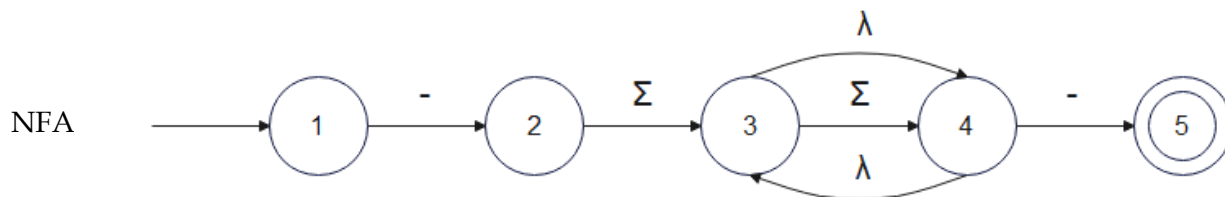


## Identifier:

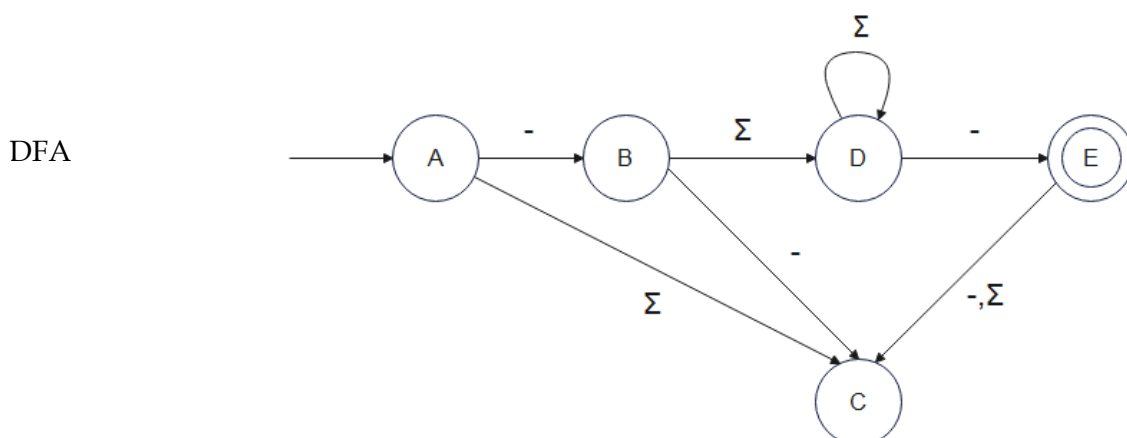
Identifier pattern =  $-\Sigma^+-$

$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\}$

- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(A,-)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(A, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(B,-)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{3,4\}$
- $\lambda\text{-closure}(\text{move}(C,-)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(C, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D,-)) = \{5\}$
- $\lambda\text{-closure}(\text{move}(D, \Sigma)) = \{3,4\}$
- $\lambda\text{-closure}(\text{move}(E,-)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(E, \Sigma)) = \{ \}$



	Name	-	Σ
{1}	A	B	C
{2}	B	C	D
{ }	C	C	C
{3,4}	D	E	D
{5}	E	C	C

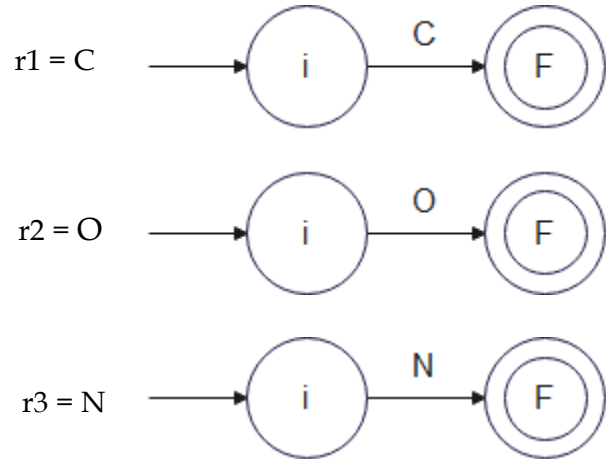


## Conditional statement:

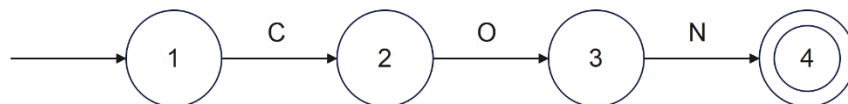
if pattern = CON

$$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$$

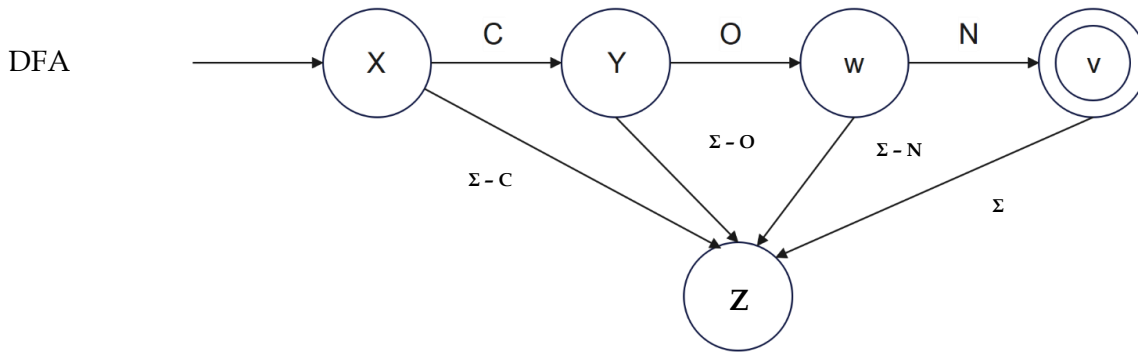
- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(X, C)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(X, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, C)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, O)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(Y, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, C)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, N)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(W, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, C)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, \Sigma)) = \{\}$



