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Final Project Milestone

Abstract:

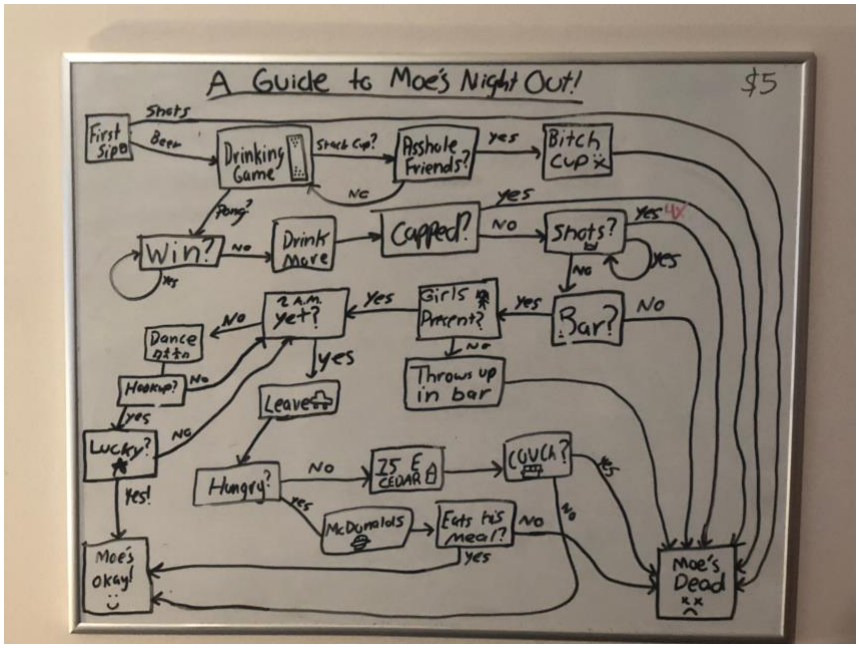
The Buddy System is a project I made based on the habits and decisions that my friend makes whenever he drinks. The purpose of the program is to see if it is likely that he will black-out based on his behavior throughout the night. The user is asked a series of questions about my friend. Based on the answers provided by the user, the system will decide what his likely fate will be. The system contains a total of seventeen states and involves the user answering a question at each state. The system will either accept a '0' or a '1' as input. That being said, there are two end states. One involves him being okay and going to bed at the end of the night, and the other involves him blacking out and/or getting sick. It can be run in a command line terminal or on eclipse.

Introduction:

Having spent many years knowing, living, and partying with this friend of mine, 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 my friend. There have been times where he has woken up in the McDonalds bathroom at 5 a.m. There have even been 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, my friend, and others in our group 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. It detailed the numerous pathways that he could go down during his typical Saturday night. When I showed it off to my friend and our other peers, 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'. The user must answer the questions one at a time instead inputting one long input string. This is due to the fact that if the system is being used at a party or bar, certain questions, like whether or not my friend is going to be lying on our couch at home at the end of the night, will not have an answer yet. The user may

also use the system ahead of time to get a better understanding of my friends' usual mistakes by describing hypothetical night out.

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 take place until that next question is answered with a '1' or a '0'. If the user inputs an invalid response, such as a '2', an error message will appear and the question will be repeated.

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 my friend is starting with shots or not. There are two end states, q15 and q16. q15 represents my friend being okay and conscious enough to go to sleep in his own bed at the end of the night. q16 represents my friend 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 my friend blacking out) the system knows what my friend's mistake was and can elaborate on it for the user. For example, in q6 the user is asked whether or not my friend 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 my friend must be blacked out. In this case, the system would write "He never misses the bar! Something must be wrong!" before outputting "He 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 when the current state is q3. The user is asked if my friend won his pong game or not. If the answer is yes, he plays again. Instead of being asked the same exact question every time my

friend wins, the system will simply ask the user “did he win again?” Doing this makes the system feel just a little less repetitious for the user.

