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Prof. Rivas

CMPT 440L_111

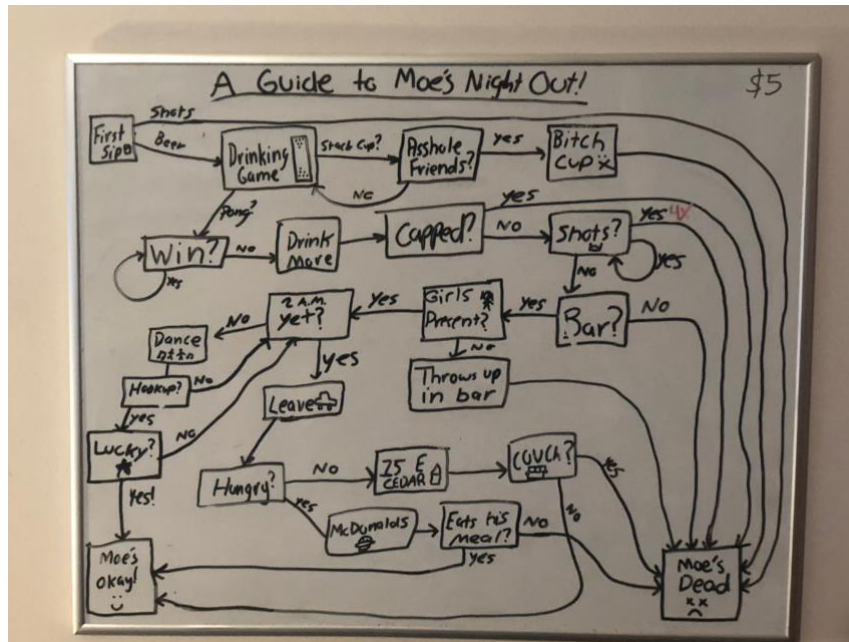
March 24, 2020

Final Project Milestone

Introduction:

Having spent many years knowing, living, and partying with my friend, Jimmy, I have seen him at his best and worst. I have witnessed nights where he is on the top of his game and runs the entire party. More often than not however, I have witnessed his demise. There have been many nights where I felt sorry for Jimmy. There have been times where he has woken up in the McDonalds bathroom at 5 a.m. There have been other nights where he did not even make it out the door for the bar. So, using what I have learned in Formal Languages and Computability, I created a DFA to help me, Jimmy, and our other friends understand how he might end up at the end of the night and whether he will black out or not.

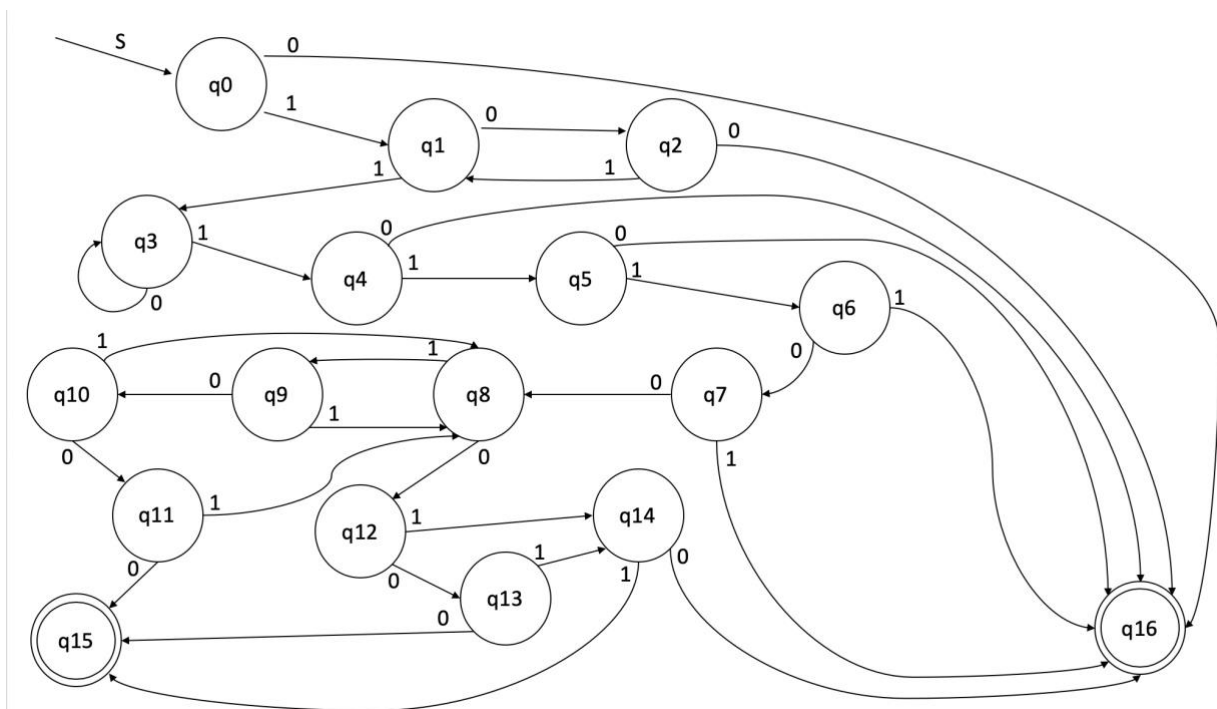
This project idea was inspired by a flowchart I made for fun, which detailed the numerous pathways that he could go down during his typical Saturday night. When I showed it off to Jimmy and numerous other friends, we realized just how accurate it was. That being said, once I learned what a DFA is and just how similar it was to that original flowchart, I knew using this as a project idea was too good of an opportunity to pass up. The original flowchart is shown below.



System Description:

For this DFA, the accepted language consists of '0' and '1'. Because we cannot see into the future, the DFA transitions must take in real time rather than inputting all of the data at once. The user will be asked questions that start at the very first sip. Once the question is answered, with either a '1' for no or a '0' for yes, the transition will take place and another question will be asked. No further transitions will happen until that next question is answered with a '1' or a '0'. Questions will be asked until an end state is reached. There are a total of 17 states (q0-q16). The starting state is q0 and as mentioned previously, is the state at which the user will be asked if Jimmy is starting with beer or not. There are two end states, q15 and q16. q15 represents Jimmy being okay and conscious enough to go to sleep in his own bed at the end of the night. q16 represents Jimmy not being okay, falling unconscious, and getting sick in any number of places at the end of his night.

The system will also keep track of the previous state that the user was on. This is so that if the q16 end state is reached, (the one that represents Jimmy blacking out) the system knows what Jimmy's mistake and can elaborate on it for the user. For example, in q6 the user is asked whether or not Jimmy is going to the bar. If the user responds by saying no, the transition to q16 (end state) will take place, and the system will output the reason why Jimmy must be blacked out. In this case, the system would write "He never misses the bar! Something must be wrong!" before outputting "Jimmy is blacked out :(". Keeping track of the previous state is also helpful in cases where a certain input will cause a transition into the same state. This happens if the state is q3. The user is asked if Jimmy won his pong game or not. If the answer is yes, Jimmy plays again. Instead of being asked the same exact question again, the system will simply ask the user "did he win again?" Doing this makes the system feel just a less repetitious for the user.



Still Needs to Be Done:

So far, I have finished the DFA diagram and the coding, as well whatever has been written above. I still need to work on transition description and state translation excel sheets. Other things must also be added to the write-up, such as an abstract, requirements, and a user manual.