NFA



	Name	C	O	N	$\Sigma$
{1}	X	Y	Z	Z	Z
{2}	Y	Z	W	Z	Z
{ }	Z	Z	Z	Z	Z
{3}	W	Z	Z	V	Z
{4}	V	Z	Z	Z	Z

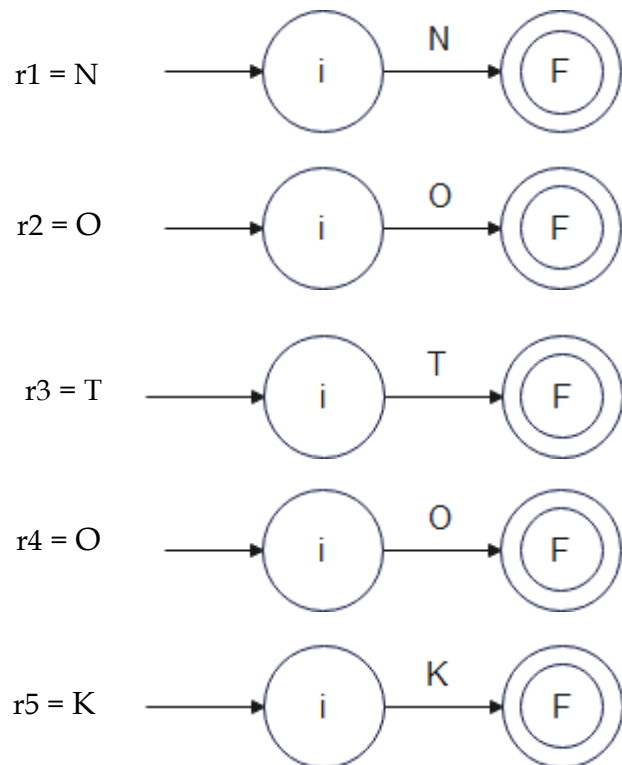


Conditional statement:

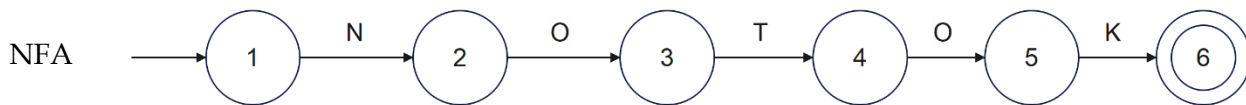
**else pattern = NOTOK**

$$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$$

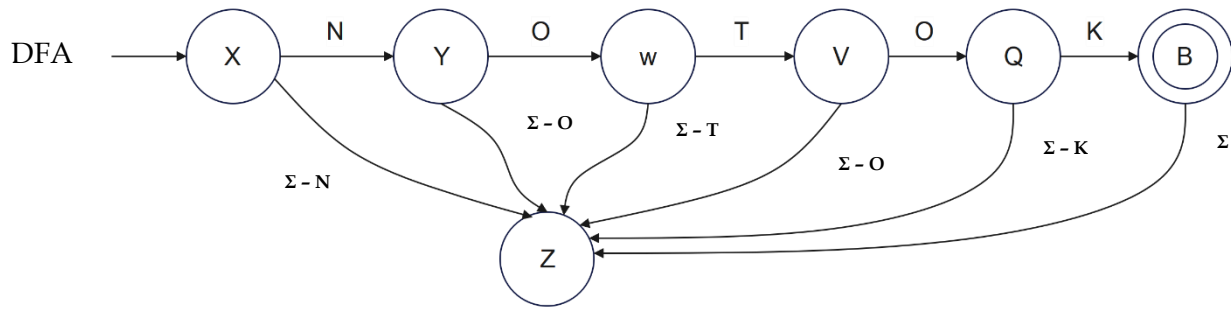
- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(X, N)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(X, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, T)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, K)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, O)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(Y, T)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, O)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(Y, K)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, T)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, K)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, O)) = \{\}$



- $\lambda\text{-closure}(\text{move}(W, T)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(W, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, K)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, O)) = \{5\}$
- $\lambda\text{-closure}(\text{move}(V, T)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, O)) = \{5\}$
- $\lambda\text{-closure}(\text{move}(V, K)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Q, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Q, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Q, T)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Q, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Q, K)) = \{6\}$
- $\lambda\text{-closure}(\text{move}(Q, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, T)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, K)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{\}$



	Name	N	O	T	O	K	$\Sigma$
$\{1\}$	X	Y	Z	Z	Z	Z	Z
$\{2\}$	Y	Z	W	Z	Z	Z	Z
$\{\}$	Z	Z	Z	Z	Z	Z	Z
$\{3\}$	W	Z	Z	V	Z	Z	Z
$\{4\}$	V	Z	Z	Z	Q	Z	Z
$\{5\}$	Q	Z	Z	Z	Z	B	Z
$\{6\}$	B	Z	Z	Z	Z	Z	Z

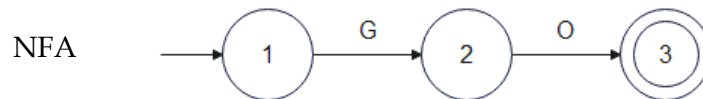
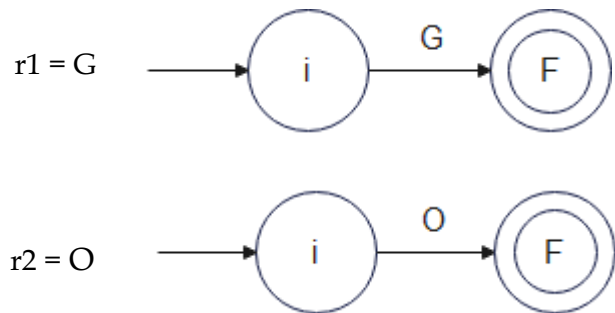


Loop statement:

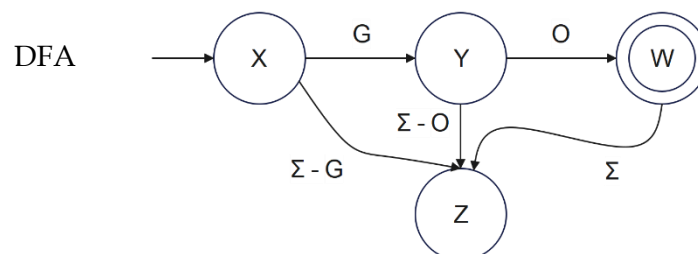
**while pattern = GO**

$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$

- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(X, G)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(X, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, G)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, O)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(Y, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, G)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$



