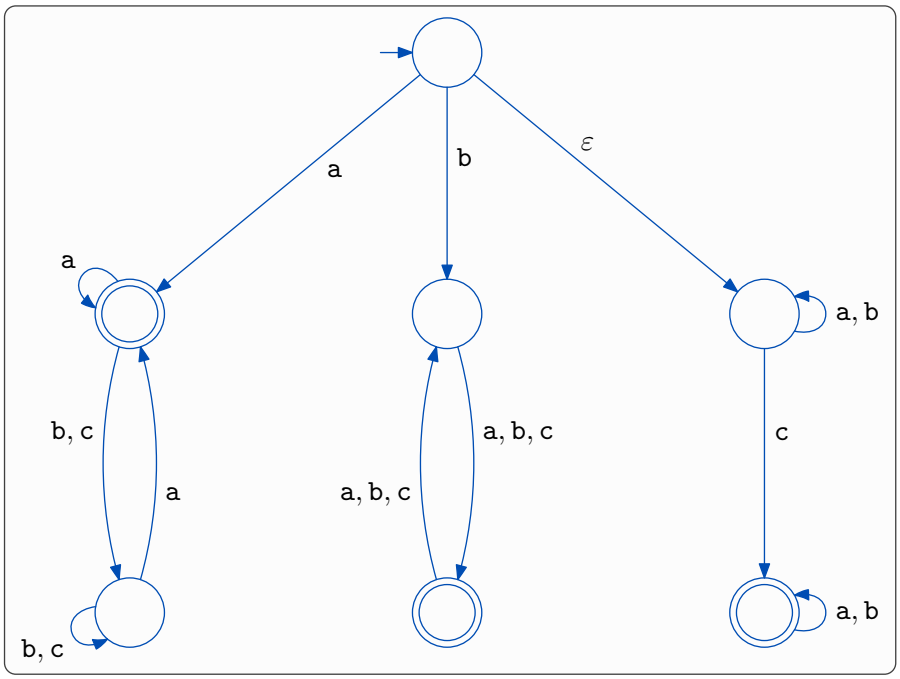
CpSc 3500 — Goddard

In-class Practice 5: REs and FAs

Give both a regular expression and a finite automaton for the following language. The alphabet is $\{\mathtt{a}, \mathtt{b}, \mathtt{c}\}$. The language is all strings that satisfy at least one of the following properties:
(i) the string starts and end with an a,
(ii) the string starts with a b and has even length, or
(iii) there is exactly one c in the string.



$$\mathtt{a}(\mathtt{a}+\mathtt{b}+\mathtt{c})^*\mathtt{a}+\mathtt{a}$$
$$+\mathtt{b}(\mathtt{a}+\mathtt{b}+\mathtt{c})\left((\mathtt{a}+\mathtt{b}+\mathtt{c})(\mathtt{a}+\mathtt{b}+\mathtt{c})\right)^*$$
$$+(\mathtt{a}+\mathtt{b})^*\mathtt{c}(\mathtt{a}+\mathtt{b})^*$$