The Language of CLINGO:
Choice, Intervals, Assignments, Constant Names

A rule of the form
\[ P(t) \leftarrow F \land \neg\neg P(t) \]
can be abbreviated as
\[ \{ P(t) \} \leftarrow F. \]
Rules of this form are called choice rules. For instance, the second program from Problem 27 can be written as
\[
\begin{align*}
P(a), \\
P(b), \\
P(c), \\
\{Q(x)\} \leftarrow P(x),
\end{align*}
\]
or, in the syntax of CLINGO, as
\[
\begin{align*}
p(a). & \quad p(b). & \quad p(c). \\
\{q(X)\} & \leftarrow p(X).
\end{align*}
\]
The input language of CLINGO allows us to abbreviate the first line as
\[ p(a;b;c). \]
Similarly, the group of facts
\[ p(5). \quad p(6). \quad p(7). \quad p(8). \quad p(9). \]
can be abbreviated as
\[ p(5..9). \]

**Problem 28c.** Consider the program
\[
\begin{align*}
p(a;b;c). & \quad p(5..9). \\
\{q(X)\} & \leftarrow p(X).
\end{align*}
\]
Guess how many stable models it has. Use CLINGO to check that your guess is correct.

Interval expressions, such as 5..9, can be used also as part of “assignment formulas.” For instance, $x=5..9$ stands for the disjunction

$$x = 5 \lor x = 6 \lor x = 7 \lor x = 8 \lor x = 9.$$ 

**Problem 29**. Consider the one-rule program

$$\{p(X,Y)\} :- X=1..3, Y=1..4.$$ 

Guess how many stable models it has. Use CLINGO to check that your guess is correct.

The CLINGO symbol `#const` allows us to introduce names for constants. For instance, the program from Problem 29 can be written also as

```clingo
#const m=3.
#const n=4.
{p(X,Y)} :- X=1..m, Y=1..n.
```