	Name	G	O	$\Sigma$
{1}	X	Y	Z	Z
{2}	Y	Z	W	Z
{}	Z	Z	Z	Z
{3}	W	Z	Z	Z

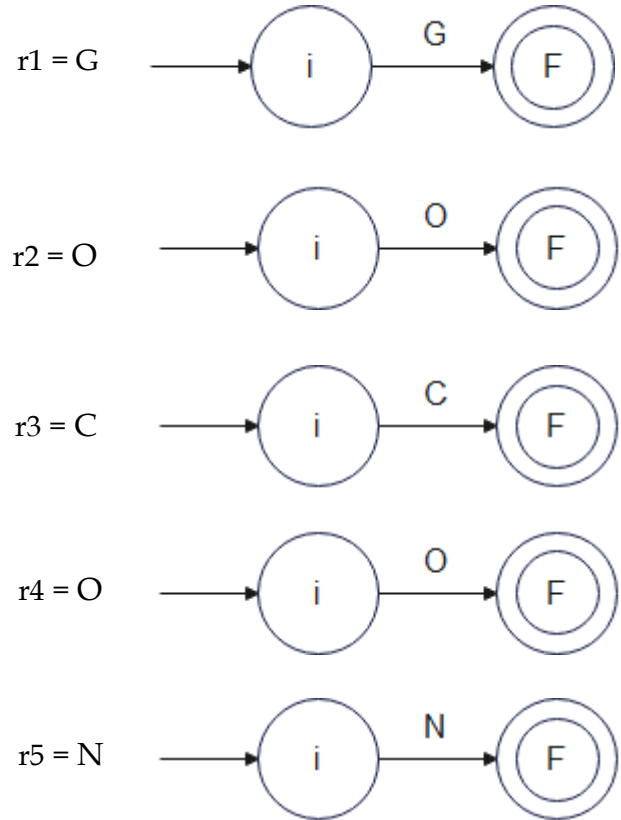


Loop statement:

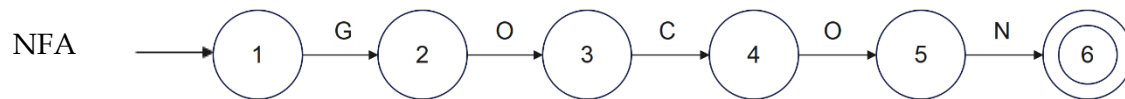
**for pattern = GOCON**

- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(X, G)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(X, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, C)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, G)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, O)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(Y, C)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, O)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(Y, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, G)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, C)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, G)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, C)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(W, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, G)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, O)) = \{5\}$
- $\lambda\text{-closure}(\text{move}(V, C)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, O)) = \{5\}$
- $\lambda\text{-closure}(\text{move}(V, N)) = \{\}$

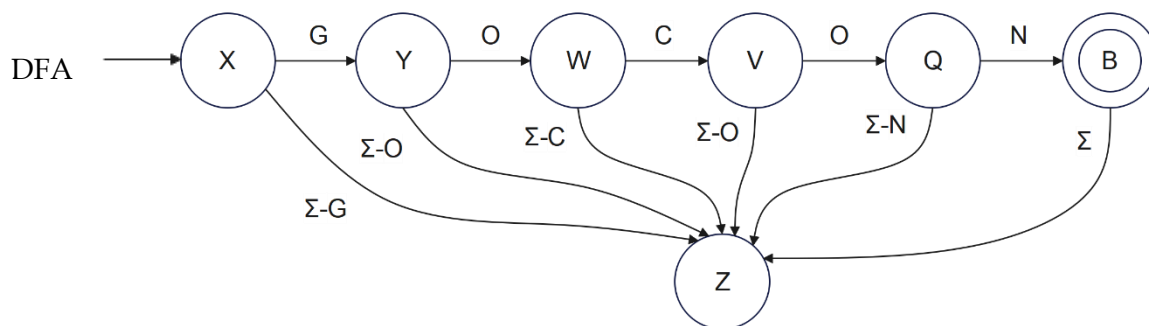
$$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$$



- $\lambda\text{-closure}(\text{move}(V, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Q, G)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Q, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Q, C)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Q, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Q, N)) = \{6\}$
- $\lambda\text{-closure}(\text{move}(Q, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, G)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, C)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, N)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{\}$



	Name	G	O	C	O	N	$\Sigma$
{1}	X	Y	Z	Z	Z	Z	Z
{2}	Y	Z	W	Z	Z	Z	Z
{}	Z	Z	Z	Z	Z	Z	Z
{3}	W	Z	Z	V	Z	Z	Z
{4}	V	Z	Z	Z	Q	Z	Z
{5}	Q	Z	Z	Z	Z	B	Z
{6}	B	Z	Z	Z	Z	Z	Z

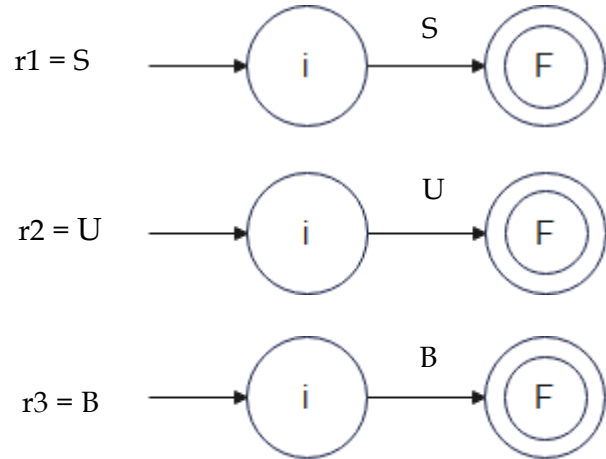


## Function:

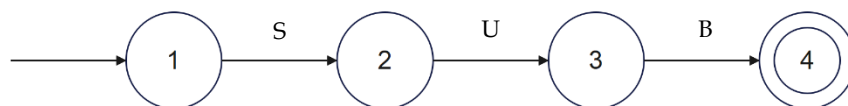
Create Function pattern = SUB

$$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$$

- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(X, S)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(X, U)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, B)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, S)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, U)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(Y, B)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Y, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, S)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, U)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, B)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, S)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, U)) = \{\}$
- $\lambda\text{-closure}(\text{move}(W, B)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(W, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, S)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, U)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, B)) = \{\}$
- $\lambda\text{-closure}(\text{move}(V, \Sigma)) = \{\}$

