

CSEN 1002

Task 3

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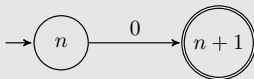
1 Thompson's Construction

2 Postfix Notation

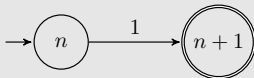
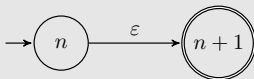
3 Example

Symbol Expression

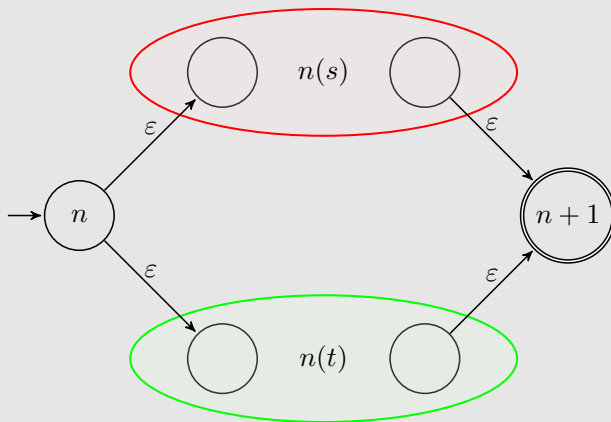
0



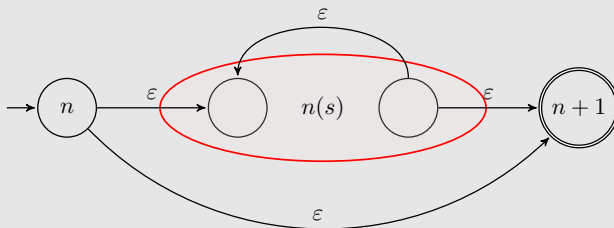
1

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Union Expression

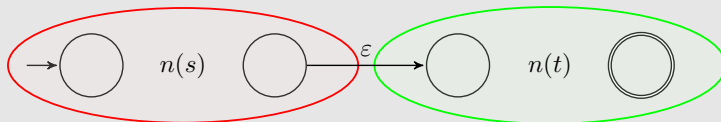
 $n(s) \cup n(t)$ 

Kleene Star Expression

 $n(s)^*$ 

Concatenation Expression

$$n(s) \circ n(t)$$



Notice

This is different from the classical Thompson's Construction.

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2 Postfix Notation

3 Example

Postfix Notation

$((2 + 3) - 1) * 7$

↓

2 3 + 1 - 7 *

Stack



Postfix Notation

$(((2 + 3) - 1) * 7)$

↓

2 3 + 1 - 7 *

Stack

2

Postfix Notation

$((2 + 3) - 1) * 7$

2 3 + 1 - 7 *

↓

Stack

2

Postfix Notation

$((2 + 3) - 1) * 7$

2 3 + 1 - 7 *

↓

Stack

3
2

Postfix Notation

$((2 + 3) - 1) * 7$

2 3 \downarrow + 1 - 7 *

Stack

3
2

Postfix Notation

 $((2 + 3) - 1) * 7$

$2 \quad 3 \quad \downarrow \quad + \quad 1 \quad - \quad 7 \quad *$

Stack

5
3
2

Postfix Notation

 $((2 + 3) - 1) * 7$

2 3 + ↓ 1 - 7 *

Stack

5
3
2

Postfix Notation

 $((2 + 3) - 1) * 7$

2 3 + ↓ 1 - 7 *

Stack

1
5
3
2

Postfix Notation

$((2 + 3) - 1) * 7$

2 3 + 1 ↓ - 7 *

Stack

1
5
3
2

Postfix Notation

$$(((2 + 3) - 1) * 7)$$

2 3 + 1 ↓ - 7 *

Stack

4
1
3
3
2

Postfix Notation

$$(((2 + 3) - 1) * 7)$$

2 3 + 1 - 7 *

↓

Stack

4
1
3
3
2

Postfix Notation

 $((2 + 3) - 1) * 7$

2 3 + 1 - 7 *

↓

Stack

7
4
1
3
3
2

Postfix Notation

$$(((2 + 3) - 1) * 7)$$

2 3 + 1 - 7 *

↓

Stack

7
4
1
5
3
2

Postfix Notation

$$(((2 + 3) - 1) * 7)$$

2 3 + 1 - 7 *

↓

Stack

28
7
4
1
3
3
2

Postfix Notation

 $((2 + 3) - 1) * 7$

2 3 + 1 - 7 *



Stack

28
7
4
1
5
3
2

Postfix Notation

 $((2 + 3) - 1) * 7$

2 3 + 1 - 7 *



Stack

28
7
4
1
5
3
2

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1 Thompson's Construction

2 Postfix Notation

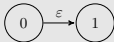
3 Example

Example

$\text{e}01^*|.0.^* = ((\varepsilon \circ (0 \cup (1^*))) \circ 0)^*$

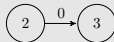
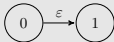
Example

