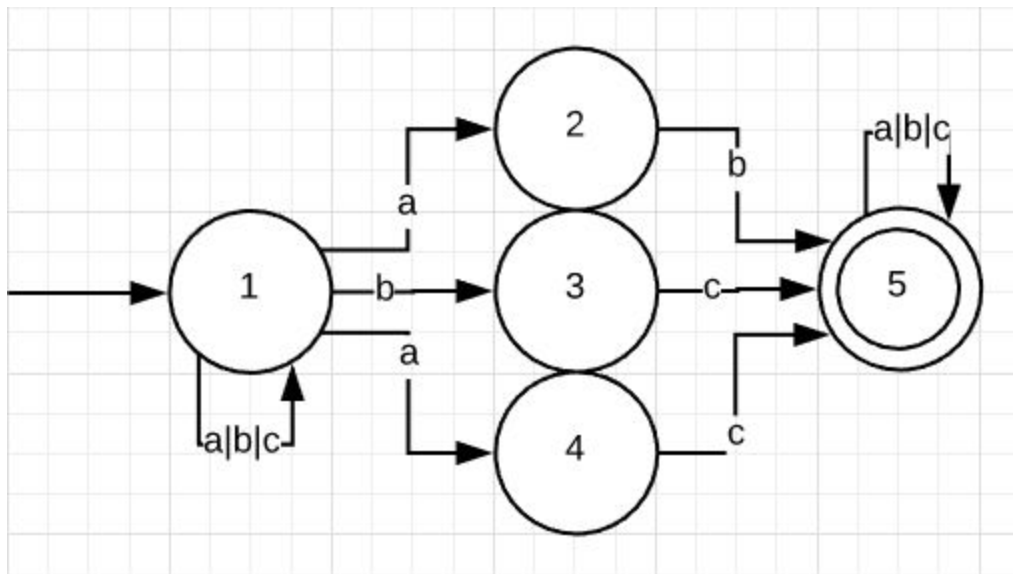


1.)

$[a-c]^*((ab)|(bc)|(ac))[a-c]^*$

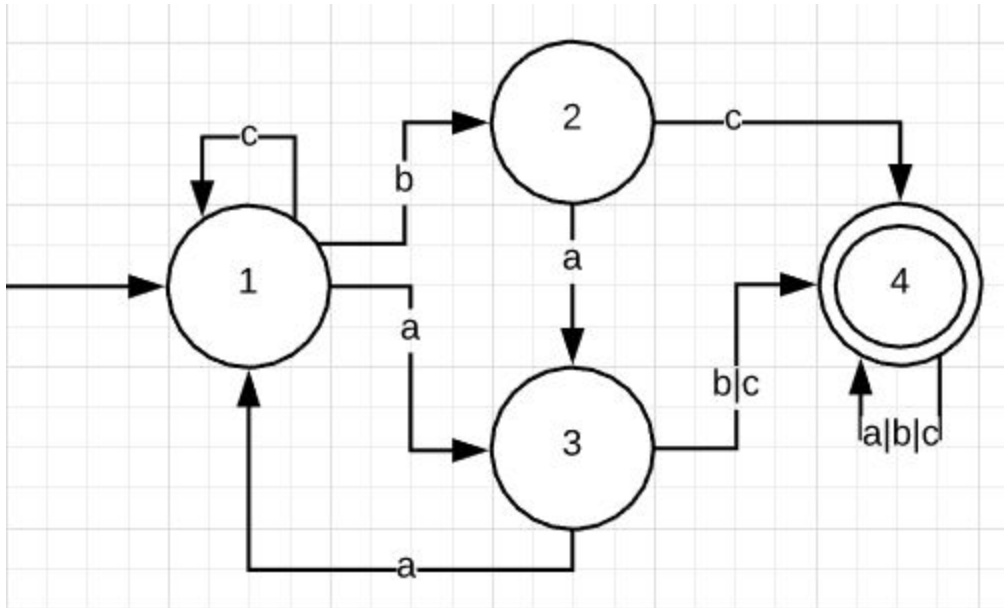
2.)



3.)

States	a	b	c	finish
{1}	{1,2,4}	{1,3}	{1}	no
{1,2,4}	{1}	{1,5}	{1,5}	no
{1,3}	{1,2,4}	{1}	{1,5}	no
{1,5}	{1,5,2,4}	{1,5,3}	{1,5}	yes
{1,5,2,4}	{1,5,2,4}	{1,5,3}	{1,5}	yes
{1,5,3}	{1,5,2,4}	{1,5,3}	{1,5}	yes

4.)

