Alternative Finite Automata Minimization

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Finite automata minimization is a fundamental issue in the theory and practical implementation of finite automata. It's a useful process in the area of text processing, lexical analysis, image analysis, pattern matching, linguistic computer science and many other applications. Basically, minimization algorithm transforms finite automaton into an equivalent finite automaton which has a minimum number of states. Minimization process removes the non-reachable states, trap states and the indistinguishable states. This process also removes or modifies the corresponding transitions.

There are two types or families of finite automata minimization algorithms. The first algorithm can be characterized by a sequence of refinements of the subset of states, the second by a sequence of fusions or merges of states. Among the algorithms of the first family, we will mention Hopcroft's and Moore's algorithms. The linear-time minimization of acyclic automata by Revuz belongs to the second family and we will talk about it as well. Brzozowski's algorithm stands quite isolated and fits in neither of these two classes. One of the algorithms will be described in depth.