

Princeton University
 COS 217: Introduction to Programming Systems
 SPARC Assembly Language “if” Statement Optimization

<p>C:</p> <pre> ... instruction0; if (test) { trueinstruction1; trueinstruction2; ... trueinstructionN; } instruction1; ... </pre>	<p>Assembly language:</p> <pre> ... instruction0 cmp ... bnx ifend nop trueinstruction1 trueinstruction2 ... trueinstructionN ifend: instruction1 ... </pre>
<p>Optimized assembly lang. (version 1):</p> <pre> ... cmp ... bnx ifend instruction0 trueinstruction1 trueinstruction2 ... trueinstructionN ifend: instruction1 ... </pre> <p>Works only if <i>test</i> does not depend upon <i>instruction0</i>.</p>	<p>Optimized assembly lang. (version 2):</p> <pre> ... instruction0 cmp ... bnx,a ifend instruction1 trueinstruction1 trueinstruction2 ... trueinstructionN instruction1 ifend: ... </pre> <p>Must duplicate <i>instruction1</i>. Wastes a machine cycle if branch is not taken.</p>