Common ISPL Problems

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Problems with the `Evolution` section

- assignments to variables on the LHS of an `if` only hold in the next state
- so all the variables that are updated by an action should be assigned at the same time (in the LHS of the same line)
- e.g., moving the carriage updates both the position and the colour/texture — if you do:

```
pos=pos0 if pos=pos2 and Robot1.Action=push1;

color=blue if pos=pos0;
```

- then `color` is not updated until the state after next, by which time `pos` could be equal to `pos1`

More problems with the `Evolution` section

- assignments should specify the complete action tuple
- if more than one line in the `Evolution` is enabled, then with the default `MultiAssignment` semantics, one of the enabled lines is chosen nondeterministically
- this might be what you want, but it might not
- if you want the system to evolve deterministically, it's safer to specify complete action tuples

Problems with `Lobsvars`

- ISPL does not allow the `Vars` section to be empty, even if all the information the agent needs is observable from the environment
- however adding a “dummy” variable in `Vars` needs to be done with care, otherwise the agent can know things it is not supposed to know

- for example

```
Agent Robot1
   Lobsvars = {blue};
   Vars:
      blue1 : boolean;
   end Vars

   Evolution:
      blue1 = true if Environment.blue = true;
      blue1 = false if Environment.blue = false;
   end Evolution
end Agent
```

- allows the agent to “remember” whether the floor was blue in the last state (because the assignment to `blue1` refers to the next state)

- so properties such as

```
Evaluation
   notblueToBlue if Environment.blue = true
                    and Robot1.blue1 = false;
   blueToNotblue if Robot1.blue1 = true
                    and Environment.blue = false;
end Evaluation

Formulae
   EF K(Robot1, notblueToBlue);
   EF K(Robot1, blueToNotblue);
end Formulae
```

- are true
- note that in `Evaluation` section, propositions are evaluated wrt to the values of variables in the current state