

A Pushdown automata (PDA) works similar as DFA.

A DFA can remember a finite amount of information, but a PDA can remember an infinite amount of information.

A PDA can be formally described as a 7-tuple  $(Q, \Sigma, S, \delta, q_0, I, F)$  –

1.  $Q$ : Finite number of states
2.  $\Sigma$ : Input alphabet
3.  $S$ : Stack
4.  $\delta$ : Transition function:  $Q \times (\Sigma \cup \{\epsilon\}) \times S \times Q \times S^*$
5.  $q_0$ : Initial state ( $q_0 \in Q$ )
6.  $I$ : Initial stack top symbol ( $I \in S$ )
7.  $F$ : Final state

$PDA = FSM + Stack$

Where, FSM for finite state machine.

Components of PDA are,

1. Input tape
2. Control unit
3. Stack

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