Homework #3
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1.3 Build this DFA using JFLAP. Since JFLAP starts with state q0, create states q0
to q5, use q1 as the initial state, delete state q0 to match the table in your book).

a. What does {u,d} represent in the definition?
b. The 4th element of the definition is q3. The fifth element is {q3}. Why is the 4th
element a single item but the 5th element a set?

1.3 ½   Build an NFA for each of the following. Σ = { A, B}
a) {w | w has at least one C AND (at least two As OR at least three Bs) }
Denote in the document what state of computation each state in the NFA
represents. For example, *state q0 represents that an even number of 0s
has been processed.*

b) {w | w has at least two As AND at least two Bs} Denote in the document
what state of computation each state in the NFA represents.

c) {xy | x starts with A and ends with B, y starts with B and ends with B}
Denote in the document what state of computation each state in the NFA
represents.

1.5
b {w | w does not contain the character b}
c {w | w does not contain either of the substrings ab or ba }
h {w | w is any string except the strings aa and bb}

1.6
d
k

1.7 d, g, h

1.10 b

1.13

1.14a,b

1.31

1.31 ½
Doubled
For a language A, let the Doubled of that language be :
$\{w \mid w = a_1a_1...a_ka_k$, where $a_1..a_k \in A$, $a_i \in \sum \}$.

Show that the class of regular languages is closed under Doubled.

"Show that L is regular." means build a machine (either circles and arrows or a formal description).

Don't forget to test your machines! Pay attention to NFA vs DFA questions.

Type up your answers in a Google Doc and share that document with the instructor.

For questions that ask for an NFA or DFA:
> Build the machine in JFLAP. Save the machine as an image. Insert this image into the document you produce, properly labeled.

> You do not need to email me any JFLAP files.