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National University of Computer & Emerging Sciences
FAST-Karachi Campus
CS218- Data Structures (Fall 2019)
Quiz#2

Dated: October 31, 2019 Marks: 25
Time: 20 min. Std-ID: _____Sol_____

Question No. 1

Consider the following sequence of stack commands:

push(a), push(b), push(c), pop(), push(d), push(e), pop(), pop(), pop(), pop().

a. What is the order in which the elements are popped? (Give a list and indicate which was popped first.) [5]

c (popped first), e, d, b, a

b. Change the position of the pop() commands in the above sequence so that the items are popped in the following order: b,d,c,a,e. You are not allowed to change the ordering of the push commands. [5]

push(a), push(b), pop(), push(c), push(d), pop(), pop(), pop() push(e), pop()

Question No. 2

Suppose you have a stack in which the values 1 through 5 must be pushed on the stack in that order, but that an item on the stack can be popped at any time. Give a sequence of push and pop operations such that the values are popped in the following order:

(a) 1, 5, 4, 2, 3

(b) 1, 3, 5, 4, 2

It might not be possible in each case. [10]

(a) Push (1), Pop, Push (2), Push (3), Push (4), Push (5), Pop, Pop? <Not Possible>

Alternate solution- Assuming all 1 through 5 elements are already pushed on stack, we need to pop elements in the following order if possible by using pop and retain elements and follow the same order for push again except the retain element.

(b) Push (1), Pop, Push (2), Push (3), Pop, Push (4), Push (5), Pop, Pop, Pop

Question No. 3

Convert the following infix expression into equivalent postfix expression. Using the algorithm discussed in class as an application of stack. [5]

b-c*d+a/d + a-c*b

The output will be: b c d * - a d / + a + c b * -