INF210. Compulsory Exercise 1

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Deliver written solutions to the exercises listed below. The submission deadline is Monday 29 September 2003, 12.00

1. Give FA accepting the following languages over the alphabet $\{0, 1\}$:

   The set of all strings whose fifth symbol from the right end is a 1.

   The set of strings with three consecutive 0's (not necessarily at the end).

2. Convert the following regular expression $(0+1)^*00$ to NFA-Λ and then convert the automaton to NFA and FA.

3. Consider the following NFA-Λ

	Λ	a	b	c
p	$\{q, r\}$	$\emptyset$	$\{q\}$	$\{r\}$
q	$\emptyset$	$\{p\}$	$\{r\}$	$\{p, q\}$
r	$\emptyset$	$\emptyset$	$\emptyset$	$\emptyset$

   with initial state p and accepting state r.

   Compute the Λ-closure of each state.

   Give all the strings of length ≤ 3 accepted by this automaton.

   Convert the automaton to minimal FA and explain why the obtained FA is minimal.

4. Let $L = \{ww \colon w \in \{0, 1\}^*\}$. Describe all the equivalence classes of I_L.