Exercise Set 5:

The first thing you should do in exercise5.tex is set up your name as the author of the submission by replacing the line, `\submitter{TODO: your name}`, with your name and UVA email id, e.g., `\submitter{Grace Hopper (gmh1a)}`.

Before submitting , also remember to:

– List your collaborators and resources, replacing the TODO in `\collaborators{TODO: replace ...}` with your collaborators and resources. (Remember to update this before submitting if you work with more people.)

– Replace the second line in exercise5.tex, `\usepackage{uvatoc}` with `\usepackage[response2]{uvatoc}`.

Collaborators and Resources: TODO: replace this with your collaborators and resources (if you did not have any, replace this with *None*)

Exercise 4-2: DROPOUT

Demonstrate that the following operation on languages preserves regularity (i.e., show that if the input language has a NFA, then the output language must as well)

Define the operation $DROPOUT(L)$ to be an operation that produces a new language using the language L. In particular, $DROPOUT(L)$ represents the language of all string where one character from L has been deleted. Formally,

$$DROPOUT(L) = \{xz \in \Sigma^* | xyz \in L \text{ where } x, z \in \Sigma^*, y \in \Sigma\}$$

Show that if L is regular, then $DROPOUT(L)$ is regular as well. To do this, demonstrate that if L has a DFA/NFA you are able to transform that into a new DFA/NFA for $DROUPOUT(L)$.