Homework 3: Planning (due November 1 before class)

Please read the rules for assignments on the course web page (http://www.cs.duke.edu/courses/fall17/compsci570/). Use Piazza (preferred) or directly contact Shuzhi (shuzhiyu@cs.duke.edu), Rui-Yi (ryzhang@cs.duke.edu), or Vince (conitzer@cs.duke.edu) for any questions.

In the course directory you can find the fast-forward planner (ff) as well as a “family domain” (family-domain.pddl), and some example problem instances: family-1.pddl asks for a plan to create a daughter; family-2.pddl asks for a plan to create an individual who is his own uncle, and family-3.pddl asks for a plan to create an individual who is his own father. As they say, “Don’t try this at home!” – but do read these files and call the planner on them to see what happens, e.g.,

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./ff -o family-domain.pddl -f family-1.pddl
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1 (50 points). Use the ff solver to find a plan to create an individual who is his own granduncle. (x is a granduncle of y if x is an uncle of a parent of y.) To do so, you should first extend family-domain.pddl to include a new predicate is-granduncle-or-grandaunt-of and a new action conclude-granduncle-grandaunt. Then, create a new problem instance family-4.pddl that asks for a plan to create an individual who is his own granduncle, and run the ff solver on it to produce an output file. Make sure to allocate enough objects (individuals who are not yet born). Finally, briefly describe the output plan in English.