COURSE: DATA STRUCTURES AND ALGORITHMS

LECTURER: ALBIN SHEMA

STACKS MID SEMESTER PREPARATIONS

1. Write a program that reads in a sequence of characters and prints them in reverse order.

2. Write a program that reads in a sequence of characters, and determines whether its parentheses, braces, and curly braces are "balanced." Hint: for left delimiters, push onto stack; for right delimiters, pop from stack and check whether popped element matches right delimiter.

   Test data:
   - Input: [(1+2)*(3-4}]
   - Output: An error was found

   - Input: {[(1+2)*4-1]
   - Output: An error was found

   - Input: (3*4)]^{3^4}
   - Output: An error was found

   - Input: (6/2)*{3^[4/(1+7)]}
   - Output: No errors were found

3. Find maximum in stack in O(1) without using additional stack

4. Delete all even elements from a stack

   Test data:
   - Input: s = 16 <- 15 <- 29 <- 24 <- 19 (TOP)
   - Output: 19 29 15

   - Input: s = 1 <- 2 <- 3 <- 4 <- 5 (TOP)
   - Output: 5 3 1

Bonus (For those who want a challenge)

5. Sort a stack using a temporary stack

   Test data:
   - Input: [34, 3, 31, 98, 92, 23]
   - Output: [3, 23, 31, 34, 92, 98]