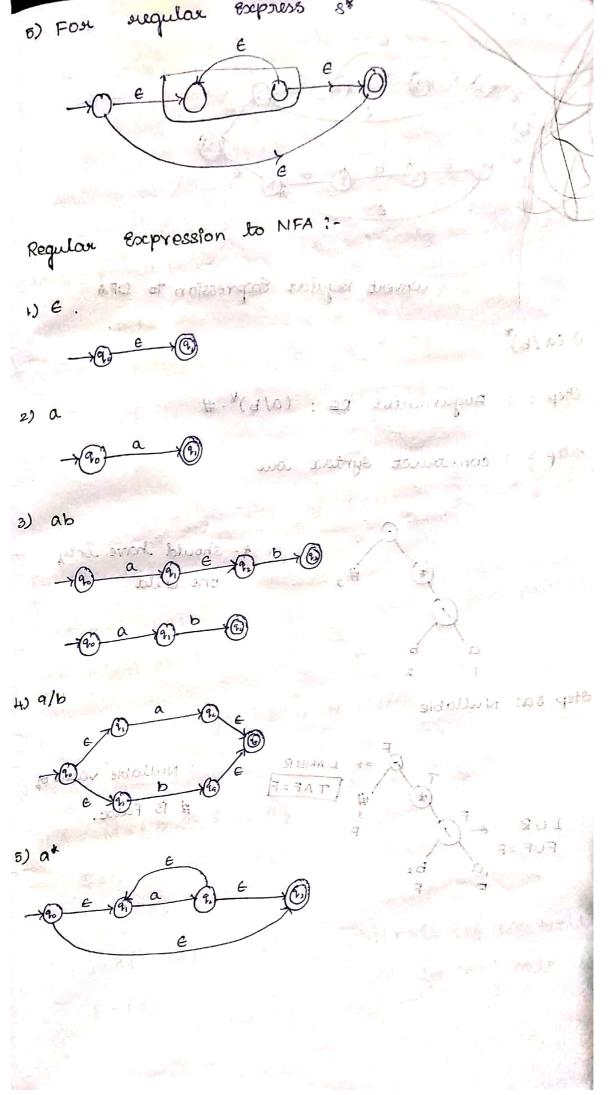
```
Regular Expression to DFA 29/11/19
  Step 1: Argumented Regular Expression.
  Step 2: construct syntax true.
   Step 3: Fixed rulable, last pse, first post
  Step 4: Fixed followpos.
  Sleps; convert DFA.
Fixed nullable
     Node constant
                               Nullable
                                Houself ("15 m)
       G
        a
                                   T
                                 N(C) or N(R)
                               cocis-type (pr).
                                 N(c) and N(R)
                                             Lastpos
  Node
                        Firstpos (s) [1] (D) Dinos (1) pos (c)
                      Firstpos (E) ( SA. ) +1 pos(E) c
                                               L pos(R)
                      Fishtpos (R)
                                         cless (ptr);
                                           ifrie) is true
                   N(L) is bue
                                           LPOSILIU LPOSIR)
                firstpos (1) u firstpos(R)
                                            else
                 else
                                              LPOS(R)
                    firstpos(L)
                                                ф
Leaf label
with ±
                                                Posti)
                      Posti)
                                            Scanned by CamScanner
```

1) (9/6)\* step1: Augumented Regular Papulation: (a/b) = (a/by . 11/ Step 2: construct syntax true. steps: (1)a (1) fey bfey follow position: -Node 3 construct the DFA:-DFA = [16, A. E. 90, FJ. 0-790, 7,0 (9, 64) 90 - [12, 33 F->[3]

S ( (90), b ) = { (1,2,3), b} 81900,000 (11,2,0), 63 follow pos (1) = {1,2,33. construct of A former (a/b) abb. Regular Expression to Transition diagram. Using Thompson's Construction Rules: -1) Fox 6, construct NFA 2) For a 8) For regular tapression N(8) Start 4). For regular Expression 8t



