

The Dating Sim DFA shows the routes inside of a basic dating sim. As many dating sims can get very complicated with multiple routes and twist endings, I will set up the DFA with a simpler version. In order to simplify a dating sim that can be described with a DFA, a few things will be implemented:

- The choices for each event will be simplified so that there are only three
 - Good, Neutral, and Bad (a, b, and c respectively)
- There will only be one girl with four possible endings (perfect, good, neutral, and bad)

With these things in mind, we can construct a language that will be accepted by the DFA and show routes to winning scenarios. One of the important things that we have to consider is that you are not usually able to go back and change what you said, so this DFA will strictly go forward. This means that even though we seem to accept any string that ends with an a or b, we cannot accept a string with 20 a's, as this goes beyond the scope of our game. We have to restrict it because a game has to have a set path that it goes through and cannot go back and forth.

DFA Explanation:

- First transition accepts any character and goes forward, this is because the first choice is usually a freebie.
- The only way to get a perfect ending is to always make the best choices (a) so this accept state (q11) will accept only strings that have all "a"s (besides the first that is a gimme and can be any character).
- Making too many bad choices will result in an error state (bad ending)
- There are a couple of ways to get Good and Neutral endings
- *Detailed explanations of each transition will be added to a description table.

With this we have a DFA that can describe a basic dating sim. Although simple, DFAs can also be used for more complex games. For example we can account for more choices or include more girls. By the end of the semester I will attempt to show a DFA for a more complex game with either more choices or more girls or some kind of twist.