$$e01^*|.0.^* = ((\varepsilon \circ (0 \cup (1^*))) \circ 0)^*$$



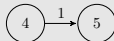
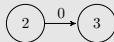
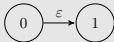
Example

$$e01^*|.0.^* = ((\varepsilon \circ (0 \cup (1^*))) \circ 0)^*$$



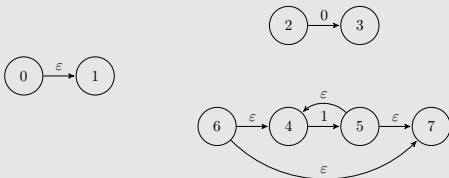
Example

$$e01^*|.0.^* = ((\varepsilon \circ (0 \cup (1^*))) \circ 0)^*$$



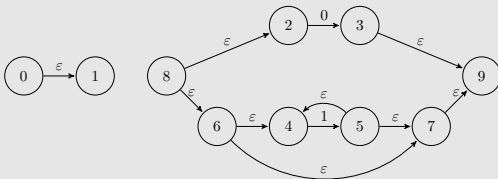
Example

$$e01^*|.0.^* = ((\varepsilon \circ (0 \cup (1^*))) \circ 0)^*$$



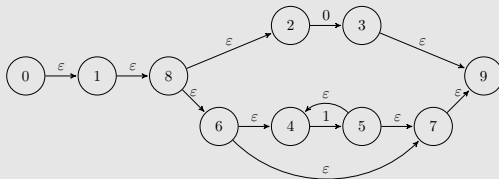
Example

$$e01^*|.0.^* = ((\varepsilon \circ (0 \cup (1^*))) \circ 0)^*$$



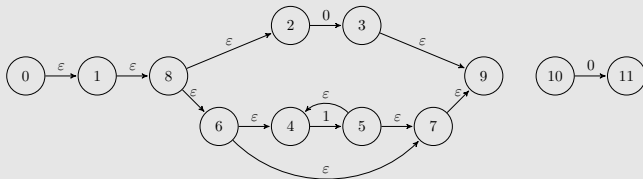
Example

$$e01^*|.0.^* = ((\varepsilon \circ (0 \cup (1^*))) \circ 0)^*$$



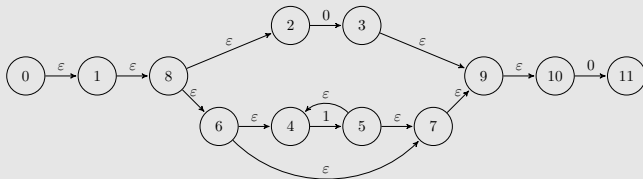
Example

$$e01^*|.0.^* = ((\varepsilon \circ (0 \cup (1^*))) \circ 0)^*$$



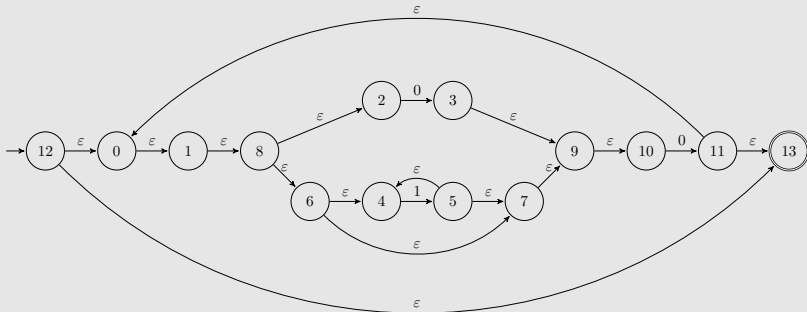
Example

$$e01^*|.0.^* = ((\varepsilon \circ (0 \cup (1^*))) \circ 0)^*$$



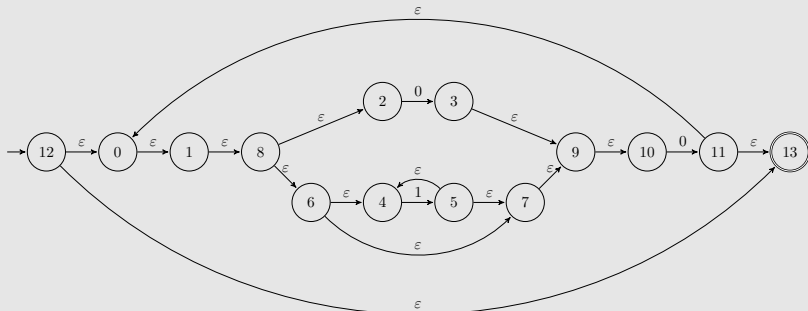
Example

$$e01^*|.0.* = ((\varepsilon \circ (0 \cup (1^*))) \circ 0)^*$$



Example

$$e01^*|.0.* = ((\varepsilon \circ (0 \cup (1^*))) \circ 0)^*$$



String Representation

14#12#13#2,3;10,11#4,5#0,1;1,8;3,9;5,4;5,7;6,4;6,7;7,9;
8,2;8,6;9,10;11,0;11,13;12,0;12,13