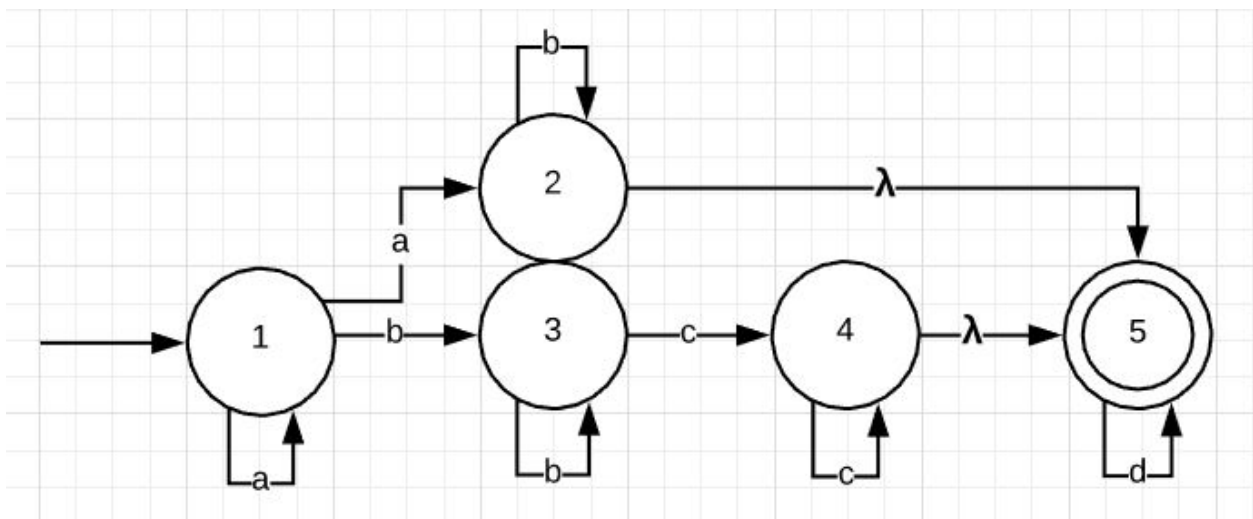


5.)

RegEx:

$$(a^*b^+c^+d^*)|(a^+b^*d^*)$$

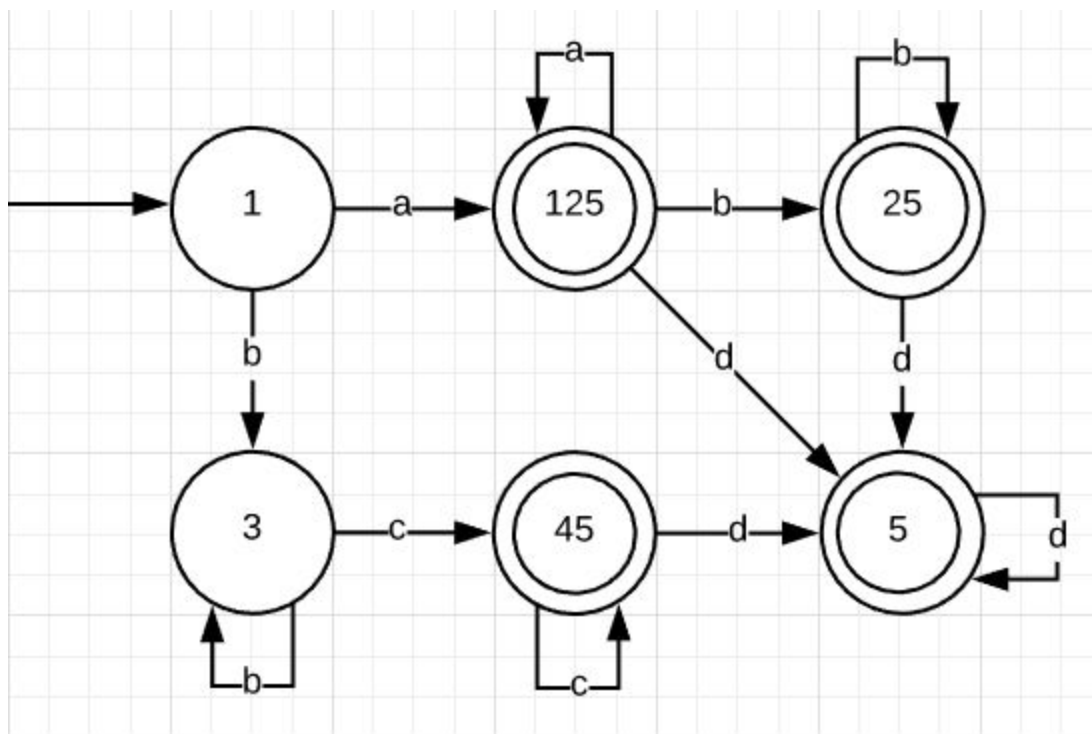
NFA:



DFA table:

States	a	b	c	d	Final
{1}	{1,2,5}	{3}	Err	Err	No
{1,2,5}	{1,2,5}	{2,5}	Err	{5}	yes
{3}	Err	{3}	{4,5}	Err	no
{2,5}	Err	{2,5}	Err	{5}	yes
{5}	Err	Err	Err	{5}	yes
{4,5}	Err	Err	{4,5}	{5}	yes

Un-reduced DFA:



Reduced DFA:

