CS 350: Programming Language Design

Lecture 15

Iterative statements – repeat code until some condition is reached

Body is a group of statements and the execution is controlled by an iteration statement.

Where do we put the control mechanism and how do we control it?

Logically-Controlled Loops are typically controlled by Boolean expressions

Pre vs. Post-Test

Pretest to mean that the test for-loops are completed before the body executes.

Posttest means that the loop executes after the body is executed.

C and C++ have pre and post test forms.

Control expressions may be arithmetic and it is legal to branch into the body of a logical loop.

Java requires Boolean in it’s expression.

The body may only be entered at it’s beginning since Java has no goto.

A counting iterative statement has a loop variable and a means of specifying the initial and terminal, and step size values.

Issues:

What are the types and scope of the loop variable

Should it be legal for the loop variable or loop parameters to be changed in the loop body, if so, does this change affect loop control?

What is the value of the loop variable after loop termination.

Loop parameters

Initial, terminal condition, step-size specs of loop.

C does not provide an explicit loop

Everything can be changed within a loop

The expression is evaluated once, but the other two are evaluated with each iteration.

It is legal to branch into the body of a for loop in C

User-Located Loop Control

At times, it is far easier for programmers to decide a location for loop control.

Like break, continue, etc.

Break will exit innermost loops. Continue will skip the current iteration, but not exit the loop