

3) (10 pts) ALG (Stacks) Consider evaluating a postfix expression that only contained positive integer operands and the addition and subtraction operators. (Thus, there are no issues with order of operations!) Write a function that evaluates such an expression. To make this question easier, assume that your function takes an array of integers, `expr`, storing the expression and the length of that array, `len`. In the array of integers, all positive integers are operands while -1 represents an addition sign and -2 represents a subtraction sign. Assume that you have a stack at your disposal with the following function signatures. Furthermore, assume that the input expression is a valid postfix expression, so you don't have to ever check if you are attempting to pop an empty stack. Complete the evaluate function below.

```
void init(stack* s); // Initializes the stack pointed to by s.
void push(stack* s, int item); // Pushes item onto the stack pointed
                                // to by s.
int pop(stack* s); // Pops and returns the top value from the stack
                   // pointed to by s.

int eval(int* expr, int len) {

    stack s;
    init(&s);
    int i;

}
}
```

Computer Science Foundation Exam

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Section I B

DATA STRUCTURES

**NO books, notes, or calculators may be used,
and you must work entirely on your own.**

Name: _____

UCFID: _____

NID: _____

Question #	Max Pts	Category	Passing	Score
1	10	DSN	7	
2	5	ALG	3	
3	10	ALG	7	
TOTAL	25		17	

You must do all 3 problems in this section of the exam.

Problems will be graded based on the completeness of the solution steps and not graded based on the answer alone. Credit cannot be given unless all work is shown and is readable. Be complete, yet concise, and above all be neat. For each coding question, assume that all of the necessary includes (stdlib, stdio, math, string) for that particular question have been made.