

Flip Class Activity Report

ACTIVITY REPORT	
Academic Year	2023-24
Activity Title	Flip class
Course	CST301 Formal Languages and Automata Theory
Brief Description	The activity has been done to analyse the self learning capability of students
Intended students	Semester 5 CSE students
Prepared by	Ms. Jomy George
Date	4-12-2023


The following topics were given for preparation:

- Automata Simulator
- Automata Tutor
How this is used to simulate NFA, DFA, PDA, Chomsky Normal Form

Classroom Assessment Methodology (TLP) followed:

During the class students were asked to submit a presentation on the topic shared. There were total 54 students participated in this Activity. The flip class was conducted to check the knowledge, analysis and self-learning capability of the students to solve the problem given

1. Explain a formal representation of a given regular language as a finite state automaton, regular grammar, regular expression and Myhill-Nerode relation. [Cognitive knowledge level: Understand].
2. Design a Pushdown Automaton and a Context-Free Grammar for a given context-free language. [Cognitive knowledge level : Apply].

 *Forwarded*

FAFL automata simulator

Brief introduction to create an automata simulator in FAFL
www.youtube.com



<https://youtu.be/CWvxp96uKj4?si=2TOssfy99tTG5cMk>

12:50 pm ✓✓

 *Forwarded*

Automaton Simulator

Finite State Machine simulator for Deterministic Finite A...
automatonsimulator.com



<https://automatonsimulator.com/>

12:50 pm ✓✓

Automata Tutor 12:50 pm ✓✓

Go through the online tools do
NFA,DFA,CNF,PDA,Turing Machine on these

12:51 pm ✓✓

Automata Tutor v3

Solve Grammar to CNF (Comsky Normalform) problem

Problem

For the grammar G with the productions:

$S \rightarrow a S b \mid x \mid S S$

Give a CNF G' such that $L(G') = L(G) \setminus \{\epsilon\}$

(remember: CNF allows only productions with the form "X -> Y Z" or "X -> a")

HELP: Grammar Syntax

```
S->DE
S->x
S->SS
D->CS
E->b
C->a
```

Submit

Grade: 10/10

The screenshot shows the Automata Tutor v3 interface. At the top, there are navigation links for Home, Register, and Login. The main heading is "Solve PDA words problem". Below this, the description states: "Description: an bn. Fill the fields below with words that are/are not in the language the following PDA accepts:". A text input field contains the following details:

- Alphabet: {a, b}
- Stack alphabet (the first symbol is the initial one): {Z, A}
- Acceptance condition: empty stack
- Deterministic (DPDA): true

Below the text field is a state transition diagram for a Pushdown Automaton (PDA). It consists of two states, 0 and 1. State 0 is the start state, indicated by an incoming arrow from the left. State 1 is the final state, indicated by a double circle. The transitions are as follows:

- State 0 has a self-loop transition labeled "a A/AA" and "a Z/A".
- State 0 has a transition to state 1 labeled "b A/".
- State 1 has a self-loop transition labeled "b A/".

The Windows taskbar at the bottom shows the system time as 11:46 on 02-12-2023, with the language set to English (IN).

Automaton Simulator: DFA

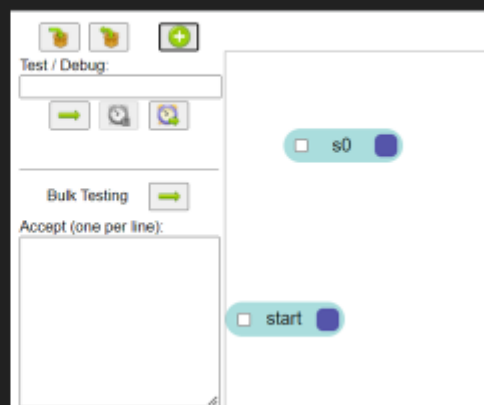
<https://automatonsimulator.com/>

UI



Adding States

Add new state by pressing the plus icon.



Adding Transitions



Conclusion

The students had a good discussion regarding the topics and attained PO1 ,PO5 and 12 for the given topic.