

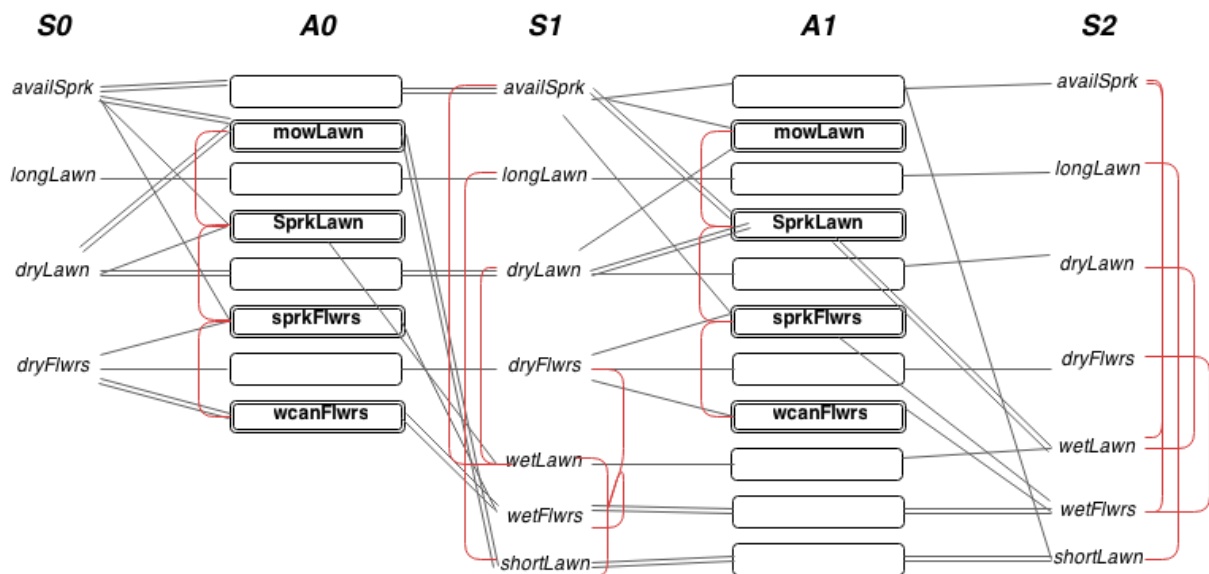
TDT4136 Assignment 6 – Planning

Propositions	Actions
<i>availSprk</i> – sprinkler is available	<i>mowLawn</i> – mow the lawn PRECOND: <i>dryLawn</i> , <i>longLawn</i> ADD: <i>shortLawn</i> DELETE: <i>longLawn</i>
<i>longLawn</i> – lawn is long	
<i>dryLawn</i> – lawn is dry	<i>sprkLawn</i> – water the lawn using the sprinkler PRECOND: <i>availSprk</i> , <i>dryLawn</i> ADD: <i>wetLawn</i> DELETE: <i>availSprk</i> , <i>dryLawn</i>
<i>dryFlwrs</i> – flowers are dry	
<i>wetLawn</i> – the lawn is wet	
<i>wetFlwrs</i> – the flowers are wet	<i>sprkFlwrs</i> – water the flowers using the sprinkler PRECOND: <i>availSprk</i> , <i>dryFlwrs</i> ADD: <i>wetFlwrs</i> DELETE: <i>availSprk</i> , <i>dryFlwrs</i>
<i>shortLawn</i> – the lawn is short	<i>wcanFlwrs</i> – water the flowers with a watering can PRECOND: <i>dryFlwrs</i> ADD: <i>wetFlwrs</i> DELETE: <i>dryFlwrs</i>

Initial conditions: *availSprkl*, *longLawn*, *dryFlwrs*, *dryLawn*

Goal: *shortLawn*, *wetLawn*, *wetFlwrs*

EXERCISE 1: FIGURE OF PLANNING GRAPH



Text outside boxes are propositions.

Text inside boxes are actions.

Single lines are relations between components

Double lines is the path

Red lines are mutex

EXERCISE 2: EXPLANATION FOR EXPANSION

In state 1 (**S1**) in the graph, we see that there is a mutex relationship between two of our goals, namely **wetLawn** and **shortLawn**. Because of this, we cannot reach all goals, and we therefore had to expand. In the expanded state, state 2 (**S2**), we see that there is no longer a mutex relationship between **wetLawn** and **shortLawn**.

EXERCISE 3: LIST OF ACTIONS

wcanFlwrs, mowLawn -> sprkLawn

EXERCISE 4: EXPLANATION OF OBTAINED PLAN

The first thing we do is to start with our three goal states, namely *shortLawn*, *wetLawn* and *wetFlwrs*. From here on, the idea is to backtrack through the graph in order to obtain the sequence of actions needed to reach our goal states. By doing so, we see that we need to perform *sprkLawn* and either *sprkFlwrs* OR *wcanFlwrs*. Since *sprkFlwrs* is in a mutex relationship with *sprkLawn*, we know that *sprkFlwrs* is not part of our solution. Furthermore we observe that *mowLawn* is in a mutex relationship with *sprkLawn*, so we know that these two actions cannot be performed simultaneously.