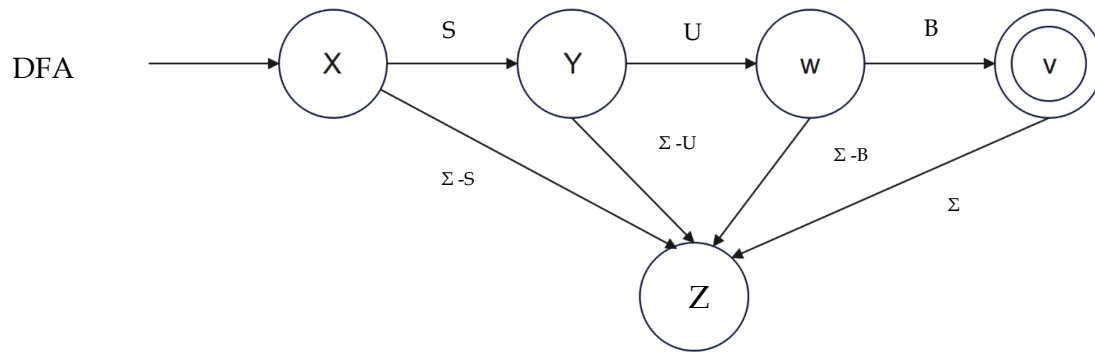


NFA



	Name	S	U	B	$\Sigma$
{1}	X	Y	Z	Z	Z
{2}	Y	Z	W	Z	Z
{ }	Z	Z	Z	Z	Z
{3}	W	Z	Z	V	Z
{4}	V	Z	Z	Z	Z

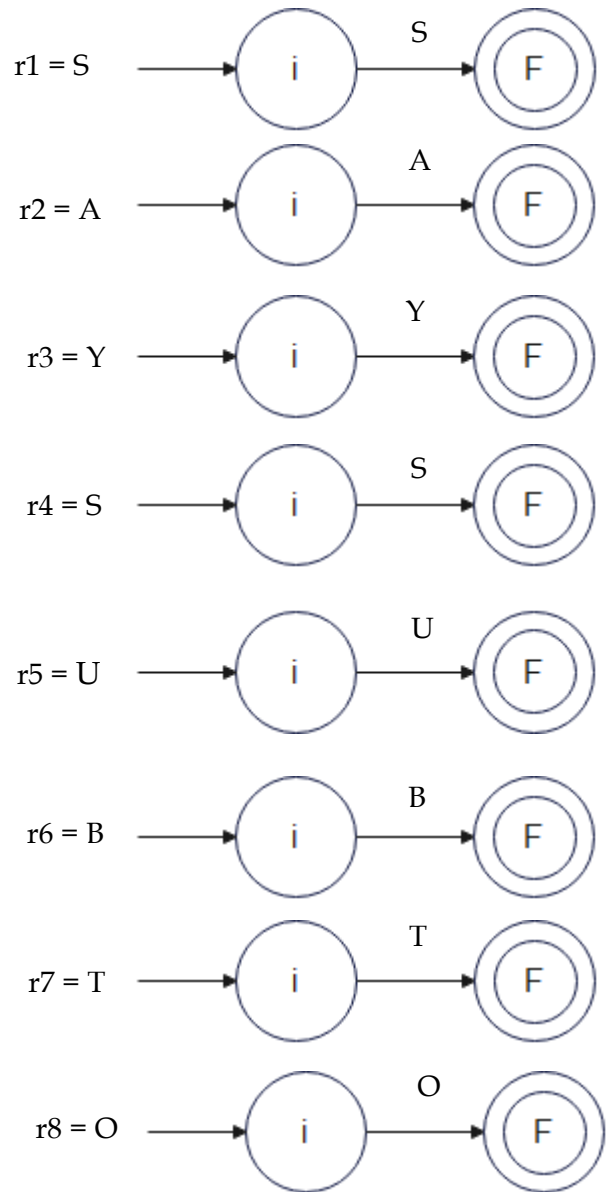




Call Function pattern = SAYSUBTO

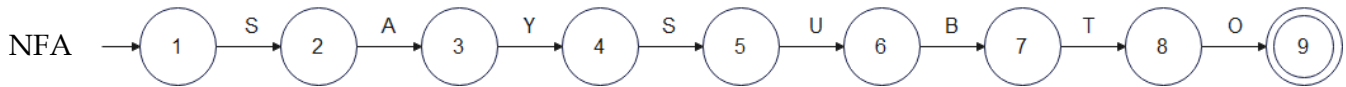
$$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$$

- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(X, S)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(X, A)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, Y)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, S)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, U)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, B)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, T)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(X, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(F, S)) = \{\}$
- $\lambda\text{-closure}(\text{move}(F, A)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(F, Y)) = \{\}$
- $\lambda\text{-closure}(\text{move}(F, S)) = \{\}$
- $\lambda\text{-closure}(\text{move}(F, U)) = \{\}$
- $\lambda\text{-closure}(\text{move}(F, B)) = \{\}$
- $\lambda\text{-closure}(\text{move}(F, T)) = \{\}$
- $\lambda\text{-closure}(\text{move}(F, O)) = \{\}$
- $\lambda\text{-closure}(\text{move}(F, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, S)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, A)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, Y)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, S)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, U)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, B)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, T)) = \{\}$

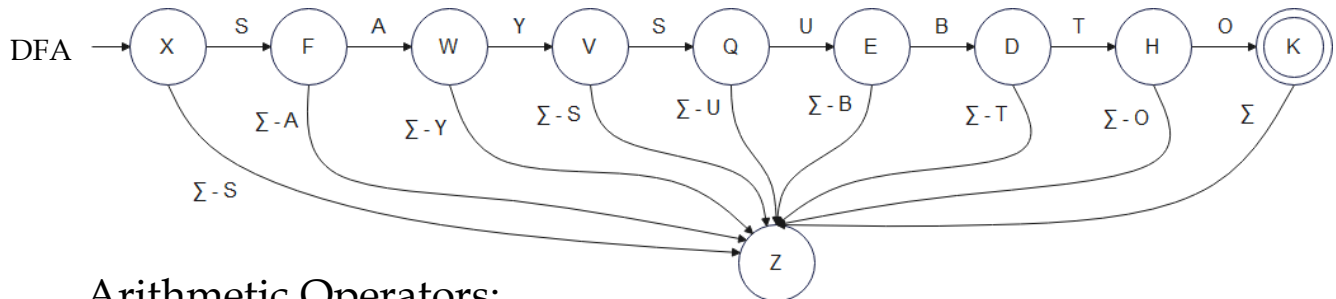


- $\lambda\text{-closure}(\text{move}(Z, O)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(W, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(W, A)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(W, Y)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(W, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(W, U)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(W, B)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(W, T)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(W, O)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(W, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(V, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(V, A)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(V, Y)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(V, S)) = \{5\}$
- $\lambda\text{-closure}(\text{move}(V, U)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(V, B)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(V, T)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(V, O)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(V, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Q, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Q, A)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Q, Y)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Q, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Q, U)) = \{6\}$
- $\lambda\text{-closure}(\text{move}(Q, B)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Q, T)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Q, O)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Q, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(E, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(E, A)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(E, Y)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(E, S)) = \{ \}$

- $\lambda\text{-closure}(\text{move}(E, U)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(E, B)) = \{7\}$
- $\lambda\text{-closure}(\text{move}(E, T)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(E, O)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(E, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, A)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, Y)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, U)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, B)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, T)) = \{8\}$
- $\lambda\text{-closure}(\text{move}(D, O)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(H, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(H, A)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(H, Y)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(H, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(H, U)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(H, B)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(H, T)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(H, O)) = \{9\}$
- $\lambda\text{-closure}(\text{move}(H, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(K, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(K, A)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(K, Y)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(K, S)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(K, U)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(K, B)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(K, T)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(K, O)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(K, \Sigma)) = \{ \}$



