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#include <stdio.h>

#include <stdlib.h>

#include <stdbool.h>

int main() {
    char input1[] = "()";
    char input2[] = "()[]{}";
    char input3[] = "[]";
    char input4[] = "([])";
    char input5[] = "{}[]";
    char stack[100];

    int top = -1;

    int i;

    #define PUSH(c) stack[++top] = (c)
    #define POP() (top >= 0 ? stack[top--] : '\0')

    bool isValid = true;

    for (i = 0; input1[i] != '\0'; ++i) {
        if (input1[i] == '(' || input1[i] == '{' || input1[i] == '[') {
            PUSH(input1[i]);
        } else if (input1[i] == ')' || input1[i] == '}' || input1[i] == ']') {
            char topElement = POP();

            if ((input1[i] == ')' && topElement != '(') ||
                (input1[i] == '}' && topElement != '{') ||
                (input1[i] == ']' && topElement != '['))
            {
                isValid = false; // Mismatched brackets

                break;
            }
        }
    }

    isValid = isValid && (top == -1);

    printf("Output 1: %s\n", isValid ? "true" : "false");
}

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return 0;
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}
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