General Game Playing

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Exercise 5.1

Read some papers on (general) game playing to learn more about the existing search stategies and heuristics. You may also have ideas of your own to improve the strategy of your player. Implement at least one of the ideas in your player and check if it improves the performance of your player by running the following experiments for at least 5 considerable different games each. The games should include single-player, two-player and multi-player (¿2) games, as well as games with simultaneous and with alternating moves.

- **direct comparison:** Play one or more matches with two version of you player against each other, one version with the "improvement" and the other without. Fill up with random opponents if the game has more than two roles.

- **indirect comparison:** Play some matches with each of the two version of your player against random opponents.

Compare the average scores of the two version of your player for each game in the two settings. If a game is simple enough to get solved by your player you may compare runtimes as well. The number of matches to play depends on the game. For more complex games you need more matches to get significant results in case some form of randomness (either in your player or the opponents) is involved.

Some games you might want to try:

- **single player:** knightstour, lightsout, peg_bugfixed, pancakes88, queens, snake_2009, wargame01

- **two-player:** bidding-tictactoe*, blocker*, bomberman2p*, breakthrough, breakthroughsuicide, chinesecheckers2, chickentictactoe*, connectfour, connect5, cubicup, kalaha_2009, othello-comp2007, pentago_2008, quarto, quartosuicide, racer*, sheep_and_wolf, skirmish, tictac-toe_3d_2player,

- **multi-player:** 3pffa, 4pttc, chinesecheckers3, chinesecheckers6_simultaneous*, cubicup_3player, four_way_battle*, pacman3p*, racer4*, smallest*

(The names of the games are the ones used at the Dresden GGP-Server. Games with * are with simultaneous moves.)

Prepare a presentation (no more than 5 minutes) for the tutorial on 14.12.2009 to present the idea(s) you implemented and a summary of the experimental results.