the secret passages rather than through the doors.

Players attempt to solve the puzzle by viewing as many of their opponent’s cards as possible. To view an opponent’s cards, a player sets up a hypothesis, called a “suspicion,” about the crime. A player rolls the die and moves his or her token each turn. If the token enters a room, the player may make a suspicion. Each suspicion includes a suspect, a weapon, and a room. The suspecting player may choose any suspect and any weapon but may only choose the room in which his or her token rests. Once a suspicion is formed, the player to the left of the suspecting player must disprove the suspicion if he or she can by showing one card (i.e., the suspect, the weapon, or the room) in the suspicion. If the first player to the left is unable to disprove the suspicion, then the next player (playing clockwise) must disprove the suspicion; this continues until the suspicion has been disproved or until play returns to the suspecting player. Players may choose to record these clues in their notebook.

At any time during his or her turn, a player may make an “accusation.” An accusation is exactly like a suspicion except the player compares his or her accusation against the solution cards. The game ends if the solution cards match the accusation. Otherwise the player no longer enjoys active play but remains to show his or her cards to disprove the suspicions of other players.