

# MAS.490: Introduction to Game Design

## ***Problem Set #3***

Due September 26, 2002 at 3pm. Send problem sets to [orwant@media.mit.edu](mailto:orwant@media.mit.edu).

1. Invent a new type of word or logic puzzle, and provide a sample puzzle. Ideally, the puzzle should involve lateral thinking so that when someone tries to solve the puzzle, fails, and learns the answer, they think “Aha!” and not “Grrr.”
2. The next class will explore text adventure games in advance of you creating your own. Come up with three ideas for a text adventure that you might want to create. You can express the ideas in as little as one or two sentences, but make sure that it’s specific enough to storyboard for the next problem set. For instance, “A space game” is too broad – is it about conquering planets? Solving missions? Establishing friendly contact with aliens? For each game idea, suggest a problem that will require lateral thinking to solve. (If you’ve never played a text adventure before, visit <http://thcnet.net/error/index.php> to play one of the classics.)
3. Consider a game that features an AI bank teller. The bank teller will look at the player and decide whether or not to press the silent alarm based on the probability that a visitor is a bank robber. Assume the following statistics. First, the a priori probability of a bank being robbed is 0.01%. (That is, one out of every 10,000 visits to a bank is a robbery.) Second, 90% of all people who rob banks use guns, but 1% of the people who visit a bank are policemen, who always carry guns and never rob banks. Third, 80% of all people who rob banks wear something that covers their eyes, but 5% of the non-thieves who visit a bank wear sunglasses. What is the probability that the visitor is there to rob the bank if a) he has a gun but nothing covering his eyes, b) he covers his eyes but doesn’t have a gun, and c) he covers his eyes *and* has a gun? (Assume the AI can’t tell whether someone is a policeman.) **Extra credit:** 75% of bank robbers look nervous, and 5% of non-robbers look nervous, but if someone has a gun and isn’t a policeman, there’s a 50% chance they’ll look nervous independent of whether they’re robbing the bank. What is the probability that the visitor is there to rob the bank if d) he has no gun and is nervous, e) he has a gun and isn’t nervous?
4. Imagine you have to create a hint line for an English-language cryptogram. What rule would you use to determine what sort of hint to give, given what they’ve solved already, and why?
5. Pick at least three languages and describe how well American-style crosswords (that is, each square is part of both an “across” clue and a “down” clue) would work in them: which will be harder for the designer, and which will be harder for the player? Describe the syntax of a (possibly hypothetical) language that would permit three-dimensional crosswords.

