HOMEWORK 1

1. Give the state diagram for a DFA that recognizes L = {w ∈ {a, b}* | w is ε or starts with b or starts with ab} over the alphabet Σ = {a, b}.

2. Describe the language represented by the automata below. Specify exactly what set of strings it accepts. Briefly explain why the DFA accepts this set of strings.
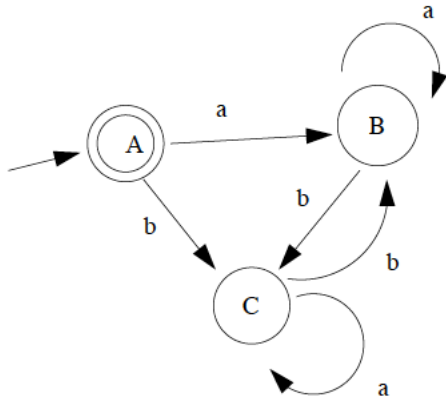
3. Let Σ = {a, b} and let L = {w | w is not a or b and does not contain the substring ab}. Give the state diagram for a DFA that recognizes L.

4. Describe the language represented by the automata below. Specify exactly what set of strings it accepts. Briefly explain why the DFA accepts this set of strings.
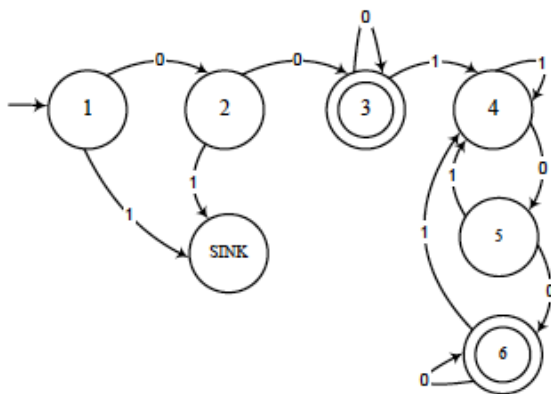
5. Give the state diagram for a NFA that recognizes {w ∈ {a, b}* : w contains at least one instance of babab or abbb or bbbbb}.