REGEX TO DFA VISUALIZER – REPORT

Project Title

Regex to DFA Visualizer using Python

Team Members

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Project Description

This project provides a fully interactive tool that converts a Regular Expression (Regex) into a deterministic finite automaton (DFA).
The system helps users understand the behavior of automata step-by-step by allowing them to convert, and test input strings directly on the generated DFA.
The input to the system is a valid regular expression, and upon conversion, the user can enter a string to check whether it is accepted or rejected by the resulting DFA.

Input Format

User enters a valid regular expression such as: aabb

Output Format

• Acceptance or rejection of a test input string

Inside Mechanism

The system performs the full theoretical process of constructing finite automata:
1. Converts a given Regex into postfix form using operator precedence.
2. Builds an NFA using Thompson's Construction algorithm.
3. Applies Subset Construction to convert the NFA to DFA.
4. Simulates input strings through the DFA and determines acceptance.

Programming Languages, Tools & Libraries

- Python
- Collections & Math Libraries

Screenshots & Output Samples