HW1 LING 490

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1 Figures from the Finite-State Morphology Chapter 1

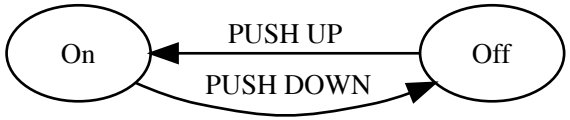

Figure 1: Model of an On-Off Light Switch Showing the States and Transitions

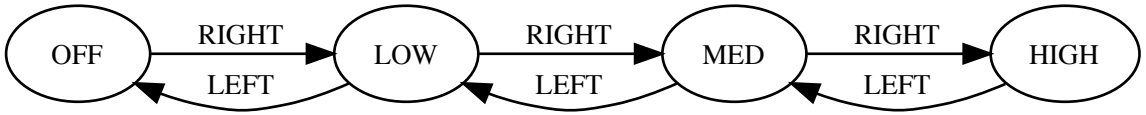

Figure 2: State Model of Ken's Old Car Fan

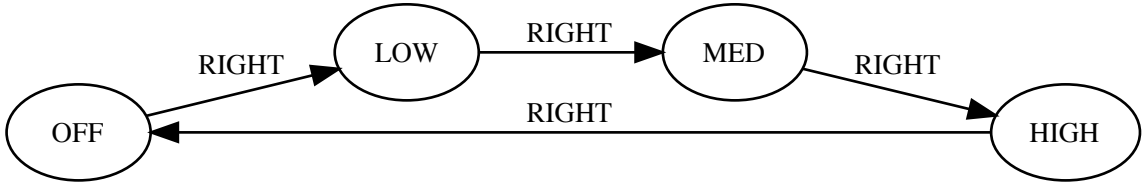

Figure 3: A Network that accepts a 1 word language

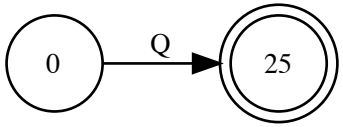

Figure 4: The Cola Machine Accepts a Quarter and Transitions Directly to the Final State

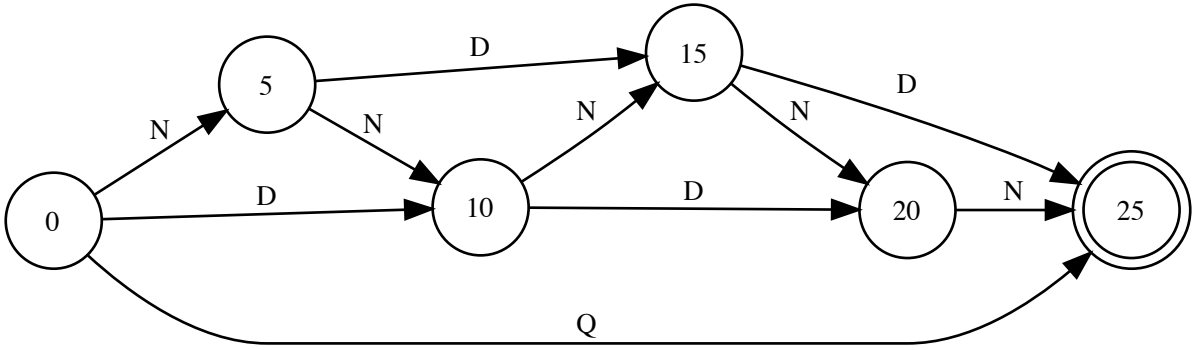

Figure 5: The Simple Cola Machine

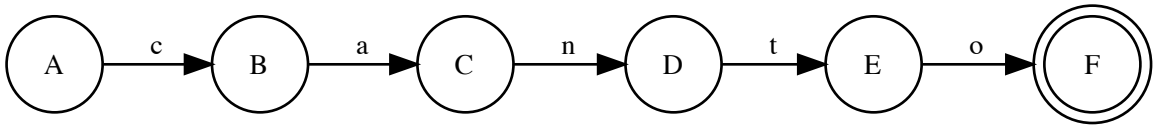

Figure 6: A Network that Accepts a One-Word Language

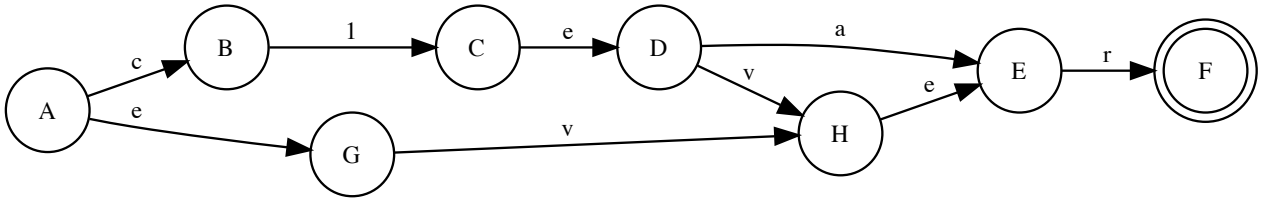

Figure 7: A Network for "clear", "clever", "ear" and "ever"

2 Exercise1.10.1

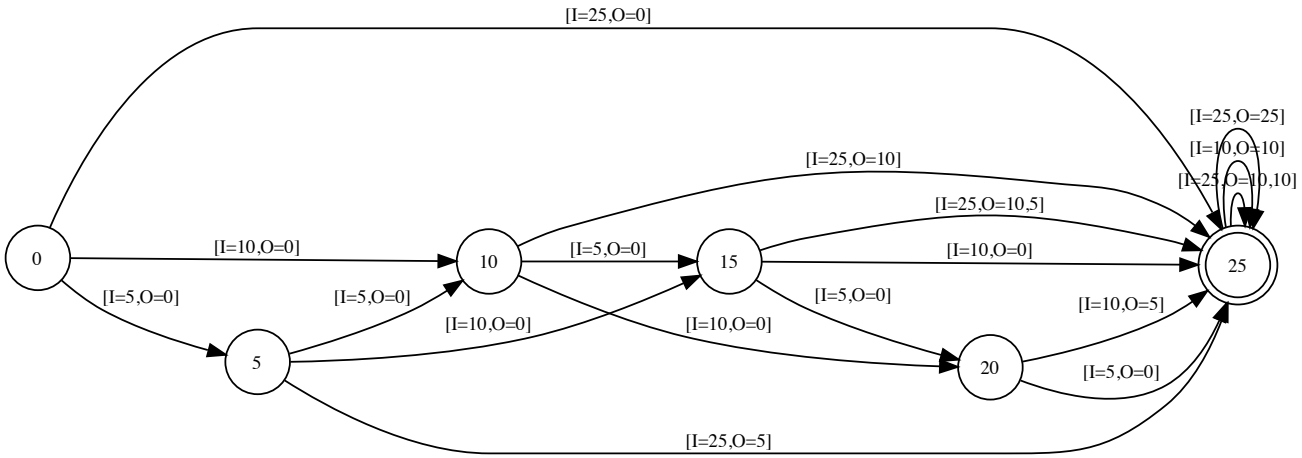

Figure 8: In this figure, the edge labels have the given format : [I: ;O:], "I" represents the input and "O" represents the output at every transition

3 Exercise1.10.2

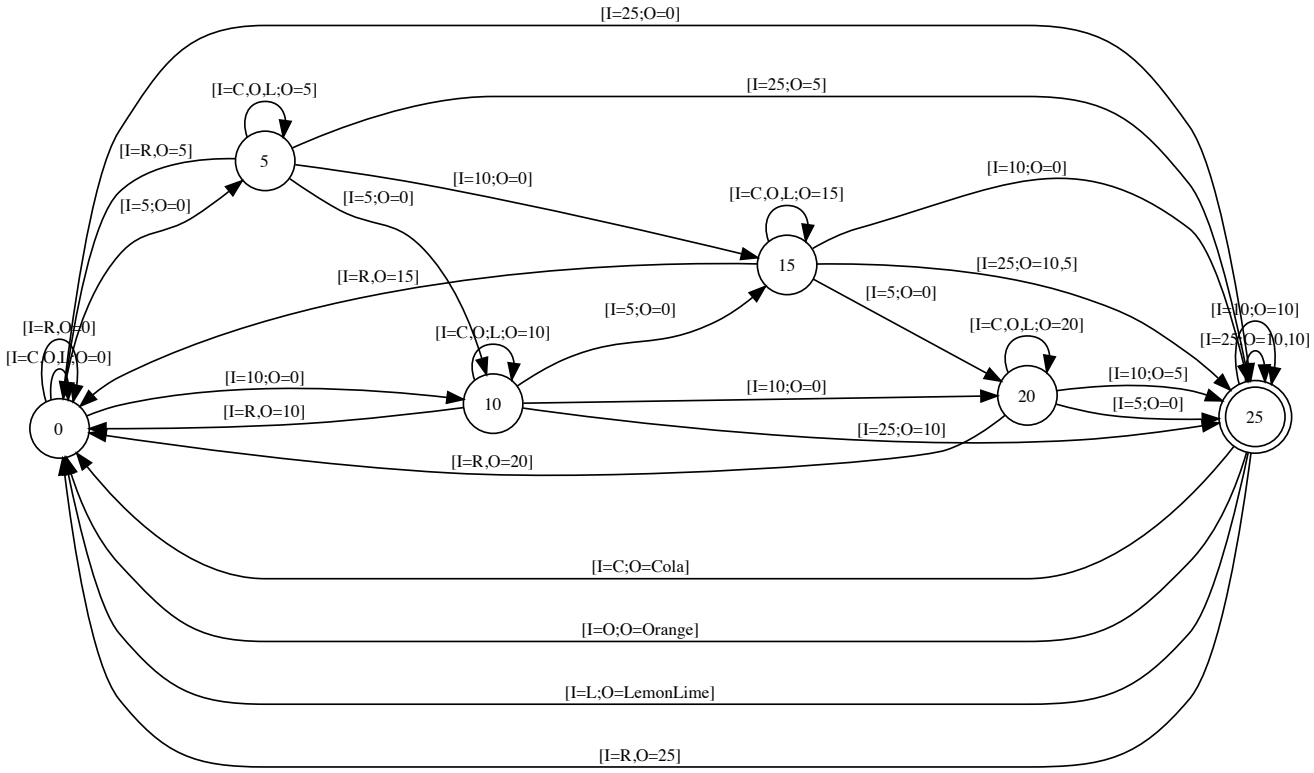

Figure 9: This figure provides additional input choices(C,O,L that represent Cola, Orange, LemonLime respectively

4 Exercise1.10.3

4.1 Father in Law definition

The new definition of father in law would be the following:
fatherInLaw(x): father(spouse(x) || spouse(father(x))

4.2 Cousin

We need to make sure that we don't include brothers or sisters, which is represented by the term child(parent(x)), for any given child x. So one to define cousins would be the following:

$$cousin(x) = child(child(parent(parent(x)))) - child(parent(x))$$

This can be also written as("to the power of i" represents inverse of the function):

$$cousin(x) = parent^i(parent^i(child^i(child^inv(x)))) - parent^i(child^i(x))$$

5 Exercise 1.10.4

5.1 Katze

To fix the problem, an upper case transducer can be added which will transform all uppercase characters to lowercase.