	Name	S	A	Y	S	U	B	T	O	$\Sigma$
{1}	X	F	Z	Z	Z	Z	Z	Z	Z	Z
{2}	F	Z	W	Z	Z	Z	Z	Z	Z	Z
{}	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
{3}	W	Z	Z	V	Z	Z	Z	Z	Z	Z
{4}	V	Z	Z	Z	Q	Z	Z	Z	Z	Z
{5}	Q	Z	Z	Z	Z	E	Z	Z	Z	Z
{6}	E	Z	Z	Z	Z	Z	D	Z	Z	Z
{7}	D	Z	Z	Z	Z	Z	Z	H	Z	Z
{8}	H	Z	Z	Z	Z	Z	Z	Z	K	Z
{9}	K	Z	Z	Z	Z	Z	Z	Z	Z	Z

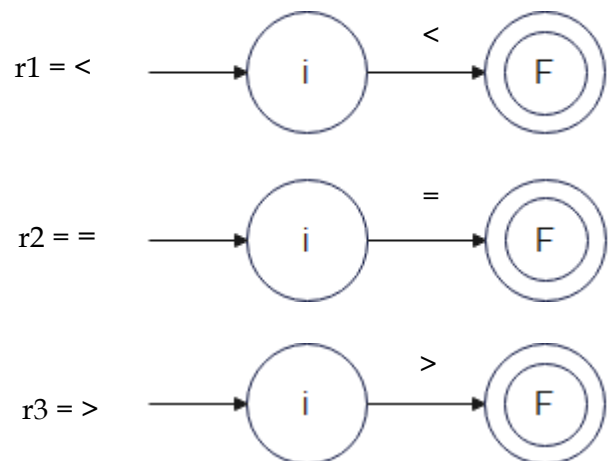


## Arithmetic Operators:

Equal = <=>

$$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$$

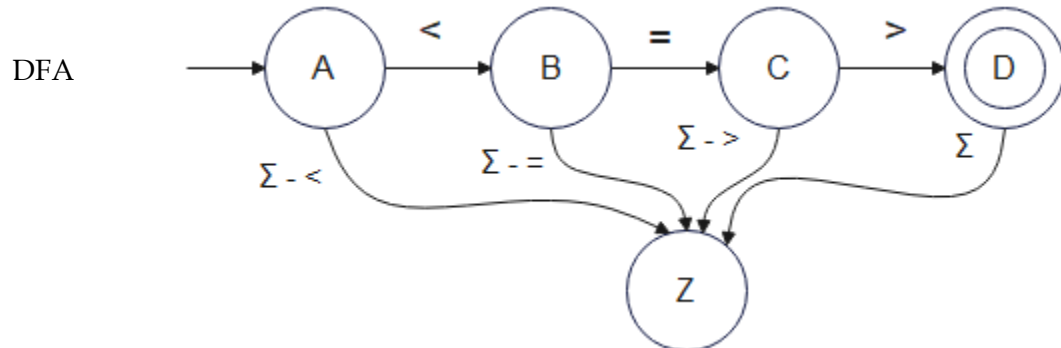
- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(A, <)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(A, =)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, =)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(B, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, =)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$



- $\lambda\text{-closure}(\text{move}(C, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, =)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, >)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(C, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, =)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, \Sigma)) = \{\}$
- 

NFA

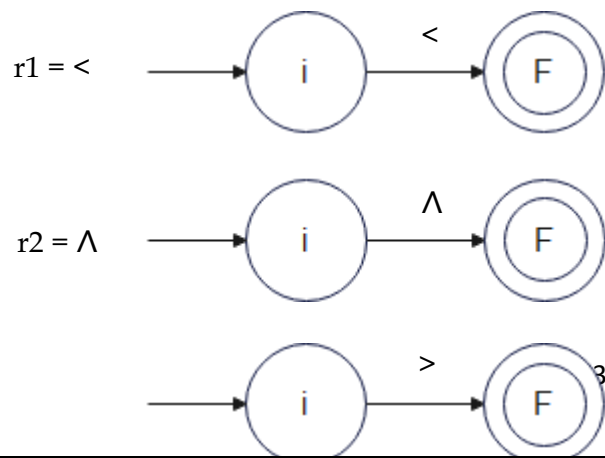
	Name	<	=	>	$\Sigma$
{1}	A	B <sup>2</sup>	Z <sup>3</sup>	Z <sup>4</sup>	Z
{2}	B	Z	C	Z	Z
{}	Z	Z	Z	Z	Z
{3}	C	Z	Z	D	Z
{4}	D	Z	Z	Z	Z



Multiply = <  $\wedge$  >

$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$

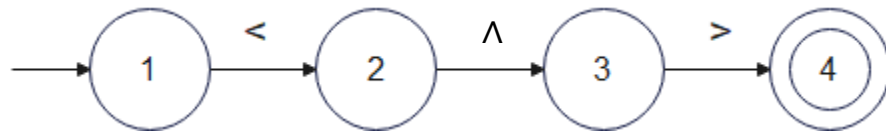
- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(A, <)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(A, \wedge)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, \wedge)) = \{3\}$



- $\lambda\text{-closure}(\text{move}(B, >)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Z, <)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Z, \wedge)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Z, >)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(C, <)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(C, \wedge)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(C, >)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(C, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, <)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, \wedge)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, >)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, \Sigma)) = \{ \}$
- 

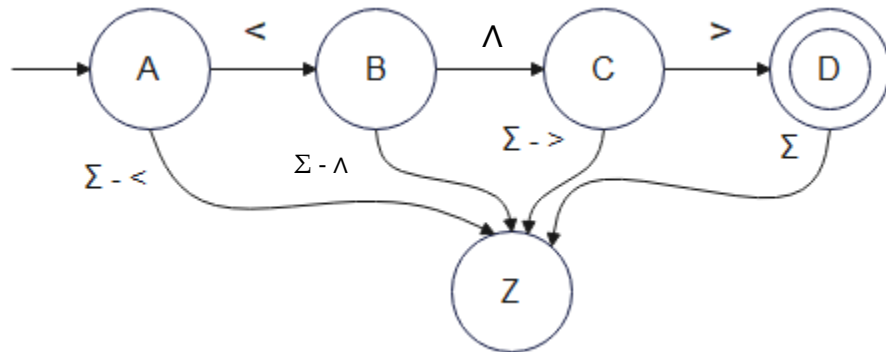
r3 = >

NFA



	Name	<	$\wedge$	>	$\Sigma$
{1}	A	B	Z	Z	Z
{2}	B	Z	C	Z	Z
{ }	Z	Z	Z	Z	Z
{3}	C	Z	Z	D	Z
{4}	D	Z	Z	Z	Z

