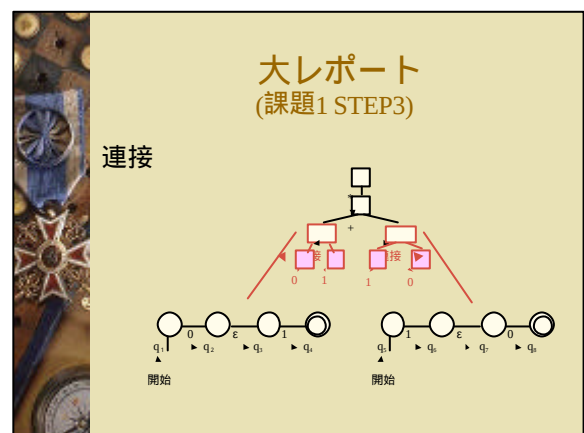
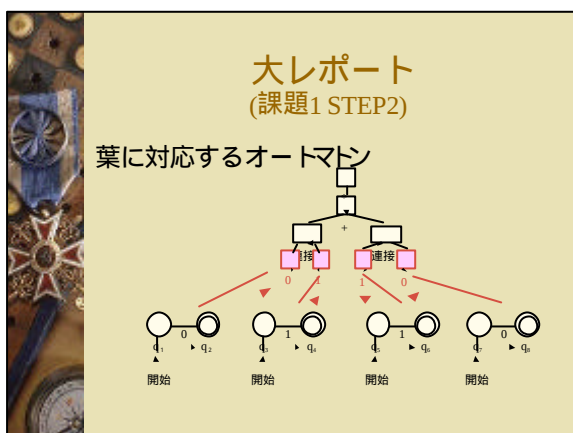
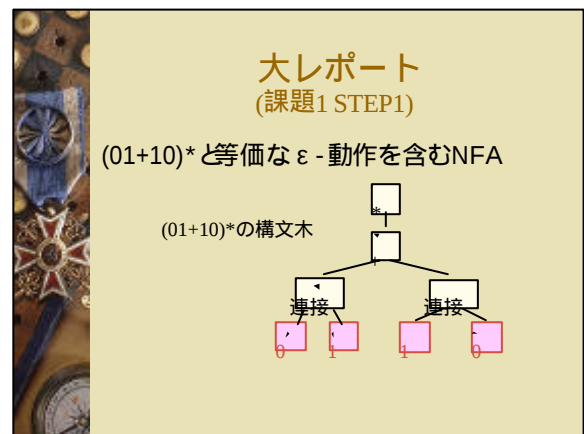
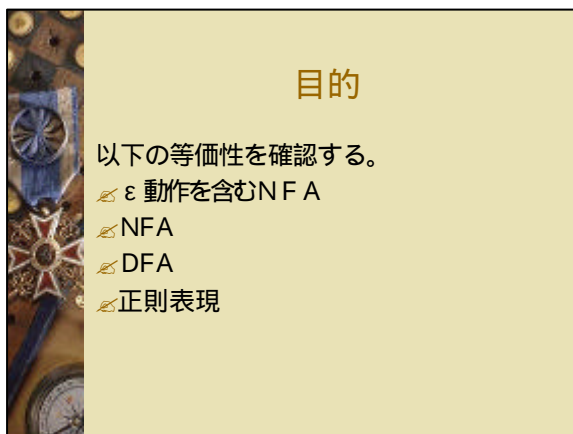
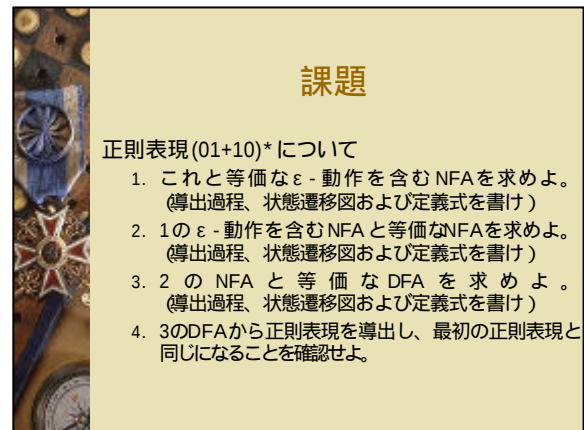




状態	$\delta'(q, 0)$	$\delta'(q, 1)$	状態	$\delta'(q, 0)$	$\delta'(q, 1)$
q_0	$\varepsilon(\{q_1\})$	-	q_1	-	$\varepsilon(\{q_1\})$
q_1	-	$\varepsilon(\{q_1\})$	q_1	$\varepsilon(\{q_1\})$	$\varepsilon(\{q_1\})$
q_2	-	$\varepsilon(\{q_1\})$	q_2	$\varepsilon(\{q_1\})$	-
q_3	$\varepsilon(\{q_1\})$	-	q_3	$\varepsilon(\{q_1\})$	$\varepsilon(\{q_1\})$
q_4	$\varepsilon(\{q_1, 1\})$	$\varepsilon(\{q_1, 1\})$	q_4	$\varepsilon(\{q_1\})$	$\varepsilon(\{q_1, 1\})$
q_{11}	$\varepsilon(\{q_1, 1\})$	$\varepsilon(\{q_1\})$	q_{10}	-	-

