Homework #2

#1. (10 Points) Convert the following NFA to a DFA and informally describe the language it accepts.

	0	1
→p	{p,q}	{p}
q	{r,s}	{t}
r	{p,r}	{t}
*s	∅	∅
*t	∅	∅

#2. (10 Points) Show an NFA over {0,1} that accepts the set of strings that contain an even number of substrings *01*.

#3. (9 Points) Create nfa to:

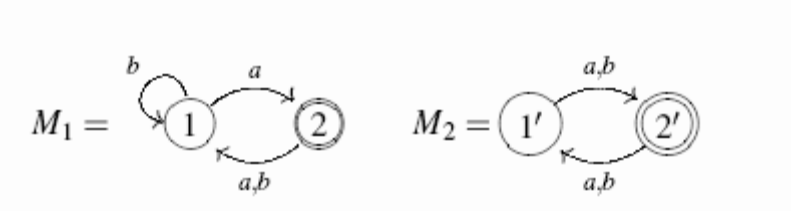
a) accept strings beginning with a letter (use *l* for letter) followed by any number of letters or digits (use *d* for digit)

b) accept strings of 1 or more digits (use *d* for digit).

c) accept either of the languages from part a and part b (use Ɛ-transitions)

#4. (11 Points) Add states to accept the keyword “while” to the nfa in 3c.

#5. (10 Points) Consider the following dfa’s over {a,b}. The start state of *M*1 is 1 and the start state of *M*2 is 1_ .



Use the product construction to produce dfa's accepting a) the intersection and b) the union of the sets accepted by these automata.

#6. (Best ones will be posted to the bb) Name some applications in Computer Science or the world of:

a) Regular Sets
b) Non-deterministic Finite Automata