Artificial Intelligence

A finite state machine M can be regarded as a pair \((Trans, Final)\) where

- \(Trans\) is a list of triples \([Q_1, X, Q_2]\) such that at state \(Q_1\), M moves to \(Q_2\) if it sees the symbol \(X\)

and

- \(Final\) is a list of M's final (i.e. accepting) states.

Let us agree to name M's initial state \(q_0\), and to encode strings as lists (e.g. 100 as \([1,0,0]\)).

Your task is to define a 3-ary predicate \(accept\) such that

\[\text{accept}(Trans, Final, String) \iff (Trans, Final) \text{ accepts String}.\]

That is, write a a Prolog program to answer queries such as

\[\text{?- accept}([[q_0,0,q_1],[q_0,1,q_1],[q_1,0,q_0],[q_1,1,q_0]], [q_1], [1,0,0]).\]