大レポート

(課題2 最終解)

$M(Q, \{0, 1\}, \delta', q^{i1}, \{q^{i1}, q^{i2}\}), Q = \{q^1, q^2, q^3, q^4, q^5, q^6, q^7, q^8, q^9, q^{10}, q^{11}, q^{12}\}, \delta'$ は下表

δ'

状態	0	1	状態	0	1
q^1	(q^1, q^1)	ϵ	q^2	ϵ	$(q^1, q^1, q^2, q^2, q^3, q^3, q^4, q^4, q^5, q^5, q^6, q^6, q^7, q^7, q^8, q^8, q^9, q^9, q^{10}, q^{10}, q^{11}, q^{11}, q^{12}, q^{12})$
q_i	ϵ	$(q^1, q^1, q^2, q^2, q^3, q^3, q^4, q^4, q^5, q^5, q^6, q^6, q^7, q^7, q^8, q^8, q^9, q^9, q^{10}, q^{10}, q^{11}, q^{11}, q^{12}, q^{12})$	q_i	(q^1, q^1)	(q^1, q^1)
q_i	ϵ	(q^1, q^1)	q_i	$(q^1, q^1, q^2, q^2, q^3, q^3, q^4, q^4, q^5, q^5, q^6, q^6, q^7, q^7, q^8, q^8, q^9, q^9, q^{10}, q^{10}, q^{11}, q^{11}, q^{12}, q^{12})$	ϵ
q_i	$(q^1, q^1, q^2, q^2, q^3, q^3, q^4, q^4, q^5, q^5, q^6, q^6, q^7, q^7, q^8, q^8, q^9, q^9, q^{10}, q^{10}, q^{11}, q^{11}, q^{12}, q^{12})$	ϵ	q_i	(q^1, q^1)	(q^1, q^1)
q_i	(q^1, q^1)	(q^1, q^1)	q_i	(q^1, q^1)	(q^1, q^1)
q_i	(q^1, q^1)	(q^1, q^1)	q_i	ϵ	ϵ

狀態	0	1	狀態	0	1
q_0	(q, q)	-	q_1	-	(q, q, q, q, q, q)
q_1	-	(q, q, q, q, q, q)	q_2	(q, q)	(q, q)
q_2	-	(q, q)	q_3	(q, q, q, q, q, q)	-
q_4	(q, q, q, q, q, q)	-	q_5	(q, q)	(q, q)
q_6	(q, q)	(q, q)	q_7	(q, q)	(q, q)
q_8	(q, q)	(q, q)	q_9	-	-

大レポート

(課題3 最終解)

2のNFAと等価なDFA

$M(Q, \{0, 1\}, \delta, [q^{u1}], \{[q^{u1}], [q_1, q^{10}, q^{12}, \text{ⓕ}, q^1, \text{ⓕ}], [q_0, q^{10}, q^{12}, \text{ⓕ}, q^1, \text{ⓕ}]\}, Q = \{[q^{u1}], [q_0, \text{ⓕ}], [q_0, q^1] \mid [q_1, q^{10}, q^{12}, \text{ⓕ}, q^1, \text{ⓕ}], [q_0, q^{10}, q^{12}, \text{ⓕ}, q^1, \text{ⓕ}], [-]\})$

δは右表

状態	0	1
[q ^{u1}]	[q ₁ , q ¹]	[q ₁ , q ¹]
[q ₁ , q ¹]	[-]	[q ₁ , q ₀ , q ¹⁰ , q ¹² , q ¹ , q ¹]
[q ₁ , q ¹]	[q ₁ , q ₀ , q ¹⁰ , q ¹² , q ¹ , q ¹]	[-]
[q ₁ , q ₀ , q ¹⁰ , q ¹² , q ¹ , q ¹]	[q ₁ , q ¹]	[q ₁ , q ¹]
[q ₁ , q ₀ , q ¹⁰ , q ¹² , q ¹ , q ¹]	[q ₁ , q ¹]	[q ₁ , q ¹]
[-]	[-]	[-]

$$M(Q, \{0, 1\}, \delta, [q^{11}], \{[q^{11}], [q^4, q^{10}, q^{12}, \Phi, q^1, \Phi], [q^8, q^{10}, q^{12}, \Phi, q^1, \Phi^5]\}), Q = \{[q^{11}], [q^7, q^3], [q^6, q^7][q^4, q^{10}, q^{12}, \Phi, q^1, \Phi], [q^8, q^{10}, q^{12}, \Phi, q^1, \Phi], [-]\}$$

狀態	0	1
{q ₀ }	{q ₀ , q ₁ }	{q ₀ , q ₁ }
{q ₀ , q ₁ }	{ }	{q ₀ , q ₁ , q ₂ , q ₃ , q ₄ }
{q ₀ , q ₁ }	{q ₀ , q ₁ , q ₂ , q ₃ , q ₄ }	{ }
{q ₀ , q ₁ , q ₂ , q ₃ , q ₄ }	{q ₀ , q ₁ }	{q ₀ , q ₁ }
{q ₀ , q ₁ , q ₂ , q ₃ , q ₄ }	{q ₀ , q ₁ }	{q ₀ , q ₁ }
{ }	{ }	{ }

大レポート (課題4 STEP1)

DFAから正則表現を導出

整理する

```

graph LR
    start(( )) -- 開始 --> q0((q0))
    q0 -- 0 --> q1(((q1)))
    q1 -- 1 --> q0
    q1 -- 0 --> q2(((q2)))
    q2 -- 1 --> q1
    q2 -- 0 --> q3(((q3)))
    q3 -- 1 --> q2
    q3 -- 1 --> q0
  
```

δ

	0	1
q_0	q_1	q_0
q_1	q_2	q_0
q_2	q_3	q_1
q_3	q_0	q_2

	0	1	2
q_0	0	1	2
q_1	0	1	2
q_2	0	1	2
q_3	0	1	2
q_4	0	1	2
q_5	0	1	2

大レポート

(課題4 STEP2)

$$\begin{aligned}
 &? r_{ij}^{k-1} ? r_{ik}^{k-1} (r_{jk}^{k-1}) r_{ij}^{k-1} ? r_{ij}^{k-1} \\
 &? r_{ij}^0 ? a ? ? \quad (i ? j \text{ のとき}) \\
 &? r_{ij}^0 ? a \quad (i ? j \text{ のとき})
 \end{aligned}$$

開始

k=0

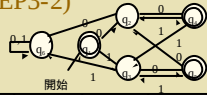
	j=1	j=2	j=3	j=4	j=5	j=6
i=1	ε	0	1	Φ	Φ	Φ
i=2	Φ	ε	Φ	1	Φ	0
i=3	Φ	Φ	ε	Φ	0	1
i=4	Φ	0	1	ε	Φ	Φ
i=5	Φ	0	1	Φ	ε	Φ
i=6	Φ	Φ	Φ	Φ	Φ	0+1+ε

[illegible]

大レポート (課題4 STEP3-1)									
$k=1$	$r_{\#}^1$	r_{i1}^0	r_{i1}^0	r_{i2}^0	$r_{\#}^0$				
	j=1	j=2	j=3	j=4	j=5	j=6			
i=1	$\Phi(\varepsilon^*)\varepsilon$ + ε	$\Phi(\varepsilon^*)0$ + 0	$\Phi(\varepsilon^*)1$ + 1	$\Phi(\varepsilon^*)\Phi$ + Φ	$\Phi(\varepsilon^*)\Phi$ + Φ	$\Phi(\varepsilon^*)\Phi$ + Φ			
i=2	$\Phi(\varepsilon^*)\Phi$ + $\varepsilon + \Phi$	$\Phi(\varepsilon^*)\Phi$ + ε	$\Phi(\varepsilon^*)1$ + Φ	$\Phi(\varepsilon^*)\Phi$ + 1	$\Phi(\varepsilon^*)\Phi$ + Φ	$\Phi(\varepsilon^*)\Phi$ + 0			
i=3	$\Phi(\varepsilon^*)\Phi$ + $\varepsilon + \Phi$	$\Phi(\varepsilon^*)0$ + Φ	$\Phi(\varepsilon^*)1$ + ε	$\Phi(\varepsilon^*)\Phi$ + Φ	$\Phi(\varepsilon^*)\Phi$ + 0	$\Phi(\varepsilon^*)\Phi$ + 1			
i=4	$\Phi(\varepsilon^*)\Phi$ + $\varepsilon + \Phi$	$\Phi(\varepsilon^*)0$ + 0	$\Phi(\varepsilon^*)1$ + 1	$\Phi(\varepsilon^*)\Phi$ + ε	$\Phi(\varepsilon^*)\Phi$ + Φ	$\Phi(\varepsilon^*)\Phi$ + Φ			
i=5	$\Phi(\varepsilon^*)\Phi$ + $\varepsilon + \Phi$	$\Phi(\varepsilon^*)0$ + 0	$\Phi(\varepsilon^*)1$ + 1	$\Phi(\varepsilon^*)\Phi$ + Φ	$\Phi(\varepsilon^*)\Phi$ + ε	$\Phi(\varepsilon^*)\Phi$ + Φ			
i=6	$\Phi(\varepsilon^*)\Phi$ + $\varepsilon + \Phi$	$\Phi(\varepsilon^*)0$ + Φ	$\Phi(\varepsilon^*)1$ + Φ	$\Phi(\varepsilon^*)\Phi$ + Φ	$\Phi(\varepsilon^*)\Phi$ + Φ	$\Phi(\varepsilon^*)\Phi$ + 0 + 1 + ε			

	j=1	j=2	j=3	j=4	j=5	j=6
i=1	ε + ε	ε (ε^*) 0 + 0	ε (ε^*) 1 + 1	ε (ε^*) Φ + Φ	ε (ε^*) Φ + Φ	ε (ε^*) Φ + Φ
i=2	Φ (ε^*) Φ + ε	Φ (ε^*) 0 + ε	Φ (ε^*) 1 + Φ	Φ (ε^*) Φ + 1	Φ (ε^*) Φ + Φ	Φ (ε^*) Φ + 0
i=3	Φ (ε^*) Φ + Φ	Φ (ε^*) 0 + ε	Φ (ε^*) 1 + Φ	Φ (ε^*) Φ + Φ	Φ (ε^*) Φ + 0	Φ (ε^*) Φ + 1
i=4	Φ (ε^*) Φ + ε	Φ (ε^*) 0 + 0	Φ (ε^*) 1 + 1	Φ (ε^*) Φ + ε	Φ (ε^*) Φ + Φ	Φ (ε^*) Φ + Φ
i=5	Φ (ε^*) Φ + ε	Φ (ε^*) 0 + ε	Φ (ε^*) 1 + 1	Φ (ε^*) Φ + ε	Φ (ε^*) Φ + Φ	Φ (ε^*) Φ + Φ
i=6	Φ (ε^*) Φ + ε	Φ (ε^*) 0 + Φ	Φ (ε^*) 1 + Φ	Φ (ε^*) Φ + Φ	Φ (ε^*) Φ + Φ	Φ (ε^*) Φ + 0 + 1 + ε

大レポート (課題4 STEP3-2)



$k=1 \quad r_{ij}^1 ? r_{i1}^0(r_{11}^0)^* r_{1j}^0 ? r_{ij}^0$

	j=1	j=2	j=3	j=4	j=5	j=6
i=1	ε	0	1	Φ	Φ	Φ
i=2	Φ	ε	Φ	1	Φ	0
i=3	Φ	Φ	ε	Φ	0	1
i=4	Φ	0	1	ε	Φ	Φ
i=5	Φ	0	1	Φ	ε	Φ
i=6	Φ	Φ	Φ	Φ	Φ	$0+1+\varepsilon$

大レポート (課題4 STEP4-1)

$$k=2 \quad r_{ij}^2 ? r_{i2}^1(r_{22}^1)^* r_{2j}^1 ? r_{ij}^1$$

	j=1	j=2	j=3	j=4	j=5	j=6
i=1	$0(\varepsilon^*)\Phi$ $+\varepsilon$	$0(\varepsilon^*)\varepsilon$ $+0$	$0(\varepsilon^*)\Phi$ $+1$	$0(\varepsilon^*)1$ $+\Phi$	$0(\varepsilon^*)\Phi$ $+\Phi$	$0(\varepsilon^*)0$ $+\Phi$
i=2	$\varepsilon(\varepsilon^*)\Phi$ $+\Phi$	$\varepsilon(\varepsilon^*)$ $\varepsilon+\varepsilon$	$\varepsilon(\varepsilon^*)\Phi$ $+\Phi$	$\varepsilon(\varepsilon^*)1$ $+1$	$\varepsilon(\varepsilon^*)\Phi$ $+\Phi$	$\varepsilon(\varepsilon^*)0+$ 0
i=3	$\Phi(\varepsilon^*)\Phi$ $+\Phi$	$\Phi(\varepsilon^*)$ $\varepsilon+\Phi$	$\Phi(\varepsilon^*)\Phi$ $+\varepsilon$	$\Phi(\varepsilon^*)1$ $+\Phi$	$\Phi(\varepsilon^*)\Phi$ $+\Phi$	$\Phi(\varepsilon^*)0$ $+1$
i=4	$0(\varepsilon^*)\Phi$ $+\Phi$	$0(\varepsilon^*)$ $\varepsilon+0$	$0(\varepsilon^*)\Phi$ $+1$	$0(\varepsilon^*)1$ $+1$	$0(\varepsilon^*)\Phi$ $+\varepsilon$	$0(\varepsilon^*)0$ $+\Phi$
i=5	$0(\varepsilon^*)\Phi$ $+\Phi$	$0(\varepsilon^*)$ $\varepsilon+0$	$0(\varepsilon^*)\Phi$ $+1$	$0(\varepsilon^*)1$ $+1$	$0(\varepsilon^*)\Phi$ $+\varepsilon$	$0(\varepsilon^*)0+$ Φ
i=6	$\Phi(\varepsilon^*)\Phi$ $+\Phi$	$\Phi(\varepsilon^*)$ $\varepsilon+\Phi$	$\Phi(\varepsilon^*)\Phi$ $+\Phi$	$\Phi(\varepsilon^*)1$ $+\Phi$	$\Phi(\varepsilon^*)\Phi$ $+\Phi$	$\Phi(\varepsilon^*)0$ $+0+1+\varepsilon$

大レポート (課題4 STEP4-2)

$$r_{ij}^k ? r_{ik}^{k+1}(r_{kk}^{k+1})^* r_{kj}^{k+1} ? r_{ij}^{k+1} \quad (k ? 1)$$

$$k=2 \quad r_{ij}^2 ? r_{i2}^1(r_{22}^1)^* r_{2j}^1 ? r_{ij}^1$$

	j=1	j=2	j=3	j=4	j=5	j=6
i=1	ε	0	1	01	Φ	00
i=2	Φ	ε	Φ	1	Φ	0
i=3	Φ	Φ	ε	Φ	0	1
i=4	Φ	0	1	01+ ε	Φ	00
i=5	Φ	0	1	01	ε	00
i=6	Φ	Φ	Φ	Φ	Φ	$0+1+\varepsilon$

