6. $CTL_{F,G,X}$ **LAB EXERCISES FOR APRIL 1, 2014**

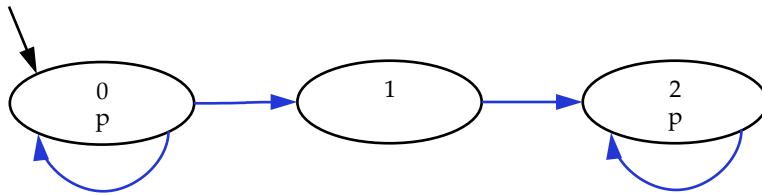*Exercise* 4 (*A familiar automaton*). Consider the automaton in Figure 7.

Fig. 7. A simple automaton.

Using the algorithm, compute the set of states that satisfies $AF[p]$.

Exercise 5 (*Anamolies in satisfaction*). Consider the two automata G_1 and G_2 in Figure 8.
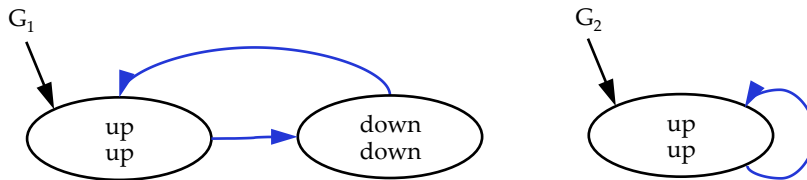

Fig. 8. Two gate models G_1 and G_2.

First, compute the set of states in G_1 that satisfy the formula $AG[down \rightarrow AF[up]]$. Now show that in model G_2, $up \models AG[down \rightarrow AF[up]]$.

Next, give a $CTL_{F,G,X}$ property that up in G_1 satisfies but up in G_2 does not satisfy.

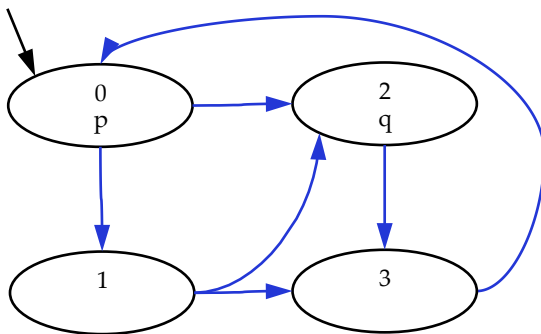*Exercise* 6 (*Examining another automaton*). Consider the automaton in Figure 9.

Fig. 9. Another automaton.

Compute the set of states that satisfies $AF[q]$. Now compute the set of states that satisfies $EF[q]$.