



UNIVERSITY OF AMSTERDAM

ASSIGNMENT 2

Lexicographic Analysis

February 17, 2021

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Lecturer:

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Course:

Compiler Construction

Course code:

5062COMP6Y

1 Introduction

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2 Assignment

2.1 Thompson's Construction

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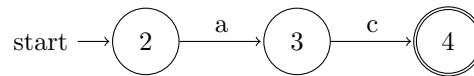


Figure 1: Step 1 creating NFA for $(ac) \rightarrow (ac|ab)^*$

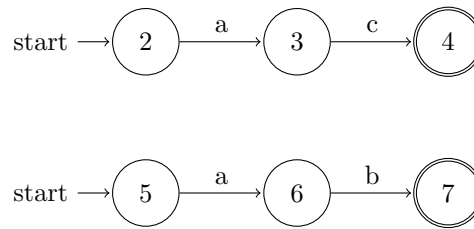


Figure 2: Step 2 creating NFA for $(ab) \rightarrow (ac|ab)^*$

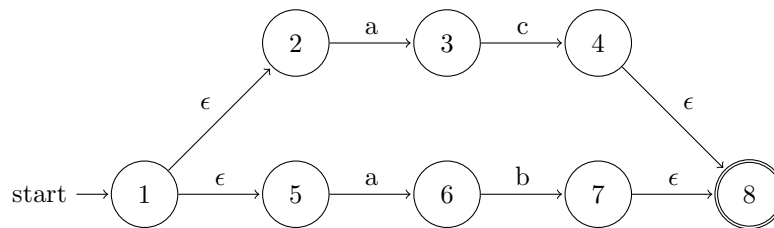


Figure 3: Step 3 creating NFA for $(ac-ab) \rightarrow (ac|ab)^*$

2.2 Subset Construction

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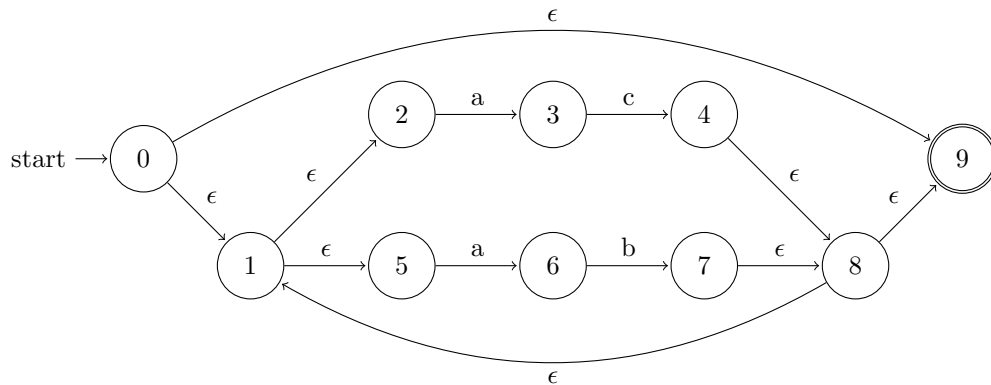
Figure 4: Final non-deterministic finite automaton for $(ac|ab)^*$

Table 1: Subset construction from NFA

State	E-closures
{0}	{0, 1, 2, 5, 8, 9}
{1}	{1, 2, 5, 8, 9}
{2}	{2}
{3}	{3}
{4}	{4, 8, 9, 1, 2, 5}
{5}	{5}
{6}	{6}
{7}	{7, 8, 9, 1, 2, 5}
{8}	{8, 9, 1, 2, 5}
{9}	{9}

2.3 Hopcroft's Algorithm

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2.4 Direct-coded Scanner

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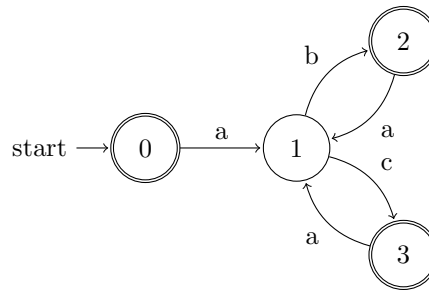


Figure 5: Deterministic finite automaton for $(ac|ab)^*$

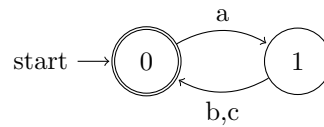


Figure 6: Minimized deterministic finite automaton for $(ac|ab)^*$

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```

#include <iostream>
using namespace std;
class Phone {
public:
    double cost;
    int slots;
};
int main() {
    Phone Y6;
    Phone Y7;

    Y6.cost = 100.0;
    Y6.slots = 2;

    Y7.cost = 200.0;
    Y7.slots = 2;
    cout << "Cost_of_Huawei_Y6:" << Y6.cost << endl;
    cout << "Cost_of_Huawei_Y7:" << Y7.cost << endl;

    cout << "Number_of_card_slots_for_Huawei_Y6:" << Y6.slots << endl;
    cout << "Number_of_card_slots_for_Huawei_Y7:" << Y7.slots << endl;

    return 0;
}

```