Question :

Suppose that a client performs an intermixed sequence of (stack) push and pop operations. The push operations put the integers 0 through 9 in order onto the stack; the pop operations print out the return values. Which of the following sequence(s) could not occur?

Solution :

    (a) 4 3 2 1 0 9 8 7 6 5
       Possible
    (b) 4 6 8 7 5 3 2 9 0 1
       Not Possible, because 0 cannot be removed without popping 1.
    (c) 2 5 6 7 4 8 9 3 1 0
       Possible
    (d) 4 3 2 1 0 5 6 7 8 9
       Possible
    (e) 1 2 3 4 5 6 9 8 7 0
       Possible
    (f) 0 4 6 5 3 8 1 7 2 9
       Not Possible, because 1 cannot be popped without popping 2.
    (g) 1 4 7 9 8 6 5 3 0 2
       Not Possible, because 0 cannot be popped without popping 2.
    (h) 2 1 4 3 6 5 8 7 9 0
       Possible