University of California, Los Angeles
CS 181 Formal Languages & Automata Theory

Student: First & Last Name
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Automata and Languages

- Grade: 100% = Problem 1 (40%) + Problem 2 (30%) + Problem 3 (30%)
- Homework 1 is due no later than Thursday 07/14/2016 23:55 as a file on `ccle.ucla.edu`, or submitted at the discussion section on a paper
- Homework file can be in LaTeX (template to be given) or Microsoft Word
- Have a question? `piazza.com/ucla/summer2016/cs181`

PROBLEM 1. Are the following equalities correct or not? Prove your answers (20 pts/question)
For all sets A, B, and C:

(a) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

(b) $A \setminus (B \cup C) = (A \setminus B) \cup (A \setminus C)$

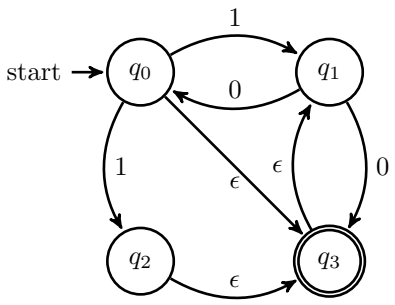
ANSWER for Problem 1:

PROBLEM 2. Draw a DFA and an NFA recognizing the following language in the binary alphabet $\{0, 1\}$

$\{w | w$ contains an even number of 0s, or contains exactly two 1s$\}$

ANSWER for Problem 2:

PROBLEM 3. Convert the following automaton into the equivalent DFA:



ANSWER for Problem 3: