Project Proposal: Reasoning in the game of Mafia Ben van Os (s1629891) Margreet Vogelzang (s1648497)

In the party game of Mafia, known as "weerwolven" in most of the Netherlands, a group of people tries to find and eliminate hidden Mafia members amongst them. This is done by a majority vote – anyone considered to be Mafia by a majority of the other players is eliminated from the game. After each vote (called a 'day' in Mafia terms) the 'night' begins, and the Mafia can murder 1 participant in the game. This process continues until either all Mafia or all innocents are eliminated.

We are planning to look at a specific 5-player variant of this game. This variant has the following roles:

- 1 Mafia
- 1 normal cop (can ask the game leader if a certain player is mafia once per night, gets truthful results)
- 1 paranoid cop (Always gets a 'guilty' result, even on fellow cops)
- 1 naïve cop (Always gets an 'innocent' result, even on the Mafia)
- 1 insane cop (Always gets the opposite result 'guilty' on cops, 'innocent' on Mafia)

Which cop has which of these 4 sanities is not revealed to the players during the game – it has to be deduced by logic.

Depending on the amount of time available we are planning to try the following:

- 1. Find the right claim for the Mafia on Day 1, given the 4 other results
- 2. Simulate the entire game, including Day 2
- 3. Allow a human player to participate

We are planning to implement this in java.