Lab Assignment 4: Regular Language Conversion

Objective: The objective of this lab assignment is to practice converting between different types of automata representing regular languages.

Instructions:

- Create a new file and name it "regular_language_conversion.c".
- Implement the following functions:
    - **`void convertNFAtoDFA(char nfa[])`**: This function should take a non-deterministic finite automaton (NFA) as input and convert it to an equivalent deterministic finite automaton (DFA). You can use any method you prefer for the conversion, such as the powerset construction algorithm.
    - **`void convertDFAtoRegex(char dfa[])`**: This function should take a deterministic finite automaton (DFA) as input and convert it to an equivalent regular expression. You can use any method you prefer for the conversion, such as the state elimination technique or the Arden's theorem approach.
- In the **`main()`** function, provide a menu-driven program to interact with the NFA to DFA and DFA to regular expression conversion functions. The menu should provide the following options:
    - Convert an NFA to a DFA
    - Convert a DFA to a regular expression
    - Exit the program
- Test your program with various NFAs, DFAs, and regular expressions to validate the correctness of the conversion operations.
- Document your code and include appropriate comments to explain the purpose of each function and significant sections of code.
- Submit your code along with a brief report summarizing your implementation, any challenges faced, and how you addressed them.