BİM314 Theory of Computation

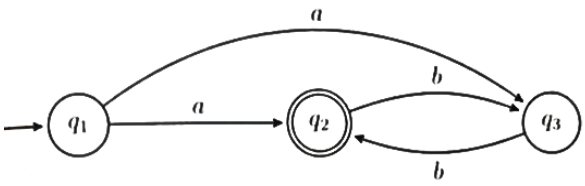
Homework 1

1. (20 pts) Design a deterministic finite automata (**DFA**) for the following language over the alphabet $\Sigma = \{0, 1\}$.

$$L = \{w | w \; contains \; '0110' and \; ends \; in \; '1'\}$$

2. (20 pts) Give state diagram of a DFA that recognizes the language L over alphabet $\sum = \{a, b, c\}$, $L = \{w | w \; does \; not \; contain \; aa, bb \; or \; cc\}$
   For example, $\varepsilon, a, b, c, ab, cac, baba$ …

3. (20 pts) Find a DFA equivalent to the following nondeterministic finite automata (NFA) over the alphabet $\Sigma = \{0, 1\}$.



4. (20 pts) Find an NFA for the following language defined over the alphabet $\sum = \{a, b, c\}$
   L = {“Strings whose last three symbols are the same”}

5. (20 pts) Verbally describe the language recognized by the following NFA.