

## PUI tutorial 6 - $h^{FF}$ exercise

$$F = \{a, b, c, d, e, f, g, h\}$$

$$O = \begin{array}{c} o_1 \\ o_2 \\ o_3 \\ o_4 \\ o_5 \\ o_6 \end{array} \begin{array}{c} \parallel \\ \parallel \\ \parallel \\ \parallel \\ \parallel \\ \parallel \end{array} \begin{array}{c} \text{pre} \\ a \\ a,c \\ b,c \\ b \\ d \\ d \end{array} \begin{array}{c} \parallel \\ \parallel \\ \parallel \\ \parallel \\ \parallel \\ \parallel \end{array} \begin{array}{c} \text{add} \\ b,c \\ d \\ e \\ f \\ e,f \\ g \end{array} \begin{array}{c} \parallel \\ \parallel \\ \parallel \\ \parallel \\ \parallel \\ \parallel \end{array} \begin{array}{c} \text{del} \\ \emptyset \\ \emptyset \\ \emptyset \\ \emptyset \\ \emptyset \end{array} \begin{array}{c} \parallel \\ \parallel \\ \parallel \\ \parallel \\ \parallel \\ \parallel \end{array} \begin{array}{c} c \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \end{array}$$

$$s_I = \{a\}$$

$$s_G = \{c, d, e, f, g\}$$

Overall algorithm:

- Create reachability graph
- Mark the final G node
- Apply rules layers by layer until every marked node is justified

Justified node definitions:

- Action node is justified if all precondition fact nodes are marked
- Fact node is justified if at least one predecessor node is marked
  - Starting with marked goal node, apply the following rules **layer by layer** until **all marked nodes are justified**
    - 1) Mark all immediate predecessors of a marked unjustified action node
    - 2) Mark the immediate predecessor of a marked unjustified atom node with only one immediate predecessor
    - 3) Mark an immediate predecessor of a marked unjustified atom node connected via an idle arc (to the same atom in the previous layer)
    - 4) Mark any immediate predecessor of a marked unjustified atom node