ASSIGNMENT-5

```cpp
/*Name: Sahil Badve PRN: B24CE1114 Div: S.Y.B-Tech 2 Batch C*/
#include <iostream>
#include <string>
using namespace std;

class Stack {
private:
    char arr[50];
    int top;
public:
    Stack() { top = -1; }

    void push(char x) {
        if (top >= 49) {
            cout << "Stack overflow!" << endl;
        } else {
            arr[++top] = x;
        }
    }

    char pop() {
        if (isEmpty()) {
            return '\0';
        } else {
            return arr[top--];
        }
    }

    char peek() {
        if (isEmpty()) {
            return '\0';
        } else {
            return arr[top];
        }
    }

    bool isEmpty() {
        return (top == -1);
    }
};

bool isBalanced(string expr) {
```

```cpp
    Stack s;
    for (int i = 0; i < expr.length(); i++) {
        char ch = expr[i];
        if (ch == '(' || ch == '[' || ch == '{') {
            s.push(ch);
        }
        else if (ch == ')' || ch == ']' || ch == '}') {
            if (s.isEmpty()) return false;

            char top = s.pop();
            if ((ch == ')' && top != '(') ||
                (ch == ']' && top != '[') ||
                (ch == '}' && top != '{')) {
                return false;
            }
        }
    }

    return s.isEmpty();
}

int main() {
    string expression;
    cout << "Enter an expression: ";
    cin >> expression;

    if (isBalanced(expression)) {
        cout << "The expression is balanced." << endl;
    } else {
        cout << "The expression is NOT balanced." << endl;
    }

    return 0;
}
```

OUTPUT:-
Enter an expression: {[(A+B)*C]}
The expression is balanced.

Enter an expression: {[(A+B)*C}
The expression is NOT balanced.