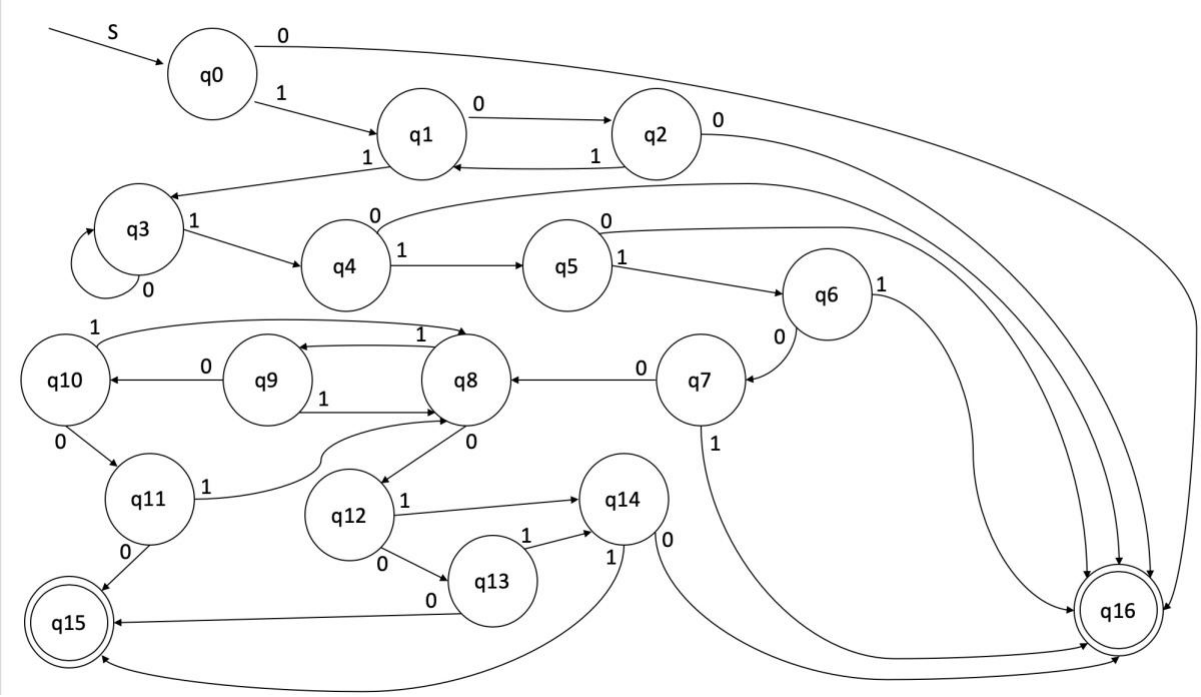
Requirements:

The system can be run on either eclipse or in a command line terminal. Java must also be downloaded on the user’s system. The program is initiated by running the driver, called DriverDFA.java, which then invokes the methods in the BuddySystem.java file.

User Manual:

The first step to running the program is to run the DriverDFA.java file. If this is being done from eclipse, it is as simple as accessing the file and clicking the ‘run’ icon. If you are running the program via Linux terminal, enter the “src” folder of the project. If you enter “ls” into the command line, you will see two files, “DriverDFA.java” and “BuddySystem.java”. Both will need to be compiled. To compile, enter “javac “ into the command line followed by the filename (Ex. javac BuddySystem.java). Once both are compiled, enter “ls” and you should see a “.class” file for each java file. The files will only need to be compiled once. To run the files, enter “java “ into the command line followed by the file’s name. Be sure to exclude the extension of the file (Ex. java DriverDFA).

Once this is done, the system will give its own instructions for the user. These instructions will have you simply enter a ‘1’ or a ‘0’ depending on your answer to each binary question. Questions will be asked one at a time as well. Once my friend’s fate has been revealed, you will be asked “Do you want to restart?” Simply enter the number that matches your intention to reset the program.



Conclusion:

The Buddy System will provide me, my friend, and our other peers with a simple yet strong tool that can be used to help us understand how to keep my friend safe and happy. It is a simple program that interviews the user and accounts for all the most significant details of my friends night.