Experiment no - 03

Aim: Write a program to construct DFA using given regular expression.

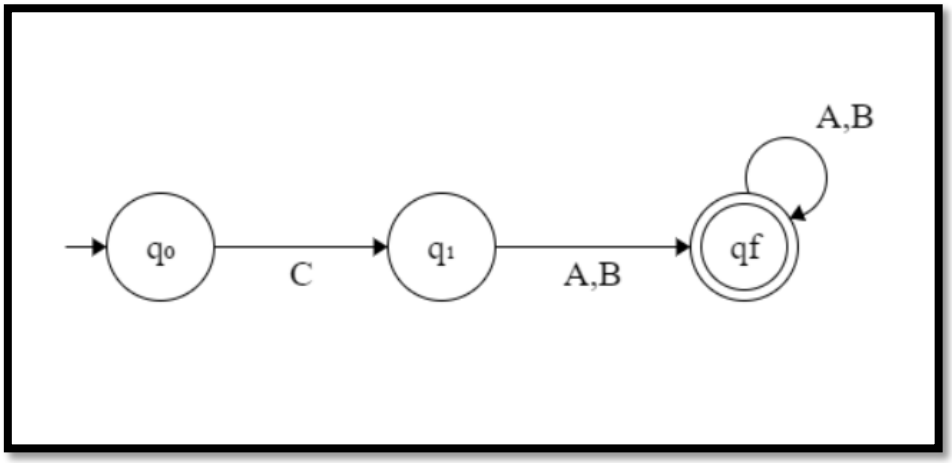
Description:

Given a string S, the task is to design a Deterministic Finite Automata (DFA) for accepting the language L = C (A + B)+. If the given string is accepted by DFA, then print "Yes". Otherwise, print "No".

Examples:

Input: S = "CABABABAB"
Output: Yes
Explanation: The given string is of the form C(A + B)+ as the first character is C and it is followed by A or B.

Input: S = "ACCBBCCA"
Output: No



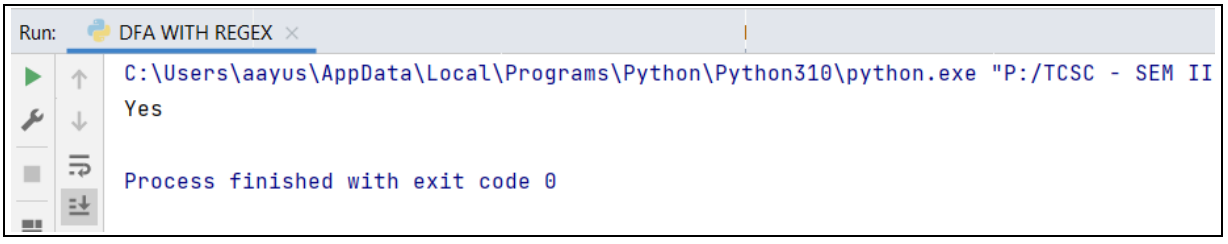
- If the given string is of length less than equal to 1, then print "No".
- If the first character is always C, then traverse the remaining string and check if any of the characters is A or B.
- If there exists any character other than A or B while traversing in the above step, then print "No".
- Otherwise, print "Yes".
- Below is the implementation of the above approach:

Program:

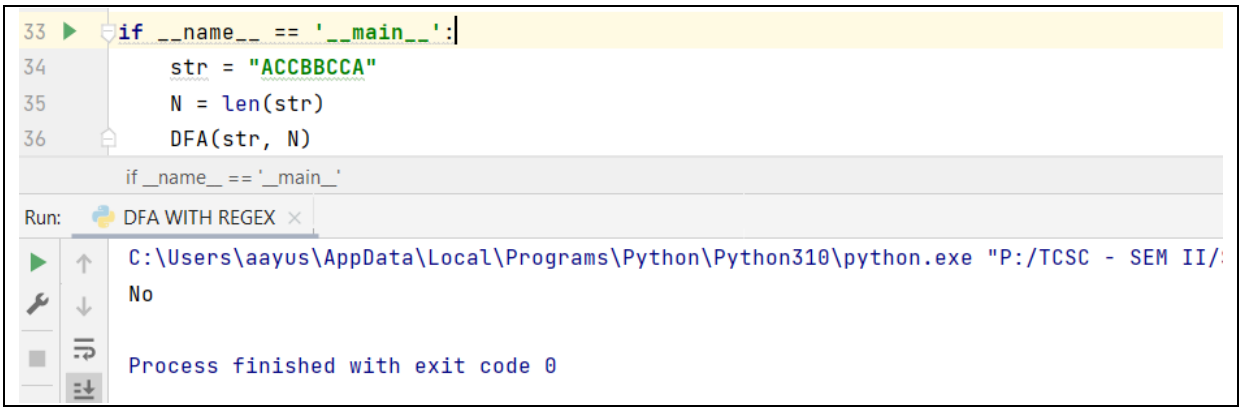
```
#Program to Construct DFA using REGEX
def DFA(str, N):
    # If n <= 1, then prNo
    if (N <= 1):
        print("No")
        return
    # To count the matched characters
    count = 0
    # Check if the first character is C
    if (str[0] == 'C'):
        count += 1
        # Traverse the rest of string
        for i in range(1, N):

            # If character is A or B,
            # increment count by 1
            if (str[i] == 'A' or str[i] == 'B'):
                count += 1
            else:
                break
    else:
        # If the first character
        # is not C, pr-1
        print("No")
        return
    # If all characters matches
    if (count == N):
        print("Yes")
    else:
        print("No")
# Driver Code
if __name__ == '__main__':
    str = "CAABBAAB"
    N = len(str)
    DFA(str, N)
```

OUTPUT:

Given String as : “CAABBAAB”



Given String as : "ACCBBCCA"



Conclusion : The given string is accepted by DFA as "CAABBAAB"