```
run:
Finite State Automaton #1
(1) number of states: 9
(2) final states: 0 1 2 3 4 5 6 7 8
(3) alphabet: 0, 1,
(4) transitions
(0 0 1)
(0 1 5)
(1 0 2)
(1 1 5)
(2 1 3)
(3 0 2)
(3 1 4)
(4 0 8)
(5 0 1)
(5 1 6)
(6 0 7)
(7 0 8)
(7 1 6)
(8 1 4)
ε     Accept
00     Accept
0011     Accept
110011     Reject
010101     Accept
000     Reject
00102     Reject
1100101     Accept
10110100101     Accept
```

1001011010110 Reject

Finite State Automaton #2

(1) number of states: 9

(2) final states: 6 7 8

(3) alphabet: -, ., 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, @, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, _, a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z,

(4) transitions

(2 n 3)

(1 0 1)

(2 o 3)

(1 1 1)

(2 p 3)

(1 2 1)

(2 q 3)

(1 3 1)

(2 r 3)

(1 4 1)

(2 s 3)

(1 5 1)

(2 t 3)

(1 6 1)

(2 u 3)

(1 7 1)

(2 v 3)

(1 8 1)

(2 w 3)

(1 9 1)

(2 x 3)

(2 y 3)

(2 z 3)

(1 @ 2)

(1 A 1)

(1 B 1)

(1 C 1)

(1 D 1)

(1 E 1)

(1 F 1)

(1 G 1)

(1 H 1)

(1 I 1)

(1 J 1)

(1 K 1)

(1 L 1)

(1 M 1)

(1 N 1)

(1 O 1)

(1 P 1)

(1 Q 1)

(1 R 1)

(1 S 1)

(1 T 1)

(1 U 1)

(1 V 1)

(1 W 1)

(1 X 1)

(1 Y 1)

(1 Z 1)

(1 _ 1)

(1 a 1)

(1 b 1)

(1 c 1)

(1 d 1)

(1 e 1)

(1 f 1)

(1 g 1)

(1 h 1)

(1 i 1)

(1 j 1)

(1 k 1)

(0 - 1)

(1 l 1)

(0 . 1)

(1 m 1)

(1 n 1)

(0 0 1)

(1 o 1)

(0 1 1)

(1 p 1)

(0 2 1)

(1 q 1)

(0 3 1)

(1 r 1)

(0 4 1)

(1 s 1)

(0 5 1)

(1 t 1)

(0 6 1)

(1 u 1)

(0 7 1)

(1 v 1)

(0 8 1)

(1 w 1)

(0 9 1)

(1 x 1)

(1 y 1)

(1 z 1)

(0 A 1)

(0 B 1)

(0 C 1)

(0 D 1)

(0 E 1)

(0 F 1)

(0 G 1)

(0 H 1)

(0 I 1)

(0 J 1)

(0 K 1)

(0 L 1)

(0 M 1)

(0 N 1)

(0 O 1)

(0 P 1)

(0 Q 1)

(0 R 1)

(0 S 1)

(0 T 1)

(0 U 1)

(0 V 1)

(0 W 1)

(0 X 1)

(0 Y 1)

(0 Z 1)

(0 _ 1)

(0 a 1)

(0 b 1)

(0 c 1)

(0 d 1)

(0 e 1)

(0 f 1)

(0 g 1)

(0 h 1)

(0 i 1)

(0 j 1)

(0 k 1)

(0 l 1)

(0 m 1)

(0 n 1)

(0 o 1)

(0 p 1)

(0 q 1)

(0 r 1)

(0 s 1)

(0 t 1)

(0 u 1)

(0 v 1)

(0 w 1)

(0 x 1)

(0 y 1)

(0 z 1)

(7 A 8)

(7 B 8)

(7 C 8)

(7 D 8)

(7 E 8)

(7 F 8)

(7 G 8)

(7 H 8)

(7 I 8)

(7 J 8)

(7 K 8)

(7 L 8)

(7 M 8)

(7 N 8)

(7 O 8)

(7 P 8)

(7 Q 8)

(7 R 8)

(7 S 8)

(7 T 8)

(7 U 8)

(7 V 8)

(7 W 8)

(7 X 8)

(7 Y 8)

(7 Z 8)

(7 a 8)

(7 b 8)

(7 c 8)

(7 d 8)

(7 e 8)

(7 f 8)

(7 g 8)

(7 h 8)

(7 i 8)

(7 j 8)

(7 k 8)

