Control structure implementation

• At the assembly language level, most control structures are implemented through conditional branches (test and branch)

• From a programmer perspective, if all we had were if statements and goto, we could "build our own" loops, switches, etc (possibly even making them more efficient that the compiler representation of generic HLL loops)

• Of course, much less readable, convenient, safe from programmer perspective

Loops

- As you found in your assembly language course(s), most loops are based around a test statement (at the top or bottom, depending on the nature of the loop), and branches to either continue or leave the loop, e.g.

    If (! continue-condition) goto Label-after-loop

        Body of loop

    Goto Label-before-if

Switches

- Multi-way selection (e.g. a switch) is also easily implemented with if/goto

  If (matches value-1) goto CodeBlock1

  If (matches value-2) goto CodeBlock2

  ... default block ...

  goto AfterSwitch

  ... code block 1 ...

  goto AfterSwitch

  ... code block 2 ...

  ... code after switch ...