Handout # 7
(Lack of) Register Allocation

Code generated for i+1 < j

lw $a0 20($fp)  ; load i into $a0
sw $a0 0($fp))  ; spill it
la $a0 int_lit8  ; load 1 into $a0
jal Any.clone    ; copy it
lw $t1 0($fp)    ; unspill i
lw $t1 12($t1)   ; get its true value
lw $t2 12($a0)   ; get 1 into $t1
add $t1 $t1 $t2   ; compute i+1
sw $t1 12($a0)   ; store it in object
sw $a0 0($fp)    ; spill result
lw $a0 16($fp)   ; get j into $a0
lw $t1 0($fp)    ; unspill i+1 object
lw $t1 12($t1)   ; get i+1 into $t1
lw $t2 12($a0)   ; get true value of j
la $a0 boolean_lit1 ; maybe result true?
blt $t1 $t2 L21   ; compare them
la $a0 boolean_lit0 ; no, it’s false

L21:

Questions:

• Why is i stored as soon as it is loaded?

• Why is the object for i+1 spilled?

• Why are we loading at offset 12 from int_lit8 when we know the answer is 1?