**Translation of Relations**

Consider translation of <,=, < = ,>,>=,=,!= on integers

Operations of type   
\begin{displaymath}
  \textsf{Int} \times \textsf{Int} \to \{ 0, 1 \}
\end{displaymath}

Note: there are no instructions that take two integers from stack and leave the result of comparison on stack

There are conditional branches for comparison of two stack operands:

* in general called **if\_icmpCOND** for different ‘COND’

Compilation scheme

* assuming translations compute results on top of the stack

What should be the compiled code?

[[ e1 COND e2 ]] =

[[ e1 ]]

[[ e2 ]]

if\_icmpCOND nTrue

bipush 0

goto nAfter

nTrue:

bipush 1

nAfter:

**Example**

static boolean test(int x, int y) {

return (x < y);

}

Bytecode:

static boolean test(int, int);

Code:

0: iload\_0

1: iload\_1

2: if\_icmpge 9

5: iconst\_1

6: goto 10

9: iconst\_0

10: ireturn

Note:

* iconst is a shorter form for bipush
* the code above uses the dual branch and swaps constants true and false