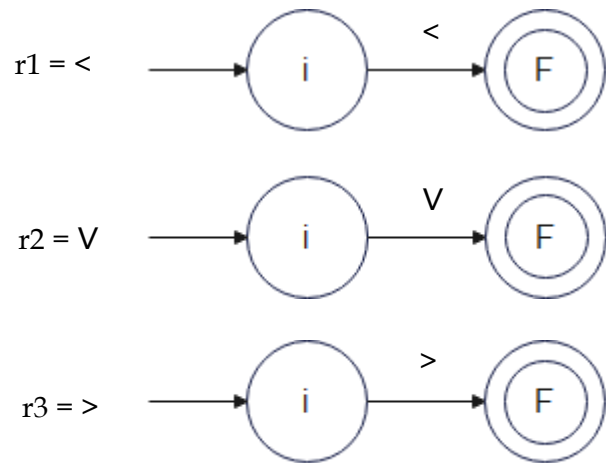
DFA



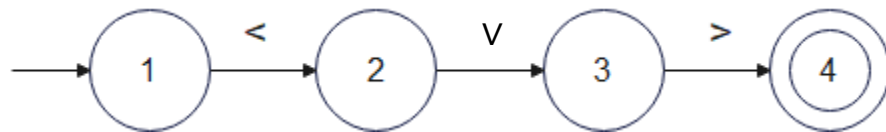
Plus = <V>

$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$

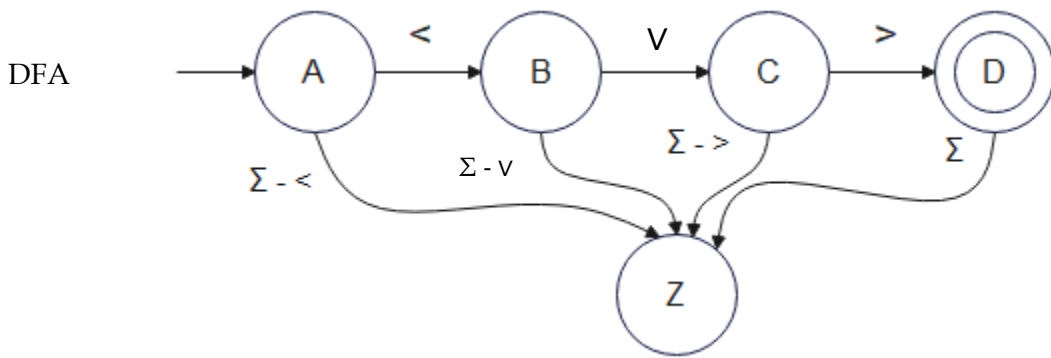
- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(A, <)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(A, v)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, v)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(B, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, v)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, v)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, >)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(C, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, v)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, \Sigma)) = \{\}$
- 



NFA



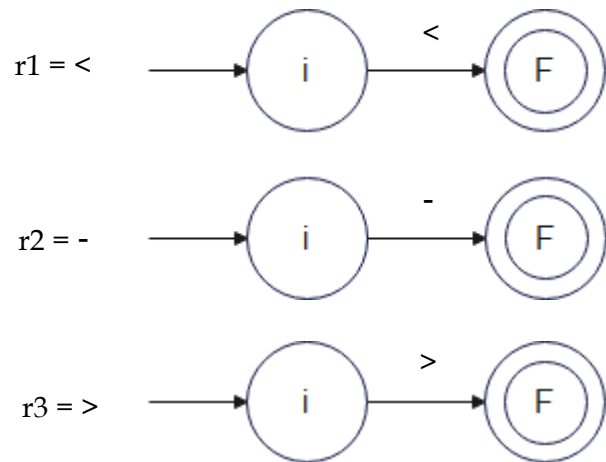
	Name	$<$	$v$	$>$	$\Sigma$
$\{1\}$	A	B	Z	Z	Z
$\{2\}$	B	Z	C	Z	Z
$\{\}$	Z	Z	Z	Z	Z
$\{3\}$	C	Z	Z	D	Z
$\{4\}$	D	Z	Z	Z	Z



Minus = < ->

$$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$$

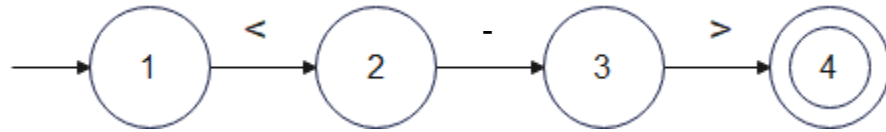
- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(A, <)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(A, -)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, -)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(B, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, -)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, -)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, >)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(C, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, -)) = \{\}$





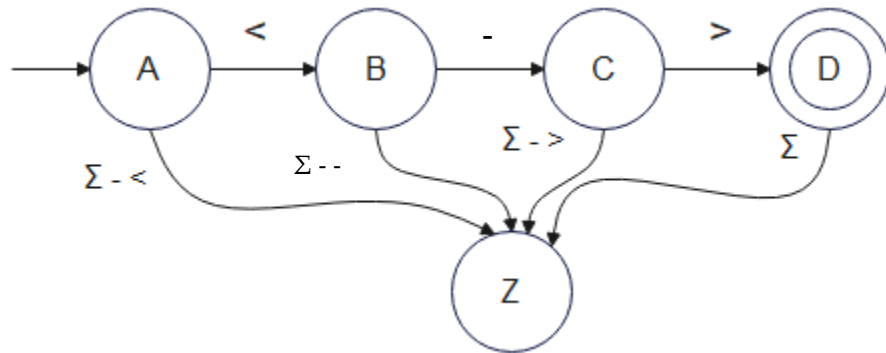
- $\lambda\text{-closure}(\text{move}(D, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, \Sigma)) = \{\}$
- 

NFA



	Name	<	-	>	$\Sigma$
{1}	A	B	Z	Z	Z
{2}	B	Z	C	Z	Z
{}	Z	Z	Z	Z	Z
{3}	C	Z	Z	D	Z
{4}	D	Z	Z	Z	Z

