Engineering a Compiler
2nd Edition

Chapter 2
Scanners
Figure 2.4

(a) NFA for “a”

(b) NFA for “b”

(c) NFA for “ab”

(d) NFA for “a | b”

(e) NFA for “a*”
Figure 2.5

(a) NFAS for “a”, “b”, and “c”

(b) NFA for “b | c”

(c) NFA for “(b | c)”

(d) NFA for “a(b | c)”
(a) NFA for “a(b | c)∗” (With States Renumbered)
Figure 2.7c

(a) Resulting DFA
Figure 2.10

(a) $\alpha$ Does Not Split $p_1$

(b) $\alpha$ Splits $p_1$

(c) Partitions After Split On $\alpha$
Figure 2.11a

(a) DFA for “fee | fie”
Figure 2.11c
Figure 2.12a

(a) Original DFA
Figure 2.12b

(b) Initial Partition
Figure 2.13
Figure 2.14

The Underlying DFA
Un - Figure 2.1

$S_i$
Un - Figure 2.2
Un - Figure 2.3
Un - Figure 2.4
Un - Figure 2.5
Un - Figure 2.6
Un - Figure 2.7

Diagram showing state transitions with labels 0, 1, ..., 9.
Un - Figure 2.9
Un - Figure 2.10
Un - Figure 2.11
Un - Figure 2.12

\[ S_0 \xrightarrow{m} S_1 \xrightarrow{\epsilon} S_2 \xrightarrow{n} S_3 \]
Un - Figure 2.13
Un - Figure 2.14
Un - Figure 2.15
Un - Figure 2.16
Un - Figure 2.17
Un - Figure 2.18
Un - Figure 2.19
Un - Figure 2.20

Diagram: A state transition diagram with states labeled as follows:
- $s_0$
- $s_1$
- $s_2$
- $s_3$
- $s_4$
- $s_5$
- $s_6$
- $s_7$
- $s_8$
- $s_9$

Transitions:
- $s_0$ transitions to $s_1$ with label $h$
- $s_1$ transitions to $s_2$ with label $h$
- $s_2$ transitions to $s_3$ with label $e$
- $s_3$ transitions to $s_4$ with label $r$
- $s_4$ transitions to $s_5$ with label $e$
- $s_5$ is a loop with label $e$
- $s_0$ transitions to $s_6$ with label $t$
- $s_6$ transitions to $s_7$ with label $e$
- $s_7$ transitions to $s_8$ with label $r$
- $s_8$ transitions to $s_9$ with label $e$
- $s_9$ is a loop with label $e$
Un - Figure 2.21

(a) Original DFA
Un - Figure 2.22
Un - Figure 2.23
Un - Figure 2.24
Un - Figure 2.25
Un - Figure 2.26