From Java to C++
Java and C++ are very similar

Similar in:

- Syntax: Java used syntax similar to C++ to ease adoption
- Principles: Both are object-oriented languages
- Execution: Many similarities when run on a machine
  - Compiled down to similar assembly language

Different in goals:

- Java designed for: safety and portability
- C++ designed for: performance and control

As a result, C++ exposes aspects of execution that Java hides
Review: Stack and Heap

- Stack: automatic variables, local variables in functions
- Heap: all objects and arrays are on the heap

reclaimed when leave scope
Call by value

- When parameters are passed, we make a copy
  - For primitives, we copy the primitive
  - For objects, we copy the reference (pointer)

a) 0  b) 1

e) more coffee
Java Arrays are objects

- Allocated on the heap
C++ code doesn’t need to be in classes

- All programs need a “main” function

```cpp
int main() {
    return 0;
}
```

- Can write code directly in this main
Namespaces

- Allows different people to use the same names
  - Similar to Java in principle

- Uses “scope resolution” operator ::
Structure of C++ class

- **Two parts: a form of encapsulation**
  - header file (something.h) provides interface
  - body (something.cpp) provides implementation

- **Standard structure:**
  - “include guards” in header file