Ex. 1

Propose a complete deterministic finite state automaton which recognizes all the words from Σ^* that include an odd number of as, one or two cs, and then an even number of bs ($\Sigma = \{a, b, c\}$).

Ex. 2

Consider the following regular grammar:

$$
\begin{aligned}
S &\rightarrow aB \mid bA \\
A &\rightarrow bA \mid aB \mid a \\
B &\rightarrow aC \mid bC \mid b \\
C &\rightarrow aB \mid a \mid b \mid cC
\end{aligned}
$$

1. Build the finite-state automaton corresponding to this grammar (hint: the states of the automaton correspond closely to the non-terminal symbols of the grammar).
2. Show the sequences of states corresponding to the recognition path of the words bbb, $bacba$ and $babcaab$.
3. Give all the words of length ≤ 3 that are recognized by the automaton.
4. Is this automaton deterministic? If not, propose a deterministic finite-state automaton recognizing the same language.