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Transition function (8): 3 { [9], a] = { [1,2,3], a} = {11,a} v (2,a) v (3,a) = (1, a)るところのちょとこい、2、3月、6分 = (1,6)、12,6)、13,6)子 = (2,6) Follow thest (1) = {1,2,3} Transition table: Follow position (2) = [1,2,3] \* q {1,2,3} {1,2,3} 2). (a/b) . abb. step 1: Augumented Regular Expression: (a/b).abb.# step 2: construct syrtax bueard nullable: restriction at this fellows that territion bonfido quanta lariare SFA . W. [0,2,8,90.7 0 P= D (d.e) = [ short gut the short refer exposed a fersing of

. short room all list

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[8] = 7

(11,2,3) F
- 3). {11,21,3} (15) {13 # {16}
co established (9/F) all FV (all andless =
{1,2,3} (43 (5)b(5)
{1,2,34, (33 643 4 43)
{11,23 } {333} F
{1,2} [1,2] (dele e de le le le le le le le le
The following the state of the
(1) a (1) (1) b(1)  4) Find follow position:
4) Find follow position jollow position
Node
1 1 2 . 33
1 [1,2,33] (0.5,01] 8 2 (0.54.8.2.17) = (0.5,01] 8
in totallature a. e. ) wallof u (p. 1) wallof.
4
5 (e) wait u i, (6) allet
6; 4, E, S, 1) = { A} v (E, C, 1) =
(3. E. P. 1. 10)
5) construct DFA:
DFA, M= (0, 5, 8, 90, F3  DFA, M= (0, 5, 8, 90, F3  Ocal Education of Consistion (distable cita) =
13:-/:/ 27
2-7 (4,0)
$q_0 \rightarrow \{1, 2, 3\}$ $q_1 = \{1, 2, 3, 5, 3-2\}$
F= {63
* 93 {1,2,3,43 {1,2,3}

```
Ca, [E, a, 1] . (a, E, P) 3
            = follow (1,a) u follow (0,a) v follow (2,a)
             (8) wollow u h u mallof =
            * {1,2,3} U {4}
            - {1,2,8,43
S( 1707, b) = ( 1, 1, 3, 37, b)
              = follow(1, b) u follow(2,b) u follow (3,b)
            م ر ده در مامامه به و د
                                          Mode
             = {1,2,33
 8([9,],a) = ([1,2,3,4],a)
               = follow (1,a) v follow (2,a) v follow (3,a)
                                    ufollow (4,a)
              = follow (1,) v follow (3)
              = {1,2,33 0 {43 = {1,2,3,43
 8([9,7,6)=([1,2,3,47,6)
              = follow (1,6) v follow (2,6) v follow (3,6) v
                                            dollow (4, b)
     = follow (2) or follow (4)
    = र्गार्थ। विक्रिया रिक्षे
   £15,211 = {112,3,53!
   £1,2,3,43 £4,8,33
```