大レポート (課題4 STEP5-1)

$$k=3 \quad r_{ij}^3 ? r_{i3}^2(r_{33}^2)^* r_{3j}^2 ? r_{ij}^2$$

	j=1	j=2	j=3	j=4	j=5	j=6
i=1	$1(\varepsilon^*)\Phi$ $+\varepsilon$	$1(\varepsilon^*)\Phi$ $+0$	$1(\varepsilon^*)\varepsilon$ $+1$	$1(\varepsilon^*)\Phi$ $+0$	$1(\varepsilon^*)0$ $+\Phi$	$1(\varepsilon^*)1$ $+0$
i=2	$\Phi(\varepsilon^*)\Phi$ $+\Phi$	$\Phi(\varepsilon^*)\Phi$ $+\varepsilon$	$\Phi(\varepsilon^*)\varepsilon$ $+\Phi$	$\Phi(\varepsilon^*)\Phi$ $+1$	$\Phi(\varepsilon^*)0$ $+\Phi$	$\Phi(\varepsilon^*)1$ $+0$
i=3	$\varepsilon(\varepsilon^*)\Phi$ $+\Phi$	$\varepsilon(\varepsilon^*)\Phi$ $+\Phi$	$\varepsilon(\varepsilon^*)\varepsilon$ $+\varepsilon$	$\varepsilon(\varepsilon^*)\Phi$ $+\Phi$	$\varepsilon(\varepsilon^*)0$ $+0$	$\varepsilon(\varepsilon^*)1$ $+1$
i=4	$1(\varepsilon^*)\Phi$ $+\Phi$	$1(\varepsilon^*)\Phi$ $+0$	$1(\varepsilon^*)\varepsilon$ $+1$	$1(\varepsilon^*)\Phi$ $+0+1+\varepsilon$	$1(\varepsilon^*)0$ $+\Phi$	$1(\varepsilon^*)1$ $+0$
i=5	$1(\varepsilon^*)\Phi$ $+\Phi$	$1(\varepsilon^*)\Phi$ $+0$	$1(\varepsilon^*)\varepsilon$ $+1$	$1(\varepsilon^*)\Phi$ $+0$	$1(\varepsilon^*)0$ $+\varepsilon$	$1(\varepsilon^*)1+$ $+0$
i=6	$\Phi(\varepsilon^*)\Phi$ $+\Phi$	$\Phi(\varepsilon^*)\Phi$ $+\Phi$	$\Phi(\varepsilon^*)\varepsilon$ $+\Phi$	$\Phi(\varepsilon^*)\Phi+$ Φ	$\Phi(\varepsilon^*)0$ $+\Phi$	$\Phi(\varepsilon^*)1$ $+0+1+\varepsilon$

大レポート (課題4 STEP5-2)

$$r_{ij}^k ? r_{ik}^{k+1}(r_{kk}^{k+1})^* r_{kj}^{k+1} ? r_{ij}^{k+1} \quad (k ? 1)$$

$$k=3 \quad r_{ij}^3 ? r_{i3}^2(r_{33}^2)^* r_{3j}^2 ? r_{ij}^2$$

	j=1	j=2	j=3	j=4	j=5	j=6
i=1	ε	0	1	01	10	$11+00$
i=2	Φ	ε	Φ	1	Φ	0
i=3	Φ	Φ	ε	Φ	0	1
i=4	Φ	0	1	$01+\varepsilon$	10	$11+00$
i=5	Φ	0	1	01	$10+\varepsilon$	$11+00$
i=6	Φ	Φ	Φ	Φ	Φ	$0+1+\varepsilon$

大レポート (課題4 STEP6-1)

$$k=4 \quad r_{ij}^4 ? r_{i4}^3(r_{44}^3)^* r_{4j}^3 ? r_{ij}^3$$

	j=1	j=2	j=3	j=4	j=5	j=6
i=1	$01((01+\varepsilon)^*)$ $\Phi+\varepsilon$	$01((01+\varepsilon)^*)$ $0+0$	$01((01+\varepsilon)^*)$ $1+1$	$01((01+\varepsilon)^*)$ $(01+\varepsilon)+01$	$01((01+\varepsilon)^*)$ $10+10$	$01((01+\varepsilon)^*)\chi$ $(11+00)+$ $11+00$
i=2	$((01+\varepsilon)^*)$ $\Phi+\Phi$	$((01+\varepsilon)^*)0$ $+\varepsilon$	$((01+\varepsilon)^*)$ $+\Phi$	$((01+\varepsilon)^*)$ $(01+\varepsilon)+1$	$((01+\varepsilon)^*)$ $0+\Phi$	$((01+\varepsilon)^*)$ $(11+00)+0$
i=3	$((01+\varepsilon)^*)$ $\Phi+\Phi$	$((01+\varepsilon)^*)$ $0+\Phi$	$((01+\varepsilon)^*)$ $1+\varepsilon$	$((01+\varepsilon)^*)$ $(01+\varepsilon)+\Phi$	$((01+\varepsilon)^*)$ $10+0$	$((01+\varepsilon)^*)$ $(11+00)+1$
i=4	$01+\varepsilon)(01$ $+\varepsilon)^*\Phi+$	$01+\varepsilon)(01$ $+\varepsilon)^*0+0$	$01+\varepsilon)(01$ $+\varepsilon)^*1+1$	$01+\varepsilon)(01$ $+\varepsilon)^*(01+\varepsilon)$ $+01+\varepsilon$	$01+\varepsilon)(01$ $+\varepsilon)^*10+$ 10	$01+\varepsilon)(01$ $+\varepsilon)^*(11+00)$ $+11+00$
i=5	$01((01+\varepsilon)^*)$ $\Phi+\Phi$	$01((01+\varepsilon)^*)$ $0+0$	$01((01+\varepsilon)^*)$ $1+1$	$01((01+\varepsilon)^*)$ $(01+\varepsilon)+01$	$01((01+\varepsilon)^*)$ $10+10$	$01((01+\varepsilon)^*)$ $(11+00)+$ $11+00$
i=6	$\Phi((01+\varepsilon)^*)$ $\Phi+\Phi$	$\Phi((01+\varepsilon)^*)$ $0+\Phi$	$\Phi((01+\varepsilon)^*)$ $1+\Phi$	$\Phi((01+\varepsilon)^*)$ $(01+\varepsilon)+\Phi$	$\Phi((01+\varepsilon)^*)$ $10+\Phi$	$\Phi((01+\varepsilon)^*)$ $(11+00)+$ $0+1+\varepsilon$

