Experiment No. 3

Aim: Stack application using Array.

WAP to check if an expression contains balanced brackets: `()`, `{}`, and `[]`.

Theory:

A stack is a linear data structure that follows the LIFO (Last In, First Out) principle. The last element inserted (pushed) is the first to be removed (popped). Stacks can be implemented using arrays or linked lists. The Valid Parentheses Checker is a classic application of the stack. It verifies whether the opening and closing brackets in an expression are balanced and properly nested**.**

Algorithm:

- Use a stack to store opening brackets.
- For each character**:**
  - If it's an opening bracket (`(`, `{`, `[`), push it to the stack.
  - If it's a closing bracket (`)`, `}`, `]`):
    - Check if the stack is not empty and top of the stack is the matching opening bracket**.**
    - If yes, pop the top.
    - Else, it's invalid**.**
- After processing the string:
  - If the stack is empty**,** it's valid.
  - If not, it's invalid.

Conclusion: (Students write conclusion in your own words. U have to describe what u you understood from the experiment and the concept of the experiment. **Conclusion carry 4 marks out of 10)**