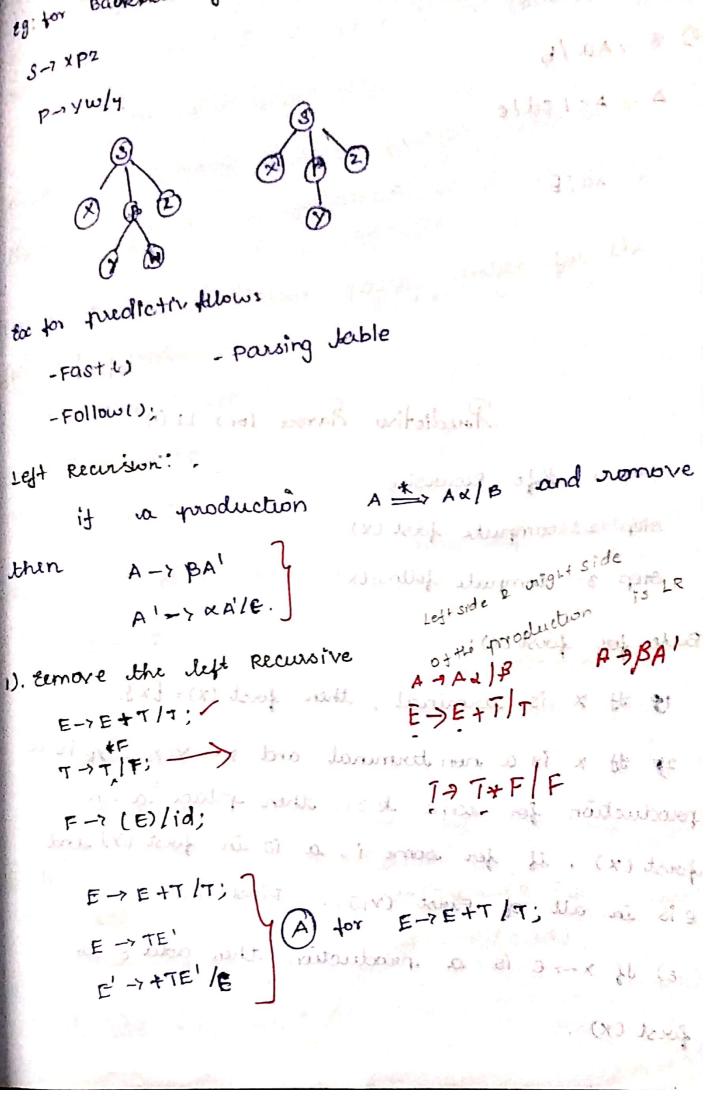
```
s((0,1, a) = ([1, 2, 3, 5], a)
            e follow (1, a) v follow (2, a) v follow (2, a) v followisa)
            = follow(1) v follow(3)
                               widoklam kno mot
            = {1,2,3,43
3([9,], b) = ([1,2,3,5], b)
             (de mailet a (d, s) wallet a (d, s) wallot a (d, l) wallot
             - follow(2) u fallow(5)
             - {1,2,3,63
8([93],a) = ([1,2,3,6],a)
               = follow (1,0) v follow (2,0) v follow(3,0) v
                                    follow(6,a)
              = follow(1) U follow(3)
               = {1,2,3,43
8([9,5], 6) = [[1,2,3,6],6]
              = follow (1, b) u follow (2, b) u follow(3, b) u follow(6,6)
                                      in fired follow position:
              - follow(2) U follow(B)
                                                 shou
              = {1,2,33.
                                    6
                                    0-
                             a
```