大レポート (課題4 STEP6-2)

$r_{ij}^k ? r_{ik}^{k^2 1} (r_{kk}^{k^2 1} *) r_{kj}^{k^2 1} ? r_{ij}^{k^2 1} \quad (k ? 1)$
 $k=4 \quad r_{ij}^4 ? r_{i4}^3 (r_{44}^3 *) r_{4j}^3 ? r_{ij}^3$

	j=1	j=2	j=3	j=4	j=5	j=6
i=1	ε	(01)*0	(01)*1	01(01)*	(01)*10	(01)*(11+00)
i=2	Φ	1(01)*0+ε	1(01)*1	1(01)*	1(01)*10	1(01)*(11+00)+0
i=3	Φ	Φ	ε	Φ	0	1
i=4	Φ	(01)*0	(01)*1	(01)*	(01)*10	(01)*(11+00)
i=5	Φ	(01)*0	(01)*1	01(01)*	(01)*10+ε	(01)*(11+00)
i=6	Φ	Φ	Φ	Φ	Φ	0+1+ε

大レポート (課題4 STEP7-1)

$k=5 \quad r_{ij}^5 ? r_{i5}^4 (r_{55}^4 *) r_{5j}^4 ? r_{ij}^4 \quad r_{55}=(01)*10+\epsilon$

	j=1	j=2	j=3	j=4	j=5	j=6
i=1	$r_{i1}^5 ? r_{i5}^4 (r_{55}^4 *) r_{51}^4 ? r_{i1}^4$	$r_{i2}^5 ? r_{i5}^4 (r_{55}^4 *) r_{52}^4 ? r_{i2}^4$	$r_{i3}^5 ? r_{i5}^4 (r_{55}^4 *) r_{53}^4 ? r_{i3}^4$	$r_{i4}^5 ? r_{i5}^4 (r_{55}^4 *) r_{54}^4 ? r_{i4}^4$	$r_{i5}^5 ? r_{i5}^4 (r_{55}^4 *) r_{55}^4 ? r_{i5}^4$	$r_{i6}^5 ? r_{i5}^4 (r_{55}^4 *) r_{56}^4 ? r_{i6}^4$
i=2	$r_{21}^5 ? r_{25}^4 (r_{55}^4 *) r_{51}^4 ? r_{21}^4$	$r_{22}^5 ? r_{25}^4 (r_{55}^4 *) r_{52}^4 ? r_{22}^4$	$r_{23}^5 ? r_{25}^4 (r_{55}^4 *) r_{53}^4 ? r_{23}^4$	$r_{24}^5 ? r_{25}^4 (r_{55}^4 *) r_{54}^4 ? r_{24}^4$	$r_{25}^5 ? r_{25}^4 (r_{55}^4 *) r_{55}^4 ? r_{25}^4$	$r_{26}^5 ? r_{25}^4 (r_{55}^4 *) r_{56}^4 ? r_{26}^4$
i=3	$r_{31}^5 ? r_{35}^4 (r_{55}^4 *) r_{51}^4 ? r_{31}^4$	$r_{32}^5 ? r_{35}^4 (r_{55}^4 *) r_{52}^4 ? r_{32}^4$	$r_{33}^5 ? r_{35}^4 (r_{55}^4 *) r_{53}^4 ? r_{33}^4$	$r_{34}^5 ? r_{35}^4 (r_{55}^4 *) r_{54}^4 ? r_{34}^4$	$r_{35}^5 ? r_{35}^4 (r_{55}^4 *) r_{55}^4 ? r_{35}^4$	$r_{36}^5 ? r_{35}^4 (r_{55}^4 *) r_{56}^4 ? r_{36}^4$
i=4	$r_{41}^5 ? r_{45}^4 (r_{55}^4 *) r_{51}^4 ? r_{41}^4$	$r_{42}^5 ? r_{45}^4 (r_{55}^4 *) r_{52}^4 ? r_{42}^4$	$r_{43}^5 ? r_{45}^4 (r_{55}^4 *) r_{53}^4 ? r_{43}^4$	$r_{44}^5 ? r_{45}^4 (r_{55}^4 *) r_{54}^4 ? r_{44}^4$	$r_{45}^5 ? r_{45}^4 (r_{55}^4 *) r_{55}^4 ? r_{45}^4$	$r_{46}^5 ? r_{45}^4 (r_{55}^4 *) r_{56}^4 ? r_{46}^4$
i=5	$r_{51}^5 ? r_{55}^4 (r_{55}^4 *) r_{51}^4 ? r_{51}^4$	$r_{52}^5 ? r_{55}^4 (r_{55}^4 *) r_{52}^4 ? r_{52}^4$	$r_{53}^5 ? r_{55}^4 (r_{55}^4 *) r_{53}^4 ? r_{53}^4$	$r_{54}^5 ? r_{55}^4 (r_{55}^4 *) r_{54}^4 ? r_{54}^4$	$r_{55}^5 ? r_{55}^4 (r_{55}^4 *) r_{55}^4 ? r_{55}^4$	$r_{56}^5 ? r_{55}^4 (r_{55}^4 *) r_{56}^4 ? r_{56}^4$
i=6	$r_{61}^5 ? r_{65}^4 (r_{55}^4 *) r_{51}^4 ? r_{61}^4$	$r_{62}^5 ? r_{65}^4 (r_{55}^4 *) r_{52}^4 ? r_{62}^4$	$r_{63}^5 ? r_{65}^4 (r_{55}^4 *) r_{53}^4 ? r_{63}^4$	$r_{64}^5 ? r_{65}^4 (r_{55}^4 *) r_{54}^4 ? r_{64}^4$	$r_{65}^5 ? r_{65}^4 (r_{55}^4 *) r_{55}^4 ? r_{65}^4$	$r_{66}^5 ? r_{65}^4 (r_{55}^4 *) r_{56}^4 ? r_{66}^4$

