



TDDC17 ARTIFICIAL INTELLIGENCE :

Lab 4 : Introduction to planning

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Task 1 : Writing Domain and Problem

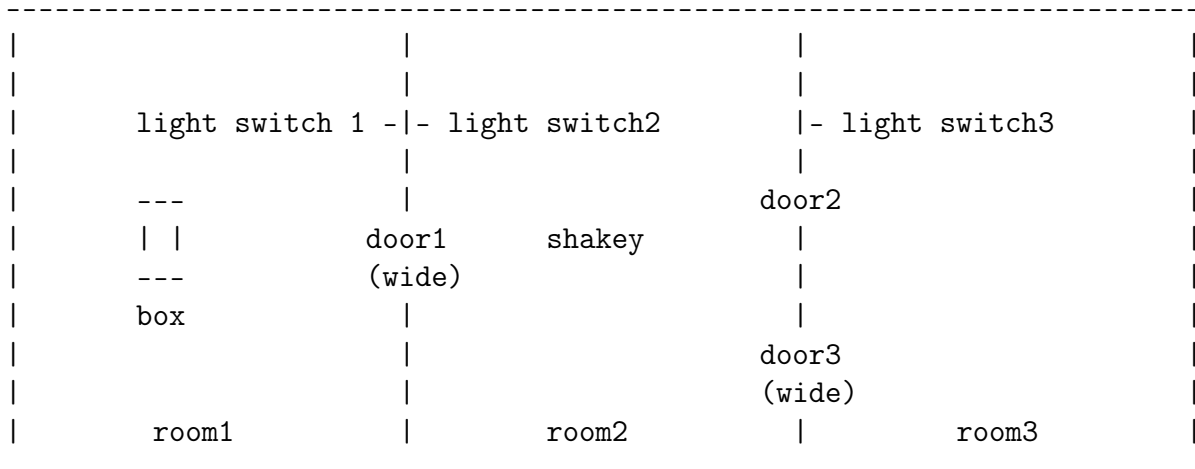
The aim of this fourth lab is to learn how to model a problem that can be solved with automatic solvers called planners, using a formal language : PDDL.

Different domains alternatives are suggested. I have chosen to implement the AI classic Shakey's World.

Shakey is a robot with two grippers that is moving in a set of rooms, connected by doors. Each room contains a lightswitch which can be on or off but may also contain big boxes or smaller objects.

The lab page defines the following constraints :

- Shakey can carry small objects, but only two at a time because he has only two grippers.
- For Shakey to be able to find a small object in a room, the light must be on in that room.
- Shakey can not carry boxes, but can push them around. Boxes can only be pushed through wide doors, not narrow ones.
- To switch the light in a room on or off Shakey must climb onto a box that is positioned below the switch (otherwise he can not reach the switch). This may in turn require moving the box into position, possibly from another room.



SRI Shaky's World

The following actions have been implemented in the domain definition file : move, push, climb, descend, turnon and carry.

A few assumptions have been made :

- Doors are either opened wide or narrow, it is not possible to change the opening.
- Shakey pushing a box from a room to another imply Shakey also being in the destination room.
- When Shakey is on a box, he can only turn a light on, he has to reach the ground before being able to move.

Please refer to the code and comments for more details regarding the implementation.

Problems

Task 2 : Performance Comparison