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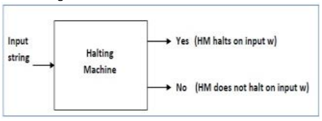

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- **Explain the various applications of regular expressions.**
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DFA: M=(Q, Σ, δ,q0,F) δ: Q X Σ → Q
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Pushdown Automata(PDA)
- Pushdown automata is a way to implement a CFG in the same way we design DFA for a regular grammar. A DFA can remember a finite amount of information, but a PDA can remember an infinite amount of information.
- Pushdown automata is simply an NFA augmented with an "external stack memory". The addition of stack is used to provide a last-in-first-out memory management capability to Pushdown automata. Pushdown automata can store an unbounded amount of information on the stack. It can access a limited amount of information on the stack. A PDA can push an element onto the top of the stack and pop off an element from the top of the stack. To read an element into the stack, the top elements must be popped off and are lost.
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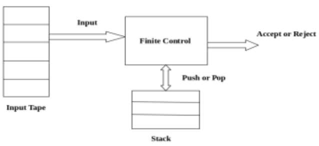

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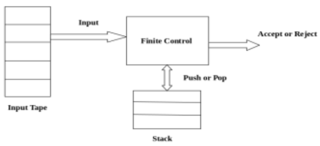

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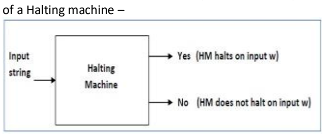

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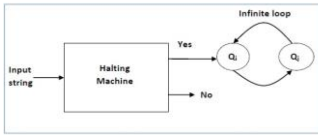

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An instantaneous description is a triple (q, w, α) where:
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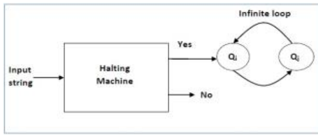

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