(7 l 8)

(7 m 8)

(7 n 8)

(7 o 8)

(7 p 8)

(7 q 8)

(7 r 8)

(7 s 8)

(7 t 8)

(7 u 8)

(7 v 8)

(7 w 8)

(7 x 8)

(7 y 8)

(7 z 8)

(6 A 7)

(6 B 7)

(6 C 7)

(6 D 7)

(6 E 7)

(6 F 7)

(6 G 7)

(6 H 7)

(6 I 7)

(6 J 7)

(6 K 7)

(6 L 7)

(6 M 7)

(6 N 7)

(6 O 7)

(6 P 7)

(6 Q 7)

(6 R 7)

(6 S 7)

(6 T 7)

(6 U 7)

(6 V 7)

(6 W 7)

(6 X 7)

(6 Y 7)

(6 Z 7)

(6 a 7)

(6 b 7)

(6 c 7)

(6 d 7)

(6 e 7)

(6 f 7)

(6 g 7)

(6 h 7)

(6 i 7)

(6 j 7)

(6 k 7)

(6 l 7)

(6 m 7)

(6 n 7)

(6 o 7)

(6 p 7)

(6 q 7)

(6 r 7)

(6 s 7)

(6 t 7)

(6 u 7)

(6 v 7)

(6 w 7)

(6 x 7)

(6 y 7)

(6 z 7)

(5 A 6)

(5 B 6)

(5 C 6)

(5 D 6)

(5 E 6)

(5 F 6)

(5 G 6)

(5 H 6)

(5 I 6)

(5 J 6)

(5 K 6)

(5 L 6)

(5 M 6)

(5 N 6)

(5 O 6)

(5 P 6)

(5 Q 6)

(5 R 6)

(5 S 6)

(5 T 6)

(5 U 6)

(5 V 6)

(5 W 6)

(5 X 6)

(5 Y 6)

(5 Z 6)

(5 a 6)

(5 b 6)

(5 c 6)

(5 d 6)

(5 e 6)

(5 f 6)

(5 g 6)

(5 h 6)

(5 i 6)

(5 j 6)

(5 k 6)

(5 l 6)

(5 m 6)

(5 n 6)

(5 o 6)

(5 p 6)

(5 q 6)

(5 r 6)

(5 s 6)

(5 t 6)

(5 u 6)

(5 v 6)

(5 w 6)

(5 x 6)

(5 y 6)

(5 z 6)

(4 A 5)

(4 B 5)

(4 C 5)

(4 D 5)

(4 E 5)

(4 F 5)

(4 G 5)

(4 H 5)

(4 I 5)

(4 J 5)

(4 K 5)

(4 L 5)

(4 M 5)

(4 N 5)

(4 O 5)

(4 P 5)

(4 Q 5)

(4 R 5)

(4 S 5)

(4 T 5)

(4 U 5)

(4 V 5)

(4 W 5)

(4 X 5)

(4 Y 5)

(4 Z 5)

(4 a 5)

(4 b 5)

(4 c 5)

(4 d 5)

(4 e 5)

(4 f 5)

(4 g 5)

(4 h 5)

(4 i 5)

(4 j 5)

(4 k 5)

(3 - 3)

(4 l 5)

(3 . 4)

(4 m 5)

(4 n 5)

(3 0 3)

(4 o 5)

(3 1 3)

(4 p 5)

(3 2 3)

(4 q 5)

(3 3 3)

(4 r 5)

(3 4 3)

(4 s 5)

(3 5 3)

(4 t 5)

(3 6 3)

(4 u 5)

(3 7 3)

(4 v 5)

(3 8 3)

(4 w 5)

(3 9 3)

(4 x 5)

(4 y 5)

(4 z 5)

(3 A 3)

(3 B 3)

(3 C 3)

(3 D 3)

(3 E 3)

(3 F 3)

(3 G 3)

(3 H 3)

(3 I 3)

(3 J 3)

(3 K 3)

(3 L 3)

(3 M 3)

(3 N 3)

(3 O 3)

(3 P 3)

(3 Q 3)

(3 R 3)

(3 S 3)

(3 T 3)

(3 U 3)

(3 V 3)

(3 W 3)

(3 X 3)

(3 Y 3)

(3 Z 3)

(3 _ 3)

(3 a 3)

(3 b 3)

(3 c 3)

(3 d 3)

(3 e 3)

(3 f 3)

(3 g 3)

(3 h 3)

(3 i 3)

(3 j 3)

