CS4510: HW2

Due: Sept 2 before 3pm on Gradescope (there is a link on Canvas)
Separate page for each problem

1. XOR. [2 points]
Construct a DFA that represents the XOR of two languages L_1 and L_2.
Construct a minimal DFA that represents the XOR of two languages L_1 (bitstrings of even length) and L_2 (bitstrings with odd number of 1s).

2. Integers and Floats. [2 points]
Construct a DFA that accepts integer/float numbers.
An integer number is defined as:

- A string leading with an optional + or -
- Followed by a single zero or non-empty sequence of digits that doesnt start with a zero

A float number is defined as:

- A string leading with an optional + or -
- Followed by a single zero or non-empty sequence of digits that doesnt start with a zero
- Followed by a decimal point
- Followed by a non-empty sequence of digits

3. Reverse Concatenation. [2 points]
Given a DFA that accepts some set S of strings (possibly infinitely many) from a fixed alphabet, construct a DFA that accepts all strings that are of the form ab where a is a string in S and b is the reverse of some string in S.