(n. La & r. 1 ]] - 3/12/19 (1) Construct NFA for Regular Expression: at b.0. Thomson's construction method: by using خواندود ۱۱) و جو تلمروا (١) Atep 1: Journal Po Cathonally o Jellerer (815) Step 2: fellowers = Step 3: For the regular Expression (9/6) abb find the DFA! using subset construction method. 11 1 Step 1: Construct e-NFA: E-closure (90) = [ 90, 91, 92,

```
e-closure (a) = [ a, ax, and ] - (n, 9)
     E-closure (20) = [ 92]
      e-closure (93)=[93,96,97,01,91,94]
        e-closure (94) = [94]
        E- Closure (95) = [95, 96, 97, 91, 92, 99].
         G-closure (96) = [96, 97, 91, 92, 94]
           E-closure (97) = [97]
                                                                      after a state of the contract 
            €-closure (98) = [98]
             €- closure (99) . € [9970M] eu al - 3 - (d. d.) eu al -
 l'a l'el closure [910] = [910] el sellato à
E-closure (A,a) = E-closure (Move (90,91, 92, 94,97),a)
            = E-closure ( (90, a) U (91, a) U (92, a) U (94, a)
                                                                                                                       u (a,,a))
                        = 4- closur ( $ 0 $ 0 $ 0 $ 0 $ 0 98)
            consume ( ors , ors ) : ( or ) inneads ;
                         6- closure (93) U E. closure (98)
                          [ (D. 18)0 = [az. ab, a1, a1, a2, a4] U [ 98]
                                                  = [ a1, a2, a3, a4, a6, a1, a8] -(B)
              (B) - (P. 18. 8, 140. 80. el. 18) -
  E- closure (A, b) = E- closure (Move (90,91,92,94,97), b)
                      Lat of is Pict in Every Develo ) = (J. 5) Housely 9
                                               = E-closure ( (90,b) U (9,1b) U (92,b) U
   (3 + 10 (d, p) (0 (d, p) (d, p) (94, b) (91, b))
                                       = E- Closure ( $ 0 $ 0 $ 0 $ 0 $)
                                                = e - closure t 95)
                             = [a1, a2, a4, a5, a6, a7] - (c)
                                                                                                                           Scanned by CamScanner
```

```
e-closeur (B,a) = 6-closure (Move (90,90,90,91,91,92,94),9)
                = 6-closure ( (03, a) U(96, a) U(97, a) U (97, a)
                              ea) e(e) mode
                  U(9,1,0) U(9,0) U(9,1,0))
                            Late of the Jacobala . &
           = E-closure ( of u of u 98 u of u 98 u of)
                 = E-closure ( 98) U E-closure(93)
                  = [ a1, a2, as, a4, a6, a7, a8] =>B
                            left (op) woods is
    €- closur (B,b) = €- closur (Move ($91, 92,93,94,96,97),b)
                  = E-closure (9,,6) D(92,6) U(93,6)U(94,6)U
           (90, b) U(96, b)U (91, b))
                = (9,, 92, 9A, 90, 96, 97, 99), -> D
    €- closure ( c, a) = €- closure (Move ( 9,192,94,95,96,97), a)
                  = E - closurec(a,,a) U (2,a) U (24,a) U (25,a)
            U(96, a) O(91, a))
          = E-closure ( 93 U 98)
                   = (91, 92, 98, 94, 96, 97, 98) - (B)
   u(d. 10) ald m) was
                  = E-closure ((a,,b) u(92,b) u(94,b)u(90,b)
            (40,000,000,000,000,000)
                   = 6-closure (95)
     = (91, 92, 9A, 90, 96, 97) -(c)
```

```
( closure ( D, a) = 6- closure (move (9, 92, 94, 98, 96, 94, 94), a)
                · 6- closuse (19,, a) U(9,, a) U(9,, a) U(95,a) U
                               (96,0) ((97,0) ((99,0))
                 - 6-closeu ( 93 v 98)
                 = (0,1,0,,00,04,06,07,08) - (B)
6-closure (D,b) = 6-closure (move (9, 9, 9, 9, 9, 96, 9, 9, 94),b)
                 = 6-closure (191, b) U(92, b) U (94, b) U(95, b)
                    U(96, b) U(97, b) U(99, b))
                 = E-closur ( 95 U910)
                  = (a1, 9, 94, 95, 96, 97, 910) - (E)
E-closure( E,a) = E-closure(move ( 91, 92, 94, 95, 96, 97, 910),a)
                  = E-closure ( (9,, a) v (92, a) v (94, a) v (95,a)
                      U(96, a) U(97, a) U(910, a))
             = E - closure ( 936 98)
                  = (a1, a2, a3, a4, a6, a7, a8) - (B).
6- Closure (E, b) = E- Closure (move (91, 92, 94, 95, 96, 97, 910), b)
                 = E - closure (19,16) u(9,16) u(9,1,6) u(9,5,6) u
                                FERENDO 6(40, P) 0 (41, P) 0 (410, P))
                  = E- closure (95)
                  = (91, 92, 94, 95, 96, 97) -(c)
                                     - chi a apticular de
                                   6 may start was
```



construct a predictive parser table for the following production of CT LUNDHOR + = (IT I COUNTY

E-7 E+T /T = (1)

T->TXF/F1-(2)

F-7 CE)/id - (2)

(2) have left recursion. step 1: production (1) and E( . b . r e \* } =

E-> TE'

ELY TIEL / E

T->FT

T'->\*F'/E

F-7 (E)/id

Firstler - Lefister, }

EC. \$ , A]

Firster) まもたいいり(F)}

Eirstie DEC. ig 3.