大レポート (課題4 STEP7-2)

$k=5 \quad r_{ij}^5 ? r_{i5}^4 (r_{55}^4 *) r_{5j}^4 ? r_{ij}^4$

	j=1	j=2	j=3	j=4	j=5	j=6
i=1	ε	((01)*10)* (01)*0	((01)*10)* (01)*1	((01)*10)* 01(01)*	(01)*10	((01)*10)* (01)* (11+00)
i=2	Φ	1((01)*10)* (01)*0 + ε	1((01)*10)* (01)*1	1((01)*10)* 01(01)*	1(01)*10	1((01)*10)* (01)* (11+00)+0
i=3	Φ	0((01)*10)* (01)*0	0((01)*10)* (01)*1 + ε	0((01)*10)* 01(01)*	0((01)*10)*	0((01)*10)* (01)* (11+00)+1
i=4	Φ	((01)*10)* (01)*0	((01)*10)* (01)*1	((01)*10)* 01(01)*	(01)*10	((01)*10)* (01)* (11+00)
i=5	Φ	((01)*10)* (01)*0	((01)*10)* (01)*1	((01)*10)* 01(01)*	(01)*10	((01)*10)* (01)* (11+00)
i=6	Φ	Φ	Φ	Φ	Φ	0+1+ε

大レポート (課題4 STEP8)

$r ? r_{11}^6 ? r_{14}^6 ? r_{15}^6$
 $r_{11}^6 ? r_{16}^5 (r_{66}^5 *) r_{61}^5 ? r_{11}^5 ? r_{16}^5 (r_{66}^5 *) ? ?$
 $r_{14}^6 ? r_{16}^5 (r_{66}^5 *) r_{64}^5 ? r_{14}^5 ? r_{16}^5 (r_{66}^5 *) ? ((01)*10)* 01(01)*$
 $r_{15}^6 ? r_{16}^5 (r_{66}^5 *) r_{65}^5 ? r_{15}^5 ? r_{16}^5 (r_{66}^5 *) ? ((01)*10)* 01(01)*$
 $r ? ? ? ((01)*10)* 01(01)* ? (01)*10((01)*10)*$
 $? ? ? ((01)*10)* (01)* (01)*10$
 $? ? ? ((01)*10)* (01)*10$
 $? ? ? (01)*10)* (01)*10$
 $? (01)*10)*$

大レポート (課題4 別解STEP1)

最小化してみる

	j=1	j=2	j=3	j=4	j=5	j=6
i=1	ε	(01)*0	(01)*1	01(01)*	(01)*10	(01)*(11+00)
i=2	Φ	1(01)*0+ε	1(01)*1	1(01)*	1(01)*10	1(01)*(11+00)+0
i=3	Φ	Φ	ε	Φ	0	1
i=4	Φ	(01)*0	(01)*1	(01)*	(01)*10	(01)*(11+00)
i=5	Φ	(01)*0	(01)*1	01(01)*	(01)*10+ε	(01)*(11+00)
i=6	Φ	Φ	Φ	Φ	Φ	0+1+ε

大レポート (課題4 別解STEP2)

