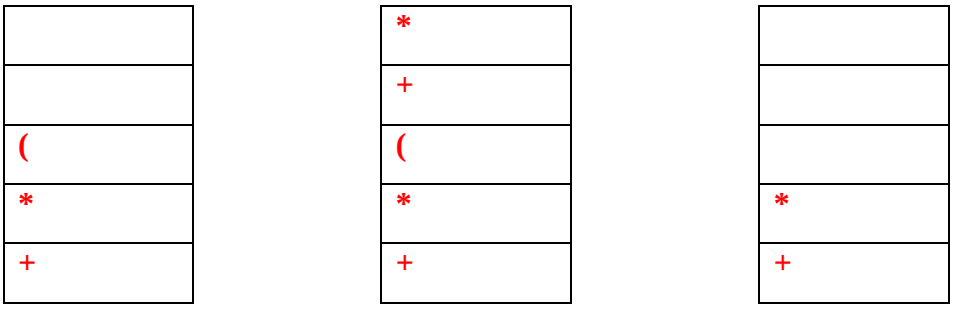
3) (10 pts) DSN (Stacks)

(a) (6 pts) Convert the following infix expression to postfix using a stack. Show the contents of the stack at the indicated points (1, 2, and 3) in the infix expression.

1 2 3

A + B * ((C / D) + E * F) * G



Resulting postfix expression:

A	B	C	D	/	E	F	*	+	*	G	*	+							

Grading: 1 point for each stack, 3 points for the whole expression (partial credit allowed.)

(b) (4 pts) Whenever a recursive function is called, the function calls go onto a call stack. The depth of the call stack is the number of different recursive calls on the stack at a particular point in time, which indicates the number of different recursive calls that have started, but have not completed. What is the maximum stack depth of the call stack when the function fib(10) is executed? Is this maximum stack depth equal to the number of times the recursive function, fib, is called? Assume the implementation of the Fibonacci function shown below:

```
int fib(int n) {
    if (n < 2) return n;
    return fib(n-1) + fib(n-2);
}
```

Maximum Stack Depth: **10 (Grading: 2 pts for 10 or 9, 1 pt to be within 3, 0 pts otherwise)**

Is Max Stack Depth equal to the # of recursive calls? YES **NO**
(Circle the correct answer.) **Grading: 2 pts correct, 0 otherwise**