1. Explain the logic behind the pumping lemma for regular languages. Give an example.

2. Do the vowel nasalization problem from HW#6 with foma. Show the code that you entered and show the automaton that results.

3. Make a transducer that models first order implication: \( A \rightarrow B \). Your transducer should take a pair of truth values on one tape and map them to an appropriate truth value on the second tape. For example, if you gave your transducer \( TF \), it would map to \( F \). Give the code you entered for this transducer and show the automaton that results.

Things to remember:

1. This is due by the *beginning* of class on **Apr. 28**!

2. Type it, double-spaced.

3. This can be no more than *two* double-spaced pages.

4. Keep in mind that there may be funny symbols here that you’ve never used or printed before. Leave time to make sure you have them right.

5. Remember: nothing late. Do not wait until the last minute to do this or to print it out.

6. You may certainly talk to each other about this and other assignments, but everyone must turn in their own work.