Textbook Assignment #2: Names, Scopes, and Bindings

Issued: Thursday, March 9
Due: Thursday, March 30

Purpose

This assignment asks you to think about the management of names in programming languages: scope (aka, visibilty), extent (aka, lifetime), and binding (i.e., meaning).

Be careful to answer all of an exercise's questions.

Textbook Exercises

Edition 4: question 3.2, page 167.

Consider variable allocation. Give only Pascal/Java and Scheme examples. They don't need to compile/execute.

Edition 4: question 3.4, page 167.

Consider live, but invisible, variables. Your examples need not compile/execute. Code:

```
1  procedure main()
2      a:integer:=1
3      b:integer:=2
4      procedure middle()
5          b:integer:=a
6          procedure inner()
7              print a,b
8          end
9          a:integer:=3
10         inner()
11         print a,b
12     end
13     middle()
14     print a,b
15 end
```

Edition 4: question 3.5, page 167.

Consider declaration order. Consider only the C and Modula-3 sets of rules.

Edition 4: question 3.7, page 169.

Analyze memory bugs. Figure 3.16 is within the exercise.

Edition 4: question 3.14, page 171.

Consider static and dynamic scope. Code:

```
1  x:integer
2
3  procedure setx(n:integer)
4      x:=n
5  end
6
7  procedure printx()
8      print(x)
9  end
10
11 procedure first()
12     setx(1)
13     printx()
14 end
15
16 procedure second()
17     x:integer
18     setx(2)
19     printx()
20 end
21
22 setx(0)
23 first()  printx()
24 second() printx()
```

Edition 4: question 3.18, page 173.

Consider shallow and deep binding.