

Formal Languages and Automata Theory, SS 2019. Homework 6 (due Week 7)

1. Consider the following ε -NFA:

	ε	a	b	c
$\rightarrow p$	\emptyset	$\{p\}$	$\{q\}$	$\{r\}$
q	$\{p\}$	$\{q\}$	$\{r\}$	\emptyset
$*r$	$\{q\}$	$\{r\}$	\emptyset	$\{p\}$

- Compute the ε -closure of each state.
- Give all strings of length three or less accepted by the automaton.
- Convert the automaton to a DFA.

2. Repeat the previous exercise for the following ε -NFA.

	ε	a	b	c
$\rightarrow p$	$\{q, r\}$	\emptyset	$\{q\}$	$\{r\}$
q	\emptyset	$\{p\}$	$\{r\}$	$\{p, q\}$
$*r$	\emptyset	\emptyset	\emptyset	\emptyset

3. Design ε -NFAs for the following languages. Try to use ε -transitions to simplify your design.

- The set of strings consisting of zero or more a 's, followed by zero or more b 's, followed by zero or more c 's.
- The set of strings that consist of either 01 repeated one or more times or 010 repeated zero or more times.