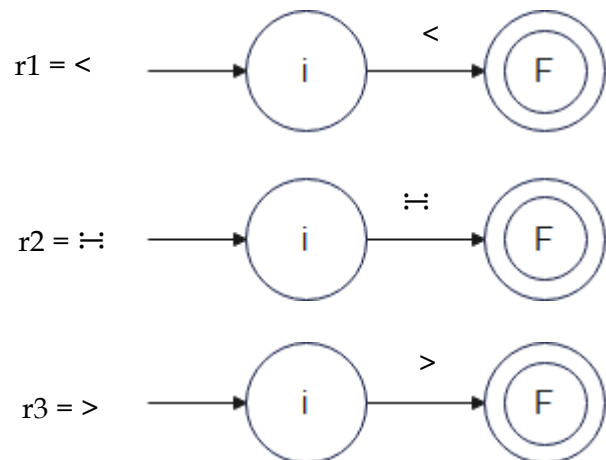
DFA



Divide =  $<::>$

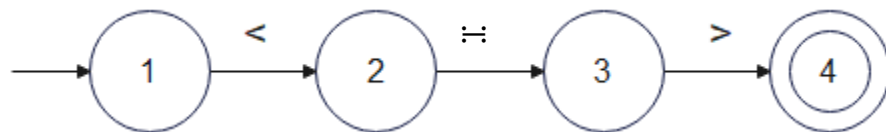
$$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$$

- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(A, <)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(A, ::)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, ::)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(B, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, ::)) = \{\}$



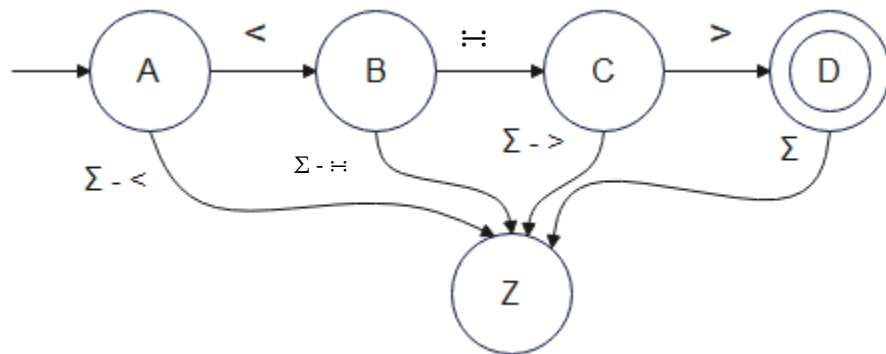
- $\lambda\text{-closure}(\text{move}(Z, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, \neq)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, >)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(C, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, \neq)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, \Sigma)) = \{\}$
- 

NFA



	Name	<	≠	>	$\Sigma$
{1}	A	B	Z	Z	Z
{2}	B	Z	C	Z	Z
{}	Z	Z	Z	Z	Z
{3}	C	Z	Z	D	Z
{4}	D	Z	Z	Z	Z

DFA

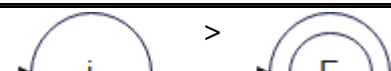
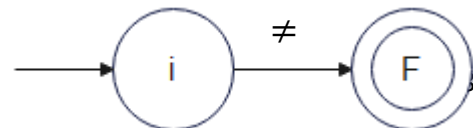


Not Equal =  $\neq$

$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$

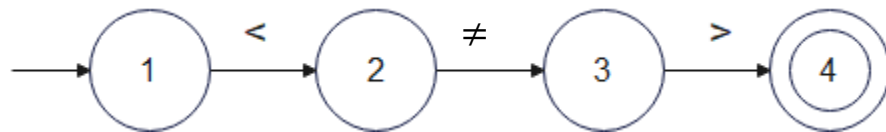
- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(A, <)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(A, \neq)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, >)) = \{\}$

r1 = <

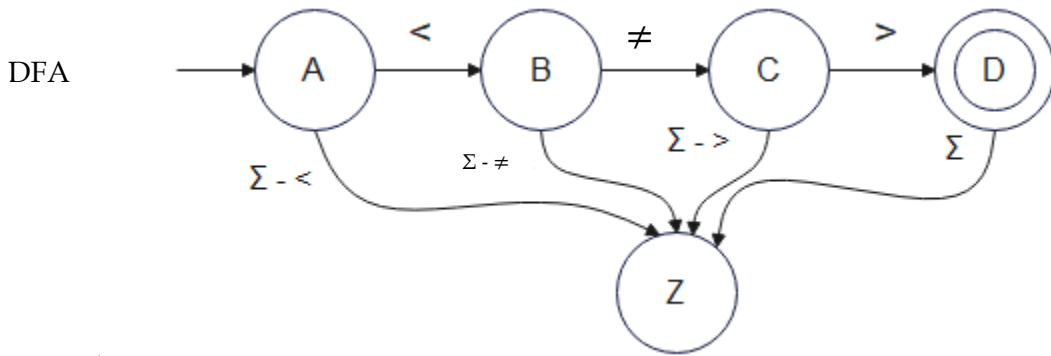


- $\lambda\text{-closure}(\text{move}(A, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, <)) = \{\}$   $r2 = \neq$
- $\lambda\text{-closure}(\text{move}(B, \neq)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(B, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{\}$   $r3 = >$
- $\lambda\text{-closure}(\text{move}(Z, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \neq)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, \neq)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, >)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(C, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, \neq)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, \Sigma)) = \{\}$
- 

NFA



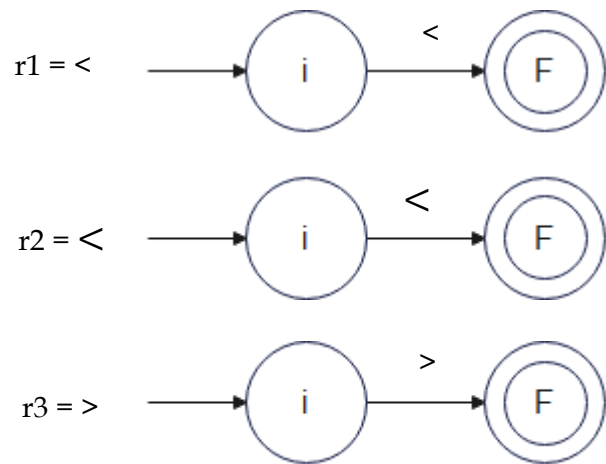
	Name	<	≠	>	$\Sigma$
{1}	A	B	Z	Z	Z
{2}	B	Z	C	Z	Z
{ }	Z	Z	Z	Z	Z
{3}	C	Z	Z	D	Z
{4}	D	Z	Z	Z	Z