(3 k 3)

(2 - 3)

(3 l 3)

(3 m 3)

(3 n 3)

(2 0 3)

(3 o 3)

(2 1 3)

(3 p 3)

(2 2 3)

(3 q 3)

(2 3 3)

(3 r 3)

(2 4 3)

(3 s 3)

(2 5 3)

(3 t 3)

(2 6 3)

(3 u 3)

(2 7 3)

(3 v 3)

(2 8 3)

(3 w 3)

(2 9 3)

(3 x 3)

(3 y 3)

(3 z 3)

(2 A 3)

(2 B 3)

(2 C 3)

(2 D 3)

(2 E 3)

(2 F 3)

(2 G 3)

(2 H 3)

(2 I 3)

(2 J 3)

(2 K 3)

(2 L 3)

(2 M 3)

(2 N 3)

(2 O 3)

(2 P 3)

(2 Q 3)

(2 R 3)

(2 S 3)

(2 T 3)

(2 U 3)

(2 V 3)

(2 W 3)

(2 X 3)

(2 Y 3)

(2 Z 3)

(2 _ 3)

(2 a 3)

(2 b 3)

(2 c 3)

(2 d 3)

(2 e 3)

(2 f 3)

(2 g 3)

(2 h 3)

(2 i 3)

(2 j 3)

(2 k 3)

(1 - 1)

(2 l 3)

(1 . 1)

(2 m 3)

a.b.c@d.w3c Reject

jsmith Reject

jsmith@olympus Reject

jsmith@olympus.gov Accept

_jsmith-example.olympus@states.us Accept

jsmith.edu Reject

john@mail.office Reject

ComputerScienceDepartment@csupomona.edu Accept

jsmith@LA.cnn.com Reject

SMITH@bookStore.Peru Accept

Finite State Automaton #3

(1) number of states: 3

(2) final states: 2

(3) alphabet: $, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, _, a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z,

(4) transitions

(2 n 2)

(1 0 2)

(2 o 2)

(1 1 2)

(2 p 2)

(1 2 2)

(2 q 2)

(1 3 2)

(2 r 2)

(1 4 2)

(2 s 2)

(1 5 2)

(2 t 2)

(1 6 2)

(2 u 2)

(1 7 2)

(2 v 2)

(1 8 2)

(2 w 2)

(1 9 2)

(2 x 2)

(2 y 2)

(2 z 2)

(1 A 2)

(1 B 2)

(1 C 2)

(1 D 2)

(1 E 2)

(1 F 2)

(1 G 2)

(1 H 2)

(1 I 2)

(1 J 2)

(1 K 2)

(1 L 2)

(1 M 2)

(1 N 2)

(1 O 2)

(1 P 2)

(1 Q 2)

(1 R 2)

(1 S 2)

(1 T 2)

(1 U 2)

(1 V 2)

(1 W 2)

(1 X 2)

(1 Y 2)

(1 Z 2)

(1 _ 2)

(1 a 2)

(1 b 2)

(0 $ 1)

(1 c 2)

(1 d 2)

(1 e 2)

(1 f 2)

(1 g 2)

(1 h 2)

(1 i 2)

(1 j 2)

(1 k 2)

(1 l 2)

(1 m 2)

(1 n 2)

(1 o 2)

(1 p 2)

(1 q 2)

(1 r 2)

(1 s 2)

(1 t 2)

(1 u 2)

(1 v 2)

(1 w 2)

(1 x 2)

(1 y 2)

(1 z 2)

(0 A 1)

(0 B 1)

(0 C 1)

(0 D 1)

(0 E 1)

(0 F 1)

(0 G 1)

(0 H 1)

(0 I 1)

(0 J 1)

(0 K 1)

(0 L 1)

(0 M 1)

(0 N 1)

(0 O 1)

(0 P 1)

(0 Q 1)

(0 R 1)

(0 S 1)

(0 T 1)

(0 U 1)

(0 V 1)

(0 W 1)

(0 X 1)

(0 Y 1)

(0 Z 1)

(0 _ 1)

(0 a 1)

(0 b 1)

(0 c 1)

(0 d 1)

(0 e 1)

(0 f 1)

(0 g 1)

(0 h 1)

(0 i 1)

(0 j 1)

(0 k 1)

(0 l 1)

(0 m 1)

(0 n 1)

(0 o 1)

(0 p 1)

(0 q 1)

(0 r 1)

(0 s 1)

(0 t 1)

(0 u 1)

(0 v 1)

