Matt Muldowney
Homework 5 due 3/5

Written Problems

Problem 1

state of environment as program executes:

1. main { }
2. printf { ...args... }; main { }
3. sum { n-->2 }; printf { ...args... }; main { }
4. sum { n--> 1}; sum { n-->2 }; printf { ...args... }; main { }
5. sum { n-->0 }; sum { n-->1}; sum { n-->2 }; printf { ...args... }; main { }
6. 0-->sum { n--> 1}; sum { n-->2 }; printf { ...args... }; main { }
7. 0+1=1-->sum { n-->2 }; printf { ...args... }; main { }
8. 1+2=3-->printf { ...args... }; main { }

printf calls sum(2), putting a binding table on the stack. sum(2) then calls sum(1), putting another binding table on the stack. sum(1) then calls sum(0), putting another binding table on the stack. sum(0) is then popped off the stack, returning the value 0. sum(1) is then popped off the stack, returning the value 0+1=1. sum(2) is then popped off the stack, returning the value 1+2=3.

The max number of binding tables on the stack (including printf) is **5 binding tables**. The cost is **O(n)**.