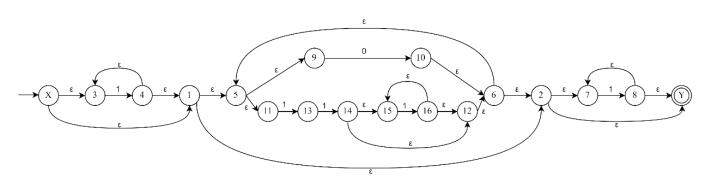
Assignment1 Solution

1、【参考解答】

① 根据汤普森构造法构造相应的 NFA:

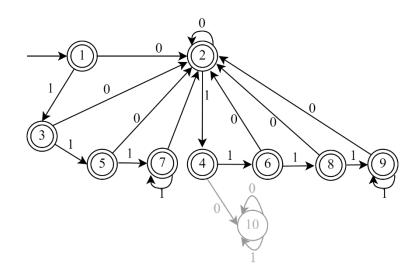


② 构造状态转换表: Start state: {1}; Accepting state: {1,2,3,4,5,6,7,8,9}

	())-))-)-)-)-)	
I	I_0	I_1
{X,3,1,5,11,9,2,7,Y}	{10,6,5,9,11,2,7,Y}	{4,3,1,5,9,11,8,7,Y,13}
{10,6,5,9,11,2,7,Y}	{10,6,5,9,11,2,7,Y}	{8,7,Y,13}
{4,3,1,5,9,11,8,7,Y,13}	{10,6,5,9,11,2,7,Y}	{4,3,1,5,9,11,8,7,Y,13,14,15,12,6,2}
{8,7,Y,13}	Ø	{8,7,Y,14,15,12,6,2,7,Y,5,9,11}
{4,3,1,5,9,11,8,7,Y,13,14,15,12,6,2}	{10,6,5,9,11,2,7,Y}	{4,3,1,5,9,11,8,7,Y,13,14,15,12,6,2,16}
{8,7,Y,14,15,12,6,2,7,Y,5,9,11}	{10,6,5,9,11,2,7,Y}	{8,7,Y,13,16,15,12,6,2,5,9,11}
{4,3,1,5,9,11,8,7,Y,13,14,15,12,6,2,16}	{10,6,5,9,11,2,7,Y}	{4,3,1,5,9,11,8,7,Y,13,14,15,12,6,2,16}
{8,7,Y,13,16,15,12,6,2,5,9,11}	{10,6,5,9,11,2,7,Y}	{8,7,Y,13,14,15,12,6,2,5,9,11,16}
{8,7,Y,13,14,15,12,6,2,5,9,11,16}	{10,6,5,9,11,2,7,Y}	{8,7,Y,13,14,15,12,6,2,5,9,11,16}
Ø	Ø	Ø

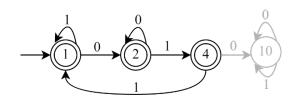
状态	I_0	I_1
1	2	3
2	2	4
3	2	5
4	10	6
5	2	7
6	2	8
7	2	7
8	2	9
9	2	9
10	10	10

画出对应的 DFA:



注意:对于空集状态,可以单独在状态转换表中单独加一行(状态 10),也可以不加,若加入后,则在 DFA 中会得到一个 Dead State,所以推荐不加。

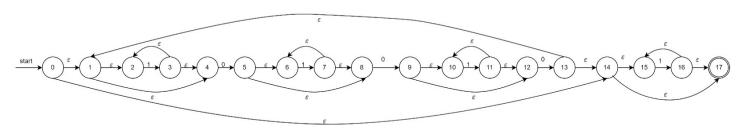
□ 最小化 DFA: {1,3,5,6,7,8,9} {4} {2}



2. 【参考解答】

- 1. 注意此类问题的正确答案不是唯一的。一个简单的正确答案是: (1*01*01*0)*1*
- 2. 参考答案【根据 RE→NFA→DFA→min DFA 的过程得到 DFA】
- ① 根据汤普森构造法构造相应的 NFA:

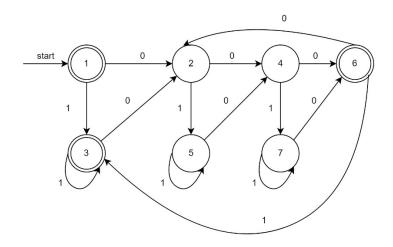
(1* 0 1 * 0 1 * 0)* 1*



② 构造状态转换表

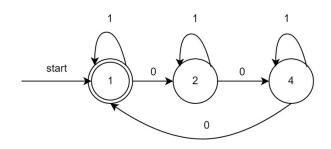
I	I0	I1	Accept
T1 {0,1,2,4,14,15,17}	T2{5,6,8}	T3 {2,3,4,15,16,17}	Yes
T2{5,6,8}	T4{9,10,12}	T5{6,7,8}	No
T3 {2,3,4,15,16,17}	T2{5,6,8}	T3 {2,3,4,15,16,17}	Yes
T4{9,10,12}	T6{13,14,1,2,4,15,17}	T7{10,11,12}	No
T5{6,7,8}	T4{9,10,12}	T5{6,7,8}	No
T6{13,14,1,2,4,15,17}	T2{5,6,8}	T8{2,3,4,15,16,17}	Yes
T7{10,11,12}	T6{13,14,1,2,4,15,17}	T7{10,11,12}	no

画出对应的 DFA:



③ 最小化 DFA

初始划分: {1, 3, 6} {2, 4, 5, 7} 最小化结果: {2, 5} {4, 7} {1, 3, 6}



此类问题可根据题目要求直接画出 DFA,最小化结果是唯一的。