3tep 2:

First (E) = { C, iol }

Figust (E') = {+, e}

First (T) = { E, id }

Figust CT') = 18 , E3

5-1 601 applable 104 / 004 / d

First (F) = {c, id}

Front (s) = { a, b c. d. }

```
steps:
    Follow (E') = { $ , ) } => [ Follow (E) = ) = First () 
= ). ]

Follow (E') = { Follow (E) } [E' have no follow 80 
Follow (E') = follow (E') = follow (E')
    (3) continue (4) sucre e La la species.
   Follow (7) = P Follows Chethy barry a 21 with the co
     & soundings (SV
                = { Follow (E)
                             graduction A-rabb where
 Follow (T) = { +, Follow(E)} { (a) wallet (E') + First (E')
    the rep elit; 4 rogsport renderburg to 1+, E'f underson
                                         raturdo Follow (E)
 Follow(T) = { Follow(T)}
                                     [7' has no follow so
                                       Follow (T) = Follow (T)
              = {4,$,)}
                                 [ T-> FT => FIF8+(TT)
Follow (F) = { *, Follow (T)}
                                 DOWN (1) May Bull 1 99 Re
              ={*, +, $, } }
                                               Follow(T)
```

2) 3->Bb/Cd B->ab/e C->cc/€

S-7 Bb/aBb/ b/cd/cCd/d

Step 1: No left recursion.

step 2:

First (3) = { a, b, c, d }

(bi.o) - (7) racia

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( 51,3) = ( 1)

3 16/12/19.

. of (1) and a First (B) = { a, e} V - 676 174-1 First (c) = { 6, 6 } mole contraction of any of the state of the 8tep 3 . 10 1-1 10 eve 1 1-1 1110000 Follow (8) = 1 & 9 A (1) 1-2 -1025-1 Follow (B) = { b} 11-201/6 Follow (1) = {d} : e 9515 {a,5} = (a) tabel 7 4) S-> ACB/ CbB/ Ba A->da/BC B-> 8/E C->h/E [D. 0] = (1) +2xi? S-7 ACB/ACG /AC/Cb/CbB/b/hb/ga/Ba/a/AhB/AB Step1: No left recursion. A-rda/Bc/gc/c/B-rg/E c-rh/E. 8 93/8 Bh/B step 2: Fellow (2) = (1) , ) } First (3) = { d, a, b, h, a} Follow(1)= [ ) } First (A) = { d, 9} Followo(1:): 1 3 5 First (B) = { 9, 6} 5) S-> QABP Fishst (C) = {h, E} BIDGA Step 3: 8-7d. 16 Follow (3) = (8) das / alb / alb / dess / das / es Follow(A) = {h, 9, e} A-2018 Follow (B) = { a, \$, h, E} 8-70/6 Follow (c) = {\$, b, h, g, e}. (io) course that of :1 qoto

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200	195	
1)	Pause	bree
''	. 55 550	

1	teres (Messel)	id	4	*	С	)	£ 30
	E	E-TE		AAA	E-ALE,	SAF	1
	E'		E'->+TE		1	E'-> €	E¦→6
	+	T->FT'			1-> FT,		
	۲'		て'->6	7-78F/6		7-76	
	F	F -, id			F-)(E)		

	input	Action
stack	id+id * id B	
\$E	id+id * id \$	
\$E'T	iol + iid * iol \$	
\$E'T'F	id + id * id \$	Pop
\$ET'id		
\$5'7'	+iol* id\$	
\$5	tid * id \$	рор
\$5 ++	id * id \$	
\$E'T	id * id \$	
\$ E'T'F	id # id \$	
\$ET'id	* Pol * .	. Earn
\$5'7'	* 101 \$	рор
\$E'T'F*	<b>₽</b> 708	
\$BT'F	id \$	Pop
\$ E'T' id	\$	
9 E,	b.	
<b>.</b>	3 - A - B - 3 - 8	

Ft) walker

30 well 1