Meaning of if-then-else

if *condition* then
   statement$_1$
else
   statement$_2$
endif

```
# code for condition, result in $t0
        beq     $t0, $zero, .L1
# code for statement1
        j       .L2
.L1:    nop
# code for statement2
.L2:    nop
```

1

While Loop

- What is the meaning of a while-loop?

while (expr) {
   body
}

```
.L0:    # code for expr
        # assume result is $t0
        beq     $t0, $zero, .L1
        body
        j       .L0
.L1:    nop
```

2

Computing a One-Dimensional Array Address

- In general, for A[i], declared as A[low..high], generate

  base(A) + (i-low)*sizeof(A[1])

3

Handling One-Dimensional Arrays

- How do we compute the address of b[i]?

VAR i: INTEGER;
   b: ARRAY [3..12] OF INTEGER;

Assume i and b are globals.

Relative to $gp, i is stored at offset 0 and b[3] is stored at offset 4 and so on

base address of b is $gp+4

```
#  access b[i]
   add $s0, $gp, 0
   lw $s1, 0($s0)
   add $s0, $gp, 4
   sub $s1, $s1, 3
   sll $s1, $s1, 2
   add $s0, $s0, $s1
   lw $s1, 0($s0)
```

4

1