(0 w 1)

(0 x 1)

(0 y 1)

(0 z 1)

(2 $ 2)

(2 0 2)

(2 1 2)

(2 2 2)

(2 3 2)

(2 4 2)

(2 5 2)

(2 6 2)

(2 7 2)

(2 8 2)

(2 9 2)

(2 A 2)

(2 B 2)

(2 C 2)

(2 D 2)

(2 E 2)

(2 F 2)

(2 G 2)

(2 H 2)

(2 I 2)

(2 J 2)

(2 K 2)

(2 L 2)

(2 M 2)

(2 N 2)

(2 O 2)

(2 P 2)

(2 Q 2)

(2 R 2)

(2 S 2)

(2 T 2)

(2 U 2)

(2 V 2)

(2 W 2)

(2 X 2)

(2 Y 2)

(2 Z 2)

(2 _ 2)

(2 a 2)

(2 b 2)

(1 $ 2)

(2 c 2)

(2 d 2)

(2 e 2)

(2 f 2)

(2 g 2)

(2 h 2)

(2 i 2)

(2 j 2)

(2 k 2)

(2 l 2)

(2 m 2)

a Reject

$ Reject

_ Reject

TAX_RATE Accept

$amount Accept

week day Reject

3dGraph Reject

X3y7 Accept

_finite_automaton Accept

X*Y Reject

Finite State Automaton #4

(1) number of states: 8

(2) final states: 4 5

(3) alphabet: +, -, ., 0, 1, 2, 3, 4, 5, 6, 7, 8, 9,

(4) transitions

(1 0 2)

(3 . 4)

(1 1 3)

(1 2 3)

(3 0 3)

(1 3 3)

(3 1 3)

(1 4 3)

(3 2 3)

(5 0 6)

(1 5 3)

(3 3 3)

(5 1 5)

(1 6 3)

(3 4 3)

(5 2 5)

(7 0 5)

(1 7 3)

(3 5 3)

(5 3 5)

(7 1 5)

(1 8 3)

(3 6 3)

(5 4 5)

(7 2 5)

(1 9 3)

(3 7 3)

(5 5 5)

(7 3 5)

(3 8 3)

(5 6 5)

(7 4 5)

(3 9 3)

(5 7 5)

(7 5 5)

(5 8 5)

(7 6 5)

(5 9 5)

(7 7 5)

(7 8 5)

(7 9 5)

(0 + 1)

(0 - 1)

(0 . 7)

(0 0 2)

(2 . 4)

(0 1 3)

(0 2 3)

(0 3 3)

(0 4 3)

(4 0 5)

(0 5 3)

(4 1 5)

(0 6 3)

(4 2 5)

(6 0 6)

(0 7 3)

(4 3 5)

(6 1 5)

(0 8 3)

(4 4 5)

(6 2 5)

(0 9 3)

(4 5 5)

(6 3 5)

(4 6 5)

(6 4 5)

(4 7 5)

(6 5 5)

(4 8 5)

(6 6 5)

(4 9 5)

(6 7 5)

(6 8 5)

(6 9 5)

(1 . 7)

+1.23 Accept

-.123 Accept

123. Accept

-0.0 Accept

01234.5 Reject

+789 Reject

. Reject

56.30 Reject

+120.0001 Accept

123000.0 Accept

Finite State Automaton #5

(1) number of states: 14

(2) final states: 0 1 2 3 5 6 8 12

(3) alphabet: 0, 1, 2,

(4) transitions

(0 0 1)

(0 1 2)

(1 0 4)

(0 2 3)

(1 1 5)

(2 0 5)

(1 2 6)

(2 1 7)

(3 0 6)

(2 2 8)

(3 1 8)

(4 0 4)

(3 2 9)

(4 1 5)

(5 0 10)

(4 2 6)

(5 1 10)

(6 0 11)

(5 2 6)

(6 1 12)

(7 0 5)

(6 2 11)

(7 1 7)

(8 0 12)

(7 2 8)

(8 1 13)

(9 0 6)

(8 2 13)

(9 1 8)

(9 2 9)

(13 2 13)

(13 1 13)

(11 2 11)

(13 0 6)

(10 1 10)

(11 1 12)

(10 2 12)

(11 0 11)

(10 0 10)

0 Accept

01 Accept

012 Accept

22 Reject

2102 Reject

0221 Accept

01012 Accept

120120 Reject

110221210 Reject

0202321 Reject

BUILD SUCCESSFUL (total time: 0 seconds)