

Ex 3: Construct PDA Acceptance by Final state.

$$L = \{ w c w^r \mid w \in (a, b)^* \}$$

Sol) $L = \{ c, aca, bcb, abcba, abbcbba, \dots \}$

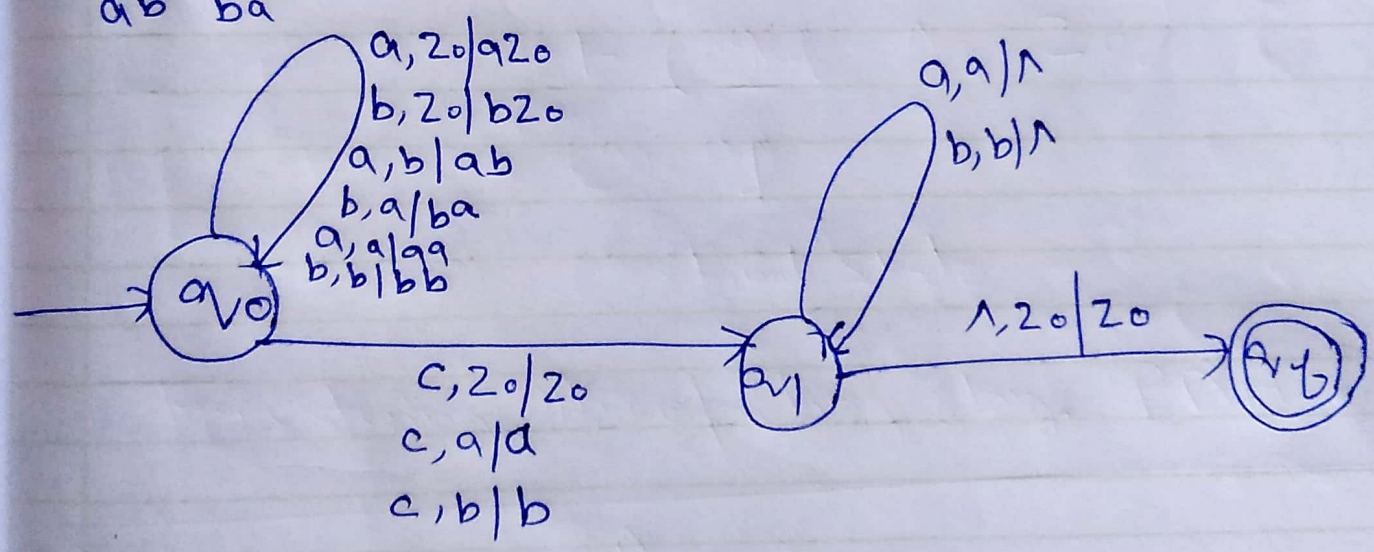
r = Reverse String

$$w = ab \Rightarrow w^r = ba$$

$$w = baba \Rightarrow w^r = abab$$

$$w c w^r = \underline{ab} \underline{c} \underline{ba}$$

$\downarrow \quad \downarrow$
 $ab \quad ba$



$$w = abcba$$

$$\begin{aligned} \delta(q_0, abcba, z_0) &\vdash (q_0, bcba, az_0) \\ &\vdash (q_0, cba, baz_0) \\ &\vdash (q_1, ba, bazz_0) \end{aligned}$$

$$\vdash (q_1, a, q_2)$$

$$\vdash (q_1, \lambda, q_2)$$

$$\vdash (q_1, \lambda, q_2)$$

Final State

Ans

Ex

Construct PDA for

$$L = \{ ww^r \mid w \in (a,b)^+ \}$$

Soln: $L = \{ aa, bb, abba, abab baba, \dots \}$

$$w = a \Rightarrow w^r = a \Rightarrow ww^r = aa$$

$$w = ab \Rightarrow w^r = ba \Rightarrow ww^r = abba$$

* In this language string length is EVEN

Let:

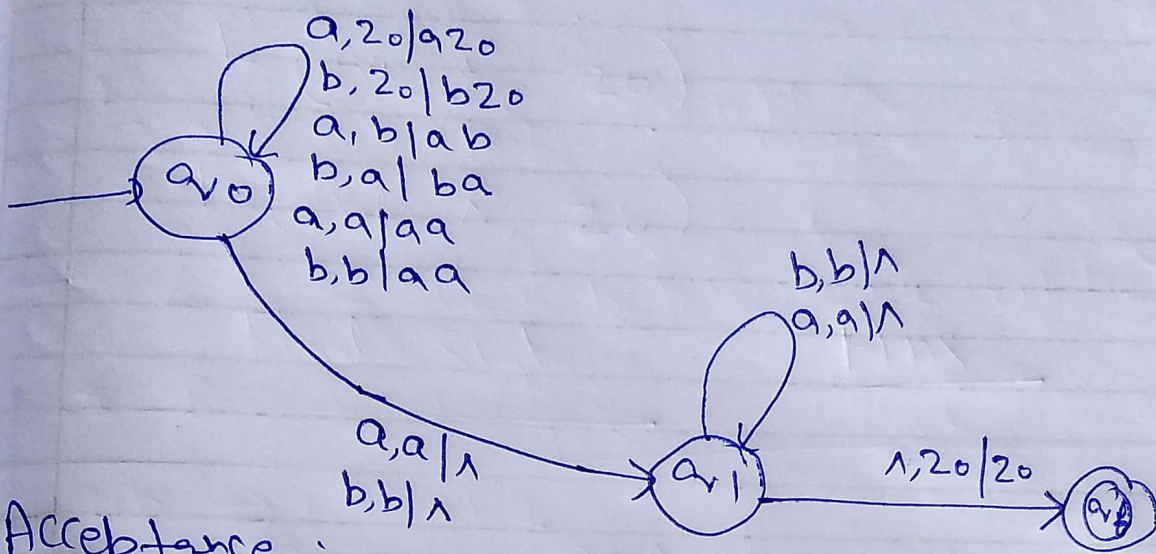
String-1 $abab \boxed{b} ab a$

String-2 $ba b \boxed{a} ab a b$

↓
make decision Here

$w = \underline{a} \underline{b} \underline{a} \underline{b} \underline{a} \underline{b} \underline{a}$

(14)



Acceptance :

$(q_0, abab \cancel{b} aba, 20) \vdash (q_0, babb \cancel{a} ba, a20)$

$\vdash (q_0, abbaba, ba20)$

$\vdash (q_0, bbaba, aba20)$

$\vdash (q_0, baba, babaz0)$

$\vdash (q_1, aba, aba20)$

$\vdash (q_1, ba, ba20)$

$\vdash (q_1, a, a20)$

$\vdash (q_1, \wedge, 20)$

$\vdash (q_2, \wedge, 20)$

It is Accepting by final State.

Any