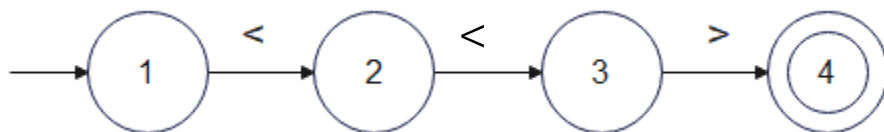
Less Than = <<>

$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$

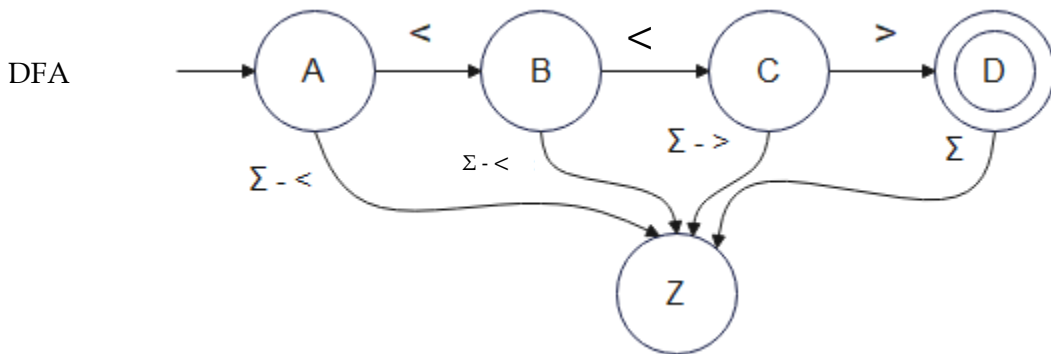
- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(A, <)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(A, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, <)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(B, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(C, >)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(C, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(D, \Sigma)) = \{\}$
- 



NFA



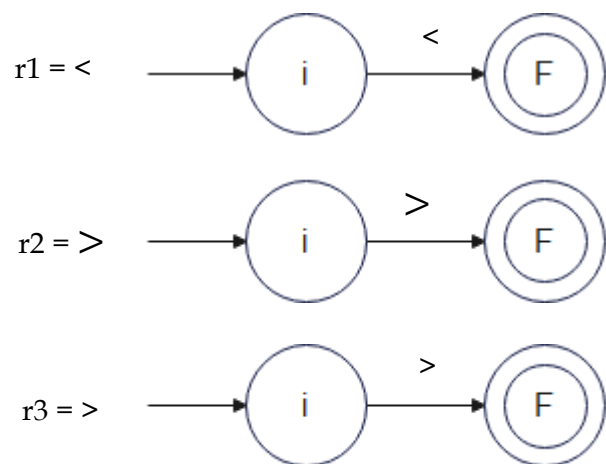
	Name	<	<	>	$\Sigma$
{1}	A	B	Z	Z	Z
{2}	B	Z	C	Z	Z
{}	Z	Z	Z	Z	Z
{3}	C	Z	Z	D	Z
{4}	D	Z	Z	Z	Z



Greater Than = <>>

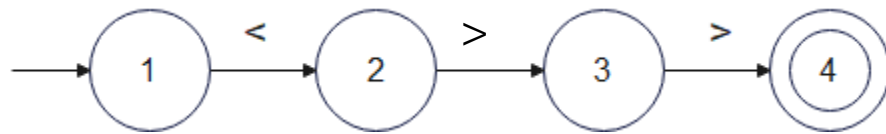
$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$

- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(A, <)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(A, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(A, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(B, >)) = \{3\}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, <)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, >)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$



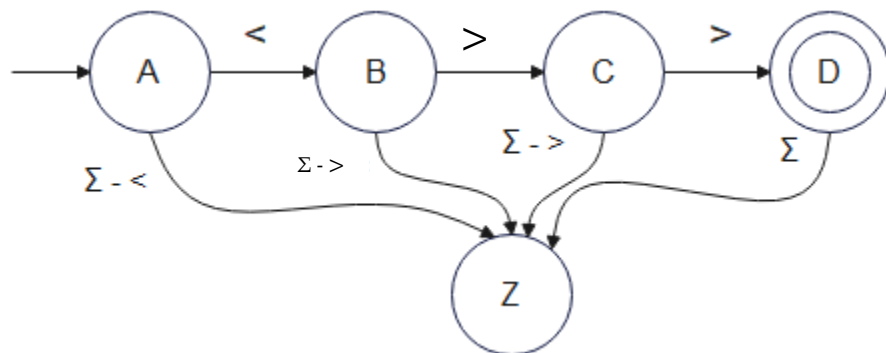
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(C, <)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(C, >)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(C, >)) = \{4\}$
- $\lambda\text{-closure}(\text{move}(C, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, <)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, >)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, >)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(D, \Sigma)) = \{ \}$
- 

NFA



	Name	<	>	>	$\Sigma$
{1}	A	B	Z	Z	Z
{2}	B	Z	C	Z	Z
{ }	Z	Z	Z	Z	Z
{3}	C	Z	Z	D	Z
{4}	D	Z	Z	Z	Z

DFA



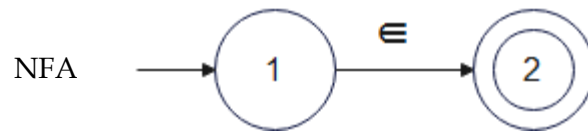
Assign =  $\epsilon$

$\Sigma = \{A-Z\} \cup \{a-z\} \cup \{0-9\} \cup \{-\}$

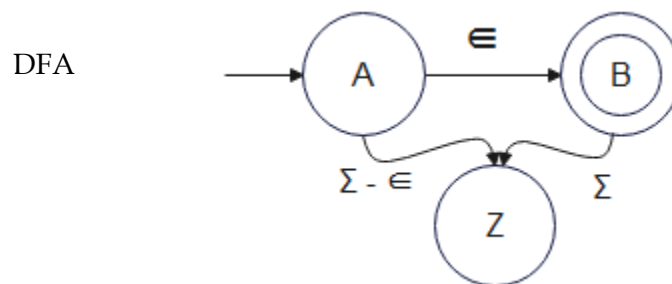
- $\lambda\text{-closure}(1) = \{1\}$
- $\lambda\text{-closure}(\text{move}(A, \epsilon)) = \{2\}$
- $\lambda\text{-closure}(\text{move}(A, \Sigma)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(B, \epsilon)) = \{ \}$
- $\lambda\text{-closure}(\text{move}(B, \Sigma)) = \{ \}$



- $\lambda\text{-closure}(\text{move}(Z, \epsilon)) = \{\}$
- $\lambda\text{-closure}(\text{move}(Z, \Sigma)) = \{\}$



	Name	$\epsilon$	$\Sigma$
{1}	A	B	Z
{2}	B	Z	Z
{}	Z	Z	Z



Numbers:

Integer = 562

$\Sigma = \{0-9\}$

