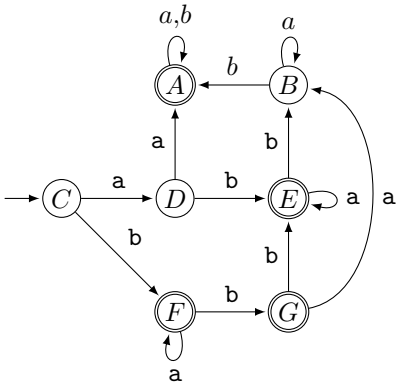
Minimal automata, regular expressions

1. Create a minimal automaton from this FA by the method we used on class.



2. Let $\Sigma = \{\mathtt{a},\mathtt{b}\}$ and $L \subseteq \Sigma^*$ be the language of words with odd number of `a`'s and odd number of `b`'s. Determine the minimal automaton for the language L^2.

3. Write a regular expression for the following language over the alphabet {0,1}: The set of all strings with at most one pair of consecutive 0's and at most one pair of consecutive 1's.

4. Give a NFA for the language $(((00)^*(11)) \cup 01)^*$.

5. * Give a regular expression that describe the following language: $\{w \mid w$ doesn't contain the substring `110`$\}$