ECE 220 Computer Systems & Programming

Lecture 7 – Programming with Stack

ECE ILLINOIS

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Balanced Parentheses Check Using a Stack

Examples of balanced parentheses:

(()()()())   ((((()))))   (()((())()))

Examples of unbalanced parentheses:

(((((())   ()))   (()()(()

Open parenthesis '(' – _____ to the Stack

Close parenthesis ')' – _____ from the stack

Assuming the expression would fit into the stack, unbalanced expression can be found under two situations:

1. While entering expression –
2. At the end of the expression –

Palindrome Check Using a Stack

A word, phrase, number or other sequence of characters which reads the same forward or backward.

- Madam
- Kayak
- Was it a car or a cat I saw
- 123456654321

How can we perform a palindrome check using a stack?

Postfix Expression (single digit operant in input)

Infix	Postfix
(3-4)+5	34-5+
(8+4)^2	
7+(9-6)/3	
	512+4*+3-

Note: '34-' is 3-4 not 4-3

Are these inputs valid postfix expression?
- 46*-
- 13+57

Arithmetic Using a Stack

- Implement an ADD subroutine that pops two numbers from a stack and perform the add operation. (draw your flowchart below)