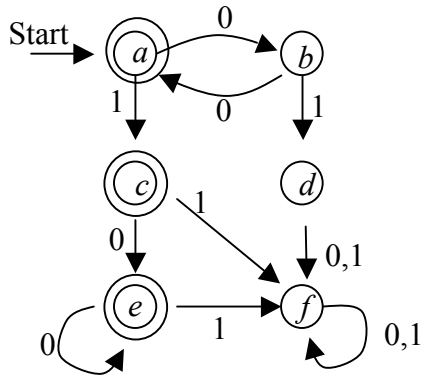


## Exercises for FLL, Fall 2016, sheet 4

Return Thursday October 6, in class

**Exercise 1.** Minimize the DFA shown in the figure by using the table filling method.

Deliverables: the filling table, the set of states of the minimal DFA, and a graph representation of the minimal DFA.



**Exercise 2.** Let  $L$  be a regular language specified by a DFA, NFA,  $\epsilon$ -NFA, or regexp. Show that it is decidable whether  $L = \Sigma^k$  for some  $k > 0$ .

**Exercise 3.** Give a CFG for all words over the terminal alphabet  $T = \{a, b, +, *, (, ), \epsilon, \emptyset\}$  that are regular expressions over  $\Sigma = \{a, b\}$ .