



Lecture 19

Intermediate Code Generation

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March 19, 2025

Take aways from the last class

- Equivalence of type expression

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- Back end generates target code from intermediate representation

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- IR should be simple and light weight while allowing easy expression of optimizations and transformations.

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```
t1 := y * z
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where $t1$ and $t2$ are compiler generated temporary names
- Three address code are a linearized representation of a syntax tree where explicit names correspond to the interior nodes of the graph

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- Pointer

- ▶ $x = y$
- ▶ $x = *y$
- ▶ $*x = y$

this can be written directly in 3AC in exam.
No need to generate a separate temporary for x relop y.

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Other Representation

- SSA: Single Static Assignment whenever assigning something, use a different variable name.
- RTL: Register transfer language is a low-level language that is used to describe the functioning of a digital circuit and, more specifically, the transfer of information between registers.
- Stack machines: P-code P-code is the Assembly language for a hypothetical stack machine, the P-machine, said to have been an imitation of the instruction set for the Burroughs Large System
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- The list goes on