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Tutorial 1:

Rules for the tutorials
- Throughout the course we will use Java, MasSim, IBM CPLEX
- Programming skills are required -- programming agents in a multi-agent environment involve problems from concurrent programming:
    - accessing shared memory
    - sending messages and their asynchronous parsing
    - outdated information about the environment
- Earning points for homework assignments
    - 9p + 14p + 17p = 40p alltogether, at least 20p for gaining the assessment
    - you will upload your solution via upload system
        - (probably) no automatic evaluation
    - deadlines are **strict!**

What is an agent? Connection between agents and robots -- a good way how to think about agents is to think about robots:
- robots are placed in some environment and react on the changes in the environment, need to deliberatively solve some task, need to communicate with other robots in the team, etc. …
- robots are currently available - you can easily purchase functional robots (vacuum cleaners, quadrotors, …) that you can deploy and use in practice

However, agents are more abstract. They, for example, can also be seen as an abstraction methodology -- consider a multi-agent simulation of a real-world large city and different level-of-detail of simulation based on the chosen autonomy/abstraction level.

3 main topics/tasks that we will cover over the semester:
- coordination of reactive agents
    - a group of agents must accomplish some common goal in an uncertain environment
    - formal model of reasoning -- modal logic, knowledge system, BDI
- solving problems in environment populated with self-interested agents
    - game-theory, solving the game
    - social choice, voting, auctions, mechanism design
- solving problems in cooperative setting, where agents wants distributively solve a common task
    - distributed constraint satisfaction programming
    - optimization

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