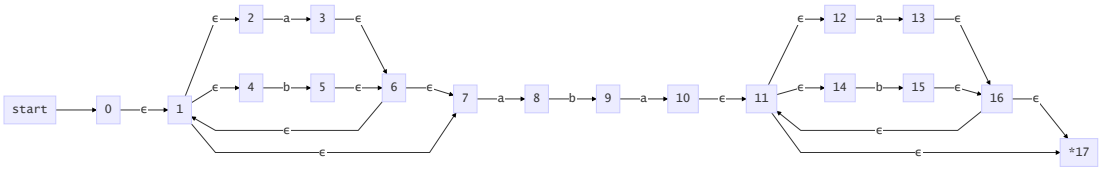
complier homework3 (RE-NFA-DFA-minDFA)

17341146 王程钥

RE

> (a|b)*aba(a|b)*

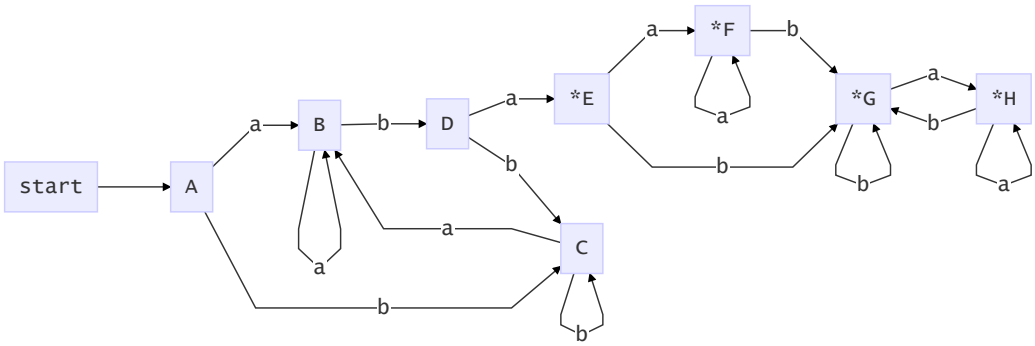
NFA



DFA
the table

NFA states	DFA state	a	b
{0,1,2,4,7}	A	B	C
{1,2,3,4,6,7,8}	B	B	D
{1,2,4,5,6,7}	C	B	C
{1,2,4,5,6,7,9}	D	E	C
{1,2,3,4,6,7,8,10,11,12,14,17}	E	F	G
{1,2,3,4,6,7,8,11,12,13,14,16,17}	F	F	G
{1,2,4,5,6,7,9,11,12,14,15,16,17}	G	H	G
{1,2,3,4,6,7,8,10,11,12,13,14,16,17}	H	H	G

the DFA generated by NFA



min-DFA

Initially, since EFGH are terminal nodes, we set ABCD in group 1, and EFGH in group 2.
For all node pairs in group A, only for node A and C, terminal nodes are in the same group, so we can merge A and C together.
For all node pairs in group B, their terminal points are in the same group, so we can merge all of them together.
Here is the min-DFA.