

HW 2 Due: 7 feb 2025

1. Draw a DFA, simplified to the best of your abilities (but including a trap state, if needed), that recognizes the language of **all** strings of a 's, b 's, and c 's where a is never immediately followed by b . 30
2. Draw a DFA, simplified to the best of your abilities (but including a trap state, if needed), that recognizes the language $L = \{w \in \{a, b\}^* : w \text{ does not have a run of 4 or more } b\text{'s}\}$. 30
3. Draw a DFA, simplified to the best of your abilities (but including a trap state, if needed), that recognizes the language $L = \{w \in \{a, b\}^* : |w|_a \bmod 3 = 0\}$. 30
4. Draw a DFA, simplified to the best of your abilities, that recognizes the language $L = \{a^i b^j : (i + j) \bmod 3 = 0\}$. Please explicitly draw the trap state, if needed, in your DFA. 30
5. Draw a DFA, simplified to the best of your abilities (but including a trap state, if needed), that accepts the language L of the natural numbers that are multiple of 5, written in base 10. For example, 0 and 435 belong to L , but 00, 0435, and 5328 do not. 30