21 18/3/24 derign a PDA 22 18/3/m derign a PDA 23 18/3/24 convert grammar to PDA 24 18/3/24 derign à Turing machine 25 18/3/m derigo a Turing marhine

Day - 4 18/3/24. Experiment - 21 21) Design a PDA for L= 80°, 20 In 213. Aim: To design a PDA for given larguage. Procedure: Seven types for PDA is P = (Q, E, I, 8,90,76, f $Q = \{q0, 91, 92, 933, \Sigma = \{0, 13, 98 = 90, F = 93.$ 2) Logical Steps: i) push all Zeroes into the stack ii) For alternate 1's pop a Zero from the start iii) When we finish reading the input if we reach the bottom of stack, the input is accepted 3) To implement this in Autemation simulator, 4) Get- states often graning the s/w 5) que transitions as shows in diagram. 6) Give i/P string & sheek whether it goes to distination or not. 7) 92 it goes to destination that string is aciente d 8) Otherwise rejected.

Diagram 60 23 Devigor a 1904 der 1-86 (2) 110/2. (92) E,20/20 where S is defined as 8 (90,0,20) = 8 (98,020) 8 (90,0,0) = 8 (90,00) 8 (90,1,0) = 8 (91,0) 8 (91,1,0) = 8 (92, 2)

 $g(q_2, 1, 0) = \delta(q_2, 0)$ $S(q_2, \xi, 20) = S(q_3, 20)$

45 it goes to checken that

Result: Thus the PDA for given language is designed successfully

27) Design a PDA for L-Eo, 1 1 n2 13. Aim: 70 design a PDA for guien language Procedue: 1) Seven tuples for PDA is P=69, 2, 1, 8, 90, 20, 1) Q= fq0,91,923 Z= {0,13,90=90, f=92 2) Logical steps: i) Push all serves in to the stack ii) On reading I if there is o on the top of the stack, popo. iii) when we finish, reading the enjut, of the stack, the input is accepted. 3) To emplement this in Automation simulation 4) Get states ofter graning the s/w 5) que transitions as shown in diagram 6) Give 1/12 string & cheek whether it goes to destination or not. 1) If it goes to destination that string is duepted oftherwise negetiled.

Diagram re 100 (25) 110/E 915 120, (22) where S is defined as 8 (90,0,20) - 8 (90,020) 8(90,0,0) = S(90,00)8(90,1,0)=8(91,2) 8 (91),1 110)= 8 (91, 8) $\delta(q_{1}, \xi, \chi_{0}) = \delta(q_{2}, \chi_{0}).$ Rendt: Thus, the PDA for given is disigned nevertily.

Convert given grammas to DDA S-> 05,1A A > IAOIST

Ain: To convert given grammas to 791.

Procedure:

- 1) Eliminate unit production, S-) OSI/150/E
- 2) Convert CFG to GNF
- 3) Introduce productions

X -> 0.

4) Rewrite the gramma STOSX ISY /E 4-> 0

5) The PDA (an be)

RI: 8(q, E, S) = & (q, 05 x) (q, 15y) (q, e).

R2:8(9,E,X)={(9,1)}.

 $R_3.8(9,\epsilon,y)=2(9,8)3.$

Ry. 8(9,0,0) = {(9,0)}

R5: 8 (9,1,1) = { (9, €) }

6) To implement this in Automation simulator 1) get stales after grening the s/w 8) que transitions & quie input q then check output. Thus, the given gramma is conterted to PDA swenfully.

24) Derign a Im for language L-800,0/n213

> Aim: To design a turing machine for guen language.

Procedure:

- 1) Senen typles for Tm = (Q, Z, T, Qo, f, B) logical steps:
- 2) Change o to x & move right
- 3) skyp o's & Y's & more right
- 4) change I to Y & more left.
- 5) skip y's & o's & move left.
- b) of there is a, then more to step 3
- 7) otherwise if there is y, skip all y's Ef then if there is & accept the input
- 8) To implement this in sho
- a) Get states & ilp after grening the sh
- 1) give framition anording to diagram
- 11) Give Paput & Check ofp.

Diagnami

Qo olx-r. QB-1/2- 200 --
Yly-r. QB-1/2- 200

Yly-r. QB

Transition table:

states	0	1	X	1 abys	B.
20	91,x,R	alore y		93, Y,R	e) thu
21	91,0,R	92,4,2	2	9, Y, R	yell (
22	92,0,1.	ince	20,X,R	92 Y, L	1 34
23	e Tidage	-	3 60	93, Y, K	24,B,R
94	The	em i	-9	1 s - solo	41 41

Result: Thus, the tuing markine for given language is designed curenfully.

Experiment-25 Design a tuning machine for the language $L = \{0^{n}, n \geq 1^{n} \geq 1^{n} \geq 1^{n} \}$ Ain To design a turing marhene for guer language. Procedure:) seven tuples for 7M = (P, E, 7, 90, f, B, s, Q= \$90,91,92,93,94,953, £= \$0,1,23 90=90, 13 logical steps: 2) Change o to X & more right. 3) skip 05 & Vis & more right. 4) change I to y & move right 5) Skip is & 2's more right. 6) change 2 to 2 & move left. 7) skip 2's 1's y's 0's & move left. 8) when you nead x move right 9) 4) there is 0, go to step 1. (0) Otherine if there is 4, skip all y's Ey of there is z, deip all 2's. 11) If there is B, cuent the string.

1/4 dR dodR 4/4 D. L. 2/2ラド

states	0	1	12	×	17	2	B,
-	9, Y, R	_	1-	-	94,4,8		
90.		92,4,	R -	-	21,y,R	-	-
9,	9,,0,8	V-1/1	1000	A ./	92,7,7		-
92.	92,0R,	-	93,2,1	10,7,1			
1.		23,1,1	-	-	93,4,6,	93,2,1	^
93	93,0,2				94, Y, R	44,2,8	25.B.R.
94			-	-	-	. 1	
95		-	-	-	-	-	-

Result Thus the tuning machine for given language is designed somewholly