Stacks

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stacks: push and pop
stack: last in, first out (lifo)

- only the thing on top of the stack is accessible
- push: add something on top of the stack
- pop: remove something from the top of the stack (and return it as the result of the pop operation)
"a stack" vs. "the stack"

- computer systems use lots of stacks
  - laser printers use stacks to process PostScript
  - compilers use stacks to convert C++ into a.out
  - stacks are used to process HTML code
- "a stack" means "any old stack"
- but when we say "the stack",
  we mean a specific one: the "run-time stack"
  - we use it to keep track of function calls
  - we use it to store local automatic variables
    (most variables we've seen so far are local automatic variables)
run-time stack

call a function: push
return from a function: pop

main

sumSquares

answer

n

squared

i

y


```
int factorial(int i) {
    if (i<=1) return 1;
    else return i * factorial(i – 1);
}

int main(void) {
    int x=4;
    cout << factorial(x);
    return 0;
}
```