Report on ITM

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Year/Semester: III-I
Course: ATLC

Adopted Teaching Methodology: Interactive Learning

Date: 03-01-2022

Topic: **Pushdown Automata** (ATLC).

Description:

Interactive learning is learning that requires student participation. This participation will come through class and small group discussions as well as through exploration of the interactive learning materials. Conduction and convection topic was discussed for interactive learning.Push Down Automata **(AT)** and the session was guided by

Dr. K. Nagi Reddy .

The outcome of the method is to learn the **Pushdown Automata** involves various techniques such as enumeration, recursion, state tables, state diagrams, and high-level language programming. The choice of technique depends on the complexity of the problem and the expertise of the programmer.

- o 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.

- o 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.

- o A PDA is more powerful than FA. Any language which can be acceptable by FA can also be acceptable by PDA. PDA also accepts a class of language which even cannot be accepted by FA. Thus PDA is much more superior to FA.
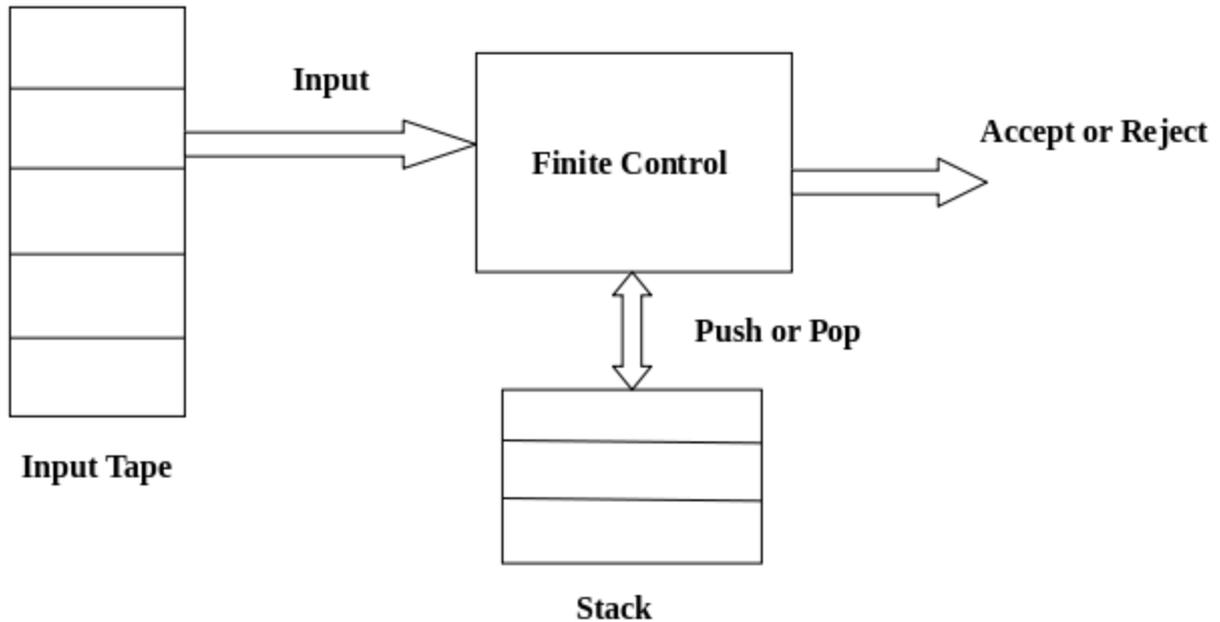
Fig: Pushdown Automata

PDA Components:

Input tape: The input tape is divided in many cells or symbols. The input head is read-only and may only move from left to right, one symbol at a time.

Finite control: The finite control has some pointer which points the current symbol which is to be read.

Stack: The stack is a structure in which we can push and remove the items from one end only. It has an infinite size. In PDA, the stack is used to store the items temporarily.