$r_{ij}^k ? r_{ik}^{k^2 1} (r_{kk}^{k^2 1} *) r_{kj}^{k^2 1} ? r_{ij}^{k^2 1} \quad (k ? 1)$
 $r_{ij}^0 ? a ? ? \quad (i ? j \text{ のとき})$
 $r_{ij}^0 ? a \quad (i ? j \text{ のとき})$

	j=1	j=2	j=3	j=4
i=1	ε	0	1	Φ
i=2	1	ε	Φ	0
i=3	0	Φ	ε	1
i=4	Φ	Φ	Φ	0+1+ε

大レポート (課題4 別解STEP3)

$$k=1 \quad r_{ij}^1 ? r_{ij}^0 (r_{11}^0)^* r_{ij}^0 ? r_{ij}^0$$

	j=1	j=2	j=3	j=4
i=1	$\varepsilon(\varepsilon^*)\varepsilon + \varepsilon$	$\varepsilon(\varepsilon^*)0 + 0$	$\varepsilon(\varepsilon^*)1 + 1$	$\varepsilon(\varepsilon^*)\Phi + \Phi$
i=2	$1(\varepsilon^*)\varepsilon + 1$	$1(\varepsilon^*)0 + \varepsilon$	$1(\varepsilon^*)1 + \Phi$	$1(\varepsilon^*)\Phi + 0$
i=3	$0(\varepsilon^*)\varepsilon + 0$	$0(\varepsilon^*)0 + \Phi$	$0(\varepsilon^*)1 + \varepsilon$	$0(\varepsilon^*)\Phi + 1$
i=4	$\Phi(\varepsilon^*)\varepsilon + \Phi$	$\Phi(\varepsilon^*)0 + \Phi$	$\Phi(\varepsilon^*)1 + \Phi$	$\Phi(\varepsilon^*)\Phi + 0 + 1 + \varepsilon$

	j=1	j=2	j=3	j=4
i=1	ε	0	1	Φ
i=2	1	$10 + \varepsilon$	11	0
i=3	0	00	$01 + \varepsilon$	1
i=4	Φ	Φ	Φ	$0 + 1 + \varepsilon$

大レポート (課題4 別解STEP4-1)

$$k=2 \quad r_{ij}^2 ? r_{12}^1 (r_{22}^1)^* r_{2j}^1 ? r_{ij}^1$$

	j=1	j=2	j=3	j=4
i=1	$0((10 + \varepsilon)^*)1 + \varepsilon$	$0((10 + \varepsilon)^*) / (10 + \varepsilon) \cdot 0$	$0((10 + \varepsilon)^*)11 + 1$	$0((10 + \varepsilon)^*)0 + \Phi$
i=2	$10 + \varepsilon)((10 + \varepsilon)^*)1 + 1$	$00 + \varepsilon)((10 + \varepsilon)^*) / (10 + \varepsilon) + 10 + \varepsilon$	$10 + \varepsilon)((10 + \varepsilon)^*)11 + 11$	$00 + \varepsilon)((10 + \varepsilon)^*)0 + 0$
i=3	$00((10 + \varepsilon)^*)1 + 0$	$00((10 + \varepsilon)^*) / (10 + \varepsilon) + 00$	$00((10 + \varepsilon)^*)11 + 01 + \varepsilon$	$00((10 + \varepsilon)^*)0 + 1$
i=4	$\Phi((10 + \varepsilon)^*)1 + \Phi$	$\Phi((10 + \varepsilon)^*) / (10 + \varepsilon) + \Phi$	$\Phi((10 + \varepsilon)^*)11 + \Phi$	$\Phi((10 + \varepsilon)^*)0 + 0 + 1 + \varepsilon$

大レポート (課題4 別解STEP4-2)

$$k=2 \quad r_{ij}^2 ? r_{12}^1 (r_{22}^1)^* r_{2j}^1 ? r_{ij}^1$$

	j=1	j=2	j=3	j=4
i=1	$0(10)^*1 + \varepsilon$	$0(10)^*$	$0(10)^*11 + 1$	$0(10)^*0$
i=2	$(10)^*1$	$(10)^*$	$(10)^*11$	$(10)^*0$
i=3	$00(10)^*1 + 0$	$00(10)^*$	$00(10)^*11 + 01 + \varepsilon$	$00(10)^*0 + 1$
i=4	Φ	Φ	Φ	$0 + 1 + \varepsilon$

大レポート (課題4 S別解STEP5)

$$r_{41}^3 ? r_{43}^2 (r_{33}^2)^* r_{31}^2 ? r_{41}^2 ? r_{33}^2 (r_{33}^2)^* ? ?$$

$$r ? r_{11}^4 ? r_{14}^3 (r_{44}^3)^* r_{41}^3 ? r_{11}^3 ? r_{11}^3 ? r_{13}^2 (r_{33}^2)^* r_{31}^2 ? r_{11}^4$$

$$? (0(10)^*11 ? 1)((00(10)^*11 ? 01 ? ?)^*) (00(10)^*1 ? 0)$$

$$? 0(10)^*1 ? ?$$

$$? (0(10)^*1 ? ?) 1(00(10)^*11 ? 01)^* 0(10)^*1 ? ?$$

$$? 0(10)^*1 ? ?$$

$$? (01)^*1(0(10)^*1 ? ?) 1)^* 0(01)^* ? (01)^*$$

$$? (01)^*1(0(01)^*1)^* 0(01)^* ? (01)^*$$

$$? (01)^*(1(0(01)^*1)^* 0(01)^* ? ?)$$

$$? ((01)^*(10)^*)^* ? (01 ? 10)^*$$