

Name _____

CSC-477/677: Algorithm Analysis

Fall 2014

Homework #3

Due on: *October 9, 2014*

Q1. Use a stack algorithm to translate the infix expression $-xy+x(yz+xy)$ into postfix, i.e., reverse Polish notation. Show the output and the stack at each step. Add rows if necessary.

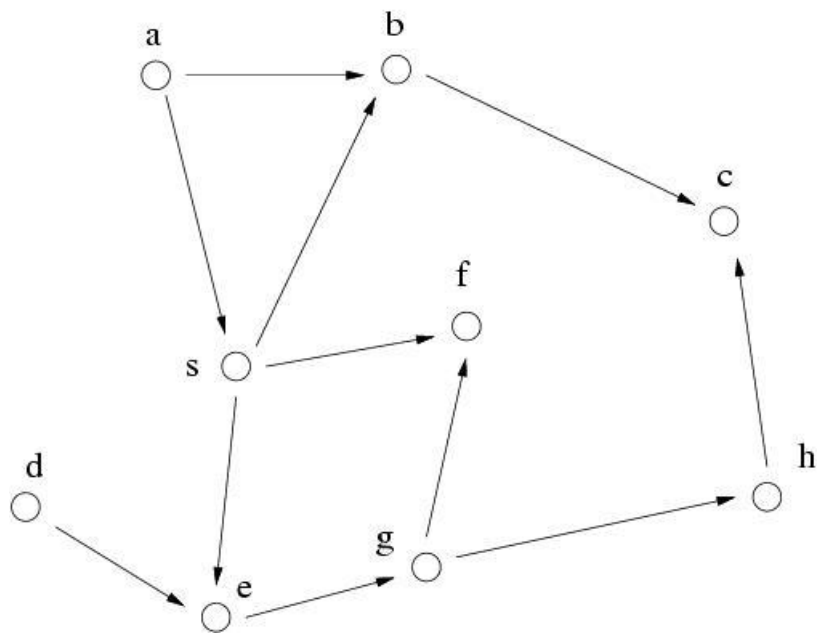
- All variables consist of a single letter.
- The only operations are addition, subtraction, negation, and multiplication.
- Multiplication has precedence over addition and subtraction.
- Negation and subtraction are both written as "-" in infix expressions.
- Multiplication is indicated by juxtaposition in infix expressions just as in high school algebra, i.e., xy is the product of x and y .
- Negation has precedence over multiplication, addition and subtraction.
- Addition and subtraction have equal precedence.
- If operators have equal precedence, the left-first rule applies.
- In your postfix expression, use "~" to denote negation, and "*" to denote multiplication.

For example, the postfix notation of the infix expression $-x+xy$ is $x \sim x \ y \ * \ +$.

[illegible]

Name _____

Q2. Consider the stack-based algorithm which visits all the vertices of the graph G shown below reachable from s in depth-first search order. Show the stack at each step.

[illegible]