The C Programming Language **Chapter 2**

(material from Dr. Michael Lewis, William & Mary Computer Science)

Overview

- Functions
- Call by Value vs. Call by Reference
- Function Prototypes
- Returning Multiple Values
- The void Type
- Implicit Returns

Functions

similar to those in Python

return n * n; }

delimited with { } instead of indentation

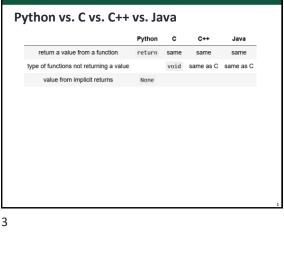
needs a return type and types of parameters

int square(int n) /* Our first function. */

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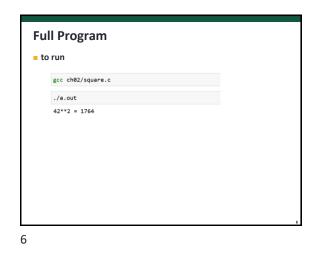
The static Storage Class



Full Program

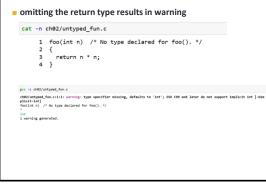
C code in file named square.c

cat ch02/square.c
<pre>#include <stdio.h></stdio.h></pre>
<pre>int square(int n) /* Our first function. */ { return n * n; }</pre>
<pre>int main(int argc, char **argv) { int n = 42; printf("%d**2 = %d\n", n, square(n));</pre>
return 0; }

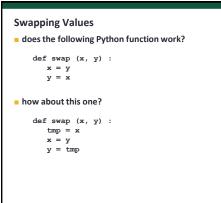


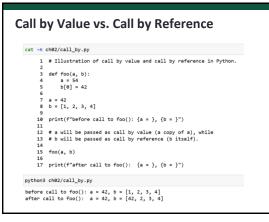
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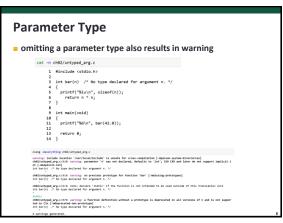
Return Type

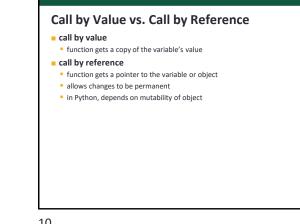




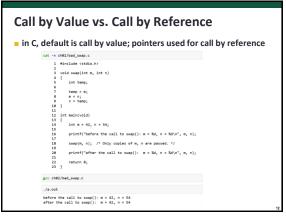








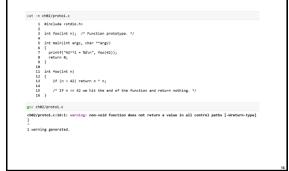


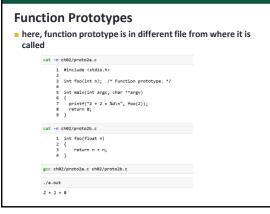


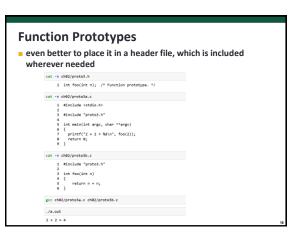
like a function declaration or signature showing function return type function name function parameter types used for detecting mismatches in calls to function often seen in header files e.g., stdio.h contains a function prototype for printf

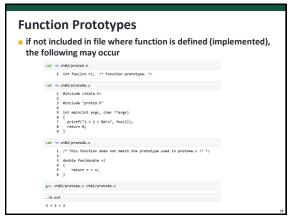
Function Prototypes

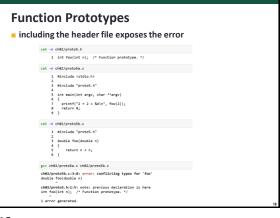
Function Prototypes











Returning Multiple Values

- in both Python and C, each function can return only one data item
- this item, however, can be a collection
 - in Python, for instance, this collection can be a tuplein C, for instance, this collection can be a struct
- so, there are workarounds to return multiple data values

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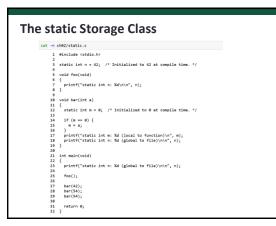
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The void Type

the compiler should detect misuse with void



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The static Storage Class

static variables are persistent

two types

- outside any function: like a global variable, but only to this source file
- inside a function: retain their value from call to call

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The static Storage Class ./a.out static int n: 42 (global to file) static int n: 42 (local to function) static int n: 42 (global to file) static int n: 42 (global to file) static int n: 42 (global to file) static int n: 42 (local to function) static int n: 42 (global to file)