Q & A

Q: What impact do local variables with static storage duration have on recursive functions? [p. 220]

A: When a function is called recursively, fresh copies are made of its automatic variables for each call. This doesn't occur for static variables, though. Instead, all calls of the function share the *same* static variables.

Q: In the following example, `j` is initialized to the same value as `i`, but there are two variables named `i`:

```
int i = 1;

void f(void)
{
  int j = i;
  int i = 2;
  ...
}
```

Is this code legal? If so, what is `j`'s initial value, 1 or 2?

A: The code is indeed legal. The scope of a local variable doesn't begin until its declaration. Therefore, the declaration of `j` refers to the external variable named `i`. The initial value of `j` will be 1.

Exercises

Section 10.4

W 1. The following program outline shows only function definitions and variable declarations.

```
int a;

void f(int b)
{
  int c;
}

void g(void)
{
  int d;
  {
    int e;
  }
}

int main(void)
{
  int f;
}
```